Evaluation of the Cost Impact of 2018 ICC Prescriptive Code Changes

RINKER-CR-2018-103

Final Report

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EXECUTIVE SUMMARY

The study examined the 2018 ICC Code changes (including: International Building Code (IBC); International Residential Code (IRC); International Energy Conservation Code; International Mechanical Code; International Plumbing Code; International Fuel Gas Code; International Code for Existing Buildings; and National Electrical Code) and their cost impact on the 2015 International Building Codes as incorporated in 2017 Florida Building Code (effective December 31, 2017).

The I-Codes 2018 changes that are prescriptive in nature and have the potential of changing the cost of construction were identified and used in a standard set of prototypes of two residential and five commercial/institutional building information models to determine the impact of these code changes on their construction costs. RS Means 2017 Cost data for the Orlando Region was used to price these prototype buildings. Model based quantities were used and verified along with some SF style estimates from RS means for certain systems that were not fully defined in the prototype BIM models. Based on these construction cost estimates, it was determined that the relative increase in cost due to the prescriptive 2018 ICC code changes ranged from approximately 4.24% for the Retail building prototype to approximately 18.05% for the Mid-rise 20-story apartment building. The estimated relative change in cost for the residences was approximately 16.28% for the 1-story house to approximately 12.12% for the 2-story house.

The average changes in cost were 7.57% for the commercial/institutional buildings and 14.20% for the residences. Across all the samples, the largest potential code impact came from the 2018 code change G123-15, which adds group R-2 cooking appliance to kitchens and from the 2018 IECC CE223-16 code that updates two motor efficiency tables to be consistent with the new federal standards.

Future research should focus on the use of the developed models and estimates to evaluate future code changes. In addition, workshop webinars should be promoted to introduce and encourage designers, builders and other code change petitioners to use the models to prospectively evaluate the cost impact of their proposed code changes. Finally, the modeling of other type of buildings should be explored to develop an even more diverse set of building models.

Overview

This research provides an assessment of the potential cost impacts of the 2018 I-Code changes to the 2015 International Building Codes as incorporated in 2017 Florida Building Code (effective December 31, 2017) by identifying those code changes/provisions that are prescriptive in nature and have the potential of adding cost to construction and by estimating the costs of the rest of the code changes using good engineering judgment and feedback from general contractors and consulting. A standard set of baseline residential and commercial building designs are modeled using building information modeling (BIM) and are used to produce cost estimates and extract the cost impact of code changes. Figure 1 shows the general process used to conduct this research.

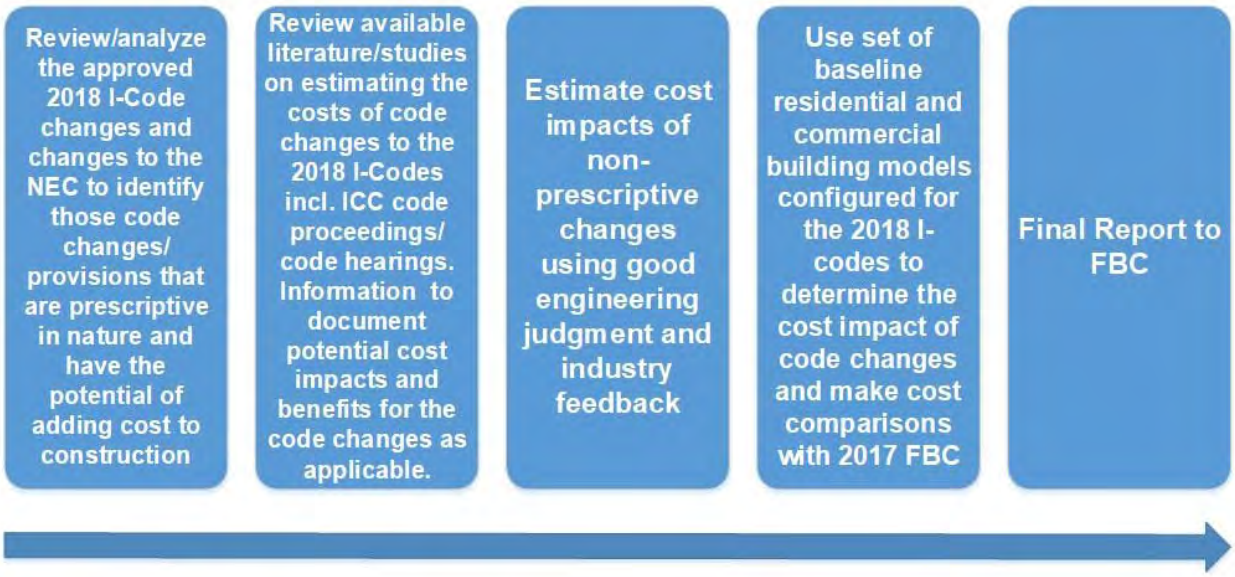

Figure 1. Research Plan

If any of the information gathered is seen as providing clear direction for one or more code recommendations, the recommendation(s) will also be written up and presented to the Commission. Effort will be made to provide a preliminary draft report by 15 April 2018.

Scope of Work

Task

a. RS shall review/analyze the approved 2018 I-Code changes and changes to the NEC to identify those code changes/provisions that are prescriptive in nature and have the potential of adding cost to construction.

b. RS shall review available literature/studies on the subject of estimating the costs of the code changes to the 2018 I-Codes including the ICC code proceedings/code hearings. Information gathered from this task shall be used to document potential cost impacts and benefits for the code changes as identified in "a." and as applicable.

c. RS shall estimate the construction cost impacts of those provisions that are not covered under "b." using good engineering judgment and feedback from general contractors and consulting engineers.

d. RS shall use the set of baseline residential and commercial building designs configured for the 2018 I-codes to determine the cost impact of code changes.

e. RS shall use building information modeling (BIM) tools developed under the 2015 I-Codes "as amended via the 6th Edition (2017) FBC" and 2018 I-Codes to produce:

f. RS shall use the information in "e." and cost databases to produce cost estimates and extract cost impact of changes on the reference houses and commercial buildings.

MEP Code Changes Cost Impact

Affiliated Engineers SE Inc. (AEI) has undertaken a study aimed at evaluating the cost impact that will result from the state of Florida's adoption of the 2018 Edition of the International Building Code (IBC). AEI's primary responsibility resided in evaluating the applicable MEP related changes that have occurred between the 2015 Edition and the 2018 Edition of the IBC and their cost impact and benefit.

Findings

1. Of the 2018 I Codes reviewed with respect to mechanical, electrical and plumbing (MEP) systems, the majority of impactful changes were observed in the International Energy Conservation Code. It many instances, code change proponents have noted the long-term energy savings expected from code changes with increased first costs.
2. A significant proportion of code changes across all I-Codes offer revised language for clarity and consistency.
3. Consistent across all relevant I-Codes was the transition away from brass and bronze fittings to coper alloy counterparts.
4. A significant portion of the International Energy Conservation Code changes have been adopted to align respective codes more closely with ASHRAE 90.1 and/or current federal minimum efficiency standards.
5. The IMC featured several code changes whereby product standards tables have been updated to reflect those most current.
6. Overall trends in the commercial sector point towards the specification of mechanical and electrical equipment with more superior efficiency ratings, the addition of control points and/or revision of sequences and the further clarification of existing code language.

The supporting appendices Tables 1-9 (APPENDIX A - I) provide further detail and elaboration on the above-listed key observations.

International Building Code (IBC-FPC) Changes Cost Impact

Koffel Associates, Inc. has undertaken a study aimed at evaluating the cost impact that will result from the state of Florida's adoption of the 2018 Edition of the International Building Code (IBC).

Findings

Approximately 67% of the code changes identified in the table result in no cost impact. The remaining code changes, identified as a decrease or increase cost impact, result in 7% and 27%, respectively, of the total code changes summarized. Accordingly, there is an overall cost increase in applying the 2018 Edition of the IBC to the five buildings studied. Roughly speaking, the decreases add up to $334,000 in total and the increases add up to $1,430,000.

For the IBC changes that reference other ICC codes or NFPA 1, 70, or 101, a cursory review of the respective ICC Code or the aforementioned NFPA Code or Standard section that is referenced by the IBC change was reviewed for the degree to which it affects the cost impact to the five buildings considered as part of this study. Such referenced Code and Standard changes imposing a significant cost impact are included in Table 10 (APPENDIX J).

NEC Changes Cost Impact

NEC Changes Cost Impact

A review of the changes to the 2017 National Electric Code (NEC) was completed by examining each change and the corresponding committee notes. Where the changes were deemed to have a cost impact on construction a value was determined by considering the change between the 2017 and 2014 code versions. Material price differentials were based on retail prices and the wages were based on the prevailing wage reports of the U.S. Department of Labor.

Findings

Many of the changes to the code were due to editorial changes to improve readability and style consistency. Many others were made so that the NEC rules align with other codes and standards. Some of changes impacted large portions of the code. These include:

- The term “Listed and Labeled” was added throughout the code to ensure that material and equipment must be “listed” by a nationally recognized testing agency have a “label” attached to the item so that the authority having jurisdiction (AHJ) determine that the item is acceptable.
- The threshold voltage between low and medium voltages was raised from 600V to 1,000V.
- Cables are generally allowed where conductors are allowed, so "and cables" was generally added to "conductors"

Additional improvements to Arc Flash mitigation were introduced by requiring ladling of equipment with available fault current and calculations available to the AHJ.

Five new articles were introduced to adjust to current trends. Although these will help to improve safety, a cost assessment was difficult to ascertain.

- 425 - Fixed Resistance and Electrode Industrial Process Heating Equipment
- 691 - Large-Scale Photovoltaic (PV) Electric Power Production Facility
- 706 - Energy Storage Systems
- 710 - Stand-Alone Systems
- 712 - Direct Current Microgrids

Table 11 (Appendix K) provides further detail and elaboration on the cost impact observations.

Structural Code Changes Cost Impact

The RS has undertaken a study aimed at evaluating the cost impact that will result from the state of Florida's adoption of the 2018 Edition of the International Building Code (IBC). RS took primary responsibility in evaluating the applicable Structural Engineering related changes that have occurred between the 2015 Edition and the 2018 Edition of the IBC and IRC.

Findings

There were very few prescriptive cost impact changes and several were related to seismic requirements.

Tables 12-13 (Appendix L-M) provide further detail and elaboration on the above-listed key observations.

Building Information Models and Associated Cost Impacts

A comparison of the cost impact of changing from the 2012 to 2015 I-Codes is shown in Table A. The cost impact of the 2015 ICC code changes ranged from approximately 2.76% for the Retail building to approximately 12.43% for the Mid-rise Apartment building with an average of 8.31% for the commercial/institutional buildings and an average of 8.51% for the residences.

Table B is a comparison of the cost impact of changing from the 2012 to 2015 I-Codes with the addition of the Florida specific changes. The cost impact of the 2015+FL specific code changes ranged from approximately 3.83% for the Retail building to approximately 12.26% for the Small Hotel building with an average of 8.51% for the commercial/institutional buildings and an average of 8.33% for the residences.

Table C is a comparison of the cost impact of changing from the 2015+FL specific code changes to the 2018 I-Codes. The cost impact of the 2018 ICC code changes ranged from approximately 4.24% for the Retail building to approximately 18.05% for the Mid-rise Apartment building with an average of 7.57% for the commercial/institutional buildings and an average of 14.20% for the residences. Each building type is discussed and the changes modeled are listed in the subsequent subsections based on Levels 1 and 2 of the ASTM Uniformat II Standard E1557 associated with each building type (See Figure 3). The ASTM E1557 standard provides a common structure linking the building program, specifications, and estimates.

Table A. Summary I-Codes Changes Cost Impact Comparison

	Building Type	Estimated Cost Under: *2012 Codes*	Estimated Cost Under: *2015 Codes*	Anticipated % Change in Cost
1	*Small Office*	$ 10,876,636.35	$ 11,400,397.29	4.82%
2	*Retail*	$ 23,218,322.89	$ 23,859,585.51	2.76%
3	*Primary School*	$ 7,680,051.08	$ 8,391,129.56	9.26%
4	*Small Hotel*	$ 7,289,716.47	$ 8,184,324.91	12.27%
5	*Mid-Rise Apartment*	$ 39,398,015.53	$ 44,295,242.36	12.43%
6	*1 Story Residence*	$ 201,826.88	$ 219,577.99	8.80%
7	*2 Story Residence*	$ 299,077.52	$ 323,665.02	8.22%
			Average Net % Change in Cost (Entire Sample):	8.67%

Table B. Summary I-Codes Changes Cost Impact Comparison

	Building Type	Estimated Cost Under: *2012 Codes*	*Estimated Cost Under: 2015+FL Specific Codes*	Anticipated % Change in Cost
1	*Small Office*	$ 10,876,636.35	$ 11,375,218	4.58%
2	*Retail*	$ 23,218,322.89	$ 24,106,698	3.83%
3	*Primary School*	$ 7,680,051.08	$ 8,428,550	9.75%
4	*Small Hotel*	$ 7,289,716.47	$ 8,183,263	12.26%
5	*Mid-Rise Apartment*	$ 39,398,015.53	$ 44,181,208	12.14%
6	*1 Story Residence*	$ 201,826.88	$ 219,073	8.55%
7	*2 Story Residence*	$ 299,077.52	$ 323,341	8.11%
		Average Net % Change in Cost (Entire Sample):		8.83%

Table C. Summary I-Codes Changes Cost Impact Comparison

	Building Type	*Estimated Cost Under: 2015+FL Specific Codes*	*Estimated Cost Under: 2018 Codes*	Anticipated % Change in Cost
1	*Small Office*	$ 11,375,218	$ 12,057,849	6.00%
2	*Retail*	$ 24,106,698	$ 25,129,031	4.24%
3	*Primary School*	$ 8,428,550	$ 8,857,325	5.09%
4	*Small Hotel*	$ 8,183,263	$ 8,549,218	4.47%
5	*Mid-Rise Apartment*	$ 44,181,208	$ 52,156,034	18.05%
6	*1 Story Residence*	$ 219,073	$ 254,737	16.28%
7	*2 Story Residence*	$ 323,341	$ 362,536	12.12%
		Average Net % Change in Cost (Entire Sample):		10.90%

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements
A. SUBSTRUCTURE	A10 Foundations	A1010 Standard Foundations A1020 Special Foundations A1030 Slab on Grade
	A20 Basement Construction	A2010 Basement Excavation A2020 Basement Walls
B. SHELL	B10 Superstructure	B1010 Floor Construction B1020 Roof Construction
	B20 Exterior Closure	B2010 Exterior Walls B2020 Exterior Windows Exterior Doors
	B30 Roofing	B3010 Roof Coverings B3020 Roof Openings
C. INTERIORS	C10 Interior Construction	C1010 Partitions C1020 Interior Doors C1030 Specialties
	C20 Staircases	C2010 Stair Construction C2020 Stair Finishes
	C30 Interior Finishes	C3010 Wall Finishes C3020 Floor Finishes C3030 Ceiling Finishes
D. SERVICES	D10 Conveying Systems	D1010 Elevators D1020 Escalators & Moving Walks D1030 Material Handling Systems
	D20 Plumbing	D2010 Plumbing Fixtures D2020 Domestic Water Distribution D2030 Sanitary Waste D2040 Rain Water Drainage D2050 Special Plumbing Systems
	D30 HVAC	D3010 Energy Supply D3020 Heat Generating Systems D3030 Cooling Generating Systems D3040 Distribution Systems D3050 Terminal & Package Units D3060 Controls & Instrumentation D3070 Special HVAC Systems & Equipment D3080 Systems Testing & Balancing
	D40 Fire Protection	D4010 Fire Protection Sprinkler Systems D4020 Stand-Pipe & Hose Systems D4030 Fire Protection Specialties D4040 Special Electrical Systems
	D50 Electrical	D5010 Electrical Service & Distribution D5020 Lighting & Branch Wiring D5030 Communication & Security Systems D5040 Special Electrical Systems
E. EQUIPMENT & FURNISHINGS	E10 Equipment	E1010 Commercial Equipment E1020 Institutional Equipment E1030 Vehicular Equipment E1040 Other Equipment
	E20 Furnishings	E2010 Fixed Furnishings E2020 Movable Furnishings
F. SPECIAL CONSTRUCTION & DEMOLITION	F10 Special Construction	F1010 Special Structures F1020 Integrated Construction F1030 Special Construction Systems F1040 Special Facilities F1050 Special Controls & Instrumentation
	F20 Selective Building Demolition	F2010 Building Elements Demolition F2020 Hazardous Components Abatement

Figure 3. ASTM UNIFORMAT II Classification of Building Elements (E 1557)

Small Office Building

The design for the permitted drawings for this 7-story office building were for the shell only, and the interior floor build outs were left for future tenants. In this regard, additional costs implications may be realized once the building is designed to completion by tenants. The 2018 code changes were evaluated based solely on the approved shell and infrastructure drawings. A typical small office building model is shown in Figures A-1 thru A-3. The 2015 ICC changes, 2015+FL specific code changes, and the 2018 ICC changes mostly impacted the Services level of the prepared cost estimate. The HVAC, fire protection and electrical systems all showed an increase in cost due to 17 of the 2018 code changes. Three of the 2018 code changes drove the majority of the cost increase reported.

One of the primary contributors to the cost increase found in the 2018 code changes was due to change in IECC CE223-16, which updates two motor efficiency tables to be consistent with the new federal standards. The second primary contributor to the cost increase found in the 2018 code changes was due to change in IECC CE226-16 for commercial buildings, which addresses IECC consistency with other standards regarding voltage drop. Additional cost increases were determined due to the 2018 IBC MEP G27-16 change, which addresses power and lighting in the fire command center.

The HVAC systems had an increase in cost due to 2018 IECC CE139-16 changes for commercial buildings, which restricts the exception allowing gravity dampers to exhaust and relief air streams, and consequently requires a positive shutoff damper for outside air intakes.

The fire protection system had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. Other 2018 IBC-Non-Structural Fire Protection and Life Safety changes that resulted in an increase in cost of the fire protection system are F141-16 and F184-16, regarding the requirements for automatic sprinkler riser rooms and Class III standpipe systems respectively. In the 2018 IBC-Non-Structural Fire Protection and Life Safety code changes, the fire protection system saw a minor decrease in cost due to code change E9-15 that changes the occupant load factor for business to 150 square feet per person.

The electrical system had an increase in cost due to the 2018 NEC changes in SR-0322 and SR-4812 with reference to the requirements for GFCI protection, and FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources. Additional cost increases were determined due to the 2018 IBC Non-Structural Fire Protection and Life Safety G28-16 change, which addresses the power and lighting systems in the fire command center. The electrical requirements that update two motor efficiency tables to be consistent with the new federal standards was the largest cost increase factor for the 2018 ICC code changes.

Small Office Cost Summary

	ASTM Uniformat II Levels	2012 FBC Estimated Costs	2015 FBC Estimated Costs	2015+FL FBC Estimated Costs	2018 FBC Estimated Costs
1	***Substructure***	**$ 310,352**	**$ 310,352**	**$ 321,690**	**$ 321,690**
	A10 - Foundations	$ 310,352	$ 310,352	$ 321,690	$ 321,690
	A20 - Basement Construction	$ -	$ -	$ -	$ -
2	***Shell***	**$ 4,772,801**	**$ 4,772,801**	**$ 4,773,816**	**$ 4,773,816**
	B10 - Superstructure	$ 2,914,531	$ 2,914,531	$ 2,914,531	$ 2,914,531
	B20 - Exterior Enclosure	$ 1,824,162	$ 1,824,162	$ 1,825,177	$ 1,825,177
	B30 - Roofing	$ 34,108	$ 34,108	$ 34,108	$ 34,108
3	***Interiors***	**$ 1,089,086**	**$ 1,089,086**	**$ 1,089,086**	**$ 1,089,086**
	C10 - Interior Construction	$ 308,211	$ 308,211	$ 308,211	$ 308,211
	C20 - Stairs	$ 199,908	$ 199,908	$ 199,908	$ 199,908
	C30 - Interior Finishes	$ 580,966	$ 580,966	$ 580,966	$ 580,966
4	***Services***	**$ 4,704,398**	**$ 5,228,159**	**$ 5,190,627**	**$ 5,873,258**
	D10 - Conveying	$ 728,036	$ 728,036	$ 728,036	$ 728,036
	D20 - Plumbing	$ 302,556	$ 302,556	$ 302,556	$ 302,556
	D30 - HVAC	$ 21,049	$ 124,178	$ 124,178	$ 128,978
	D40 - Fire Protection	$ 1,868,315	$ 1,873,315	$ 1,873,315	$ 1,862,815
	D50 - Electrical	$ 1,784,443	$ 2,200,075	$ 2,162,542	$ 2,850,873
5	***Equipment & Furnishings***	**$ -**	**$ -**	**$ -**	**$ -**
6	***Special Construction***	**$ -**	**$ -**	**$ -**	**$ -**
7	***Building Sitework***	**$ -**	**$ -**	**$ -**	**$ -**
	Total Cost:	**$ 10,876,636**	**$ 11,400,397**	**$ 11,375,218**	**$ 12,057,849**

Figure A-1. 3D sections of Small Office Building

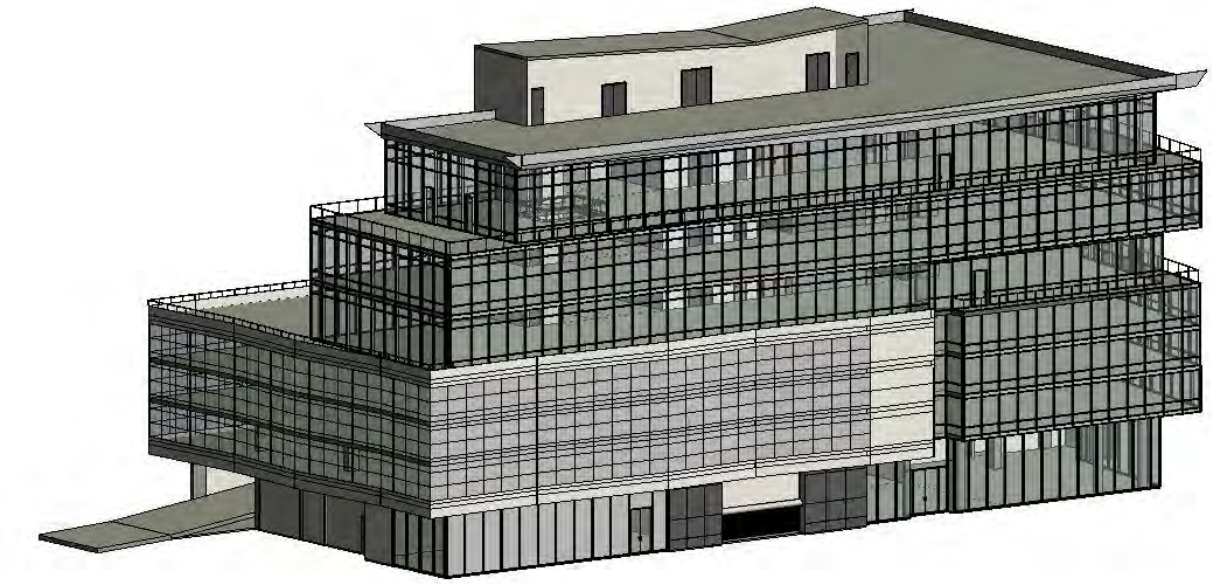

Figure A-2. 3D Model of Small Office Building

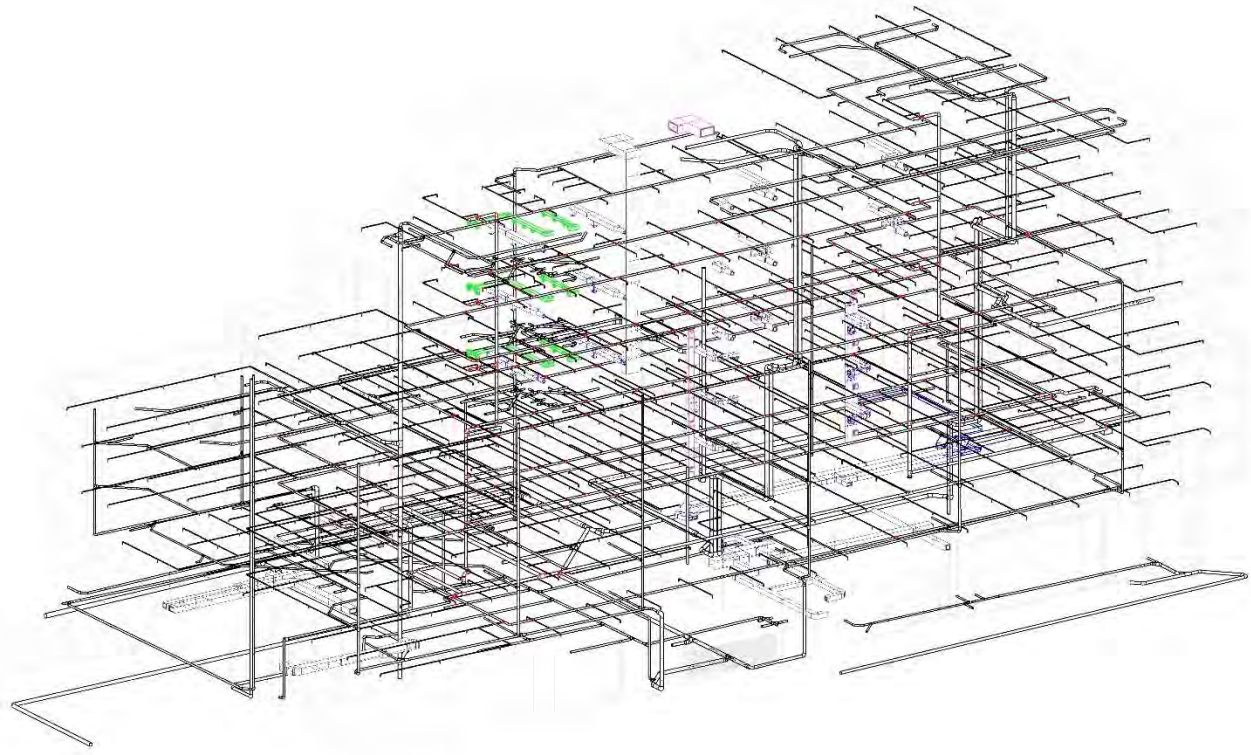

Figure A-3. 3D Model of MEP systems for Small Office Building

Retail Space

Typical retail spaces are shown in Figures B-1 thru B-3. The retail spaces modeled and utilized to develop this estimate have a parking structure on the lower level with large open areas above, from which the retail spaces can be accessed. It is an “open-air” style retail plaza and the retail spaces themselves are to be built out by the tenants. Due to this, major utility connections were made available in the approved drawings but there were limited MEP finishes as it was assumed that the tenants would complete this work and get it approved separately. The 2018 code changes were applied to the drawing set for the main retail space and the tenant built-outs were not evaluated. The 2015 ICC changes, 2015+FL specific code changes, and the 2018 ICC changes mostly impacted the Services level of the prepared cost estimate. The fire protection and electrical systems all showed an increase in cost due to 16 of the 2018 code changes. Three of the 2018 code changes drove the majority of the cost increase reported.

One of the primary contributors to the cost increase found in the 2018 code changes was due to the changes in 2018 IECC CE209-16 and CE210-16 for commercial buildings, which requires additional lighting wattage for retail buildings. The second primary contributor to the cost increase found in the 2018 code changes was due to the change in IECC CE223-16 for commercial buildings, which updates two motor efficiency tables to be consistent with the new federal standards. Additional cost increases were determined due to the 2018 IECC CE226-16 changes for commercial buildings, which address IECC consistency with other standards regarding voltage drop.

The fire protection system had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. Other 2018 IBC-Non-Structural Fire Protection and Life Safety changes that resulted in an increase in cost of the fire protection system are F141-16 and F184-16, regarding the requirements for automatic sprinkler riser rooms and Class III standpipe systems respectively. In the 2018 IBC-Non-Structural Fire Protection and Life Safety code changes, the fire protection system saw a minor decrease in cost due to code change E9-15 that changes the occupant load factor for business to 150 square feet per person.

The electrical system is impacted by the 2018 IBC MEP G27-16 change and the 2018 IBC-Non-Structural Fire Protection and Life Safety G28-16 change, which addresses the power and lighting in the fire command center. The 2018 NEC changes that resulted in an increase in cost of the electrical system are SR-0322 and SR-4812 with reference to the requirements for GFCI protection, and FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources. The electrical requirements for the additional lighting wattage were the largest cost increase factor for the 2018 ICC code changes.

Retail Cost Summary

	ASTM Uniformat II Levels	2012 FBC Estimated Costs	2015 FBC Estimated Costs	2015+FL FBC Estimated Costs	2018 FBC Estimated Costs
1	***Substructure***	**$ 2,255,246**	**$ 2,255,246**	**$ 2,558,734**	**$ 2,558,734**
	A10 - Foundations	$ 2,255,246	$ 2,255,246	$ 2,558,734	$ 2,558,734
	A20 - Basement Construction	$ -	$ -	$ -	$ -
2	***Shell***	**$ 10,897,059**	**$ 10,897,059**	**$ 10,912,190**	**$ 10,912,190**
	B10 - Superstructure	$ 9,041,350	$ 9,041,350	$ 9,041,350	$ 9,041,350
	B20 - Exterior Enclosure	$ 1,770,425	$ 1,770,425	$ 1,785,557	$ 1,785,557
	B30 - Roofing	$ 85,283	$ 85,283	$ 85,283	$ 85,283
3	***Interiors***	**$ 1,424,925**	**$ 1,424,925**	**$ 1,424,925**	**$ 1,424,925**
	C10 - Interior Construction	$ 411,821	$ 411,821	$ 411,821	$ 411,821
	C20 - Stairs	$ 443,168	$ 443,168	$ 443,168	$ 443,168
	C30 - Interior Finishes	$ 569,936	$ 569,936	$ 569,936	$ 569,936
4	***Services***	**$ 8,641,094**	**$ 9,282,356**	**$ 9,210,850**	**$ 10,233,183**
	D10 - Conveying	$ 853,948	$ 853,948	$ 853,948	$ 853,948
	D20 - Plumbing	$ 976,074	$ 984,458	$ 984,458	$ 984,458
	D30 - HVAC	$ 518,952	$ 784,112	$ 783,112	$ 783,112
	D40 - Fire Protection	$ 5,987,616	$ 5,992,616	$ 5,992,616	$ 5,982,116
	D50 - Electrical	$ 304,504	$ 667,222	$ 596,716	$ 1,629,549
5	***Equipment & Furnishings***	**$ -**	**$ -**	**$ -**	**$ -**
6	***Special Construction***	**$ -**	**$ -**	**$ -**	**$ -**
7	***Building Sitework***	**$ -**	**$ -**	**$ -**	**$ -**
	Total Cost:	**$ 23,218,323**	**$ 23,859,586**	**$ 24,106,698**	**$ 25,129,031**

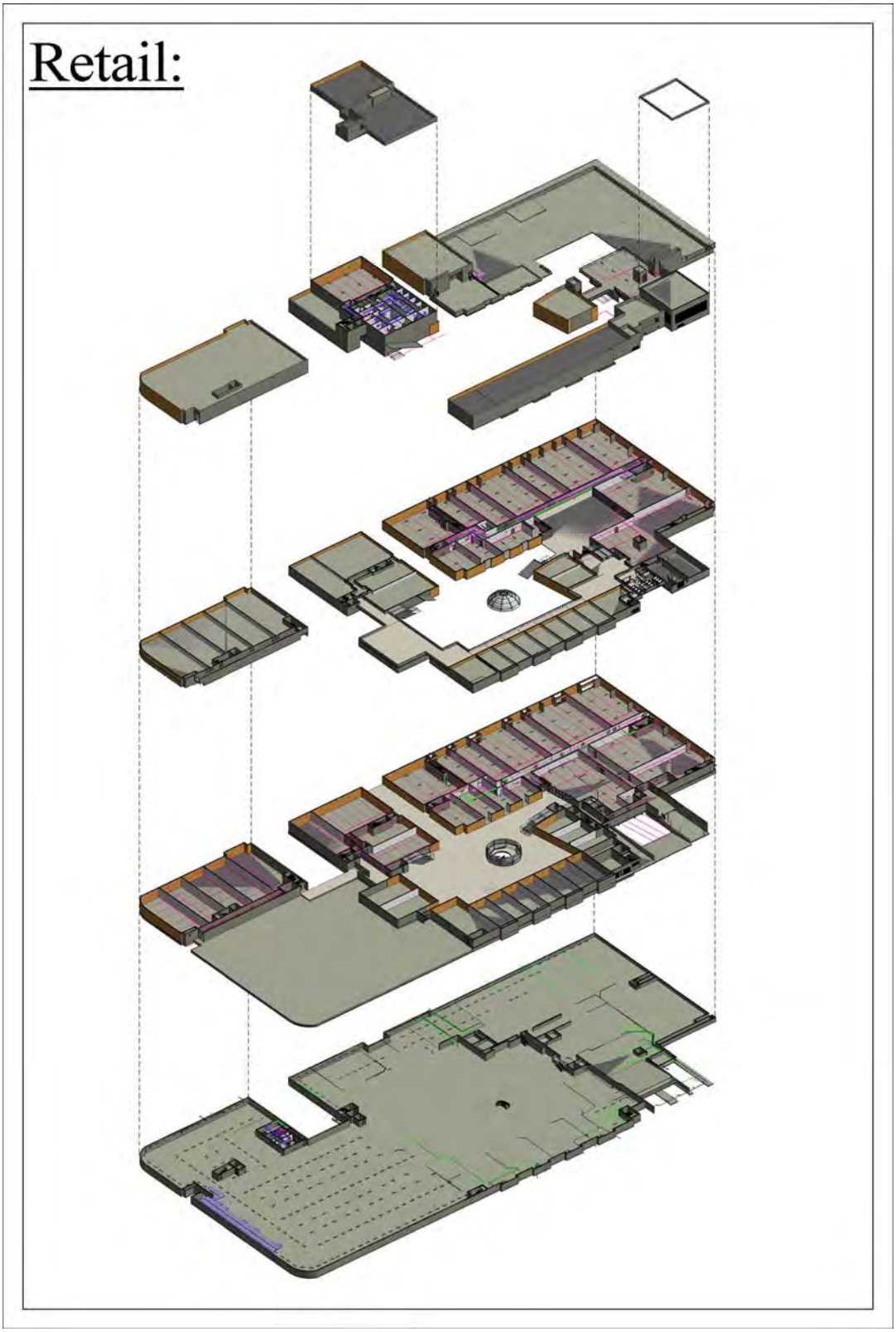

Figure B-1. 3D sections of Retail Space

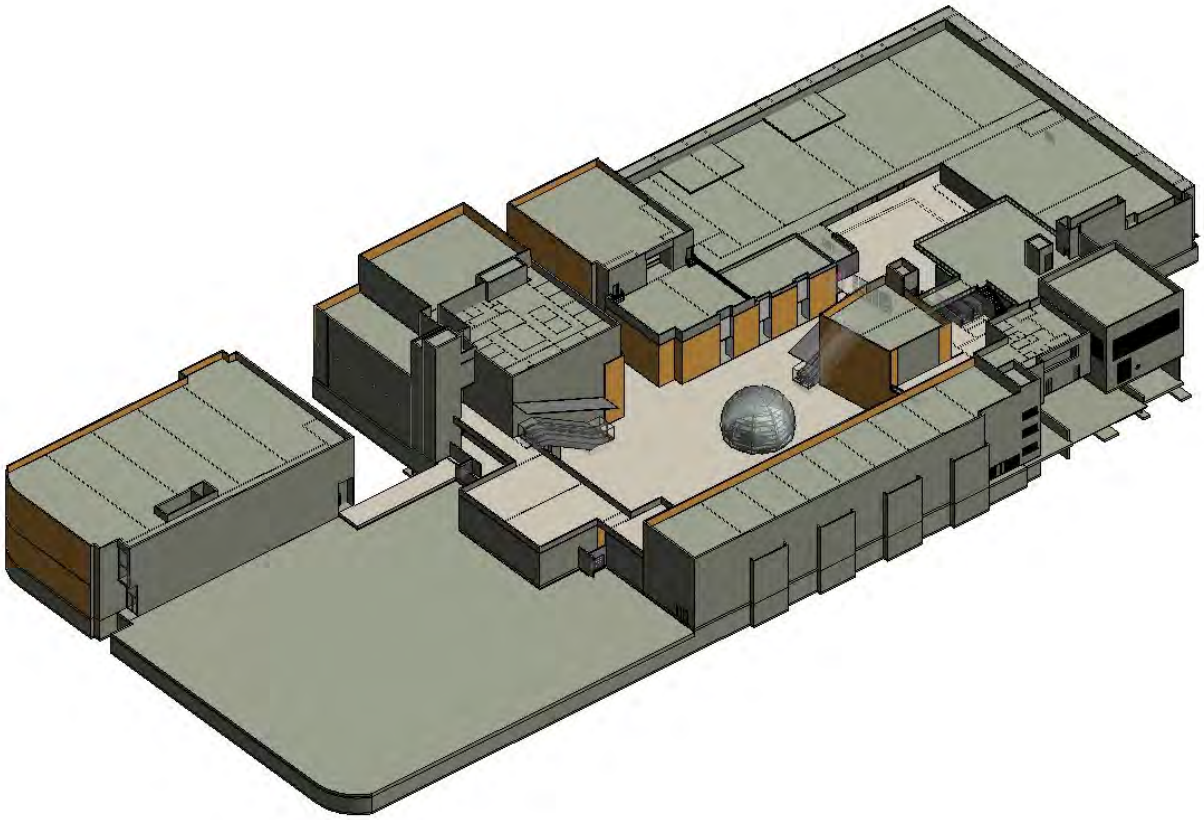

Figure B-2. 3D model of Retail Spaces

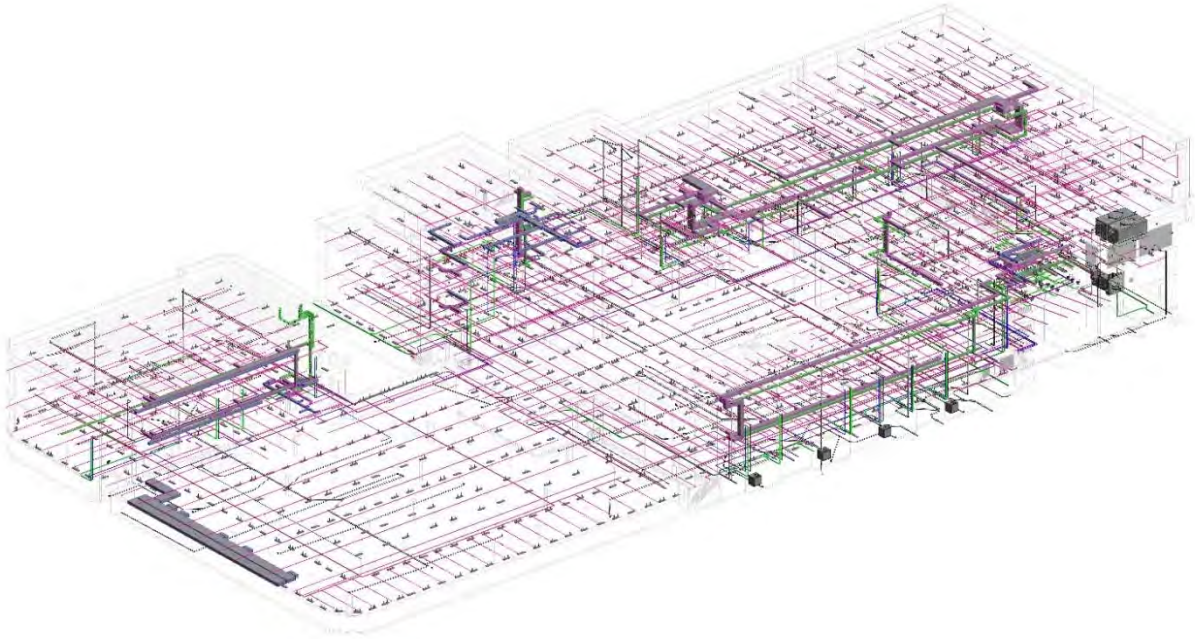

Figure B-3. 3D Model of MEP systems for Retail Spaces

Elementary School

As shown in Figures C-1 thru C-3, the elementary school building has two levels in the classroom areas and one level near the cafeteria and auditorium spaces. The building is a public school building with largely standard materials and was designed with performance and longevity in mind. The 2015 ICC changes, 2015+FL specific code changes, and the 2018 ICC changes mostly impacted the Services level of the prepared cost estimate. The HVAC, fire protection and electrical systems all showed an increase in cost due to 14 of the 2018 code changes. Two of the 2018 code changes drove the majority of the cost increase reported.

One of the primary contributors to the cost increase found in the 2018 code changes was due to the change in IECC CE223-16 for commercial buildings, which updates two motor efficiency tables to be consistent with the new federal standards. The second primary contributor to the cost increase found in the 2018 code changes was due to the change in SR-0322, which expands GFCI protection to more receptacle voltage, phase, and current ratings.

The HVAC systems had an increase in cost due to 2018 IECC CE139-16 changes for commercial buildings, which restricts the exception allowing gravity dampers to exhaust and relief air streams, and consequently requires a positive shutoff damper for outside air intakes. The fire protection system had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. Another 2018 IBC-Non-Structural Fire Protection and Life Safety change that resulted in an increase in cost of the fire protection system is F141-16, which addresses same room requirements for fire pump rooms and automatic sprinkler riser rooms.

The electrical system had an increase in cost due to 2018 IECC CE226-16 changes for commercial buildings, which addresses IECC consistency with other standards regarding voltage drop. The 2018 NEC changes that resulted in an increase in cost of the electrical system are SR-4812 with reference to the requirements for GFCI protection, and FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources. Overall the electrical requirements that update the two motor efficiency tables to be consistent with the new federal standards was the largest cost increase factor for the 2018 ICC code changes.

Primary School Cost Summary

	ASTM Uniformat II Levels	2012 FBC Estimated Costs	2015 FBC Estimated Costs	2015+FL FBC Estimated Costs	2018 FBC Estimated Costs
1	***Substructure***	**$ 700,228**	**$ 700,228**	**$ 743,241**	**$ 743,241**
	A10 - Foundations	$ 700,228	$ 700,228	$ 743,241	$ 743,241
	A20 - Basement Construction	$ -	$ -	$ -	$ -
2	***Shell***	**$ 3,737,916**	**$ 3,737,916**	**$ 3,737,916**	**$ 3,737,916**
	B10 - Superstructure	$ 1,636,810	$ 1,636,810	$ 1,636,810	$ 1,636,810
	B20 - Exterior Enclosure	$ 1,260,650	$ 1,260,650	$ 1,260,650	$ 1,260,650
	B30 - Roofing	$ 840,456	$ 840,456	$ 840,456	$ 840,456
3	***Interiors***	**$ 1,276,392**	**$ 1,276,392**	**$ 1,276,392**	**$ 1,276,392**
	C10 - Interior Construction	$ 584,401	$ 584,401	$ 584,401	$ 584,401
	C20 - Stairs	$ 79,310	$ 79,310	$ 79,310	$ 79,310
	C30 - Interior Finishes	$ 612,681	$ 612,681	$ 612,681	$ 612,681
4	***Services***	**$ 1,965,515**	**$ 2,676,593**	**$ 2,671,000**	**$ 3,099,776**
	D10 - Conveying	$ 64,985	$ 64,985	$ 64,985	$ 64,985
	D20 - Plumbing	$ 634,069	$ 634,069	$ 634,069	$ 634,069
	D30 - HVAC	$ 195,243	$ 663,725	$ 663,725	$ 668,925
	D40 - Fire Protection	$ 607,906	$ 612,906	$ 612,906	$ 627,406
	D50 - Electrical	$ 463,313	$ 700,909	$ 695,316	$ 1,104,391
5	***Equipment & Furnishings***	**$ -**	**$ -**	**$ -**	**$ -**
6	***Special Construction***	**$ -**	**$ -**	**$ -**	**$ -**
7	***Building Sitework***	**$ -**	**$ -**	**$ -**	**$ -**
	Total Cost:	**$ 7,680,051**	**$ 8,391,130**	**$ 8,428,550**	**$ 8,857,325**

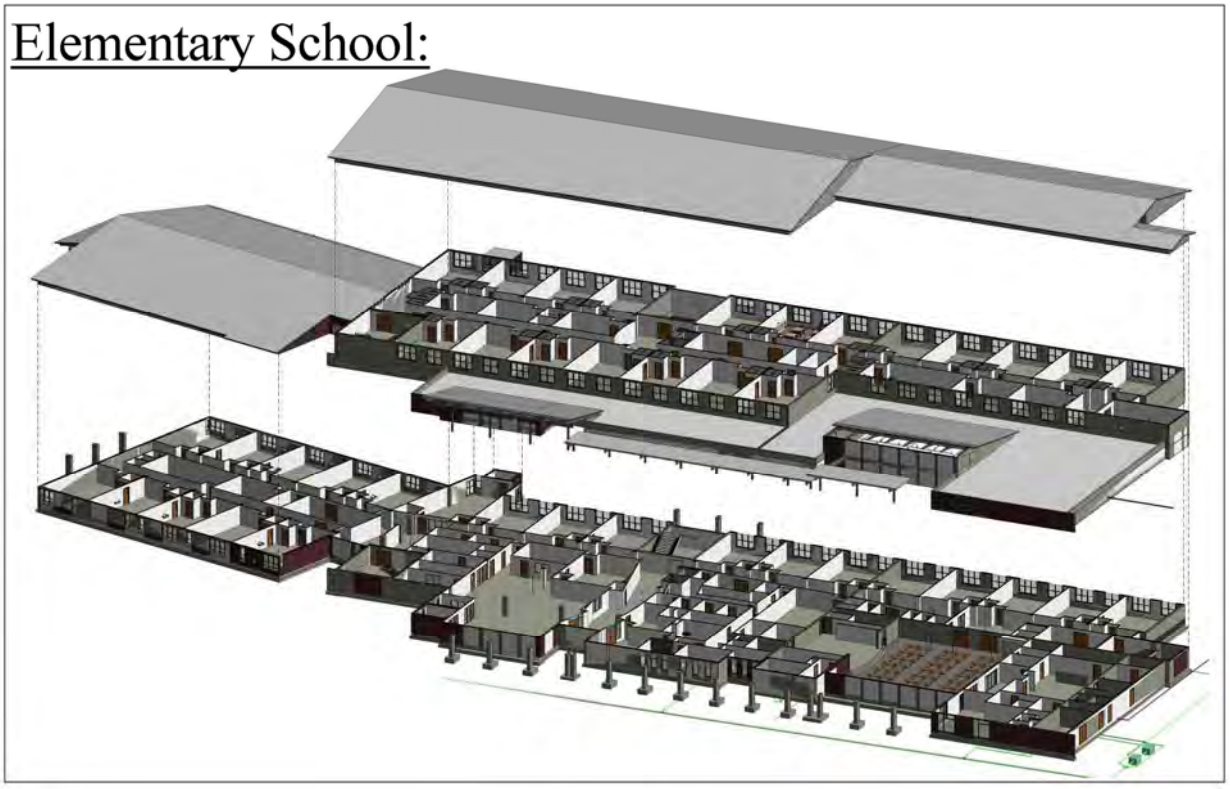

Figure C-1. 3D sections of Elementary School

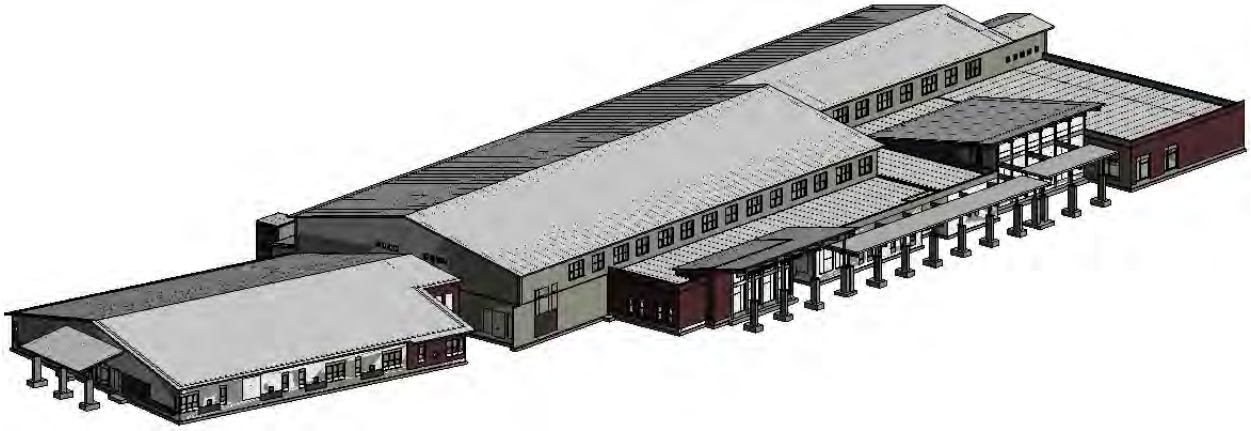

Figure C-2. 3D model of Elementary School

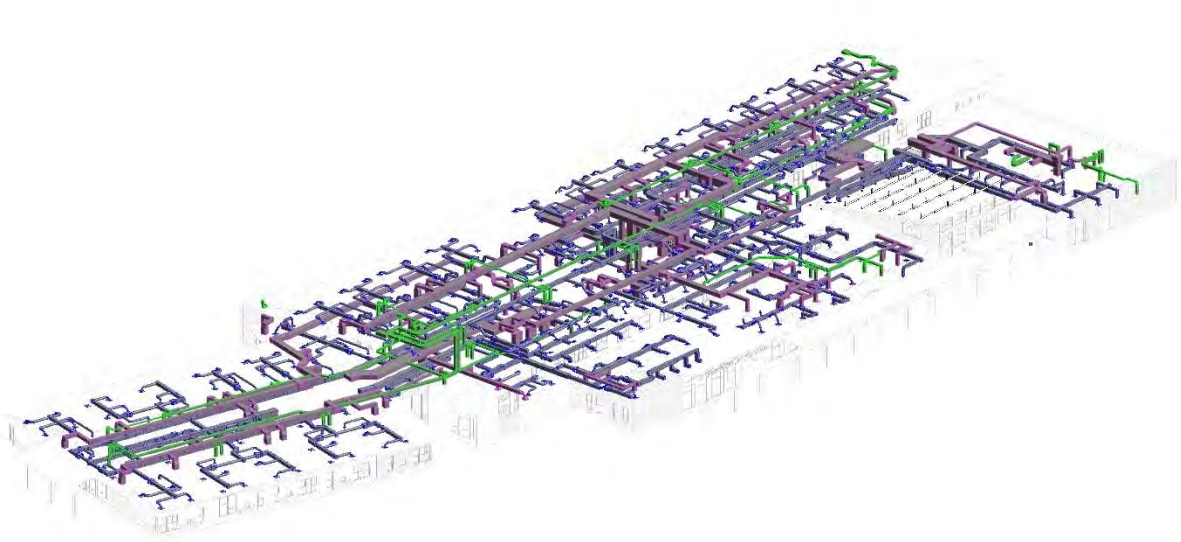

Figure C-3. 3D model of MEP systems for Elementary School

Small Hotel

As shown in Figures D-1 thru D-3, the hotel modeled for this estimate is a 3-story building with 128 hotel rooms, a full service kitchen and lobby area with standard hotel amenities. Each room has its own dedicated package HVAC unit and exhaust system. Both the exterior enclosure and interior partitions are primarily CMU structure walls with stucco or gypsum finish respectively. The 2015 ICC changes, 2015+FL specific code changes, and the 2018 ICC changes mostly impacted the Services level of the prepared cost estimate. The HVAC, fire protection and electrical systems all showed an increase in cost due to 17 of the 2018 code changes. Two of the 2018 code changes drove the majority of the cost increase reported.

One of the primary contributors to the cost increase found in the 2018 code changes was due to change in 2018 IECC CE223-16 for commercial buildings, which updates two motor efficiency tables to be consistent with the new federal standards. The second primary contributor to the cost increase found in the 2018 code changes was due to the IECC CE226-16 changes for commercial buildings, which address IECC consistency with other standards regarding voltage drop.

The HVAC systems had an increase in cost due to 2018 IECC CE139-16 changes for commercial buildings, which restricts the exception allowing gravity dampers to exhaust and relief air streams, and consequently requires a positive shutoff damper for outside air intakes. The HVAC systems are also impacted by 2018 IRC M44-15 and M51-15 changes, which address several exhaust system requirements for kitchens. The fire protection system had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. Another 2018 IBC-Non-Structural Fire Protection and Life Safety change that resulted in an increase in cost of the fire protection system is F141-16, which addresses same room requirements for fire pump rooms and automatic sprinkler riser rooms.

The electrical system had an increase in cost due to the 2018 NEC changes that resulted in an increase in cost of the electrical system are SR-0322, SR-4812 and SR-5414 with reference to the requirements for GFCI protection and receptacles. Other NEC changes that resulted in an increase in cost of the electrical system are FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources. For the Equipment level, there was an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety change G123-15, which adds group R-2 cooking appliance requirements to kitchens. Overall the electrical requirements that updates two motor efficiency tables to be consistent with the new federal standards was the largest cost increase factor for the 2018 ICC code changes.

Small Hotel Cost Summary

	ASTM Uniformat II Levels	*2012 FBC Estimated Costs*	*2015 FBC Estimated Costs*	*2015+FL FBC Estimated Costs*	*2018 FBC Estimated Costs*
1	***Substructure***	**$ 260,286**	**$ 260,286**	**$ 278,388**	**$ 278,388**
	A10 - Foundations	$ 260,286	$ 260,286	$ 278,388	$ 278,388
	A20 - Basement Construction	$ -	$ -	$ -	$ -
2	***Shell***	**$ 1,980,038**	**$ 1,980,038**	**$ 1,987,358**	**$ 1,987,358**
	B10 - Superstructure	$ 1,098,060	$ 1,098,060	$ 1,098,060	$ 1,098,060
	B20 - Exterior Enclosure	$ 808,987	$ 808,987	$ 816,307	$ 816,307
	B30 - Roofing	$ 72,991	$ 72,991	$ 72,991	$ 72,991
3	***Interiors***	**$ 1,416,588**	**$ 1,416,588**	**$ 1,416,588**	**$ 1,416,588**
	C10 - Interior Construction	$ 802,456	$ 802,456	$ 802,456	$ 802,456
	C20 - Stairs	$ 64,134	$ 64,134	$ 64,134	$ 64,134
	C30 - Interior Finishes	$ 549,998	$ 549,998	$ 549,998	$ 549,998
4	***Services***	**$ 3,632,804**	**$ 4,527,412**	**$ 4,500,929**	**$ 4,851,884**
	D10 - Conveying	$ 165,710	$ 165,710	$ 165,710	$ 165,710
	D20 - Plumbing	$ 908,650	$ 908,650	$ 908,650	$ 908,650
	D30 - HVAC	$ 919,059	$ 1,316,056	$ 1,316,056	$ 1,344,990
	D40 - Fire Protection	$ 913,628	$ 918,628	$ 918,628	$ 933,128
	D50 - Electrical	$ 725,758	$ 1,218,368	$ 1,191,884	$ 1,499,406
5	***Equipment & Furnishings***	**$ -**	**$ -**	**$ -**	**$ 15,000**
6	***Special Construction***	**$ -**	**$ -**	**$ -**	**$ -**
7	***Building Sitework***	**$ -**	**$ -**	**$ -**	**$ -**
	Total Cost:	**$ 7,289,716**	**$ 8,184,325**	**$ 8,183,263**	**$ 8,549,218**

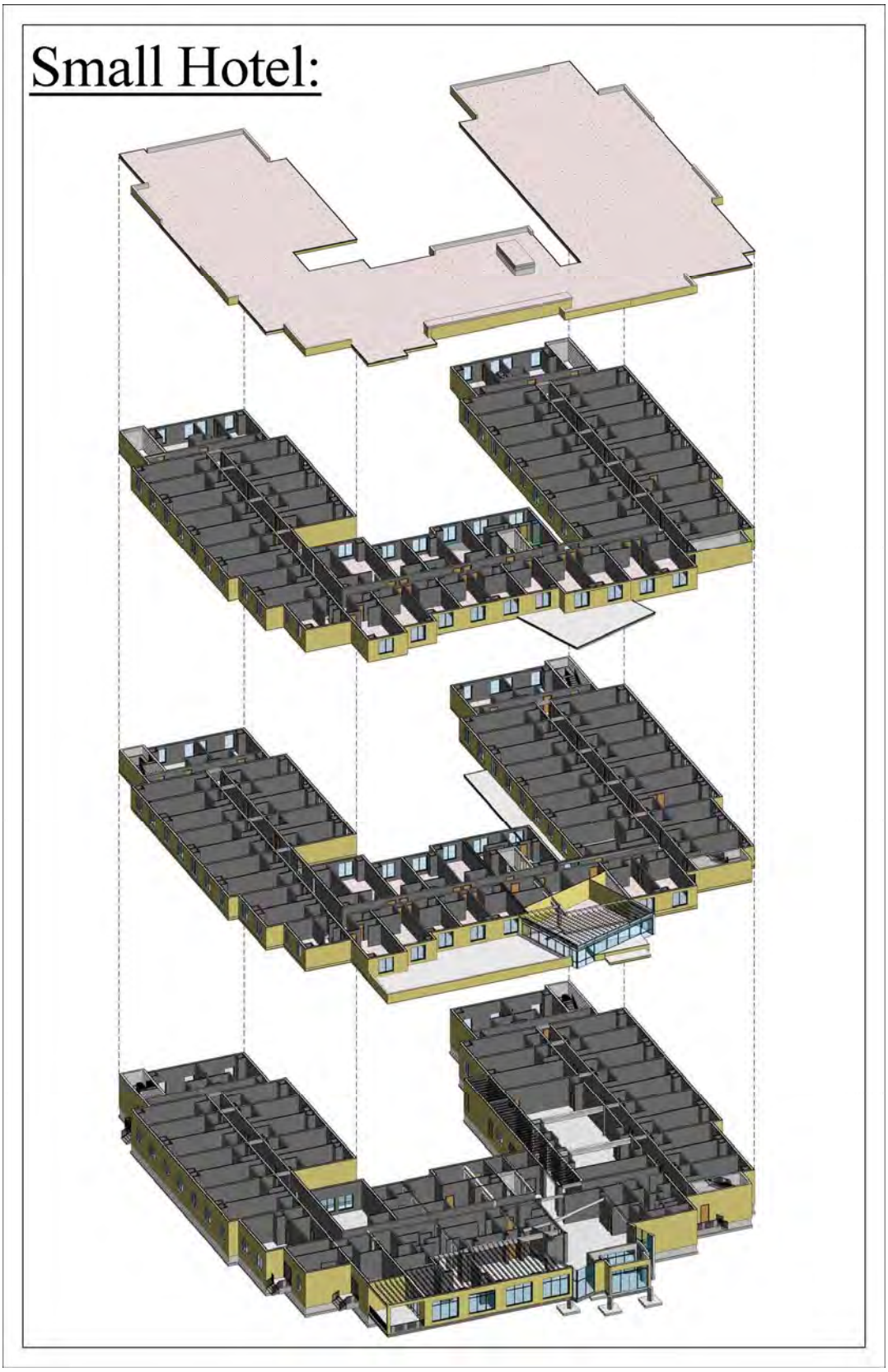

Figure D-1. 3D sections of Small Hotel

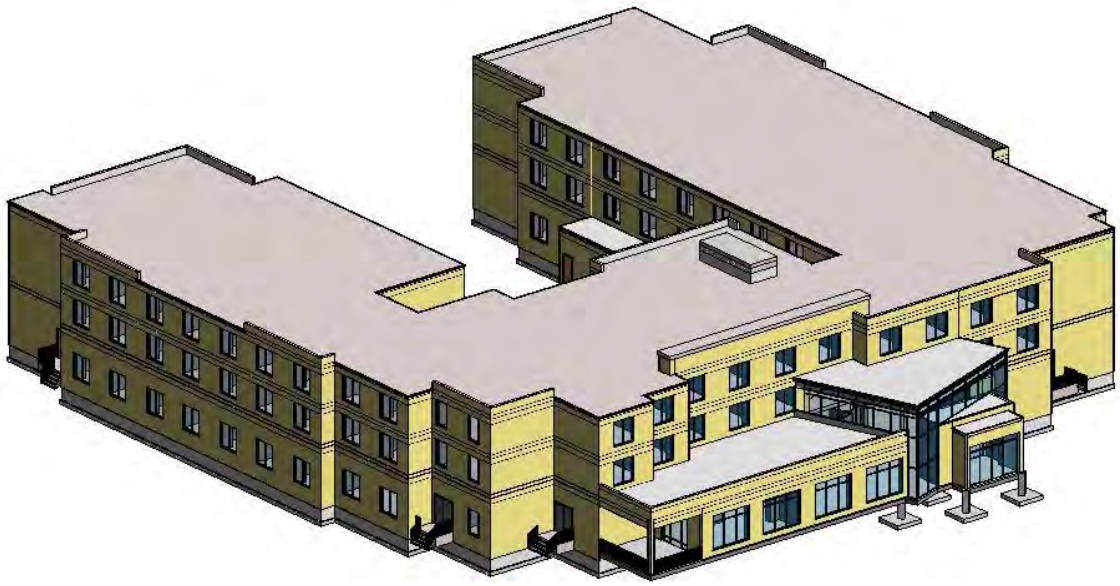

Figure D-2. 3D model of Small Hotel

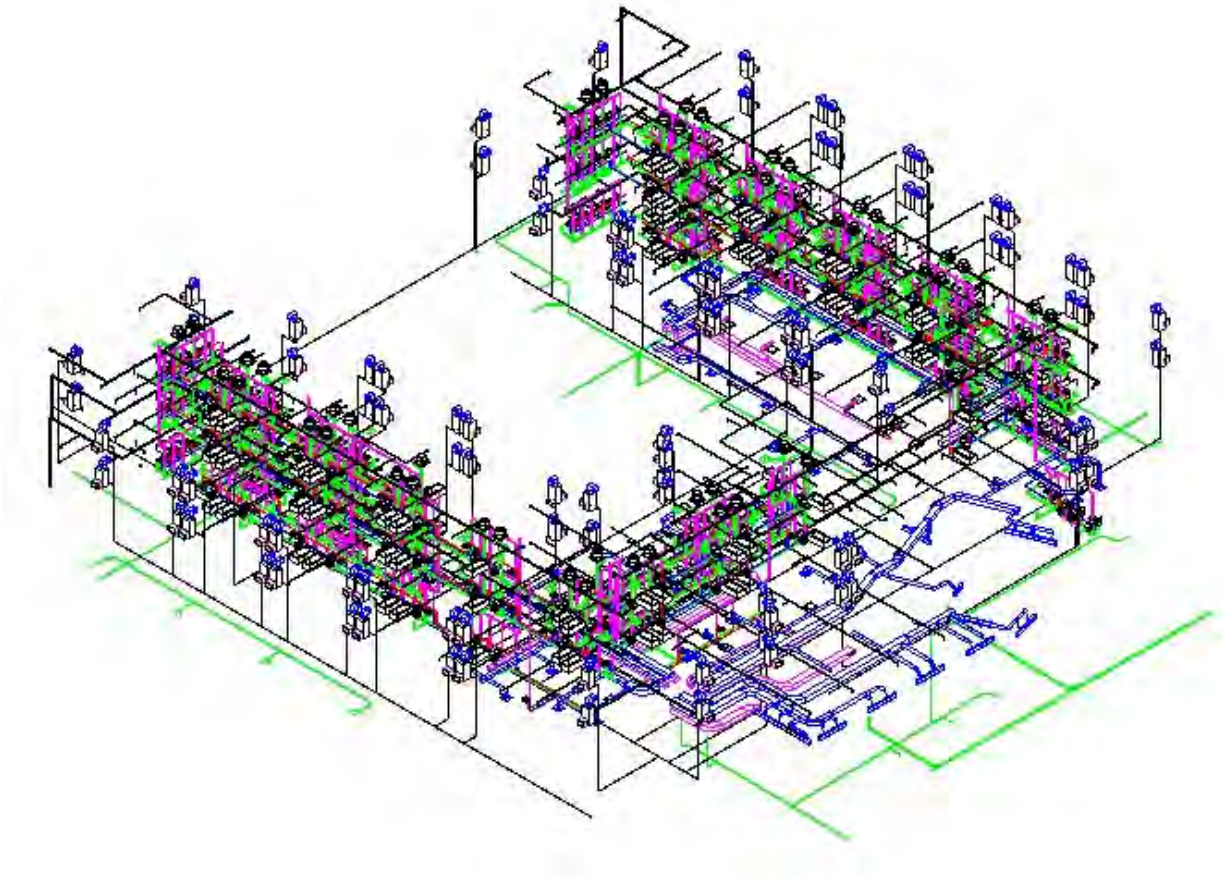

Figure D-2. 3D model of MEP systems for Small Hotel

Mid-Rise Apartment Building

As shown in Figures E-1 thru E-3, the midrise apartment building has a 20 level residential tower and an attached 7 level parking structure. It is a concrete structure building with a largely curtain wall façade system. The residential tower reaches an overall height of 209' with the highest occupied level at 197' 10". The 2018 code changes impacted the midrise apartment building at the Services level of the prepared estimate. The 2015 ICC changes, 2015+FL specific code changes, and the 2018 ICC changes mostly impacted the Services level and also the Equipment level of the prepared cost estimate. The HVAC, fire protection and electrical systems all showed an increase in cost due to 26 of the 2018 code changes. Three of the 2018 code changes drove the majority of the cost increase reported.

One of the primary contributors to the cost increase found in the 2018 code changes was due to the IECC CE223-16 change for commercial buildings, which updates two motor efficiency tables to be consistent with the new federal standards. Significant cost increases were reported due to the change in SR-0322, which expands GFCI protection to more receptacle voltage, phase, and current ratings. The major contributor to the cost increase found in the 2018 code changes was due to the change in 2018 IBC-Non-Structural Fire Protection and Life Safety change G123-15, which adds group R-2 cooking appliance requirements to kitchens.

The HVAC systems had an increase in cost due to 2018 IECC CE139-16 changes for commercial buildings, which restricts the exception allowing gravity dampers to exhaust and relief air streams, and consequently requires a positive shutoff damper for outside air intakes. The 2018 IRC Mechanical code, RM31-15 that requires access to above-ground duct system components for system balancing, also contributed to a cost increase in the HVAC systems. The HVAC systems are also impacted by the 2018 IRC M38-15 and M44-15 changes, which address several exhaust system requirements in the building. In the 2018 IBC-Non-Structural Fire Protection and Life Safety code changes, the HVAC systems saw a minor decrease in cost due to code change FS52-15 that allows a recycling chute in the same shaft as the trash chute.

The fire protection system had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. Other 2018 IBC-Non-Structural Fire Protection and Life Safety changes that resulted in an increase in cost of the fire protection system are F141-16 and F184-16, regarding the requirements for automatic sprinkler riser rooms and Class III standpipe systems respectively. The fire protection system is also impacted by IBC-Non-Structural Fire Protection and Life Safety F197-16 change, which requires multiple-channel voice evacuation systems for high-rise buildings.

The electrical system had an increase in cost due to 2018 IECC CE226-16 changes for commercial buildings, which addresses IECC consistency with other standards regrading voltage drop. The electrical system is also impacted by 2018 IBC MEP G27-16 change and the 2018 IBC-Non-Structural Fire Protection and Life Safety G28-16 change, which address the power and lighting in the fire command center. The 2018 NEC changes that resulted in an increase in cost of the electrical system are SR-

0322, SR 0326, SR-4812 and SR-5414 with reference to the requirements for GFCI protection and receptacles. Other NEC changes that resulted in an increase in cost of the electrical system are FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources. Overall the requirements which adds group R-2 cooking appliance to kitchens was the largest cost increase factor for the 2018 ICC code changes.

Mid-Rise Apartment Cost Summary

	ASTM Uniformat II Levels	*2012 FBC Estimated Costs*	*2015 FBC Estimated Costs*	*2015+FL FBC Estimated Costs*	*2018 FBC Estimated Costs*
1	***Substructure***	**$ 1,498,735**	**$ 1,498,735**	**$ 1,545,295**	**$ 1,545,295**
	A10 - Foundations	$ 1,498,735	$ 1,498,735	$ 1,545,295	$ 1,545,295
	A20 - Basement Construction	$ -	$ -	$ -	$ -
2	***Shell***	**$ 12,849,079**	**$ 12,849,079**	**$ 12,870,467**	**$ 12,870,467**
	B10 - Superstructure	$ 10,084,546	$ 10,084,546	$ 10,105,934	$ 10,105,934
	B20 - Exterior Enclosure	$ 2,693,593	$ 2,693,593	$ 2,693,593	$ 2,693,593
	B30 - Roofing	$ 70,940	$ 70,940	$ 70,940	$ 70,940
3	***Interiors***	**$ 7,354,169**	**$ 7,354,169**	**$ 7,354,169**	**$ 7,354,169**
	C10 - Interior Construction	$ 2,300,013	$ 2,300,013	$ 2,300,013	$ 2,300,013
	C20 - Stairs	$ 64,001	$ 64,001	$ 64,001	$ 64,001
	C30 - Interior Finishes	$ 4,990,156	$ 4,990,156	$ 4,990,156	$ 4,990,156
4	***Services***	**$ 17,696,032**	**$ 22,593,259**	**$ 22,411,276**	**$ 25,841,103**
	D10 - Conveying	$ 1,456,072	$ 1,456,072	$ 1,456,072	$ 1,456,072
	D20 - Plumbing	$ 8,074,420	$ 9,531,364	$ 9,531,364	$ 9,531,364
	D30 - HVAC	$ 3,368,413	$ 5,134,077	$ 5,133,077	$ 5,103,994
	D40 - Fire Protection	$ 375,761	$ 430,761	$ 430,761	$ 555,261
	D50 - Electrical	$ 4,421,366	$ 6,040,985	$ 5,860,002	$ 9,194,412
5	***Equipment & Furnishings***	**$ -**	**$ -**	**$ -**	**$ 4,545,000**
6	***Special Construction***	**$ -**	**$ -**	**$ -**	**$ -**
7	***Building Sitework***	**$ -**	**$ -**	**$ -**	**$ -**
	Total Cost:	**$ 39,398,016**	**$ 44,295,242**	**$ 44,181,208**	**$ 52,156,034**

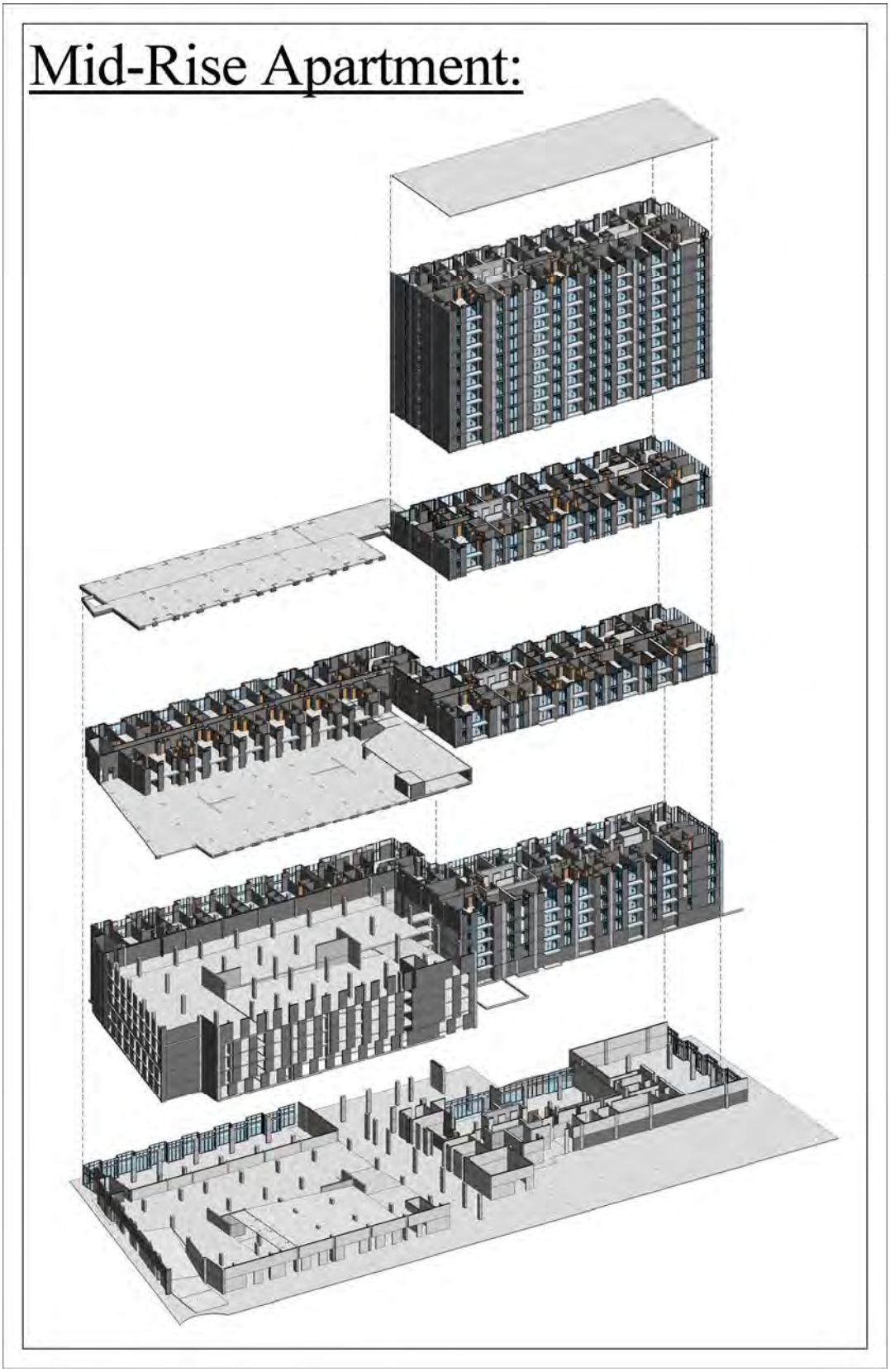

Figure E-1. 3D sections of Mid-Rise Apartment Building

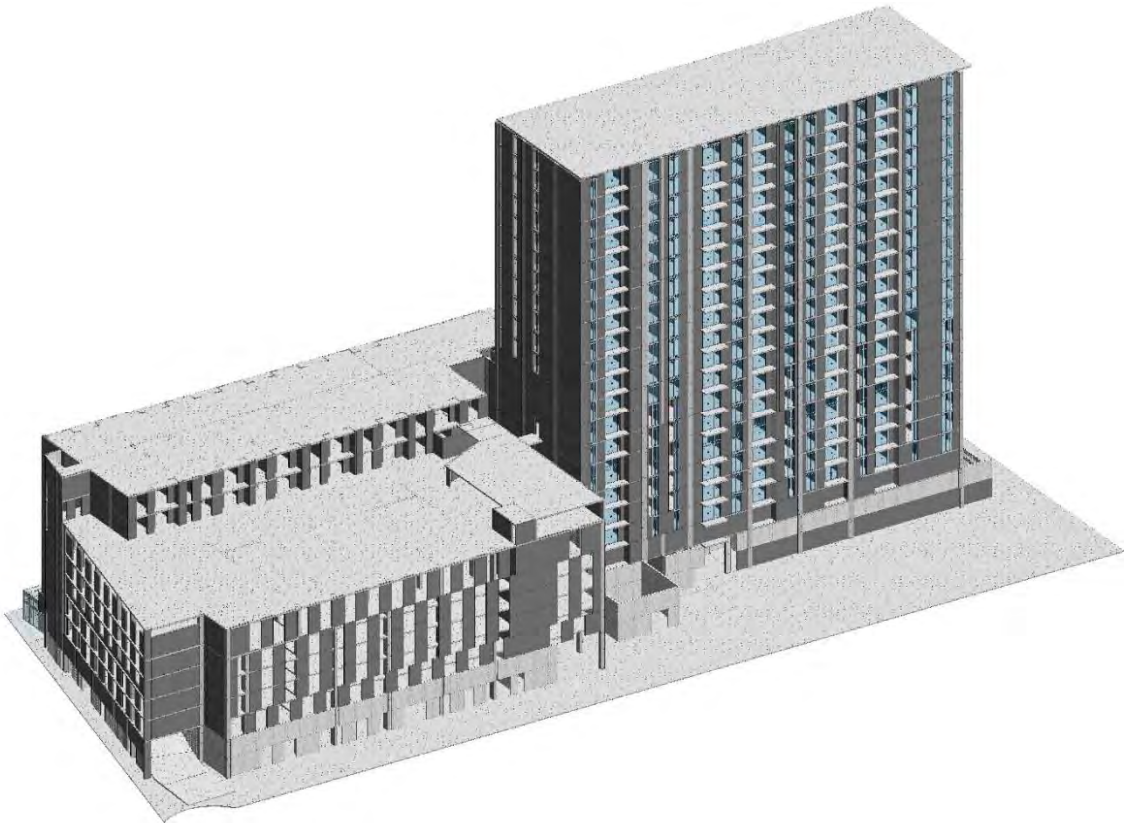

Figure E-2. 3D model of Mid-Rise Apartment Building

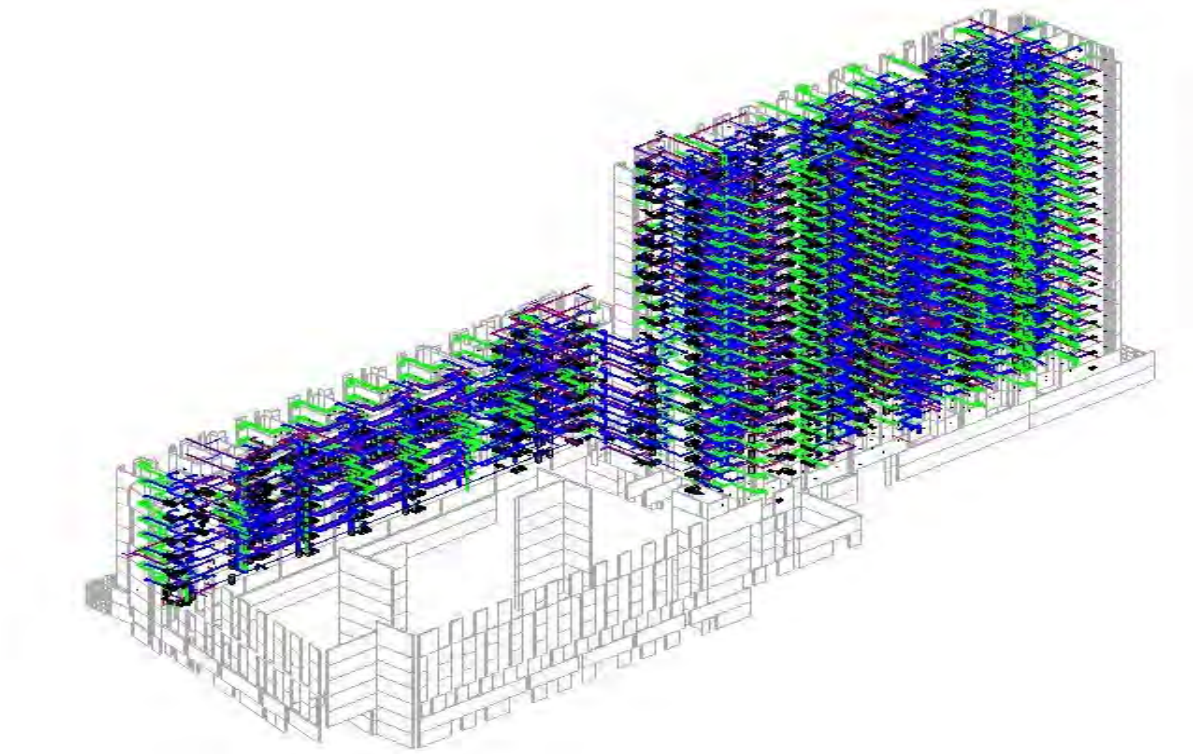

Figure E-2. 3D model of MEP systems for Mid-Rise Apartment Building

1-Story Residence

As shown in Figures F-1 thru F-3, the residence has three bedrooms and an open concept kitchen and family room. There is an attached 385 SF two car garage and a concrete outdoor area connected the family room and kitchen. The hip roof is constructed of pre-engineered roof trusses with a standard shingle roof covering. The 2018 code changes impacted the 1-story residence at the specialties, mechanical and electrical levels of the prepared estimate. Approved plans based on the 2012 Florida building code were used to develop the model for estimation and code adjustments to meet the 2015 ICC, 2015-FL specific and the 2018 ICC code changes.

The specialties level was impacted by the 2018 IBC-Non-Structural Fire Protection and Life Safety change G123-15, which adds group R-2 cooking appliance requirements to kitchens. The mechanical level had an increase in cost due to 2018 IECC RE183-16 change for residential buildings, which updates standards for new HVAC systems and components. The 2018 IRC Mechanical RM22-15 change that addresses several exhaust system requirements in the building, and the 2018 IRC Mechanical code, RM31-15 that requires access to above-ground duct system components also contributed to an increase in cost of the mechanical level.

The electrical level had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. The 2018 NEC changes that resulted in an increase in cost of the electrical system are SR-0322, SR 0326, SR-4812 and SR-5414 with reference to the requirements for GFCI protection and receptacles. Other NEC changes that resulted in an increase in cost of the electrical system are FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources.

In the 2018 NEC changes, the electrical level saw a minor decrease in cost due to code change SR-1505 that requires reduced service conductors for single-phase 208Y/120-volt systems. The requirements which add group R-2 cooking appliance to kitchens was the largest cost increase factor for the 2018 ICC code changes.

1-Story Residence Cost Summary

	ASTM Uniformat II Levels	*2012 FBC Estimated Costs*	*2015 FBC Estimated Costs*	*2015+FL FBC Estimated Costs*	*2018 FBC Estimated Costs*
1	*Site Work*	$ -	$ -	$ -	$ -
2	*Foundations*	$ 15,719	$ 15,719	$ 17,312	$ 17,312
3	*Framing*	$ 41,260	$ 41,260	$ 41,260	$ 41,260
4	*Exterior Walls*	$ 40,084	$ 40,084	$ 40,084	$ 40,084
5	*Roofing*	$ 18,782	$ 18,782	$ 18,782	$ 18,782
6	*Interiors*	$ 32,642	$ 32,642	$ 32,642	$ 32,642
7	*Specialties*	$ -	$ -	$ -	$ 15,000
8	*Mechanical*	$ 40,503	$ 57,201	$ 56,201	$ 59,165
9	*Electrical*	$ 12,837	$ 13,890	$ 12,792	$ 30,492
	Total Cost:	**$ 201,827**	**$ 219,578**	**$ 219,073**	**$ 254,737**

Figure F-1. 3D sections of 1-Story Residence

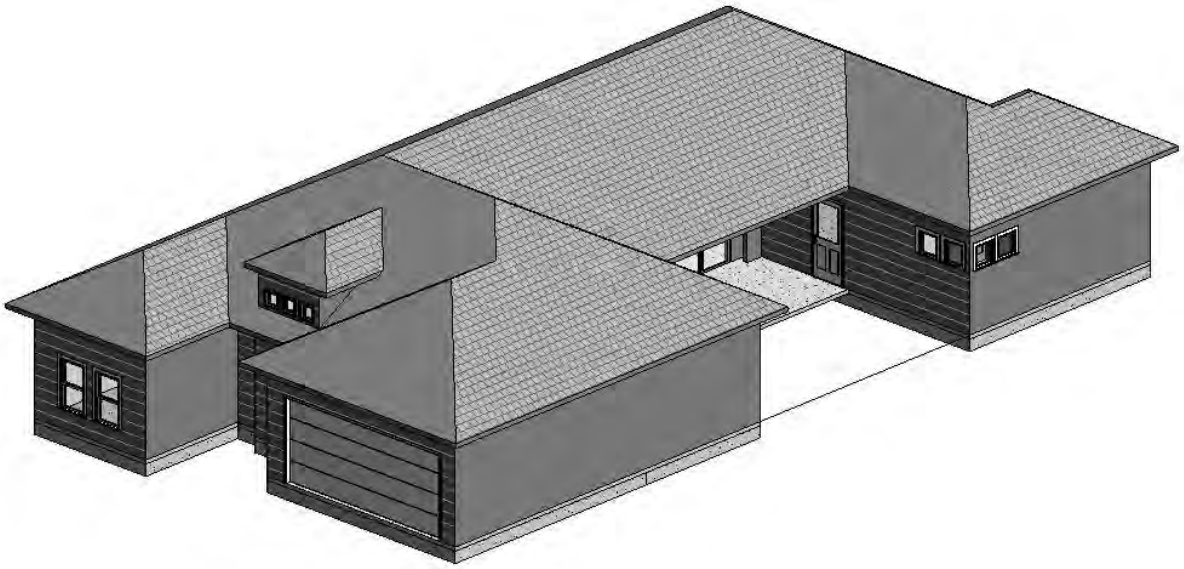

Figure F-2. 3D model of 1-Story Residence

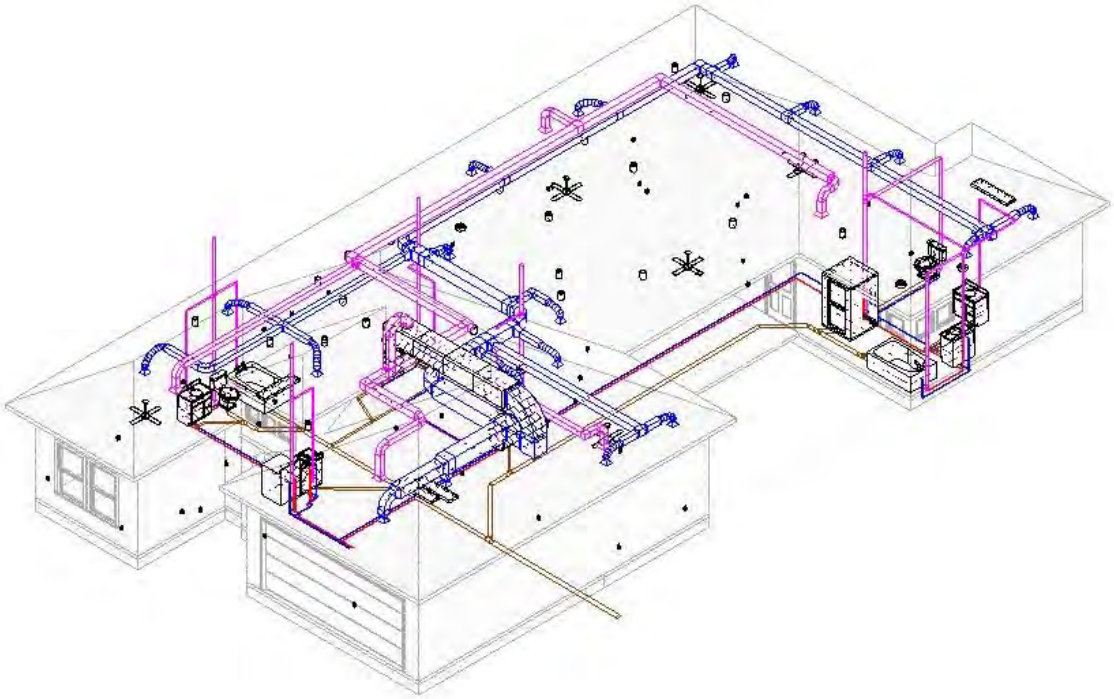

Figure F-3. 3D model MEP systems for 1-Story Residence

2-Story Residence

As shown in Figures G-1 thru G-3, the residence has three bedrooms with the master suite on the lower level and two bedrooms on the second level. There is a 497 SF attached two car garage and an open style floor plan on the first floor. In addition to the two bedrooms, the second level has a game room and a bathroom connected to the two bedrooms. The roof over the lower level is a hip roof and the second level has a gable roof. Both roofs are made from pre-engineered roof trusses with a standard roof shingle covering. The 2018 code changes impacted the 2-story residence at the specialties, mechanical and electrical levels of the prepared estimate. Approved plans based on the 2012 Florida building code were used to develop the model for estimation and code adjustments to meet the 2015 ICC, 2015-FL specific and the 2018 ICC code changes.

The specialties level was impacted by the 2018 IBC-Non-Structural Fire Protection and Life Safety change G123-15, which adds group R-2 cooking appliance requirements to kitchens. The mechanical level had an increase in cost due to 2018 IECC RE183-16 change for residential buildings, which updates standards for new HVAC systems and components. The 2018 IRC Mechanical RM22-15 change that address several exhaust system requirements in the building, and the 2018 IRC Mechanical code, RM31-15 that requires access to above-ground duct system components also contributed to an increase in cost of the mechanical level.

The electrical level had an increase in cost due to 2018 IBC-Non-Structural Fire Protection and Life Safety RB131-16 and RB144-16 changes regarding the interconnection of both smoke alarms and carbon monoxide alarms systems. The 2018 NEC changes that resulted in an increase in cost of the electrical system are SR-0322, SR 0326, SR-4812 and SR-5414 with reference to the requirements for GFCI protection and receptacles. Other NEC changes that resulted in an increase in cost of the electrical system are FR-3661 and SR-3620 regarding generator prime mover shutdown means, and FR-3616 that addresses the installation of alternate power sources.

In the 2018 NEC changes, the electrical level saw a minor decrease in cost due to code change SR-1505 that requires reduced service conductors for single-phase 208Y/120-volt systems. The requirements which add group R-2 cooking appliance to kitchens was the largest cost increase factor for the 2018 ICC code changes.

2-Story Residence Cost Summary

	ASTM Uniformat II Levels	*2012 FBC Estimated Costs*	*2015 FBC Estimated Costs*	*2015+FL FBC Estimated Costs*	*2018 FBC Estimated Costs*
1	*Site Work*	$ -	$ -	$ -	$ -
2	*Foundations*	$ 28,776	$ 28,776	$ 31,071	$ 31,071
3	*Framing*	$ 40,309	$ 40,309	$ 40,309	$ 40,309
4	*Exterior Walls*	$ 58,812	$ 58,812	$ 58,812	$ 58,812
5	*Roofing*	$ 27,578	$ 27,578	$ 27,578	$ 27,578
6	*Interiors*	$ 67,536	$ 67,536	$ 67,536	$ 67,536
7	*Specialties*	$ 1,431	$ 3,291	$ 3,291	$ 18,291
8	*Mechanical*	$ 51,160	$ 73,888	$ 72,888	$ 78,733
9	*Electrical*	$ 23,475	$ 23,475	$ 21,857	$ 40,207
	Total Cost:	**$ 299,078**	**$ 323,665**	**$ 323,341**	**$ 362,536**

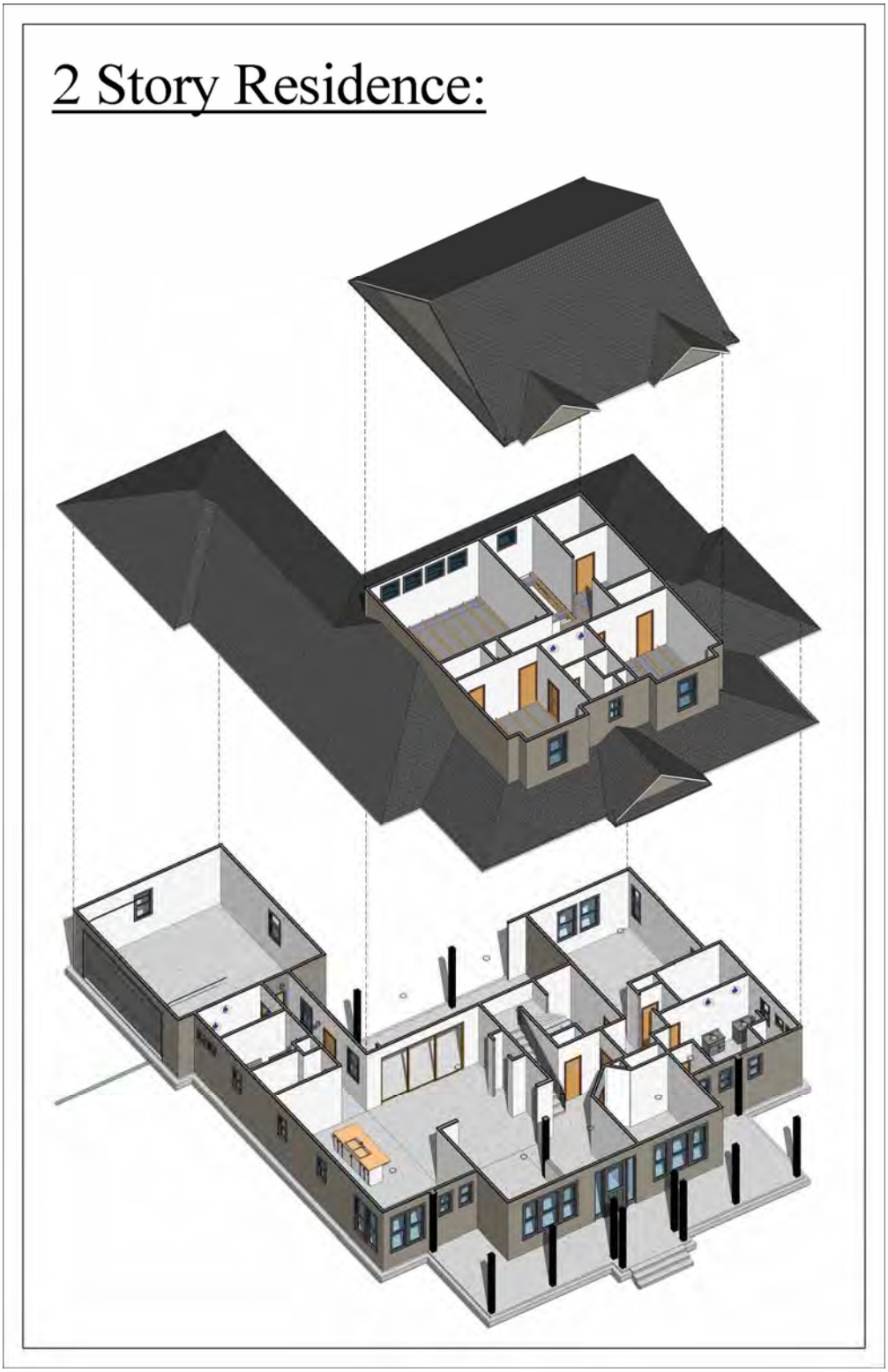

Figure G-1. 3D sections of 2-Story Residence

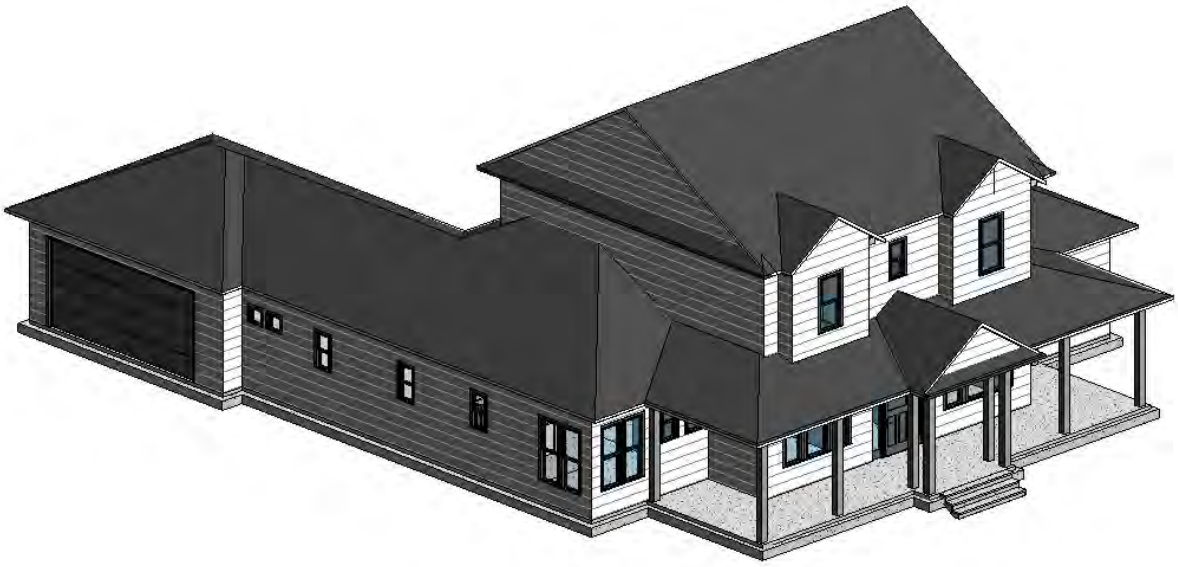

Figure G-2. 3D model of 2-Story Residence

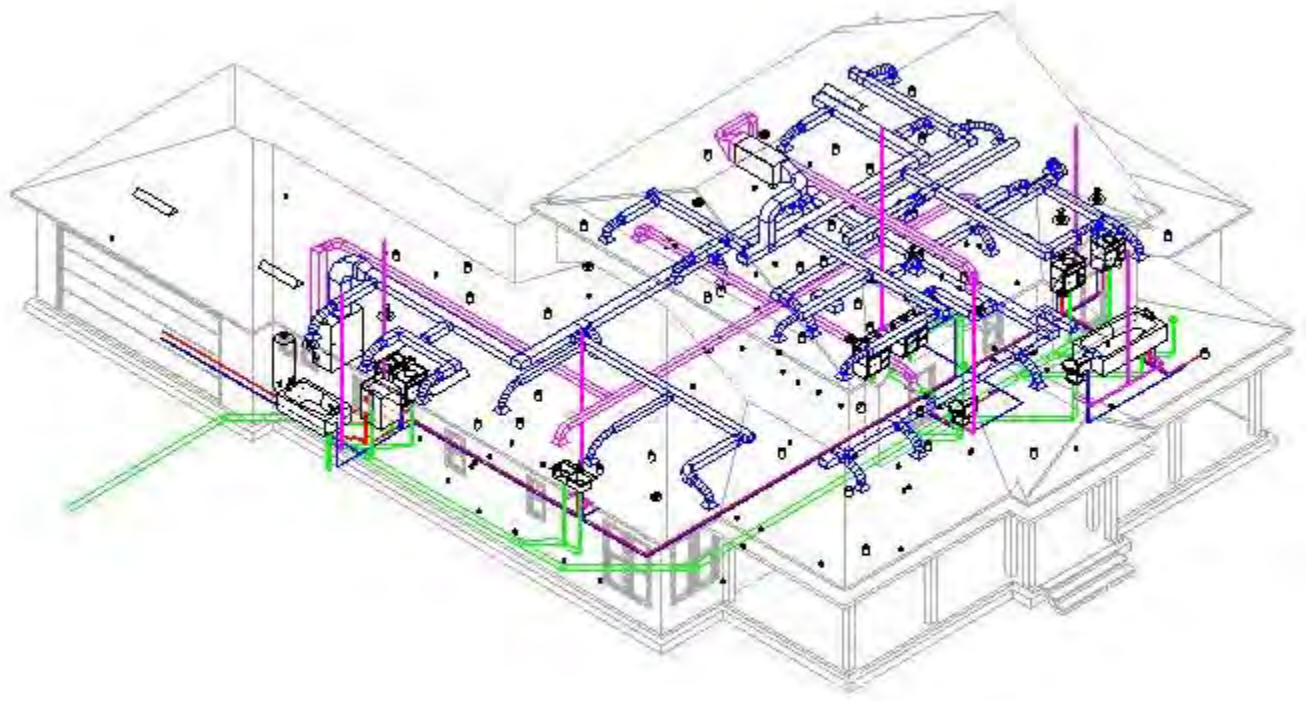

Figure G-3. 3D model MEP systems for 2-Story Residence

Conclusions and Recommendations

I-Codes 2018 changes that are prescriptive in nature and have the potential of impacting construction cost were identified and used to develop cost estimates for two prototype residential (2) and five prototype commercial/institutional building information models. These construction cost estimates were developed for both 2012, 2015 I-codes, 2015+ FL specific code changes and 2018 I-Codes based on models of each of the seven building types.

RS Means 2017 Cost data was used to price these prototype buildings. Model based quantities were used and verified along with some SF style estimates from RS means for certain systems that were not fully defined in the models. Based on these construction cost estimates, it was determined that the relative increase in cost due to the 2018 ICC code changes ranged from approximately 4.24% for the Retail building prototype to approximately 18.05% for the Mid-rise 20-story apartment building. The estimated relative change in cost for the residences was approximately 16.28% for the 1-story house to approximately 12.12% for the 2-story house.

The average changes in cost were 7.57% for the commercial/institutional buildings and 14.20% for the residences. Across all the samples, the largest potential code impact came from the 2018 code change G123-15, which adds group R-2 cooking appliance to kitchens and from the 2018 IECC CE223-16 code that updates two motor efficiency tables to be consistent with the new federal standards.

Future research should focus on the use of the developed models and estimates to evaluate future code changes. In addition, workshop webinars should be promoted to introduce and encourage designers, builders and other code change petitioners to use the models to prospectively evaluate the cost impact of their proposed code changes. Finally, the modeling of other type of buildings should be explored to develop an even more diverse set of building models.

DRAFT

APPENDIX A

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
FS74-15	**Section: 1023.3.1, 3007.6.3, 3008.6.3, 3008.6.3.1, 402.8.6.1, 405.4.2, 405.4.3, 407.3.1, 408.3.8, 410.3.5, 510.2, 705.8.2, 706.8, 3104.10, 722.2.4.4, 909.20.3.1, 909.20.3.2** ***AEI Summary: This proposal reviews all I-Code references from IBC Section 716 and clarifies the elevator section.*** **Revise as follows:** **405.4.3 Elevators.** Where elevators are provided, each compartment shall have direct access to an elevator. Where an elevator serves more than one compartment, an elevator lobby shall be provided and shall be separated from each compartment by a s*moke barrier* in accordance with Section 709. ~~Doors~~ Doorways in the smoke barrier shall be ~~gasketed~~ protected by fire door assemblies that comply with Section 716, ~~have a drop sill~~ shall comply with the smoke and draft control assembly requirements of Section 716.5.3 with the UL 1784 test conducted without an artificial bottom seal, and shall be automatic-closing by smoke detection in accordance with Section 716.5.9.3.		X			Clarification
FS103-15	**Section: 717.1.2 (IMC 607.1.2)** ***AEI Summary: This proposal distinguishes the difference between rated walls and horizontal assemblies, as it relates to duct penetrations.*** **Revise as follows:** **717.1.2 Ducts that penetrate fire-resistance-rated assemblies without dampers.** Ducts that penetrate fire-resistance-rated ~~assemblies~~ walls and are not required by this section to have *dampers* shall comply with the requirements of Sections 714.2 through 714.3.3. Ducts that penetrate *horizontal assemblies* not required to be contained within a shaft and not required by this section to have *dampers* shall comply with the requirements of Sections 714.4 through 714.5.2.		X			Clarification
G95-15	**Section: 406, 406 (New), Chapter 35** ***AEI Summary: This proposal includes standards for electric vehicle charging stations installation and clarifies duct section, relative to parking garages.*** **406.1.7 (New) Electric vehicle charging stations.** Electric vehicle charging stations shall be installed in accordance with NFPA 70. Electric vehicle charging system equipment shall be listed and		X			Update and Clarification

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		Decrease	None	Increase		
Sub Code:						
	labeled in accordance with UL 2202. Electric vehicle supply equipment shall be listed and labeled in accordance with UL 2594. Accessibility to electric vehicle charging stations shall be provided in accordance with Chapter 11. ~~**406.3.4.3**~~ **406.3.2.2 Ducts.** Ducts in a private garage and ducts penetrating the walls or ceilings separating the *dwelling unit* from the garage, including its *attic* area, shall be constructed of sheet steel of not less than 0.019 inch (0.48 mm) in thickness and shall have no openings into the garage.					
G102-15	**Section(s): 406.6.2** ***AEI Summary*: This proposal provides specific requirements for the ventilation of an enclosed parking garage.** **Revise as follows:** **406.6.2 Ventilation.** A mechanical *ventilation* system and an exhaust system shall be provided in accordance with Sections 404 and 502.13 of the *International Mechanical Code*.		X			Clarification
G103-15	**Section: 406.6.2** ***AEI Summary*: This proposal provides an exception for private garages, not requiring ventilation.** **Revise as follows:** **406.6.2 Ventilation.** A mechanical *ventilation* system shall be provided in accordance with the *International Mechanical Code*. **Exception:** Mechanical ventilation shall not be required for enclosed parking garages that are accessory to Group R-3 occupancies.		X			Clarification
G115-15	**Section(s): 412.3, 412.3.1 (New), 412.3.1.1, TABLE 412.3.1, 412.3.1.2 (New), 412.3.1.3 (New), 412.3.2 (New), 412.3.2, 412.3.3, 412.3.4, 412.3.4.1, 412.3.3 (New), [F] 412.3.5, 412.3.3.2 (New), 412.3.3.3 (New), 412.3.6, 412.3.4.1 (New), 412.3.7, 412.3.7.1, 412.3.8** ***AEI Summary*: This proposal modifies the protection of elevator wiring and cables for air traffic control tower applications.** **412.3.~~7~~412.3.5 ~~Elevator protection~~ Protection of elevator wiring and cables.** ~~Wires or Wiring and cables that provide normal or standby power,~~ serving elevators in airport traffic control ~~signals, communication with the car, lighting, heating, air conditioning, ventilation and fire detecting systems to elevators~~ towers shall be protected ~~by construction having a fire-resistance rating of not less~~			X	$1.00 per SF of Building	Safety/ Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	~~than 1 hour, or shall be circuit integrity cable having a fire resistance rating of not less than 1 hour~~ in accordance with Section 3007.8.1.					
G117-15	**Section(s): 412.3.7, 909.20.6.1, [F] 913.2.2, (IFC 913.2.2), [F] 2702.3, 3007.8.1, 3008.8.1, Chapter 35** ***AEI Summary*: This proposal is intended to standardize the methods of protecting wiring or cables determined to be essential for the operation of systems and building services during emergency conditions.*** **Revise as follows:** **~~412.3.7 Elevator protection.~~** Wires or cables that provide normal or standby power, control signals, communication with the car, lighting, heating, air conditioning, *ventilation* and fire detecting systems to elevators shall be protected by ~~construction having~~ one of the following methods: 1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a *fire-resistance rating* of not less than 1 hour, or. 2. Electrical circuit protective systems shall be ~~circuit integrity cable having~~ tested in accordance with ASTM E 1725 and shall have a ~~fire resistance~~ *fire-resistance rating* of not less than 1 hour. Electrical circuit protective systems shall be installed in accordance with their listing requirements. 3. Construction having a *fire-resistance rating* of not less than 1 hour.		X			Safety/ Clarification
G125-15	**Section: IBC: 422.6 (New); IFC: 604.2.1(IBC [F] 2702.2.1) (New)** ***AEI Summary*: This proposal clarifies fire protection for electrical systems in ambulatory care facilities.*** **Add new text as follows:** **422.6 Electrical systems.** In *ambulatory care facilities*, the essential electrical system for electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of Chapter 27 and NFPA 99. **2015 International Fire Code** **604.2.1(IBC [F] 2702.2.1) Ambulatory care facilities.** Essential electrical systems for *ambulatory care facilities* shall be in accordance with Section 422.6 of the *International Building Code*.			X	$2.00 per SF of Building	Safety/ Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
G146-15	**Section: 507.4** ***AEI Summary*: This proposal clarifies fire protection for ancillary spaces at sporting arenas.*** **Revise as follows:** **507.4 Sprinklered, one-story buildings.** The area of a Group A-4 building no more than one *story above grade plane* of other than Type V construction, or the area of a Group B, F, M or S building no more than one story above grade plane of any construction type, shall not be limited where the building is provided with an *automatic sprinkler system* throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by *public ways* or *yards* not less than 60 feet (18 288 mm) in width. **Exceptions:** 1. Buildings and structures of Type I or II construction for rack storage facilities that do not have access by the public shall not be limited in height, provided that such buildings conform to the requirements of Sections 507.4 and 903.3.1.1 and Chapter 32 of the *International Fire Code*. 2. The *automatic sprinkler system* shall not be required in areas occupied for indoor participant sports, such as tennis, skating, swimming and equestrian activities in occupancies in Group A-4, provided that ~~both~~ all of the following criteria are met: *2.1* *Exit* doors directly to the outside are provided for occupants of the participant sports areas. *2.2* The building is equipped with a *fire alarm system* with *manual fire alarm boxes* installed in accordance with Section 907. *2.3* An *automatic sprinkler system* is provided in storage rooms, press boxes, concession booths or other spaces ancillary to the sport activity space.			X	$2.00 per SF of Ancillary Space	Safety/ Clarification
G186-15	**Section: 1203.2, 1203.2 (New)** ***AEI Summary*: This proposal introduces the unvented attic requirements into the code to provide comprehensive provisions that replace the ventilation requirements as an optional path to address moisture concerns when the building thermal envelope is located at the roof assembly.***		X			Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Add new text as follows: **1203.2(New) Roof ventilation** Roof assemblies shall be ventilated in accordance with this section or shall meet the unvented attic or unvented enclosed rafter assembly requirements of Section 1203.3. ~~**1203.2**~~ **1203.2.1** ~~**Ventilation required**~~ **Ventilated attics and rafter spaces.** Enclosed *attics* and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilation openings protected against the entrance of rain and snow. Blocking and bridging shall be arranged so as not to interfere with the movement of air. An airspace of not less than 1 inch (25 mm) shall be provided between the insulation and the roof sheathing. The net free ventilating area shall be not less than 1 /150 of the area of the space ventilated. Ventilators shall be installed in accordance with manufacturer's installation instructions.					
G189-15	**Section: 1203.4, 1203.4.1, 1203.4.1.1 (New), 1203.4.1.2 (New), 1203.4.2, 1203.4.2 (New), 1203.4.3 (New), 1203.4.3.1 (New), 1203.4.3.2 (New), 1203.4.4 (New)** ***AEI Summary: This proposal reorganizes sections relevant to under-floor ventilation and adds exceptions.*** **Revise as follows:** **1203.4 Under-floor ventilation.** The space between the bottom of the floor joists and the earth under any building except spaces occupied by basements or cellars shall be provided with ~~ventilation openings through foundation walls or exterior walls~~ in accordance with Sections 1203.4.1, 1203.4.2 and 1203.4.3. ~~Such openings shall be placed so as to provide cross ventilation of the under-floor space.~~ **1203.4.1** ~~**Openings for under-floor ventilation**~~ **Ventilation openings.** Ventilation openings through foundation walls shall be provided. The openings shall be placed so as to provide cross ventilation of the under-floor space. The net area of ventilation openings shall be~~ not less than 1 square foot for each 150 square feet (0.67 m2 for each 100 m2) of crawl space area~~ in accordance with Section 1203.4.1.1 or 1203.4.1.2. Ventilation openings shall be covered for their height and width with any of the following materials, provided that the least dimension of the covering shall be not greater than 1 /4 inch (6.4 mm): 1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.		X			Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick. 3. Cast-iron grilles or gratings. 4. Extruded load-bearing vents. 5. Hardware cloth of 0.035-inch (0.89 mm) wire or heavier. 6. Corrosion-resistant wire mesh, with the least dimension not greater than 1 /8 inch (3.2 mm). 7. Operable louvres, where ventilation is provided in accordance with Section 1203.4.1.2. For buildings in flood hazard areas as established in Section 1612.3, the openings for under-floor ventilation shall be designed and installed in accordance with ASCE 24. **1203.4.1.1 Ventilation area for crawl spaces with open earth floors.** The net area of ventilation openings for crawl spaces with uncovered earth floors shall be not less than 1 square foot for each 150 square feet (0.67 m2 for each 100 m2) of crawl-space area. **1203.4.1.2 Ventilation area for crawl spaces with covered floors.** The net area of ventilation openings for crawl spaces with the ground surface covered with a Class I vapor retarder shall be not less than 1 square foot for each 1500 square feet (0.67 m2 for each 1000 m2) of crawl-space area. **1203.4.2 Ventilation in cold climates.** In extremely cold climates, where ventilation opening will cause a detrimental loss of energy, ventilation openings to the interior of the structure shall be provided. **1203.4.3 Mechanical ventilation.** Mechanical ventilation shall be provided to crawl spaces where the ground surface is covered with a Class I vapor retarder. Ventilation shall be in accordance with Section 1203.4.3.1 or 1203.4.3.2. **1203.4.3.1 Continuous mechanical ventilation.** Continuously operated mechanical ventilation shall be provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m2) of crawl space ground surface area and the ground surface is covered with a Class I vapor retarder. **1203.4.3.2 Conditioned space.** The crawl space shall be conditioned in accordance with the *International Mechanical Code* and the walls of the crawl space shall be insulated in accordance with the *International Energy Conservation Cod*e. ~~**1203.4.2 Exceptions.** The following are exceptions to Sections 1203.4 and 1203.4.1:~~ ~~1. Where warranted by climatic conditions, ventilation openings to the outdoors are not required if ventilation openings to the interior are provided.~~					

Table 1. 2018 IBC MEP Changes Cost Impact

CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	~~2. The total area of ventilation openings is permitted to be reduced to 1 /1,500 of the under-floor area where the ground surface is covered with a Class I vapor retarder material and the required openings are placed so as to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited.~~ ~~3. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m2) of crawlspace floor area and the ground surface is covered with a Class I vapor retarder.~~ ~~4. Ventilation openings are not required where the ground surface is covered with a Class I vapor retarder, the perimeter walls are insulated and the space is conditioned in accordance with the International Energy Conservation Code.~~ ~~5. For buildings in flood hazard areas as established in Section 1612.3, the openings for under-floor ventilation shall be deemed as meeting the flood opening requirements of ASCE 24 provided that the ventilation openings are designed and installed in accordance with ASCE 24.~~					
G194-15	**Section: 3001.2, TABLE 3001.2 (New)** ***AEI Summary: This proposal clarifies standards for work performed on elevators and conveying systems.*** **Revise as follows:** **3001.2 Referenced standards.** Except as otherwise provided for in this code, the design, construction, installation, *alteration*, repair and maintenance of elevators and conveying systems and their components shall conform to ~~ASME A17.1/CSA B44, ASME A17.7/CSA B44.7, ASME A90.1, ASME B20.1, ANSI MH29.1, ALI ALCTV~~ the applicable standard specified in Table 3001.2 and ASCE 24 for construction in flood hazard areas established in Section 1612.3. **Add new text as follows:**		X			Clarification

TABLE 3001.2
ELEVATORS AND CONVEYING SYSTEMS AND COMPONENTS

TYPE	STANDARD
Elevators, escalators, dumbwaiters, moving walks, material lifts	ASME A17.1
Belt manlifts	ASME A90.1
Conveyors and related equipment	ASME B20.1
Automotive lifts	ALI ALCTV
Platform lifts, stairway chairlifts, wheelchair lifts	ASME A18.1

Table 1. 2018 IBC MEP Changes Cost Impact

CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE 3001.2 ELEVATORS AND CONVEYING SYSTEMS AND COMPONENTS TYPE: STANDARD Elevators, escalators, dumbwaiters, moving walks, material lifts: ASME A17.1/CSA B44, ASME A17.7 Belt manlifts: ASME A90.1 Conveyors and related equipment: ASME B20.1 Automotive lifts: ALI ALCTV Platform lifts, stairway chairlifts, wheelchair lifts: ASME A18.1 Industrial scissors lifts: ANSI MH29.1					
G195-15	**Section: 3001.2 (New)** ***AEI Summary: This proposal requires two-way emergency elevator communication for the deaf, hard-of-hearing and speech impaired.*** **Add new text as follows:** **3001.2 Emergency elevator communication systems for the deaf, hard of hearing and speech** 1. Is a visual text-based and a video-based live interactive system, 2. Is fully accessible by the deaf and hard of hearing and speech impaired, 3. Is located between the elevator car and the local emergency authorities at a point outside of the hoistway.		X			Safety/ Clarification
G197-15	**Section: 3004.2.2** ***AEI Summary: This proposal removes an exception that should be located in the IEBC.*** **Revise as follows:** **3004.2.2 Escalators.** Where provided in below-grade transportation stations, escalators shall have a clear width of not less than 32 inches (815 mm). ~~**Exception:** The clear width is not required in existing facilities undergoing *alterations*.~~		X			Clarification
G201-15	**Section: 1020.1.1(IFC [BE] 1020.1.1) (New), 3006.2.1 (New)** ***AEI Summary: This proposal requires fire protection at elevator hoistway openings.***		X			Safety

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Add new text as follows: **1020.1.1(IFC [BE] 1020.1.1) Hoistway opening protection** Elevator hoistway openings shall be protected in accordance with Section 3006.2.1. **3006.2.1 Rated corridors.** Where corridors are required to be fire resistance rated in accordance with Section 1020.1, elevator hoistway openings shall be protected in accordance with Section 3006.3.					
G204-15	**Section: 3007.3, 3008.3** ***AEI Summary: This proposal requires the prevention of sprinkler water infiltration from outside of the enclosed lobby into the hoistway.*** **Revise as follows:** **3007.3 Water protection.** ~~An *approved* method to prevent water~~ Water from the operation of an automatic sprinkler system outside the enclosed lobby shall be prevented from infiltrating into the hoistway enclosure ~~from the operation of the *automatic sprinkler system* outside the enclosed fire service access elevator lobby shall be provided.~~in accordance with an approved method. **3008.3 Water protection.** ~~An *approved* method to prevent water~~ Water from the operation of an automatic sprinkler system outside the enclosed lobby shall be prevented from infiltrating into the hoistway enclosure ~~from the operation of the *automatic sprinkler system* outside the enclosed occupant evacuation elevator lobby shall be provided.~~in accordance with an approved method.		X			Clarification
G207-15	**Section: 3008.1, 3008.1.1 (New), 3008.8.1 (New)** ***AEI Summary: This proposal provides a more reasonable performance-based approach to emergency elevator management while retaining the capacity to evacuate buildings more quickly than with stairs alone.*** **Revise as follows:** **3008.1 General.** ~~Where elevators are to be~~ Elevators used for occupant self-evacuation during fires~~, all passenger elevators for general public use~~ shall comply with Sections 3008.1 through 3008.10. ~~Where other elevators are used for occupant self-evacuation, those elevators shall comply with these sections.~~ **Add new text as follows:**		X			Safety/ Performance

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	3008.1.1 Number of occupant evacuation elevators. The number of elevators available for occupant evacuation shall be determined based on an egress analysis that addresses one of the following scenarios 1. Full building evacuation where the analysis demonstrates that the number of elevators provided for evacuation results in an evacuation time less than one hour. 2. Evacuation of the 5 consecutive floors with the highest cumulative occupant load where the analysis demonstrates that the number of elevators provided for evacuation results in an evacuation time less than 15 minutes. A minimum of one elevator in each bank shall be designated for occupant evacuation. Not less than two shall be provided in each occupant evacuation elevator lobby where more than one elevator opens into the lobby. Signage shall be provided to denote which elevators are available for occupant evacuation. **3008.8.1 Determination of standby power load.** Standby power loads shall be based upon the determination of the number of occupant evacuation elevators in Section 3008.1.1.					
G211-15	**Section: 3101.1, 3111, 3111.1, 3111.1.1, 3111.1.1 (New), 3111.1.2 (New), 3111.2 (New), 3111.2.1 (New), 3111.3 (New), 3111.3.1 (New), 3111.3.2 (New), 3111.3.3 (New), 3111.3.4 (New), 3111.3.5 (New), 3111.3.5.1 (New)** ***AEI Summary: This proposal attempts to clarify the code for roof-mounted equipment.*** **Revise as follows:** **3101.1 Scope.** The provisions of this chapter shall govern special building construction including membrane structures, temporary structures, *pedestrian walkways* and tunnels, automatic *vehicular gates*, *awnings* and *canopies*, *marquees*, signs, ~~and~~ towers and antennas, swimming pool enclosures and safety devices, and solar energy systems. **~~PHOTOVOLTAIC PANELS AND MODULES~~ SOLAR ENERGY SYSTEMS**					Safety/ Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	3111.1 General. ~~Photovoltaic panels and modules~~ Solar energy systems shall comply with the requirements of this ~~code and the International Fire Code~~ section. **~~3111.1.1 Rooftop-mounted photovoltaic panels and modules.~~** ~~Photovoltaic panels and modules installed on a roof or as an integral part of a roof assembly shall comply with the requirements of Chapter 15 and the International Fire Code.~~ **3111.1.1 Wind resistance.** Rooftop mounted photovoltaic panels and modules and solar thermal collectors shall be designed in accordance with Section 1609. **3111.1.2 Roof live load.** Roof structures that provide support for solar energy systems shall be designed in accordance with Section 1607.12.5. **3111.1.3 Guards.** Installations shall comply with Section 1015.6 prior to installation of solar thermal systems or photovoltaic solar energy systems. **3111.2 Solar thermal systems.** Solar thermal systems shall be designed and installed in accordance with Section 2606.12, the *International Plumbing Code*, the *International Mechanical Code*, and the *International Fire Cod*e. **3111.2.1 Equipment listings.** Solar thermal systems and components shall be listed and labeled in accordance with ICC 900/SRCC 300 and ICC 901/SRCC 100. **3111.**3 Photovoltaic solar energy systems. Photovoltaic solar energy systems shall be designed and installed in accordance with this section, the *International Fire Cod*e, NFPA 70, and the manufacturer's installation instructions.					
G27-16	**Section: [F] 403.4.8.3, [F] 403.4.8.4** ***AEI Summary*: This proposal attempts to ensure that all power and lighting in the fire command center is provided as quickly as possible to ensure continuity of operations in the fire command center should power be lost during an event.** **Revise as follows:** **[F] 403.4.8.3 Standby power loads.** The following are classified as standby power loads: • ~~Power and lighting for the *fire command center* required by Section 403.4.6.~~ • *Ventilation* and automatic fire detection equipment for *smoke proof enclosures*. • Elevators. • Where elevators are provided in a *high-rise building* for *accessible means of egress*, fire service access or occupant self-evacuation, the standby power system			X	$1.00 per SF of Building	Safety

Table 1. 2018 IBC MEP Changes Cost Impact						
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		Decrease	None	Increase		
Sub Code:						
	shall also comply with Sections 1009.4, 3007 or 3008, as applicable. **[F] 403.4.8.4 Emergency power loads.** The following are classified as emergency power loads: 1. Exit signs and *means of egress* illumination required by Chapter 10. 2. Elevator car lighting. 3. *Emergency voice/alarm communications systems*. 4. Automatic fire detection systems. 5. *Fire alarm* systems. 6. Electrically powered fire pumps. 7. Power and lighting for the *fire command center* required by Section 403.4.6.					
G28-16	**Section: [F] 405.8.1, [F] 405.8.2** ***AEI Summary: This proposal changes fire pumps from stand-by power to emergency power on underground buildings.*** **Revise as follows:** **[F] 405.8.1 Standby power loads.** The following loads are classified as standby power loads: • Smoke control system. • *Ventilation* and automatic fire detection equipment for *smokeproof enclosures.* • ~~Fire pumps.~~ • Elevators, as required in Section 3003. **[F] 405.8.2 Emergency power loads.** The following loads are classified as emergency power loads: 8. *Emergency voice/alarm communications systems*. 9. *Fire alarm* systems. 10. Automatic fire detection systems. 11. Elevator car lighting. 12. Means of egress and exit sign illumination as required by Chapter 10. 6. Electrically powered fire pumps.			X	$1.00 per SF of Building	Clarification
G36-16	**Section: [F] 2702.2.5 (New); IFGC: [M] 614.10; IMC: 504.10, 505.3** ***AEI Summary: This proposal requires standby power for exhaust systems.*** **Add new text as follows:**		X			Safety/ Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	[F] 2702.2.5 Exhaust systems. Standby power shall be provided for common exhaust systems for domestic kitchens located in multistory structures as required in Section 505.3 of the *International Mechanical Code*. Standby power shall be provided for common exhaust systems for clothes dryers located in multistory structures as required in Section 504.10 of the *International Mechanical Code* and Section 614.10 of the *International Fuel Gas Code*.					
S2-15	**Section(s): [BF] 1505.9, Chapter 35** ***AEI Summary: This proposal adds a new standard for components used in rooftop PV panel system installation.*** **THIS PROPOSAL WAS HEARD BY THE FIRE SAFETY COMMITTEE.** **Revise as follows:** **[BF] 1505.9 ~~Photovoltaic panels and modules~~ Rooftop mounted photovoltaic panel systems**. Rooftop-mounted *photovoltaic panel systems* shall be tested, *listed* and identified with a fire classification in accordance with UL 1703 or UL 2703. The fire classification shall comply with Table 1505.1 based on the type of construction of the building. **Add new standard(s) as follows:** UL 2703-14, Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels		X			Clarification
S7-16	**Section(s): 2304.12.2.6 (New)** ***AEI Summary: This proposal states that when a balcony or elevated walking surface serves as a weather resistant barrier and the joist spaces below are enclosed, cross ventilation is required as for enclosed rafter spaces of roofs.*** **Add new text as follows:** **1503.7 Ventilation required beneath balcony or elevated walking surfaces.** Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation, where the structural framing is protected by an impervious moisture barrier, shall be provided with openings that provide a net free cross ventilation area not less than 1/150 of the area of each separate space. Where framing supports such surfaces			X	$2.00 per SF of Surface Area	Clarification

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	over 30 inches (762 mm) above grade, the ventilation openings shall be designed to allow inspection of framing material.					
S47-16	**Section: 1507.17.2 (New)** ***AEI Summary: This proposal establishes a minimum roof pitch requirement for PV type shingles.*** **Add new text as follows:** **1507.17.2 Deck Slope.** *Photovoltaic shingles* shall be installed on roof slopes of not less than two units vertical in 12 units horizontal (2:12).		X			Clarification
S98-16	**Section: 1607.12.5.2.1 (New)** ***AEI Summary: This proposal establishes a minimum roof pitch requirement for PV type shingles.*** **Add new text as follows:** **1607.12.5.2.1 Photovoltaic panels installed on open grid roof structures** Structures with open grid framing and no roof deck or sheathing supporting photovoltaic panel systems shall be designed to support the uniform and concentrated roof live loads specified in Section 1607.12.3.1, except that the uniform roof live load shall be permitted to be reduced to 12 psf (0.57kN/m_2).		X			Standards Establishment
S124-16	**Section: 1613.6** ***AEI Summary: This proposal establishes installation standards for ballasted PV panel systems.*** **Revise as follows:** **1613.6 Ballasted photovoltaic panel systems.** Ballasted, roof-mounted *photovoltaic panel systems* need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one-unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to *Seismic Design Category* C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by ~~nonlinear response-history~~ *approved* analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.		X			Standards Establishment

Table 1. 2018 IBC MEP Changes Cost Impact						
CODE CHANGE #	2018 IBC MEP CHANGE SUMMARY	IBC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S147-16	**Section: 1705.12.6** ***AEI Summary: This proposal establishes periodic special inspection for certain MEP items installed in specific Seismic Design Categories.*** **Revise as follows:** **1705.12.6 Plumbing, mechanical and electrical components.** *Periodic special inspection* of plumbing, mechanical and electrical components shall be required for the following: 1. Anchorage of electrical equipment for emergency and standby power systems in structures assigned to *Seismic Design Category* C, D, E or F. 2. Anchorage of other electrical equipment in structures assigned to *Seismic Design Category* E or F. 3. Installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to *Seismic Design Category* C, D, E or F. 4. Installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to *Seismic Design Category* C, D, E or F. 5. Installation and anchorage of vibration isolation systems in structures assigned to *Seismic Design Category* C, D, E or F where the *approved construction documents* require a nominal clearance of 1/4 inch (6.4 mm) or less between the equipment support frame and restraint. 6. Installation of mechanical and electrical equipment including duct work, piping systems and their structural supports where automatic fire sprinkler systems are installed in structures assigned to Seismic Design Category C, D E or F to verify either of the following: 6.1 Minimum clearances have been provided as required by Section 13.2.3 ASCE/SEI 7; or 6.2 That a nominal clearance of at least 3 inches (76 mm) has been be provided between fire protection sprinkler system drops and sprigs and structural members not used collectively or independently to support the sprinklers, or from equipment attached to the building structure, or from other systems' piping. Where flexible sprinkler hose fittings are used, special inspection of minimum clearances is not required.			X	$5.00 per SF of Building	Standards Establishment

*For prescriptive Code changes only.

APPENDIX B

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
EB19-15	**Section: 402.1, 403.1, 407.1, 601.2, 608.1, 805.2, [BS] 403.9, [BS] 807.6** ***AEI Summary*: This proposal clarifies requirements for additions and alterations of existing buildings and structures to meet the International Building Code for new construction.*** **Revise as follows:** **402.1 General.** *Additions* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. Alterations to the *existing building* or structure shall be made to ensure that the *existing building* or structure together with the *addition* are no less ~~conforming to~~ complying with the provisions of the *International Building Code* than the *existing building* or structure was prior to the *addition*. An *existing building* together with its *additions* shall comply with the height and area provisions of Chapter 5 of the *International Building Code*. **403.1 General.** Except as provided by Section 401.2 or this section, *alterations* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. *Alterations* shall be such that the *existing building* or structure is no less ~~conforming to~~ complying with the provisions of the *International Building Code* than the *existing building* or structure was prior to the *alteration*. **Exceptions:** 3. An existing stairway shall not be required to comply with the requirements of Section 1011 of the *International Building Code* where the existing space and construction does not allow a reduction in pitch or slope. 4. Handrails otherwise required to comply with Section 1011.11 of the *International Building Code* shall not be required to comply with the requirements of Section 1014.6 of the *International Building Code* regarding full extension of the handrails where such extensions would be hazardous due to plan configuration. **[BS] 403.9 Voluntary seismic improvements.** *Alterations* to existing structural elements or *additions* of new structural elements that are not otherwise required by this chapter and are initiated for the purpose of improving the performance of the seismic force-resisting system of an existing structure or the		X			Clarification/ Consistency

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	performance of seismic bracing or anchorage of existing nonstructural elements shall be permitted, provided that an engineering analysis is submitted demonstrating the following: 13. The altered structure and the altered nonstructural elements are no less ~~conforming to~~ complying with the provisions of the *International Building Code* with respect to earthquake design than they were prior to the *alteration*. 14. New structural elements are detailed as required for new construction. 15. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required for new construction. 16. The *alterations* do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe. **7.1 ~~Conformance~~ Compliance.** No change shall be made in the use or occupancy of any building unless such building is made to comply with the requirements of the *International Building Code* for the use or occupancy. Changes in use or occupancy in a building or portion thereof shall be such that the existing building is no less complying with the provisions of this code than the existing building or structure was prior to the change. Subject to the approval of the building official, the use or occupancy of *existing buildings* shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without ~~conforming to~~ complying with all of the requirements of this code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use. **Exception:** The building need not be made to comply with the seismic requirements for a new structure unless required by Section 407.4. **601.2 ~~Conformance~~ Compliance.** The work shall not make the building less ~~conforming~~ complying than it was before the *repair* was undertaken. **608.1 General.** Existing mechanical systems undergoing *repair* shall not make the building less ~~conforming~~ complying than it was before the *repair* was undertaken.					

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	805.2 General. The means of egress shall comply with the requirements of this section. **Exceptions:** 1. Where the *work area* and the means of egress serving it complies with NFPA 101. 2. Means of egress ~~conforming to~~ complying with the requirements of the building code under which the building was constructed shall be considered compliant means of egress if, in the opinion of the *code official*, they do not constitute a distinct hazard to life. **[BS] 807.6 Voluntary lateral force-resisting system alterations.** *Alterations* of existing structural elements and additions of new structural elements that are initiated for the purpose of increasing the lateral force-resisting strength or stiffness of an existing structure and that are not required by other sections of this code shall not be required to be designed for forces ~~conforming to~~ complying with the *International Building Code*, provided that an engineering analysis is submitted to show that: 1. The capacity of existing structural elements required to resist forces is not reduced; 2. The lateral loading to existing structural elements is not increased either beyond its capacity or more than 10 percent; 3. New structural elements are detailed and connected to the existing structural elements as required by the *International Building Code*; 4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by the *International Building Code*; and 5. A *dangerous* condition as defined in this code is not created. Voluntary *alterations* to lateral force- resisting systems conducted in accordance with Appendix A and the referenced standards of this code shall be permitted.					
EB21-15	**Section(s): 1105 (New), 1105.1 (New), 402.6 (New), 403.11 (New), 805 (New), 805.1 (New)** ***AEI Summary: This proposal corrects requirements for installing smoke alarms in existing occupancies.*** **Add new text as follows:**		X			Oversight Correction

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	402.6 Carbon monoxide alarms in existing portions of a building. Where an addition is made to a building or structure of a Group I-1, I-2, I-4 or R occupancy, the existing building shall be provided with carbon monoxide alarms in accordance with Section 1103.9 of the *International Fire Code* or Section R315of the *International Residential Code,* as applicable. **403.11 Carbon monoxide alarms.** Carbon monoxide alarms shall be provided to protect sleeping units and dwelling units in Group I-1, I-2, I-4 and R occupancies in accordance with Section 1103.9 of the *International Fire Code*. **804.4.4 Carbon monoxide alarms.** Sleeping units and dwelling units in any work area in Group I-1, I-2, I- 4 and R occupancies shall be equipped with carbon monoxide alarms in accordance with Section 1103.9 of the International Fire Code. **SECTION 1105** **CARBON MONOXIDE** **ALARMS IN GROUPS** **I-1, I-2, I-4 AND R** **1105.1 Carbon monoxide alarms in existing portions of a building** Where an addition is made to a building or structure of a Group I-1, I-2, I-4 or R occupancy, the existing building shall be equipped with carbon monoxide alarms in accordance with Section 1103.9 of the *International Fire Code* or Section R315 of the *International Residential Code,* as applicable.					
EB22-15	**Section: 1401.2.6 (New), 403.1, 801.3** ***AEI Summary: This proposal includes an exception for escalators serving below-grade transportation systems.*** **Revise as follows:** **403.1 General.** Except as provided by Section 401.2 or this section, *alterations* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. *Alterations* shall be such that the *existing building* or structure is no less conforming to the provisions of the *International Building Code* than the *existing building* or structure was prior to the *alteration*. **Exceptions:** 1. An existing stairway shall not be required to comply with the requirements of Section 1011 of the *International Building Code* where the existing space and construction does not allow a reduction in pitch or slope. 2. Handrails otherwise required to comply with Section 1011.11 of the *International Building Code*		X			Exception Inclusion

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	shall not be required to comply with the requirements of Section 1014.6 of the *International Building Code* regarding full extension of the handrails where such extensions would be hazardous due to plan configuration. 3. Where provided in below grade transportation stations, existing and new escalators shall be permitted to have a clear width of less than 32 inches (815 mm). **801.3 Compliance.** All new construction elements, components, systems, and spaces shall comply with the requirements of the *International Building Code*. **Exceptions:** 1. Windows may be added without requiring compliance with the light and ventilation requirements of the *International Building Code*. 2. Newly installed electrical equipment shall comply with the requirements of Section 808. 3. The length of dead-end corridors in newly constructed spaces shall only be required to comply with the provisions of Section 805.6. 4. The minimum ceiling height of the newly created habitable and occupiable spaces and corridors shall be 7 feet (2134 mm). 5. Where provided in below grade transportation stations, existing and new escalators shall be permitted to have a clear width of less than 32 inches (815 mm). **Add new text as follows:** **1401.2.6 Escalators** Where escalators are provided in below grade transportation stations, existing and new escalators shall be permitted to have a clear width of less than 32 inches (815 mm).					
EB42-16	**Section: 302.4.1 (New), 801.3, [BS] 606.1, [BS] 807.2** ***AEI Summary: This proposal provides clarity and a necessary exception to account for alternative seismic criteria.*** **Add new text as follows:** **302.4.1 New structural members and connections.** New structural members and connections shall comply with the		X			Clarification

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	detailing provisions of the *International Building Code* for new buildings of similar structure, purpose, and location. **Exception:** Where alternative design criteria are specifically permitted. **Revise as follows:** **[BS] 606.1 General.** Structural repairs shall be in compliance with this section and Section 601.2. Regardless of the extent of structural or nonstructural damage, *dangerous* conditions shall be eliminated. ~~Regardless of the scope of repair, new structural members and connections used for repair or rehabilitation shall comply with the detailing provisions of the International Building Code for new buildings of similar structure, purpose and location.~~ **801.3 Compliance.** All new construction elements, components, systems, and spaces shall comply with the requirements of the *International Building Code*. **Exceptions:** 1. Windows may be added without requiring compliance with the light and ventilation requirements of the *International Building Code*. 2. Newly installed electrical equipment shall comply with the requirements of Section 808. 3. The length of dead-end corridors in newly constructed spaces shall only be required to comply with the provisions of Section 805.6. 4. The minimum ceiling height of the newly created habitable and occupiable spaces and corridors shall be 7 feet. 5. New structural members and connections shall comply with alternative design criteria in accordance with Section 302.					
EB52-15	**Section: 601.2, 608.1** ***AEI Summary*: This proposal clarifies condition requirements of mechanisms and structures following damage repairs.** **Revise as follows:** **601.2 Conformance.** The work shall not make the building less conforming than it was before the ~~*repair* was undertaken~~ damage occurred.		X			Clarification

Table 2. 2018 IEBC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IEBC MECHANICAL CHANGE SUMMARY	IEBC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	608.1 General. Existing mechanical systems undergoing *repair* shall not make the building less conforming than it was before the ~~*repair* was undertaken~~ damage occurred.					

*For prescriptive Code changes only.

APPENDIX C

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE36-16	**Section: C401.2, C403.2.11, C404.11, C408.1, C408.2.5.2, C408.3, C408.3.1, C408.3.2, C408.3.2.1 (New), C408.3.2.2 (New), C408.3.2.3 (New)** ***AEI Summary*: This proposal clarifies commissioning language for the mechanical, service hot water heating and lighting functional test sections.*** **Revise as follows:** **C401.2 Application.** Commercial buildings shall comply with one of the following: 5. The requirements of ANSI/ASHRAE/IESNA 90.1. 6. The requirements of Sections C402 through C405 and Section C408. In addition, commercial buildings shall comply with Section C406 and tenant spaces shall comply with Section C406.1.1. 7. The requirements of Sections C402.5, C403.2, C404, C405.2, C405.3, C405.5, C405.6, C407, and ~~C407~~ Section C408. The building energy cost shall be equal to or less than 85 percent of the standard reference design building. **Delete without substitution:** ~~**C403.2.11 Mechanical systems commissioning and completion requirements.** Mechanical systems shall be commissioned and completed in accordance with Section C408.2.~~ ~~**C404.11 Service water-heating system commissioning and completion requirements.** *Service water-heating systems,* swimming pool water-heating systems, spa water-heating systems and the controls for those systems shall be commissioned and completed in accordance with Section C408.2.~~ **Revise as follows:** **C408.1 General.** This section covers the commissioning ~~of the~~ and functional testing requirements for building ~~mechanical~~ systems ~~in Section C403 and electrical power and lighting systems in Section C405~~.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C408.2.5. Manuals. An operating and maintenance manual shall be provided and include all of the following: 1. Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance. 2. Manufacturer's operation manuals and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified. 3. Name and address of at least one service agency. 4. HVAC and service hot water controls system maintenance and calibration information, including wiring diagrams, schematics and control sequence descriptions. Desired or field-determined set points shall be permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions. 5. ~~Submittal data indicating all selected options for~~ a narrative of how each ~~piece of lighting equipment and lighting controls~~ system is intended to operate, including recommended set points. ~~6. Operation and maintenance manuals for each piece of lighting equipment. Required routine maintenance actions, cleaning and recommended relamping shall be clearly identified.~~ ~~7. A schedule for inspecting and recalibrating all lighting controls.~~ ~~8. A narrative of how each system is intended to operate, including recommended set points.~~ **C408.3 Lighting ~~system~~ controls functional testing.** ~~Controls for automatic~~ Automatic lighting ~~systems~~ controls required by this code shall comply with this section. **C408.3.1 Functional testing.** Prior to passing final inspection, the *registered design professional* shall provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the *construction documents* and manufacturer's instructions. Functional testing shall be in accordance with Sections C408.3.1.1 ~~and C408.3.1.2~~ through C408.3.1.3 for the applicable control type.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C408.3.2 Documentation requirements. The *construction documents* shall specify that the documents ~~certifying that the installed lighting controls meet documented performance criteria of Section C405 are to~~ described in this section be provided to the building owner or owner's authorized agent within 90 days ~~from~~ of the date of receipt of the *certificate of occupancy*. **Add new text as follows:** **C408.3.2.1 Drawings.** *Construction documents* shall include the location and catalogue number of each piece of equipment. **C408.3.2.2 Manuals.** An operating and maintenance manual shall be provided and include the following: 17. Name and address of not less than one service agency for installed equipment. 18. A narrative of how each system is intended to operate, including recommended set points. 19. Submittal data indicating all selected options for each piece of lighting equipment and lighting controls. 20. Operation and maintenance manuals for each piece of lighting equipment. Required routine maintenance actions, cleaning and recommended relamping shall be clearly identified. 21. A schedule for inspecting and recalibrating all lighting controls. **C408.3.2.3 Report.** A report of test results shall be provided and include the following: 1. Results of functional performance tests. 2. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.					
CE98-16	**Section: C402.4.1.2, C402.4.2, C402.4.2.1, C405.2.3.2, C405.2.3.3** ***AEI Summary: This proposal provides consistency across skylight related section titles and figures.*** **Revise as follows:** **C402.4.1.2 Increased skylight area with daylight responsive controls.** The skylight area shall be permitted to be not more than 5 percent of the roof area provided *daylight responsive controls* complying with		X			Consistency

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	Section C405.2.3.1 are installed in *Toplight daylight zones.* ~~under skylights.~~ **C402.4.2 Minimum skylight fenestration area.** In an enclosed space greater than 2,500 square feet (232 m2) in floor area, directly under a roof with not less than 75 percent of the ceiling area with a ceiling height greater than 15 feet (4572 mm), and used as an office, lobby, atrium, concourse, corridor, storage space, gymnasium/exercise center, convention center, automotive service area, space where manufacturing occurs, nonrefrigerated warehouse, retail store, distribution/sorting area, transportation depot or workshop, the total *toplight daylight zone* ~~under skylights~~ shall be not less than half the floor area and shall provide one of the following: 1. A minimum skylight area to *toplight daylight zone* ~~under skylights~~ of not less than 3 percent where all skylights have a VT of at least 0.40 as determined in accordance with Section C303.1.3. 2. A minimum skylight effective aperture of at least 1 percent, determined in accordance with Equation 4-4. $$\text{Skylight Effective Aperture} = \frac{0.85 \cdot \text{Skylight Area} \cdot \text{Skylight VT} \cdot \text{WF}}{\text{Daylight zone under skylight}}$$ (Equation 4-4) where: Skylight area = Total fenestration area of skylights. Skylight VT = Area weighted average visible transmittance of skylights. WF = Area weighted average well factor, where well factor is 0.9 if light we less than 2 feet (610 mm), or 0.7 if light well depth is 2 feet (610 mm greater. Light well depth = Measure vertically from the underside of the lowest point of the skyli to the ceiling plane under the skylight. **Exception:** Skylights above daylight zones of enclosed spaces are not required in: 1. Buildings in Climate Zones 6 through 8. 2. Spaces where the designed *general lighting* power densities are less than 0.5 W/ft^2 (5.4 W/m^2).					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	3. Areas where it is documented that existing structures or natural objects block direct beam sunlight on at least half of the roof over the enclosed area for more than 1,500 daytime hours per year between 8 a.m. and 4 p.m. 4. Spaces where the daylight zone under rooftop monitors is greater than 50 percent of the enclosed space floor area. 5. Spaces where the total area minus the area of sidelight daylight zones ~~adjacent to vertical fenestration~~ is less than 2,500 square feet (232 m^2), and where the lighting is controlled according to Section C405.2.3. **C402.4.2.1 Lighting controls in toplight daylight zones ~~under skylights.~~** *Daylight responsive controls* complying with Section C405.2.3.1 shall be provided to control all electric lights within ~~daylight zones under skylights~~ toplight daylight zones.					
CE102-16	**Section(s): C402.4.4 (New), C405.2.3, C405.2.3.1, C405.2.3.2, C405.2.3.3** ***AEI Summary*: This proposal clarifies the term daylight zone.** **Add new text as follows:** **C402.4.4 Daylight Zones** Daylight zones referenced in Sections C402.4.1.1 through C402.4.3.2 or Section C405.2.3 shall comply with Section C402.4.4.1 and C402.4.4.2, as applicable. **Revise as follows:** **~~C405.2.3.2~~ C402.4.4.1 Sidelight daylight zone.** The sidelight *daylight zone* is the floor area adjacent to vertical *fenestration* which complies with all of the following: 1. Where the fenestration is located in a wall, the daylight zone shall extend laterally to the nearest full-height wall, or up to 1.0 times the height from the floor to the top of the fenestration, and longitudinally from the edge of the fenestration to the nearest full-height wall, or up to 2 feet (610 mm), whichever is less, as indicated in Figure ~~C405.2.3.2(1~~ C402.4.4.1(1). 2. Where the *fenestration* is located in a rooftop monitor, the *daylight zone* shall extend laterally to the nearest obstruction that is taller than 0.7 times the ceiling height, or up to 1.0 times the height from the floor to		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	the bottom of the *fenestration*, whichever is less, and longitudinally from the edge of the *fenestration* to the nearest obstruction that is taller than 0.7 times the ceiling height, or up to 0.25 times the height from the floor to the bottom of the *fenestration*, whichever is less, as indicated in Figures ~~C405.2.3.2(2~~ C402.4.4.1(2) and ~~C405.2.3.2(3~~ C402.4.4.1(3). 3. The area of the *fenestration* is not less than 24 square feet (2.23 m^2). 4. The distance from the *fenestration* to any building or geological formation which would block access to daylight is greater than the height from the bottom of the *fenestration* to the top of the building or geologic formation. 5. Where located in existing buildings, the *visible transmittance* of the *fenestration* is not less than 0.20. **~~C405.2.3.3~~ C402.4.4.2 Toplight daylight zone.** The toplight daylight zone is the floor area underneath a roof fenestration assembly which complies with all of the following: 1. The daylight zone shall extend laterally and longitudinally beyond the edge of the roof *fenestration* assembly to the nearest obstruction that is taller than 0.7 times the ceiling height, or up to 0.7 times the ceiling height, whichever is less, as indicated in Figure ~~C405.2.3.3~~ C402.4.4.2. 2. No building or geological formation blocks direct sunlight from hitting the roof *fenestration* assembly at the peak solar angle on the summer solstice. 3. Where located in existing buildings, the product of the visible *transmittance* of the roof *fenestration* assembly and the area of the rough opening of the roof *fenestration* assembly divided by the area of the *daylight zone* is not less than 008. **C405.2.3 Daylight-responsive controls.** *Daylight-responsive controls* complying with Section C405.2.3.1 shall be provided to control the electric lights within *daylight zones* in the following spaces: 1. Spaces with a total of more than 150 watts of *general lighting* within sidelight *daylight zones* complying with Section ~~C405.2.3.2~~ C402.4.4.1. *General lighting* does not include lighting that is required to have specific application control in accordance with Section C405.2.4.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. Spaces with a total of more than 150 watts of *general lighting* within toplight *daylight zones* complying with Section ~~C405.2.3.3~~ C402.4.4.2. **Exceptions:** Daylight responsive controls are not required for the following: 1. Spaces in health care facilities where patient care is directly provided. 2. Dwelling units and sleeping units. 3. Lighting that is required to have specific application control in accordance with Section C405.2.4. 4. Sidelight daylight zones on the first floor above grade in Group A-2 and Group M occupancies. **C405.2.3.1 Daylight-responsive control function.** Where required, *daylight-responsive controls* shall be provided within each space for control of lights in that space and shall comply with all of the following: 1. Lights in toplight *daylight zones* in accordance with Section ~~C405.2.3.3~~ C402.4.4.2 shall be controlled independently of lights in sidelight *daylight zones* in accordance with Section ~~C405.2.3.2~~ C402.4.4.1. 2. *Daylight responsive controls* within each space shall be configured so that they can be calibrated from within that space by authorized personnel. 3. Calibration mechanisms shall be r*eadily accessible*. 4. Where located in offices, classrooms, laboratories and library reading rooms, *daylight responsive controls* shall dim lights continuously from full light output to 15 percent of full light output or lower. 5. *Daylight responsive controls* shall be capable of a complete shutoff of all controlled lights. 6. Lights in sidelight *daylight zones* in accordance with Section ~~C405.2.3.2~~ C402.4.4.1 facing different cardinal orientations [i.e., within 45 degrees (0.79 rad) of due north, east, south, west] shall be controlled independently of each other. **Exception:** Up to 150 watts of lighting in each space is permitted to be controlled together with lighting in a daylight zone facing a different cardinal orientation.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE108-16	**Section(s): C402.5.1.1** ***AEI Summary: This proposal allows for a mechanical sealing system for penetrations.*** **Revise as follows:** **C402.5.1.1 Air barrier construction.** The *continuous air barrier* shall be constructed to comply with the following: 1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across the joints and assemblies. 2. Air barrier joints and seams shall be sealed, including sealing transitions in places and changes in materials. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation. 3. Penetrations of the air barrier shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Joints and seals associated with penetrations shall be sealed in the same manner or taped or covered with moisture vapor-permeable wrapping material. Sealing materials shall be appropriate to the construction materials being sealed and shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation. Sealing of concealed fire sprinklers, where required, shall be in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings. Refrigerent piping penetrations shall be sealed by gasketing and mechanically secured. 4. Recessed lighting fixtures shall comply with Section C402.5.8. Where similar objects are installed that penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.		X			Mechanical Sealing
CE109-16	**Section(s): C402.5.1.1** ***AEI Summary: This proposal specifies that sealing material has to be compatible with construction material and location.*** **Revise as follows:**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C402.5.1.1 Air barrier construction. The *continuous air barrier* shall be constructed to comply with the following: 1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across the joints and assemblies. 2. Air barrier joints and seams shall be sealed, including sealing transitions in places and changes in materials. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation. 3. Penetrations of the air barrier shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Joints and ~~seals~~ seams associated with penetrations shall be sealed in the same manner or taped or covered with ~~moisture vapor-permeable~~ moisture-vapor permeable wrapping material. Sealing materials ~~shall be appropriate to the construction materials being sealed and~~ shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation. Sealing of concealed fire sprinklers, where required, shall be in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings. 4. Recessed lighting fixtures shall comply with Section C402.5.8. Where similar objects are installed that penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.					
CE114-16 Part I	**Section: C402.5.3** ***AEI Summary*: This proposal deals with unrestricted air entering space where a fuel burning appliance is located.** **Revise as follows:** **C402.5.3 Rooms containing fuel-burning appliances.** In *Climate Zones* 3 through 8, where ~~open~~ combustion air ~~ducts provide combustion air~~ is supplied through openings in an exterior wall to ~~open combustion~~ a room or space ~~conditioning~~ containing a space-conditioning fuel-burning ~~appliances~~ appliance, one of the ~~appliances and combustion air openings~~ following shall apply:		X			Combustion Air Management

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. The room or space containing the appliance shall be located outside of the *building thermal envelope*. 2. The room or space containing the appliance shall be enclosed ~~in a room~~ and isolated from conditioned spaces inside the building thermal envelope. Such rooms shall ~~be sealed and insulated in accordance~~ comply with ~~the envelope requirements~~ all of ~~Table C402.1.3 or C402.1.4, where~~ the following. 2.1 The walls, floors and ceilings ~~shall meet~~ that separate the ~~minimum~~ enclosed room or space from conditioned spaces shall be insulated to be at least equivalent to the insulation requirement of below grade walls as specified in Table C402.1.3 or C402.1.4. 2.2 The walls, floors and ceilings that separate the ~~below-grade wall *R*-value requirement~~ enclosed room or space from conditioned spaces shall be sealed in accordance with Section C402.5.1.1. 2.3 The ~~door~~ doors into the enclosed room or space shall be fully gasketed~~, and any water~~. 2.4 Water lines and ducts in the enclosed room or space shall be insulated in accordance with Section C403. ~~The~~ 2.5. Where the air duct supplying combustion air ~~duct shall be insulated, where it~~to the enclosed room or space passes through conditioned space, the duct shall be insulated to ~~a minimum~~ an R-value of not less than R-8. ~~**Exceptions**~~ **Exception:** 1. ~~Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.~~ 2. Fireplaces and stoves complying with Sections 901 through 905 of the International Mechanical Code, and Section 2111.13 of the International Building Code.					
CE119-16	**Section: C403, C403.1, C403.11 (New), C403.12 (New), C403.2, C403.2.1, C403.2.10, C403.2.10.1, C403.2.11, C403.2.12, C403.2.12.1, C403.2.12.2, C403.2.12.3, C403.2.13, C403.2.14, C403.2.15, C403.2.16, C403.2.17, C403.2.2, C403.2.3, C403.2.3.1, C403.2.3.2, C403.2.4, C403.2.4.1, C403.2.4.1.1, C403.2.4.1.2, C403.2.4.1.3, C403.2.4.2, C403.2.4.2.1, C403.2.4.2.2, C403.2.4.2.3, C403.2.4.3, C403.2.4.4, C403.2.4.5, C403.2.4.6, C403.2.4.7, C403.2.5, C403.2.6, C403.2.6.1, C403.2.6.2, C403.2.7, C403.2.8, C403.2.9, C403.2.9.1, C403.2.9.1.1, C403.2.9.1.2,**		X			Reorganization/ Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C403.2.9.1.3, C403.3, C403.3 (New), C403.3.1, C403.3.2, C403.3.3, C403.3.3.1, C403.3.3.2, C403.3.3.3, C403.3.3.4, C403.3.3.5, C403.3.4, C403.3.4.1, C403.3.4.2, C403.4, C403.4 (New), C403.4.1, C403.4.1.1, C403.4.1.2, C403.4.1.3, C403.4.2, C403.4.2.1, C403.4.2.2, C403.4.2.3, C403.4.2.3.1, C403.4.2.3.2, C403.4.2.3.2.1, C403.4.2.3.2.2, C403.4.2.3.3, C403.4.2.4, C403.4.2.5, C403.4.2.6, C403.4.3, C403.4.3.1, C403.4.3.2, C403.4.3.2.1, C403.4.3.2.2, C403.4.3.3, C403.4.3.4, C403.4.4, C403.4.4.1, C403.4.4.2, C403.4.4.3, C403.4.4.4, C403.4 C403.5.2, C403.7 (New), C403.8.1 (New) ***AEI Summary: This proposal provides an organization that is more specific to HVAC equipment type.*** (Use hyperlink to view revisions and tables)					
CE122-16	**Section: C202, C403.2.12, C403.2.12.1, C403.2.12.2, C403.2.12.3, C403.4.1, C403.4.1.1, C403.4.1.2, C403.4.1.3, C403.4.4.4.** ***AEI Summary: This proposal provides organization and consistency for fan motors and related requirements.*** **Revise as follows:** **FAN SYSTEM DESIGN CONDITIONS.** Operating conditions that can be expected to occur during normal system operation that result in the highest supply fan airflow rate to conditioned spaces served by the system, other than during air economizer operation. **C403.2.12 Air system design and control.** Each HVAC system ~~having~~ with a ~~total~~ fan ~~system motor nameplate horsepower (hp) exceeding 5 hp (3.7 kW)~~ shall comply with the provisions of Sections C403.2.12.1 through ~~C403.2.12.3~~ C403.2.12.5. **C403.2.12.1 Allowable fan ~~motor~~ horsepower.** Each HVAC system having a total fan system motor nameplate horsepower exceeding 5 hp (3.7 kW) at fan system design conditions shall not exceed the allowable *fan system motor nameplate hp* (Option 1) or *fan system bhp* (Option 2) as shown in Table C403.2.12.1(1). This includes supply fans, exhaust fans, return/relief fans, and fan-powered terminal units associated with systems providing heating or cooling capability. Single-*zone* variable air volume systems shall comply with the constant volume fan power limitation. **Exceptions:** 1. Hospital, vivarium and laboratory systems that utilize flow control devices on exhaust or return to		X			Reorganization/ Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	maintain space pressure relationships necessary for occupant health and safety or environmental control shall be permitted to use variable volume fan power limitation. 2. Individual exhaust fans with motor nameplate horsepower of 1 hp (0.746 kW) or less are exempt from the allowable fan horsepower requirement. **C403.2.12.2 Motor nameplate horsepower.** For each fan, the fan brake horsepower shall be indicated on the construction documents and the selected motor shall be not larger than the first available motor size greater than the following: 1. For fans less than 6 bhp (4413 W), 1.5 times the fan brake horsepower. 2. For fans 6 bhp (4413 W) and larger, 1.3 times the fan brake horsepower. 3. Systems complying with Section C403.2.12.1 *fan system motor nameplate hp* (Option 1). **Exception:** Fans with motor nameplate horsepower less than 1 hp are exempt from this section. **C403.2.12.3 Fan efficiency.** Fans shall have a fan efficiency grade (FEG) of not less than 67 when determined in accordance with AMCA 205 by an *approved*, independent testing laboratory and label y the manufacturer. The total efficiency of the fan at the design point of operation shall be within 15 percentage points of the maximum total efficiency of the fan. **Exception:** The following fans are not required to have a fan efficiency grade: 1. Fans of 5 hp (3.7 kW) or less as follows: 1.1 ~~Single~~ fan Individual fans with a motor nameplate horsepower of 5 hp (3.7 kW) or less, unless Exception 1.2 applies. 1.2 Multiple fans in series or parallel that have a combined motor nameplate horsepowe of 5 hp (3.7 kW) or less and are operated as the functional equivalent of a single fan 1.3 Fans that are part of equipment covered under Section C403.2.3. 1.4 Fans included in an equipment package certified by an *approved agency* for air or energy performance. 1.5 Powered wall/roof ventilators. 1.6 Fans outside the scope of AMCA 205. 1.7 Fans that are intended to operate only during emergency conditions. ~~**C403.4.4.4**~~ **C403.2.12.4 Fractional hp fan motors.** Motors for fans that are not less than 1/12 hp (0.082 kW) and less than 1 hp (0.746 kW) shall be electronically commutated motors or shall have a minimum motor efficiency of 70 percent, rated in accordance with					

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	DOE 10 CFR 431. These motors shall also have the means to adjust motor speed for either balancing or remote control. The use of belt-driven fans to sheave adjustments for airflow balancing instead of a varying motor speed shall be permitted. **Exceptions:** The following motors are not required to comply with this section: 1. Motors in the airstream within fan coils and terminal units that only provide heating to the space served. 2. Motors in space-conditioning equipment that comply with Section 403.2.3 or C403.2.12. 3. Motors that comply with Section C405.8. ~~**C403.4.1**~~ **C403.2.12.5 Fan control.** *No change to text.* TABLE ~~C403.4.1.1~~C403.2.12.5 ~~EFFECTIVE DATES~~ REQUIREMENTS FOR FAN CONTROL COOLING SYSTEM TYPE / FAN MOTOR SIZE / MECHANICAL COOLING CAPACI DX cooling / Any / ~~≥ 75,000 Btu/h (before 1/1/2016~~ ≥ 65,000 Btu/h ~~(after 1/~~ Chilled water and evaporative cooling / ~~≥ 5 hp~~ / ~~Any~~ ≥ 1/4 hp / Any For SI: 1 British thermal unit per hour = 0.2931 W; 1 hp = 0.746 kW. **C403.4.1.1 Fan airflow control.** Each cooling system listed in Table C403.4.1.1 shall be designed to vary the indoor fan airflow as a function of load and shall comply with the following requirements: 1. Direct expansion (DX) and chilled water cooling units that control the capacity of the mechanical cooling directly based on space temperature shall have not fewer than two stages of fan control. Low or minimum speed shall not be greater than 66 percent of full speed. At low or minimum speed, the fan system shall draw not more than 40 percent of the fan power at full fan speed. Low or minimum speed shall be used during periods of low cooling load and ventilation-only operation. 2. Other units including DX cooling units and chilled water units that control the space temperature by modulating the airflow to the space shall have modulating fan control. Minimum speed shall be not greater than 50 percent of full speed. At minimum speed the fan system shall draw not more than 30 percent of the power at full fan speed. Low or minimum speed shall be used during periods of low cooling load and ventilation-only operation.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	3. Units that include an airside economizer in accordance with Section C403.3 shall have not fewer than two speeds of fan control during economizer operation **Exceptions:** 1. Modulating fan control is not required for chilled water and evaporative cooling units with fan motors of less than 1 hp (0.746 kW) where the units are not used to provide *ventilation* air and the indoor fan cycles with the load. 2. Where the volume of outdoor air required to comply with the *ventilation* requirements of the *International Mechanical Code* at low speed exceeds the air that would be delivered at the speed defined in Section C403.4.1, the minimum speed shall be selected to provide the required *ventilation air*. **C403.4.1.2 Static pressure sensor location.** Static pressure sensors used to control VAV fans shall be located such that the controller set point is not greater than 1.2 inches w.c. (299 Pa). Where this results in one or more sensors being located downstream of major duct splits, not less than one sensor shall be located on each major branch to ensure that static pressure can be maintained in each branch. **C403.4.1.3 Set points for direct digital control.** For systems with direct digital control of individual zones reporting to the central control panel, the static pressure set point shall be reset based on the *zone* requiring the most pressure. In such case, the set point is reset lower until one zone damper is nearly wide open. The direct digital controls shall be capable of monitoring *zone* damper positions or shall have an alternative method of indicating the need for static pressure that is capable of all of the following: 1. Automatically detecting any *zone* that excessively drives the reset logic. 2. Generating an alarm to the system operational location. 3. Allowing an operator to readily remove one or more zones from the reset algorithm.					
CE126-16	**Section: C403.2.16, C403.2.16.1 (New), C403.2.16.1(1) (New), C403.2.16.1(2) (New), C403.2.16.1(3) (New)** ***AEI Summary: This proposal updates the energy code, relative to walk-in coolers and freezers, with the June 2017 performance requirements.***			X	$25.00 per SF of cold room	New Performance Requirements

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **C403.2.16 Walk-in coolers and walk-in freezers.** Site-assembled or site-constructed *walk-in coolers* and *walk-in freezers* shall comply with the following: 1. Automatic door closers shall be provided that fully close walk-in doors that have been closed to within 1 inch (25 mm) of full closure. **Exception:** Closers are not required for doors more than 45 inches (1143 mm) in width or more than 7 feet (2134 mm) in height. 2. Doorways shall be provided with strip doors, curtains, spring-hinged doors or other method of minimizing infiltration when the doors are open. 3. Walls shall be provided with insulation having a thermal resistance of not less than R-25, ceilings shall be provided with insulation having a thermal resistance of not less than R-25 and doors of *walk-in coolers* and *walk-in freezers* shall be provided with insulation having a thermal resistance of not less than R-32. **Exception:** Insulation is not required for glazed portions of doors or at structural members associated with the walls, ceiling or door frame. 4. The floor of *walk-in freezers* shall be provided with insulation having a thermal resistance of not less than R-28. 5. Transparent reach-in doors for and windows in opaque *walk-in freezer* doors shall be provided with triple-pane glass having the interstitial spaces filled with inert gas or provided with heat- reflective treated glass. 6. Transparent reach-in doors for and windows in opaque walk-in cooler doors shall be double-pane heat-reflective treated glass having the interstitial space gas filled. 7. Evaporator fan motors that are less than 1 hp (0.746 kW) and less than 460 volts shall be electronically commutated motors or 3-phase motors. 8. Condenser fan motors that are less than 1 hp (0.746 kW) in capacity shall be of the electronically commutated or					

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					

permanent split capacitor-type or shall be 3-phase motors.

Exception: Fan motors in *walk-in coolers* and *walk-in freezers* combined in a single enclosure greater than 3,000 square feet (279 m^2) in floor area are exempt.

9. Antisweat heaters that are not provided with anti-sweat heater controls shall have a total door rail, glass and frame heater power draw not greater than 7.1 W/ft^2 (76 W/m^2) of door opening for *walk- in freezers*, and not greater than 3.0 W/ft^2 (32 W/m^2) of door opening for *walk-in coolers*.
10. Antisweat heater controls shall be capable of reducing the energy use of the antisweat heater as a function of the relative humidity in the air outside the door or to the condensation on the inner glass pane.
11. Light sources shall have an efficacy of not less than 40 lumens per Watt, including any ballast losses, or shall be provided with a device that automatically turns off the lights within 15 minutes of when the *walk-in cooler* or *walk-in freezer* was last occupied.

Add new text as follows:

TABLE C403.2.16.1(1)
Walk-in Cooler and Freezer Display Doors Efficiency Requirements

Class Descriptor	Class	Maximum Energy Consumption (kWh/day)
Display Door, Medium Temperature	DD, M	0.04 x A_{dd} + 0.41
Display Door, Low Temperature	DD, L	0.15 x A_{dd} + 0.29

a. A_{dd} is the surface area of the display door.

TABLE C403.2.16.1(2)
Walk-in Cooler and Freezer Non-Display Doors Efficiency Requirements

Class Descriptor	Class	Maximum Energy Consumption (kWh/day
Passage Door, Medium Temperature	PD, M	0.05 x A_{nd} + 1.7
Passage Door, Low Temperature	PD, L	0.14 x A_{nd} + 4.8
Freight Door, Medium Temperature	PD, M	0.04 x A_{nd} + 1.9
Freight Door, Medium Temperature	PD, L	0.12 x A_{nd} + 5.6

a. A_{nd} is the surface area of the non-display door.

TABLE C403.2.16.1(3)
Walk-in Cooler and Freezer Refrigeration Systems Efficiency Requirements

Class Descriptor	Class	Minimum Annual Walk-In F Factor AWEF (Btu/W-h)
Dedicated Condensing, Medium Temperature, Indoor System	DC.M.I	5.61
Dedicated Condensing, Medium Temperature, Indoor System, > 9,000 Btu/h Capacity	DC.M.I, > 9,000	5.61
Dedicated Condensing, Medium Temperature, Outdoor System	DC.M.I	7.60
Dedicated Condensing, Medium Temperature, Outdoor System, > 9,000 Btu/h Capacity	DC.M.I, > 9,000	7.60

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C403.2.16.1 Performance standards. Effective June 5, 2017, walk-in coolers and walk-in freezers shall meet the requirements of Tables C403.2.16.1(1), C403.2.16.1(2) and C403.2.16.1(3).					
CE127-16	**Section: C403.2.2** ***AEI Summary: This proposal clarifies common practice relative to HVAC equipment sizing.*** **Revise as follows:** **C403.2.2 Equipment sizing.** The output capacity of heating and cooling equipment shall be not greater than that of the smallest available equipment size that exceeds the loads calculated in accordance with Section C403.2.1. A single piece of equipment providing both heating and cooling shall satisfy this provision for one function with the capacity for the other function as small as possible, within available equipment options. ~~**Exceptions:**~~ 1. ~~Required standby equipment and systems provided with controls and devices that allow such systems or equipment to operate automatically only when the primary equipment is not operating.~~ 2. ~~Multiple units of the same equipment type with combined capacities exceeding the design load and provided with controls that have the capability to sequence the operation of each unit based on load.~~		X			Clarification
CE128-16	**Section: C403.2.16, C403.2.2, C403.2.4.1.2, C403.2.4.1.3, C403.2.4.2.1, C403.2.4.2.2, C403.2.4.2.3, C403.2.4.5, C403.2.4.7, C403.2.7, C403.2.8, C403.3.1, C403.3.3.1, C403.3.3.2, C403.3.3.3, C403.3.4.1, C403.4.1.3, C403.4.2, C403.4.2.3.1, C403.4.2.4, C403.4.2.6, C403.4.4, C403.4.4.1, C403.4.4.2, C403.4.4.5, C405.2.3.1, C405.2.4, C406.4** ***AEI Summary: This proposal increases the likelihood that energy savings intended by the energy code will be realized.*** (Use hyperlink to view revisions and tables)		X			Editorial/ Efficiency
CE130-16	**Section: C403.2.3** ***AEI Summary: This proposal updates the footnotes to Table C403.2.3(2) for heat pumps.*** **Revise as follows:**		X			Table Update

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Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE ~~C403.2.3(2)~~ C403.2.3(2) (2) MINIMUM EFFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED UNITARY AND APPLIED HI					

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY		PI
				~~Before 1/1/2016~~	~~As of 1/1/2016~~	
Air cooled (cooling mode)	b	All	Split System	~~13.0 SEER~~[c]	14.0 SEER[c]	
			Single Package	~~13.0 SEER~~[c]	14.0 SEER[c]	
Through-the-wall, air cooled	≤ 30,000 Btu/h[b]	All	Split System	~~12.0 SEER~~	12.0 SEER	A
			Single Package	~~12.0 SEER~~	12.0 SEER	
Single-duct high-velocity air cooled	b	All	Split System	~~11.0 SEER~~	11.0 SEER	
Air cooled (cooling mode)	≥ 65,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~11.0 EER~~ ~~11.2 IEER~~	11.0 EER 12.0 IEER	
		All other	Split System and Single Package	~~10.8 EER~~ ~~11.0 IEER~~	10.8 EER 11.8 IEER	
	≥ 135,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~10.6 EER~~ ~~10.7 IEER~~	10.6 EER 11.6 IEER	
		All other	Split System and Single Package	~~10.4 EER~~ ~~10.5 IEER~~	10.4 EER 11.4 IEER	
	≥ 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	~~9.5 EER~~ ~~9.6 IEER~~	9.5 EER 10.6 IEER	
		All other	Split System and Single Package	~~9.3 EER~~ ~~9.4 IEER~~	9.3 EER 9.4 IEER	
Water to Air: Water Loop (cooling mode)		All	86°F entering water	~~12.2 EER~~	12.2 EER	I

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	See nested table below					
[CE131-16](#)	**Section: C403.2.3** ***AEI Summary: This proposal updates the footnotes to Table C403.2.3(1).***		X			Table Update

	≥ 17,000 Btu/h and	All	86°F entering water	~~13.0 EER~~	13.0 EER		
	≥ 65,000 Btu/h and	All	86°F entering water	~~13.0 EER~~	13.0 EER		
Water to Air: Ground Water (cooling mode)		All	59°F entering water	~~18.0 EER~~	18.0 EER	IS	
Brine to Air: Ground Loop (cooling mode)		All	77°F entering water	~~14.1 EER~~	14.1 EER	IS	
Water to Water: WaterLoop (cooling mode)		All	86°F entering water	~~10.6 EER~~	10.6 EER		
Water to Water: Ground Water (cooling mode)		All	59°F entering water	~~16.3 EER~~	16.3 EER	IS	
Brine to Water: Ground Loop (cooling mode)		All	77°F entering fluid	~~12.1 EER~~	12.1 EER		
Air cooled (heating mode)	b	—	Split System	~~7.7 HSPF~~[b]	8.2 HSPF[c]		
		—	Single Package	~~7.7 HSPF~~[b]	8.0 HSPF[c]		
Through-the-wall, (air cooled, heating mode)	≤ 30,000 Btu/h[b] (cooling capacity)	—	Split System	~~7.4 HSPF~~	7.4 HSPF	AI	
		—	Single Package	~~7.4 HSPF~~	7.4 HSPF		
Small-duct high velocity (air cooled, heating mode)	b	—	Split System	~~6.8 HSPF~~	6.8 HSPF		
Air cooled (heating mode)	≥ 65,000 Btu/h and (cooling capacity)	—	47°F db/43°F wb outdoor air	~~3.3 COP~~	3.3 COP		
			17°F db/15°F wb outdoor air	~~2.25 COP~~	2.25 COP	AI	
	≥ 135,000 Btu/h (cooling capacity)	—	47°F db/43°F wb outdoor air	~~3.2 COP~~	3.2 COP		
			17°F db/15°F wb outdoor air	~~2.05 COP~~	2.05 COP		
Water to Air: Water Loop (heating mode)	(cooling capacity)	—	68°F entering water	~~4.3 COP~~	4.3 COP		
Water to Air: Ground Water (heating mode)	(cooling capacity)	—	50°F entering water	~~3.7 COP~~	3.7 COP	IS	
Brine to Air: Ground Loop (heating mode)	(cooling capacity)	—	32°F entering fluid	~~3.2 COP~~	3.2 COP		
Water to Water: Water Loop (heating mode)	(cooling capacity)	—	68°F entering water	~~3.7 COP~~	3.7 COP		
Water to Water: Ground Water (heating mode)	(cooling capacity)	—	50°F entering water	~~3.1 COP~~	3.1 COP	IS	
Brine to Water: Ground Loop (heating mode)	(cooling capacity)	—	32°F entering fluid	~~2.5 COP~~	2.5 COP		

For SI: 1 British thermal unit per hour = 0.2931 W, °C = [(°F) - 32]/1.8.
a. Chapter 6 contains a complete specification of the referenced test procedure, including the reference year version procedure.
b. Single-phase, air-cooled ~~air conditioners~~ heat pumps less than 65,000 Btu/h are regulated by NAECA. SEER and are those set by NAECA.
c. ~~Minimum efficiency as of January 1, 2015.~~

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows:					

TABLE ~~C403.2.3(1)~~ C403.2.3(1) (1)
MINIMUM EFFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED UNITARY AIR CONDITIC CONDENSING UNITS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	
				~~Before 1/1/2016~~	~~As of 1/1/2016~~
Air conditioners, air cooled	b	All	Split System	~~13.0 SEER~~	13.0 SEER
			Single Package	~~13.0 SEER~~	14.0 SEER[c]
Through-the-wall (air cooled)	≤ 30,000 Btu/h[b]	All	Split system	~~12.0 SEER~~	12.0 SEER
			Single Package	~~12.0 SEER~~	12.0 SEER
Small-duct high-velocity (air cooled)	b	All	Split System	~~11.0 SEER~~	11.0 SEER
Air conditioners, air cooled	≥ 65,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~11.2 EER~~ ~~11.4 IEER~~	11.2 EER 12.8 IEER
		All other	Split System and Single Package	~~11.0 EER~~ ~~11.2 IEER~~	11.0 EER 12.6 IEER
	≥ 135,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~11.0 EER~~ ~~11.2 IEER~~	11.0 EER 12.4 IEER
		All other	Split System and Single Package	~~10.8 EER~~ ~~11.0 IEER~~	10.8 EER 12.2 IEER
	≥ 240,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~10.0 EER~~ ~~10.1 IEER~~	10.0 EER 11.6 IEER
		All other	Split System and Single Package	~~9.8 EER~~ ~~9.9 IEER~~	9.8 EER 11.4 IEER
	≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	~~9.7 EER~~ ~~9.8 IEER~~	9.7 EER 11.2 IEER
		All other	Split System and Single Package	~~9.5 EER~~ ~~9.6 IEER~~	9.5 EER 11.0 IEER
Air conditioners, water cooled	b	All	Split System and Single Package	~~12.1 EER~~ ~~12.3 IEER~~	12.1 EER 12.3 IEER
	≥ 65,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~12.1 EER~~ ~~12.3 IEER~~	12.1 EER 13.9 IEER
		All other	Split System and	~~11.9 EER~~	11.9 EER

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT: Decrease	None	Increase	ESTIMATED AMOUNT*	BENEFIT OF CHANGE
Sub Code:						

			Single Package	~~12.1 IEER~~	13.7 IEER
≥ 135,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~12.5 EER~~ ~~12.5 IEER~~	12.5 EER 13.9 IEER
	All other	Split System and Single Package	~~12.3 EER~~ ~~12.5 IEER~~	12.3 EER 13.7 IEER
≥ 240,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~12.4 EER~~ ~~12.6 IEER~~	12.4 EER 13.6 IEER
	All other	Split System and Single Package	~~12.2 EER~~ ~~12.4 IEER~~	12.2 EER 13.4 IEER
≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	~~12.2 EER~~ ~~12.4 IEER~~	12.2 EER 13.5 IEER
	All other	Split System and Single Package	~~12.0 EER~~ ~~12.2 IEER~~	12.0 EER 13.3 IEER
b	All	Split System and Single Package	~~12.1 EER~~ ~~12.3 IEER~~	12.1 EER 12.3 IEER
≥ 65,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~12.1 EER~~ ~~12.3 IEER~~	12.1 EER 12.3 IEER
	All other	Split System and Single Package	~~11.9 EER~~ ~~12.1 IEER~~	11.9 EER 12.1 IEER
≥ 135,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~12.0 EER~~ ~~12.2 IEER~~	12.0 EER 2.2 IEER
	All other	Split System and Single Package	~~11.8 EER~~ ~~12.0 IEER~~	11.8 EER 12.0 IEER
≥ 240,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	~~11.9 EER~~ ~~12.1 IEER~~	11.9 EER 2.1 IEER
	All other	Split System and Single Package	~~11.7 EER~~ ~~11.9 IEER~~	11.7 EER 11.9 IEER
≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	~~11.7 EER~~ ~~11.9 IEER~~	11.7 EER 11.9 IEER
	All other	Split System and Single Package	~~11.5 EER~~ ~~11.7 IEER~~	11.5 EER 11.7 IEER
≥ 135,000 Btu/h			~~10.5 EER~~ ~~11.8 IEER~~	10.5 EER 11.8 IEER
≥ 135,000 Btu/h			~~13.5 EER~~ ~~14.0 IEER~~	13.5 EER 14.0 IEER
≥ 135,000 Btu/h			~~13.5 EER~~ ~~14.0 IEER~~	13.5 EER 14.0 IEER

For SI: 1 British thermal unit per hour = 0.2931 W.
a. Chapter 6 contains a complete specification of the referenced test procedure, including the reference year versio procedure.
b. Single-phase, air-cooled air conditioners less than 65,000 Btu/h are regulated by NAECA. SEER and EER value by NAECA.
~~c. Minimum efficiency as of January 1, 2015.~~

CE132-16	**Section: C403.2.3** ***AEI Summary: This proposal updates the table to reflect the current federal minimum efficiency standards.*** **Revise as follows:**			X	$30.00 per CEER increase	Increased Efficiency Requirements

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE C403.2.3(3) MINIMUM E3FFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED PACKAGED TERMINAL AIR CONDITIONERS, PACKAGED TERMINAL HEAT PUMPS, SINGLE-PACKAGE VERTICAL AIR CONDITIONE SINGLE VERTICAL HEAT PUMPS, ROOM AIR CONDITIONERS AND ROOM AIR-CONDITIONER H					

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	P
PTAC (cooling mode) new construction	All Capacities	95°F db outdoor air	14.0 – (0.300 × Cap/1000) EER[c]	
PTAC (cooling mode) replacements[b]	All Capacities	95°F db outdoor air	10.9 - (0.213 × Cap/1000) EER	
PTHP (cooling mode) new construction	All Capacities	95°F db outdoor air	14.0 - (0.300 × Cap/1000) EER	
PTHP (cooling mode) replacements[b]	All Capacities	95°F db outdoor air	10.8 - (0.213 × Cap/1000) EER	
PTHP (heating mode) new construction	All Capacities	—	3.2 - (0.026 × Cap/1000) COP	
PTHP (heating mode) replacements[b]	All Capacities	—	2.9 - (0.026 × Cap/1000) COP	
SPVAC (cooling mode)		95°F db/ 75°F wb outdoor air	9.0 EER	
	≥ 65,000 Btu/h and	95°F db/ 75°F wb outdoor air	8.9 EER	
	≥ 135,000 Btu/h and	95°F db/ 75°F wb outdoor air	8.6 EER	
SPVHP (cooling mode)		95°F db/ 75°F wb outdoor air	9.0 EER	
	≥ 65,000 Btu/h and	95°F db/ 75°F wb outdoor air	8.9 EER	
	≥ 135,000 Btu/h and	95°F db/ 75°F wb outdoor air	8.6 EER	
SPVHP (heating mode)		47°F db/ 43°F wb outdoor air	3.0 COP	
	≥ 65,000 Btu/h and	47°F db/ 43°F wb outdoor air	3.0 COP	
	≥ 135,000 Btu/h and	47°F db/ 75°F wb outdoor air	2.9 COP	
Room air conditioners, with louvered sides	< 6,000 Btu/h	—	~~9.7 SEER~~11.0 CEER	
	≥ 6,000 Btu/h and	—	~~9.7 EER~~11.0	

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						

			CEER
	≥ 8,000 Btu/h and	—	~~9.8 EER~~10.9 CEER
	≥ 14,000 Btu/h and	—	~~9.7 EER~~10.7 CEER
	≥ 20,000 Btu/h and < 25,000 Btu/h	—	~~8.5 EER~~9.4 CEER
	≥ 25,000 Btu/h		9.0 CEER
Room air conditioners, without louvered sides	< 6,000 Btu/h	—	10.0 CEER
	≥ 6,000 Btu/h and < 8,000 Btu/h		~~9.0 EER~~10.0 CEER
	≥ 8,000 Btu/h and < 11,000 Btu/h	—	~~8.5 EER~~9.6 CEER
	≥ 11,000 Btu/h and < 14,000 Btu/h		9.5 CEER
	≥ 14,000 Btu/h and < 20,000 Btu/h		9.3 CEER
	≥ 20,000 Btu/h	—	~~8.5 EER~~9.4 CEER
Room air-conditioner heat pumps with louvered sides	< 20,000 Btu/h	—	~~9.0 EER~~9.8 CEER
	≥ 20,000 Btu/h	—	~~8.5 EER~~9.3 CEER
Room air-conditioner heat pumps without louvered sides	< 14,000 Btu/h	—	~~8.5 EER~~9.3 CEER
	≥ 14,000 Btu/h	—	~~8.0 EER~~8.7 CEER
Room air conditioner casement only	All capacities	—	~~8.7 EER~~9.5 CEER
Room air conditioner casement-slider	All capacities	—	~~9.5 EER~~10.4 CEER

For SI: 1 British thermal unit per hour = 0.2931 W, °C = [(°F) - 32]/1.8, wb = wet bulb, db = wet bulb.
"Cap" = The rated cooling capacity of the project in Btu/h. Where the unit's capacity is less than 7000 Btu/h, use 7000 calculation. Where the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculations.
a. Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year versi procedure.
b. Replacement unit shall be factory labeled as follows: "MANUFACTURED FOR REPLACEMENT APPLICATIONS TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS." Replacement efficiencies apply only to units with existir than 16 inches (406 mm) in height and less than 42 inches (1067 mm) in width.
~~c. Before January 1, 2015 the minimum efficiency shall be 13.8 - (0.300 x Cap/1000) EER.~~

CE136-16	**Section: C403.2.4.1.4 (New)** ***AEI Summary: This proposal will ensure consistency with ASHRAE Standard 90.1-16 regarding air curtains.*** **Add new text as follows:** **403.2.4.1.4 Heated or cooled vestibules** The heating system for heated vestibules and air curtains with integral heating shall be provided with controls configured to shut off the source of heating when the outdoor air temperature is greater than 45°F (7°C). Vestibule heating and cooling systems shall be controlled by a thermostat located in the vestibule configured to limit heating to a			X	$500.00 per space	Standards Consistency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	temperature not greater than 60°F (16°C) and cooling to a temperature not less than 85°F (29°C). **Exception:** Control of heating or cooling provided by site-recovered energy or transfer air that would otherwise be exhausted.					
CE139-16	**Section: C403.2.4.3** ***AEI Summary: This proposal restricts the exception allowing gravity dampers to exhaust and relief air streams, and consequently requires a positive shutoff damper for outside air intakes.*** **Revise as follows:** **C403.2.4.3 Shutoff dampers.** Outdoor air intake and exhaust openings and stairway and shaft vents shall be provided with Class I motorized dampers. The dampers shall have an air leakage rate not greater than 4 cfm/ft^2 (20.3 L/s • m^2) of damper surface area at 1.0 inch water gauge (249 Pa) and shall be labeled by an approved agency when tested in accordance with AMCA 500D for such purpose. Outdoor air intake and exhaust dampers shall be installed with automatic controls configured to close when the systems or spaces served are not in use or during unoccupied period warm-up and setback operation, unless the systems served require outdoor or exhaust air in accordance with the *International Mechanical Code* or the dampers are opened to provide intentional economizer cooling. Stairway and shaft vent dampers shall be installed with automatic controls configured to open upon the activation of any fire alarm initiating device of the building's fire alarm system or the interruption of power to the damper. **Exception:** Gravity (nonmotorized) dampers shall be permitted to be used for exhaust and relief as follows: 1. In buildings less than three stories in height above grade plane. 2. In buildings of any height located in *Climate Zones* 1, 2 or 3. 3. Where the design exhaust capacity is not greater than 300 cfm (142 L/s). Gravity (nonmotorized) dampers shall have an air leakage rate not greater than 20 cfm/ft^2 (101.6 L/s • m^2) where not less than 24 inches (610 mm) in either dimension and 40 cfm/ft^2 (203.2 L/s • m^2)			X	$200.00 per damper	Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	where less than 24 inches (610 mm) in either dimension. The rate of air leakage shall be determined at 1.0 inch water gauge (249 Pa) when tested in accordance with AMCA 500D for such purpose. The dampers shall be labeled by an approved agency.					
CE141-16	**Section: C403.2.6.1** ***AEI Summary: This proposal clarifies the occupant load relative to demand control ventilation.*** **Revise as follows:** **C403.2.6.1 Demand controlled ventilation.** Demand control ventilation (DCV) shall be provided for spaces larger than 500 square feet (46.5 m^2) and with an average occupant load of 25 people or greater per 1,000 square feet (93 m^2) of floor area (as established in Table 403.3.1.1 of the *International Mechanical Code*) and served by systems with one or more of the following: 1. An air-side economizer. 2. Automatic modulating control of the outdoor air damper. 3. A design outdoor airflow greater than 3,000 cfm (1416 L/s). **Exception:** Demand control ventilation is not required for systems and spaces as follows: 1. Systems with energy recovery complying with Section C403.2.7. 2. Multiple *zone* systems without direct digital control of individual *zones* communicating with a central control panel. 3. Systems with a design outdoor airflow less than 1,200 cfm (566 L/s). 4. Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1,200 cfm (566 L/s). 5. Ventilation provided for process loads only.		X			Clarification
CE143-16	**Section: C403.2.6.3 (New)** ***AEI Summary: This proposal limits the heating of dedicated outside air supply air to 60°F when most of the building is expected to require cooling.*** **Add new text as follows:** **C403.2.6.3 Ventilation air heating control.** Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems shall not use heating or heat			X	$150.00 per BAS control change	Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	recovery to warm supply air to a temperature greater than 60°F (16°C) when representative building loads or outdoor air temperature indicate that the majority of zones require cooling.					
CE149-16	**Section: C403.2.9.1, C403.2.9.1.3** ***AEI Summary: This proposal clarifies characteristics of high-pressure duct systems.*** **C403.2.9.1 Duct construction.** Ductwork shall be constructed and erected in accordance with the *International Mechanical Code*. **Revise as follows:** **C403.2.9.1.3 High-pressure duct systems.** Ducts and plenums designed to operate at static pressures equal to or greater than 3 inches water gauge (747 Pa) shall be insulated and sealed in accordance with Section C403.2.9. In addition, ducts and plenums shall be leak tested in accordance with the SMACNA HVAC Air Duct Leakage Test Manual and shown to have a rate of air leakage (CL) less than or equal to 4.0 as determined in accordance with Equation 4-8. $CL = F/P^{0.65}$ **(Equation 4-8)** where: F = The measured leakage rate in cfm per 100 square feet of duct surface. P = The static pressure of the test. Documentation shall be furnished by the designer demonstrating that representative sections totaling at least 25 percent of the duct area have been tested and that all tested sections comply with the requirements of this section.		X			Clarification
CE150-16	**Section: C403.2.12.1** ***AEI Summary: This proposal clarifies code language to make changes to be consistent with addenda G and Q to 90.1-2013.*** **Revise as follows:**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE C403.2.12.1 (2) FAN POWER LIMITATION PRESSURE DROP ADJUSTMENT DEVICE | ADJUSTMENT Credits ~~Fully ducted return and/or exhaust air systems~~ Return air or exhaust systems required by code or accreditation standards to be fully ducted, or systems required to maintain air pressure differentials between adjacent rooms | 0.5 inch w.c. (2.15 in w.c. for laboratory and vivari Return and/or exhaust airflow control devices | 0.5 inch w.c. Exhaust filters, scrubbers or other exhaust treatment | The pressure drop of device calculated at fan sys condition Particulate filtration credit: MERV 9 thru 12 | 0.5 inch w.c. Particulate filtration credit: MERV 13 thru 15 | 0.9 inch. w.c. Particulate filtration credit: MERV 16 and greater and electronically enhanced filters | Pressure drop calculated at 2x clean filter press fan system design condition. Carbon and other gas-phase air cleaners | Clean filter pressure drop at fan system design Biosafety cabinet | Pressure drop of device at fan system design Energy recovery device, other than coil runaround loop | ~~(2.2 × energy recovery effectiveness) – 0.5 inch~~ ~~airstream.~~ For each airstream (2.2 * Energy R Effectiveness – 0.5 in) Coil runaround loop | 0.6 inch w.c. for each airstream. Evaporative humidifier/cooler in series with another cooling coil | Pressure drop of device at fan system design c Sound attenuation section (fans serving spaces with design background noise goals below NC35) | 0.15 inch w.c. Exhaust system serving fume hoods | 0.35 inch w.c. Laboratory and vivarium exhaust systems in high-rise buildings | 0.25 inch w.c./100 feet of vertical duct exceedir Deductions Systems without central cooling device | - 0.6 in. w.c. Systems without central heating device | - 0.3 in. w.c. Systems with central electric resistance heat | - 0.2 in. w.c. For SI: 1 inch w.c. = 249 Pa, 1 inch = 25.4 mm. w.c. = water column, NC = Noise criterion.					
CE151-16	**Section: C403.2.3** ***AEI Summary: This proposal clarifies certification requirements for cooling tower heat rejection equipment.*** **Revise as follows:**		X			Table Update

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						

ABLE C403.2.3 (8)
MINIMUM EFFICIENCY REQUIREMENTS: HEAT REJECTION EQUIPMENT

EQUIPMENT TYPE[a]	TOTAL SYSTEM HEAT REJECTION CAPACITY AT RATED CONDITIONS	SUBCATEGORY OR RATING CONDITION[i]	PERFORMANCE REQUIRED[b, c, d, g, h]	PI
Propeller or axial fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	≥ 40.2 gpm/hp	C a
Centrifugal fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	≥ 20.0 gpm/hp	C a
Propeller or axial fan closed-circuit cooling towers	All	102°F entering water 90°F leaving water 75°F entering wb	≥ 14.0 gpm/hp	C a
Centrifugal fan closed- circuit cooling towers	All	102°F entering water 90°F leaving water 75°F entering wb	≥ 7.0 gpm/hp	C a
Propeller or axial fan evaporative condensers	All	Ammonia Test Fluid 140°F entering gas temperature 96.3°F condensing temperature 75°F entering wb	≥ 134,000 Btu/h·hp	C
Centrifugal fan evaporative condensers	All	Ammonia Test Fluid 140°F entering gas temperature 96.3°F condensing temperature 75°F entering wb	≥ 110,000 Btu/h·hp	C
Propeller or axial fan evaporative condensers	All	R-507A Test Fluid 165°F entering gas temperature 105°F condensing temperature 75°F entering wb	≥ 157,000 Btu/h·hp	C
Centrifugal fan evaporative condensers	All	R-507A Test Fluid 165°F entering gas temperature 105°F condensing temperature 75°F entering wb	≥ 135,000 Btu/h·hp	C
Air-cooled condensers	All	125°F Condensing Temperature 190°F Entering Gas Temperature 15°F subcooling 95°F entering db	≥ 176,000 Btu/h·hp	

For SI: °C = [(°F)-32]/1.8, L/s · kW = (gpm/hp)/(11.83), COP = (Btu/h · hp)/(2550.7),
db = dry bulb temperature, °F, wb = wet bulb temperature, °F.

a. The efficiencies and test procedures for both open- and closed-circuit cooling towers are not applicable to hybrid that contain a combination of wet and dry heat exchange sections.

b. For purposes of this table, open circuit cooling tower performance is defined as the water flow rating of the tower rating condition listed in Table 403.2.3(8) divided by the fan nameplate-rated motor power.

c. For purposes of this table, closed-circuit cooling tower performance is defined as the water flow rating of the towe thermal rating condition listed in Table 403.2.3(8) divided by the sum of the fan nameplate-rated motor power and the nameplate-rated motor power.

d. For purposes of this table, air-cooled condenser performance is defined as the heat rejected from the refrigerant fan nameplate-rated motor power.

e. Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year versi procedure. The certification requirements do not apply to field-erected cooling towers.

f. Where a certification program exists for a covered product and it includes provisions for verification and challenge efficiency ratings, then the product shall be listed in the certification program; or, where a certification program exists product, and it includes provisions for verification and challenge of equipment efficiency ratings, but the product is not existing certification program, the ratings shall be verified by an independent laboratory test report.

g. Cooling towers shall comply with the minimum efficiency listed in the table for that specific type of tower with the of any project-specific accessories and/or options included in the capacity of the cooling tower

h. For purposes of this table, evaporative condenser performance is defined as the heat rejected at the specified ra in the table divided by the sum of the fan motor nameplate power and the integral spray pump nameplate power

i. Requirements for evaporative condensers are listed with ammonia (R-717) and R-507A as test fluids in the table. condensers intended for use with halocarbon refrigerants other than R-507A shall meet the minimum efficiency requi in this table with R-507A as the test fluid.

Reference standards type: This is an update to reference standard(s) already in the ICC Co
Add new standard(s) as follows:

Cooling Technology Institute (CTI)
2611 FM 1960 West, Suite A-101, Houston, TX 77068-3730; P.O. Box 73383, Houston, TX 77

Referenced Standards:

CTI STD-201 RS (15)	Performance Rating of Evaporative Heat Rejection Equipment
CTI STD-201 OM (15)	Operations Manual for Thermal Performance Certification of Evap Heat Rejection Equipment

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE152-16	**Section: C403.2.3** ***AEI Summary*: This proposal raises efficiency standards for evaporatively cooled heat rejection devices.** **Revise as follows:**		X			Efficiency

TABLE C403.2.3 (8)
MINIMUM EFFICIENCY REQUIREMENTS: HEAT REJECTION EQUIPMENT

EQUIPMENT TYPE[a]	TOTAL SYSTEM HEAT REJECTION CAPACITY AT RATED CONDITIONS	SUBCATEGORY OR RATING CONDITION[i]	PERFORMANCE REQUIRED[b, c, d, g, h]	PI
Propeller or axial fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	≥ 40.2 gpm/hp	C a
Centrifugal fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	≥ 20.0 gpm/hp	C a
Propeller or axial fan closed-circuit cooling towers	All	102°F entering water 90°F leaving water 75°F entering wb	≥ ~~14.0~~15.4 gpm/hp	C a
Centrifugal fan closed- circuit cooling towers	All	102°F entering water 90°F leaving water 75°F entering wb	≥ 7.0 gpm/hp	C a
Propeller or axial fan evaporative condensers	All	Ammonia Test Fluid 140°F entering gas temperature 96.3°F condensing temperature 75°F entering wb	≥ 134,000 Btu/h·hp	C
Centrifugal fan evaporative condensers	All	Ammonia Test Fluid 140°F entering gas temperature 96.3°F condensing temperature 75°F entering wb	≥ 110,000 Btu/h·hp	C
Propeller or axial fan evaporative condensers	All	R-507A Test Fluid 165°F entering gas temperature 105°F condensing temperature 75°F entering wb	≥ 157,000 Btu/h·hp	C
Centrifugal fan evaporative condensers	All	R-507A Test Fluid 165°F entering gas temperature 105°F condensing temperature 75°F entering wb	≥ 135,000 Btu/h·hp	C
Air-cooled condensers	All	125°F Condensing Temperature 190°F Entering Gas Temperature 15°F subcooling 95°F entering db	≥ 176,000 Btu/h·hp	

For SI: °C = [(°F)-32]/1.8, L/s · kW = (gpm/hp)/(11.83), COP = (Btu/h · hp)/(2550.7),

db = dry bulb temperature, °F, wb = wet bulb temperature, °F.

a. The efficiencies and test procedures for both open- and closed-circuit cooling towers are not applicable to hybrid c that contain a combination of wet and dry heat exchange sections.

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	b. For purposes of this table, open circuit cooling tower performance is defined as the water flow rating of the tower at rating condition listed in Table 403.2.3(8) divided by the fan nameplate-rated motor power. c. For purposes of this table, closed-circuit cooling tower performance is defined as the water flow rating of the tower thermal rating condition listed in Table 403.2.3(8) divided by the sum of the fan nameplate-rated motor power and the s nameplate-rated motor power. d. For purposes of this table, air-cooled condenser performance is defined as the heat rejected from the refrigerant di fan nameplate-rated motor power. e. Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year versior procedure. The certification requirements do not apply to field-erected cooling towers. f. Where a certification program exists for a covered product and it includes provisions for verification and challenge o efficiency ratings, then the product shall be listed in the certification program; or, where a certification program exists fo product, and it includes provisions for verification and challenge of equipment efficiency ratings, but the product is not li existing certification program, the ratings shall be verified by an independent laboratory test report. g. Cooling towers shall comply with the minimum efficiency listed in the table for that specific type of tower with the ca of any project-specific accessories and/or options included in the capacity of the cooling tower h. For purposes of this table, evaporative condenser performance is defined as the heat rejected at the specified ratin in the table divided by the sum of the fan motor nameplate power and the integral spray pump nameplate power i. Requirements for evaporative condensers are listed with ammonia (R-717) and R-507A as test fluids in the table. E condensers intended for use with halocarbon refrigerants other than R-507A shall meet the minimum efficiency requirer in this table with R-507A as the test fluid.					
CE153-16	**Section: C403.2.3** ***AEI Summary*: This proposal updates the table to reflect the new federal minimum efficiency standards.** **Revise as follows:** TABLE ~~C403.2.3(4)~~ C403.2.3(4) WARM-AIR FURNACES AND COMBINATION WARM-AIR FURNACES/AIR-CONDITIONING UNITS, DUCT FURNACES AND UNIT HEATERS, MINIMUM EFFICIENCY REQUIREMENTS EQUIPMENT TYPE / SIZE CATEGORY (INPUT) / SUBCATEGORY OR RATING CONDITION / MINIMUM EFFICIENCY[d, e] / PROC Warm-air furnaces, gas fired — < 225,000 Btu/h — ~~78%~~80% AFUE or 80% E_t[c] — DOE 10 (AN Warm-air furnaces, gas fired — ≥ 225,000 Btu/h — Maximum capacity[c] — 80% E_t[f] — AN Warm-air furnaces, oil fired — < 225,000 Btu/h — — ~~78%~~83% AFUE or 80% E_t[c] — DOE 10 (Warm-air furnaces, oil fired — ≥ 225,000 Btu/h — Maximum capacity[b] — 81% E_t[g] Warm-air duct furnaces, gas fired — All capacities — Maximum capacity[b] — 80% E_c — AN Warm-air unit heaters, gas fired — All capacities — Maximum capacity[b] — 80% E_c — ANS Warm-air unit heaters, oil fired — All capacities — Maximum capacity[b] — 80% E_c For SI: 1 British thermal unit per hour = 0.2931 W. a. Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year versi procedure. b. Minimum and maximum ratings as provided for and allowed by the unit's controls. c. Combination units not covered by the National Appliance Energy Conservation Act of 1987 (NAECA) (3-phase pc capacity greater than or equal to 65,000 Btu/h [19 kW]) shall comply with either rating. d. E_t = Thermal efficiency. See test procedure for detailed discussion. e. E_c = Combustion efficiency (100% less flue losses). See test procedure for detailed discussion. f. E_c = Combustion efficiency. Units shall also include an IID, have jackets not exceeding 0.75 percent of the input r have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furn combustion air is drawn from the conditioned space. g. E_t = Thermal efficiency. Units shall also include an IID, have jacket losses not exceeding 0.75 percent of the inpu have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furn combustion air is drawn from the conditioned space.			X	$100.00 per increase in AFUE %	New Efficiency Standards

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE154-16	**Section: C403.2.3** ***AEI Summary*: This proposal ensures that the table reflects the current minimum federal standards and design requirements for residential products that may be used in commercial buildings.** **Revise as follows:**			X	$100.00 per increase in AFUE %	Updated Standards
CE155-16	**Section: C403.2.7** ***AEI Summary*: This proposal increases the minimum energy recovery requirements from zero to a reasonable minimum size for smaller units.** **Revise as follows:**		X			Minimum ERV Addendum

TABLE ~~C403.2.3(5)~~ C403.2.3(5)
MINIMUM EFFICIENCY REQUIREMENTS: GAS- AND OIL-FIRED BOILERS

EQUIPMENT TYPE[a]	SUBCATEGORY OR RATING CONDITION	SIZE CATEGORY (INPUT)	MINIMUM EFFICIENCY[d, e]	p
Boilers, hot water	Gas-fired	< 300,000 Btu/h[f,g]	~~80%~~ 82% AFUE	
		≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h[b]	80% E_t	
		> 2,500,000 Btu/h[a]	82% E_c	
	Oil-fired[c]	< 300,000 Btu/h[g]	~~80%~~ 84% AFUE	
		≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h[b]	82% E_t	
		> 2,500,000 Btu/h[a]	84% E_c	
Boilers, steam	Gas-fired	< 300,000 Btu/h[f]	~~75%~~ 80% AFUE	
	Gas-fired- all, except natural draft	≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h[b]	79% E_t	
		> 2,500,000 Btu/h[a]	79% E_t	
	Gas-fired-natural draft	≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h[b]	77% E_t	
		> 2,500,000 Btu/h[a]	77% E_t	
	Oil-fired[c]	< 300,000 Btu/h	~~80%~~ 82% AFUE	
		≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h[b]	81% E_t	
		> 2,500,000 Btu/h[a]	81% E_t	

For SI: 1 British thermal unit per hour = 0.2931 W.
a. These requirements apply to boilers with rated input of 8,000,000 Btu/h or less that are not packaged boilers and packaged boilers. Minimum efficiency requirements for boilers cover all capacities of packaged boilers.
b. Maximum capacity – minimum and maximum ratings as provided for and allowed by the unit's controls.
c. Includes oil-fired (residual).
d. E_c = Combustion efficiency (100 percent less flue losses).
e. E_t = Thermal efficiency. See referenced standard for detailed information.
f. Boilers shall not be equipped with a constant burning ignition pilot.
g. A boiler not equipped with a tankless domestic water heating coil shall be equipped with an automatic means for temperature of the water such that an incremental change in inferred heat load produces a corresponding increment temperature of the water supplied.

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT: Decrease	None	Increase	ESTIMATED AMOUNT*	BENEFIT OF CHANGE
Sub Code:						
	TABLE ~~C403.2.7(1)~~ C403.2.7(1) ENERGY RECOVERY REQUIREMENT (Ventilation systems operating less than 8,000 hours p					

CLIMATE ZONE	PERCENT (%) OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE						
	≥10% and	≥ 20% and	≥ 30% and	≥ 40% and 50%	≥ 50% and 60%	≥ 60% and 70%	≥ 70% 80
	DESIGN SUPPLY FAN AIRFLOW RATE (cfm)						
3B, 3C, 4B, 4C, 5B	NR	NR	NR	NR	NR	NR	NI
1B, 2B, 5C	NR	NR	NR	NR	≥ 26,000	≥ 12,000	≥ 5,(
6B	≥ 28,000	≥ 26,5000	≥ 11,000	≥ 5,500	≥ 4,500	≥ 3,500	≥ 2,5
1A, 2A, 3A, 4A, 5A, 6A	≥ 26,000	≥ 16,000	≥ 5,500	≥ 4,500	≥ 3,500	≥ 2,000	≥ 1,(
7, 8	≥ 4,500	≥ 4,000	≥ 2,500	≥ 1,000	> 140	> 120	> 1

For SI: 1 cfm = 0.4719 L/s.
NR = Not Required.

TABLE ~~C403.2.7(2)~~ C403.2.7(2)
ENERGY RECOVERY REQUIREMENT (Ventilation systems operating not less than 8,000 hours

CLIMATE ZONE	PERCENT (%) OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE						
	≥ 10% and	≥ 20% and	≥ 30% and	≥ 40% and	≥ 50% and	≥ 60% and	≥ 70%
	Design Supply Fan Airflow Rate (cfm)						
3C	NR	NR	NR	NR	NR	NR	NI
1B, 2B, 3B, 4C, 5C	NR	≥ 19,500	≥ 9,000	≥ 5,000	≥ 4,000	≥ 3,000	≥ 1,
1A, 2A, 3A, 4B, 5B	≥ 2,500	≥ 2,000	≥ 1,000	≥ 500	~~≥~~ 140	~~≥~~ 120	~~≥~~
4A, 5A, 6A, 6B, 7, 8	~~≥~~ 200	~~≥~~ 130	~~≥~~ 100	~~≥~~ 80	~~≥~~ 70	~~≥~~ 60	~~≥~~

For SI: 1 cfm = 0.4719 L/s.
NR = Not required

CE156-16	**Section: C403.3, C403.3.3, C403.3.4** ***AEI Summary*: This proposal corrects gaps and conflicts in the economizer provisions from the 2015 edition.** **Revise as follows:** **C403.3 Economizers (Prescriptive).** ~~Each cooling system~~ Economizers shall ~~include either an air or water economizer complying~~ comply with Sections C403.3.1 through C403.3.4 **Exceptions:** ~~Economizers are not required for the systems listed below.~~		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. In cooling systems for buildings located in Climate Zones 1A and 1B. 2. In climate zones other than 1A and 1B, where individual fan cooling units have a capacity ~~e~~ less than 54,000 Btu/h (15.8 kW) and meet one of the following~~:~~ 2.1. Have direct expansion cooling coils. 2.2. The total chilled water system capacity less the capacity of fan units with air economiz~~e~~ is less than the minimum specified in Table C403.3(1). The total supply capacity of all fan-cooling units not provided with economizers shall n~~e~~ exceed 20 percent of the total supply capacity of all fan-cooling units in the building or 300,000 Btu/h (88 kW), whichever is greater. 3. Where more than 25 percent of the air designed to be supplied by the system is to spaces that are designed to be humidified above 35°F (1.7°C) dew-point temperature to satisfy process needs. 4. Systems that serve residential spaces where the system capacity is less than five times th~~e~~ requirement listed in Table C403.3(1). 5. Systems expected to operate less than 20 hours per week. 6. Where the use of outdoor air for cooling will affect supermarket open refrigerated casework~~s~~ systems. 7. Where the cooling efficiency meets or exceeds the efficiency requirements in Table C403.3(2). 8. Chilled-water cooling systems that are passive (without a fan) or use induction where the t~~o~~ chilled water system capacity less the capacity of fan units with air economizers is less tha~~n~~ the minimum specified in Table C403.3(1). 9. Systems that include a heat recovery system in accordance with Section C403.4.5. 10. An air or water economizer shall be provided for the following cooling systems. 10.1. Chilled water systems with a total cooling capacity, less cooling capacity provided with air economizers, as specified in Table C403.3(1). 10.2. Individual fan systems with cooling capacity greater than or equal to 54,000 Btu/h i~~n~~ buildings having other than a Group R occupancy, . The total supply capacity of all fan-cooling units not provided with economizers shall not exceed 20 percent of the total supply capacity of all fan cooling units in th~~e~~ building or 300,000 Btu/h (88 kW), whichever is greater. 10.3. Individual fan systems with cooling capacity greater than or equal to 270,000 Btu/h in buildings having a Group R occupancy, The total supply capacity of all fan cooling units not provided with economizer shall not exceed 20 percent of the total supply capacity of all fan cooling units in t~~he~~ building or 1,500,000 Btu/h (440 kW), whichever is greater. **Exceptions:** Economizers are not required for the following systems. 1. Individual fan systems not served by chilled water for buildings located in *Climate Zones* 1A and 1B. 2. Where more than 25 percent of the air designed to be supplied by the system is to spaces that are designed to be humidified above 35~~°~~F (1.7~~°~~C) dew-point temperature satisfy process needs. 3. Systems expected to operate less than 20 hours per week. 4. Systems serving supermarket areas with open refrigerated casework. 5. Where the cooling efficiency is greater than or equal to the efficiency requirements in Table C403.3(2). 6. Systems that include a heat recovery system in accordance with Section C403.4.5. **C403.3.3 Air economizers.** ~~Air~~ Where economizers are required by Section C403.3, air economizers shall comply with Sections C403.3.3.1 through C403.3.3.5. **C403.3.4 Water-side economizers.** Where economizers are required by Section C403.3, water-side economizers shall comply with Sections C403.3.4.1 and C403.3.4.2.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE157-16 Part I	**Section: C101.4.1, C101.5, C202, C202 (New), C403.3, C406.7, C407.5.1, C407.5.2.3** ***AEI Summary: This proposal offers clarification regarding the term residential regarding occupancy.*** **Revise as follows:** **C101.4.1 Mixed ~~occupancy~~ Residential and Commercial buildings.** Where a building includes both r*esidential building* and *commercial building* ~~occupancies,~~ portions, each ~~occupancy~~ portion shall be separately considered and meet the applicable provisions of IECC—Commercial Provisions or IECC— Residential Provisions. **C101.5 Compliance.** *Residential buildings* shall meet the provisions of IECC—Residential Provisions. *Commercial buildings* shall meet the provisions of IECC—Commercial Provisions. **STOREFRONT.** A ~~nonresidential~~ system of doors and windows mulled as a composite fenestration structure that has been designed to resist heavy use. *Storefront* systems include, but are not limited to, exterior fenestration systems that span from the floor level or above to the ceiling of the same story on commercial buildings, with or without mulled windows and doors. **Add new definition as follows:** **GROUP R** Buildings or portions of buildings that contain any of the following occupancies as established in the International Building Code: 1. Group R-1. 2. Group R-2 where located more than three stories in height above grade plane. 3. Group R-4 where located more than three stories in height above grade plane. **Revise as follows:** **C403.3 Economizers (Prescriptive).** Each cooling system shall include either an air or water economizer complying with Sections C403.3.1 through C403.3.4 **Exceptions:** Economizers are not required for the systems listed below.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						

1. In cooling systems for buildings located in Climate Zones 1A and 1B.
2. In climate zones other than 1A and 1B, where individual fan cooling units have a capacity of less than 54,000 Btu/h (15.8 kW) and meet one of the following:
   2.1. Have direct expansion cooling coils.
   2.2. The total chilled water system capacity less the capacity of fan units with air economizer is less than the minimum specified in Table C403.3(1). The total supply capacity of all fan-cooling units not provided with economizers shall not exceed 20 percent of the total supply capacity of all fan-cooling units in the building or 300,000 Btu/h (88 kW), whichever is greater.
3. Where more than 25 percent of the air designed to be supplied by the system is to spaces that are designed to be humidified above 35°F (1.7°C) dew-point temperature to satisfy process needs.
4. Systems that serve ~~residential~~ Group R occupancy spaces where the system capacity is les than five times the requirement listed in Table C403.3(1).
5. Systems expected to operate less than 20 hours per week.
6. Where the use of outdoor air for cooling will affect supermarket open refrigerated casework systems.
7. Where the cooling efficiency meets or exceeds the efficiency requirements in Table C403.3(2).
8. Chilled-water cooling systems that are passive (without a fan) or use induction where the tot chilled water system capacity less the capacity of fan units with air economizers is less than the minimum specified in Table C403.3(1).
9. Systems that include a heat recovery system in accordance with Section C403.4.5.

C406.7 Reduced energy use in service water heating. Buildings shall be of the following types to use this compliance method:

TABLE C407.5.1 (2)
HVAC SYSTEMS MAP

CONDENSER COOLING SOURCE[a]	HEATING SYSTEM CLASSIFICATION[b]	STANDARD REFERENCE DESIGN HVC SY	
		Single-zone Residential System	Single-zone Nonresidential Sys
Water/ground	Electric resistance	System 5	System 5
	Heat pump	System 6	System 6
	Fossil fuel	System 7	System 7
Air/none	Electric resistance	System 8	System 9
	Heat pump	System 8	System 9
	Fossil fuel	System 10	System 11

a. Select "water/ground" where the proposed design system condenser is water or evaporatively cooled; select "air/ the condenser is air cooled. Closed-circuit dry coolers shall be considered air cooled. Systems utilizing district cooling treated as if the condenser water type were "water." Where no mechanical cooling is specified or the mechanical cool the proposed design does not require heat rejection, the system shall be treated as if the condenser water type were proposed designs with ground-source or groundwater-source heat pumps, the standard reference design HVAC syste water-source heat pump (System 6).

b. Select the path that corresponds to the proposed design heat source: electric resistance, heat pump (including ai water source), or fuel fired. Systems utilizing district heating (steam or hot water) and systems with no heating capabi treated as if the heating system type were "fossil fuel." For systems with mixed fuel heating sources, the system or sy the secondary heating source type (the one with the smallest total installed output capacity for the spaces served by t shall be modeled identically in the standard reference design and the primary heating source type shall be used to determine *standard* reference design HVAC system type.

c. Select the standard reference design HVAC system category: The system under "single-zone residential syste selected where the HVAC system in the proposed design is a single-zone system and serves a ~~residential space~~ G occupancy. The system under "single-zone nonresidential system" shall be selected where the HVAC system in the design is a single-zone system and serves other than ~~residential spaces~~ Group R occupancies. The system under " be selected for all other cases.

C407.5.2.3 ~~Multifamily residential~~ Group R-2 occupancy buildings. ~~Residential~~ Group R-2 occupancy spaces shall be modeled using one thermal block per space except that those facing same orientations

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	are permitted to be combined into one thermal block Corner units and units with roof or floor loads shall only be combined with units sharing these features.					
CE158-16	**Section: C403.3** ***AEI Summary: This proposal allows the prescriptive economizer to be replaced by more efficient cooling equipment in moist climates.*** **Revise as follows:** TABLE 403.3(2) EQUIPMENT EFFICIENCY PERFORMANCE EXCEPTION FOR ECONOMIZERS CLIMATE ZONES | COOLING EQUIPMENT PERFORMANCE IMPROVEMENT (EER OR IPLV) 2A, 2B | 10% efficiency improvement 3A, 3B | 15% efficiency improvement 4A, 4B | 20% efficiency improvement		X			Efficiency
CE160-16	**Section: C403.4.2.3.2, C403.4.2.3.2.1, C403.4.2.3.2.2** ***AEI Summary: This proposal corrects language discrepancies and creates consistency with ASHRAE/IES 90.1-2010 while simplifying the code language.*** **Revise as follows:** **C403.4.2.3.2 Heat rejection.** ~~Heat rejection equipment shall comply with Sections C403.4.2.3.2.1 and C403.4.2.3.2.2.~~ The following shall apply to hydronic water loop heat pump systems in Climate Zones 3 through 8: 1. Where a closed-circuit cooling tower is used directly in the heat pump loop, either an automatic valve shall be installed to bypass the flow of water around the closed-circuit cooling tower, except for any flow necessary for freeze protection, or low leakage positive closure dampers shall be provided. 2. Where an open-circuit cooling tower is used directly in the heat pump loop, an automatic valve shall be installed to bypass all heat pump water flow around the open-circuit cooling tower. 3. Where an open-circuit cooling tower is used in conjunctionwith a separate heat exchanger to isolate the open-cirucit cooling tower from the heat pump loop, heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Exception: Where it can be demonstrated that a heat pump system will be required to reject heat throughout the year. **Delete without substitution:** ~~**C403.4.2.3.2.1 Climate zones 3 and 4.** For *Climate Zones* 3 and 4:~~ 1. ~~Where a closed-circuit cooling tower is used directly in the heat pump loop, either an automatic valve shall be installed to bypass all but a minimal flow of water around the tower, or lower leakage positive closure dampers shall be provided.~~ 2. ~~Where an open-circuit tower is used directly in the heat pump loop, an automatic valve shall be installed to bypass all heat pump water flow around the tower.~~ 3. ~~Where an open- or closed-circuit cooling tower is used in conjunction with a separate heat exchanger to isolate the cooling tower from the heat pump loop, then heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop.~~ ~~**C403.4.2.3.2.2 Climate zones 5 through 8.** For *Climate Zones* 5 through 8, where an open- or closed- circuit cooling tower is used, a separate heat exchanger shall be provided to isolate the cooling tower from the heat pump loop, and heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop and providing an automatic valve to stop the flow of fluid.~~					
CE162-16	**Section: C403.4.2.4, C403.4.2.4 (New)** ***AEI Summary: This proposal reduces the threshold where variable flow and variable speed drives (VSD) are required for pumping systems.*** **Revise as follows:** **C403.4.2.4 Part-load controls.** Hydronic systems greater than or equal to 500,000 Btu/h (146.5 kW) in design output capacity supplying heated or chilled water to comfort conditioning systems shall include controls that ~~have the capability~~ are configured to do all of the following: 1. Automatically reset the supply-water temperatures in response to varying building heating and cooling demand using coil valve position, zone-return water temperature, building-return water temperature or outside air temperature. The temperature shall be capable of being reset by not less than 25 percent of		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	the design supply-to-return water temperature difference. 2. Automatically vary fluid flow for hydronic systems with a combined pump motor capacity of ~~10~~ 2 hp (~~7.5~~1.5 kW) or larger with three or more control valves or other devices by reducing the system design flow rate by not less than 50 percent or as required by ~~designed~~the equipment manufacturer for proper operation of equipment by valves that modulate or step open and close, or pumps that modulate or turn on and off as a function of load. 3. ~~Automatically vary pump flow on chilled-water systems and heat rejection loops serving water- cooled unitary air conditioners with a combined motor capacity of 10 hp (7.5 kW) or larger by reducing pump design flow by not less than 50 percent, utilizing adjustable speed drives on pumps, or multiple-staged pumps where not less than one-half of the total pump horsepower is capable of being automatically turned off. Pump flow shall be controlled to maintain one control valve nearly wide open or to satisfy the minimum differential pressure.~~ **~~Exceptions:~~** 1. ~~Supply-water temperature reset for chilled-water systems supplied by off-site district chilled water or chilled water from ice storage systems.~~ 2. ~~Minimum flow rates other than 50 percent as required by the equipment manufacturer for proper operation of equipment where using flow bypass or end-of-line 3-way valves.~~ 3. ~~Variable pump flow on dedicated equipment circulation pumps where configured in primary/secondary design to provide the minimum flow requirements of the equipment manufacturer for proper operation of equipment.~~ 3. Automatically vary pump flow on heating-water systems, chilled-water systems and heat rejection loops serving water-cooled unitary air conditioners as follows: 3.1 Where pumps operate continuously or operate based on a time schedule, pumps with nominal output motor power of 2 hp or more shall have a variable speed drive. 3.2 Where pumps have automatic direct digital					

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	control configured to operate pumps only when zone heating or cooling is required, a variable speed drive shall be provided for pumps with motors having the same or greater nominal output power indicated in Table C403.4.2.4 based on the climate zone and system served. 4. Where a variable speed drive is required by item 3 of this Section, pump motor power input shall be not more than 30 percent of design wattage at 50 percent of the design water flow. Pump flow shall be controlled to maintain one control valve nearly wide open or to satisfy the minimum differential pressure. Exceptions: 1. Supply-water temperature reset is not required for chilled-water systems supp site district chilled water or chilled water from ice storage systems. 2. Variable pump flow is not required on dedicated coil circulation pumps where freeze protection. 3. Variable pump flow is not required on dedicated equipment circulation pumps configured in primary/secondary design to provide the minimum flow requirem equipment manufacturer for proper operation of equipment. 4. Variable speed drives are not required on heating water pumps where more th annual heat is generated by an electric boiler. Add new text as follows: TABLE C403.4.2.4 VARIABLE SPEED DRIVE (VSD) REQUIREMENTS FOR DEMAND-CONTROLLED PUMP CHILLED WATER AND HEAT REJECTION LOOP PUMPS IN THESE CLIMATE ZONES / HEATING WATER PUMPS IN THESE CLIMATE ZONES / VSD REQUIRED FOR MOTORS RATED OUTPUT AT LEAST 0a, 0b, 1a, 1b, 2b / / ≥2 HP 2a, 3b / / ≥3 HP 3a, 3c, 4a, 4b / 7, 8 / ≥5 HP 4c, 5a, 5b, 5c, 6a, 6b / 3c, 5a, 5c, 6a, 6b / ≥7.5 HP / 4a, 4c, 5b / ≥10 HP 7, 8 / 4b / ≥15 HP / 2a, 2b, 3a, 3b / ≥25 HP / 1b / ≥100 HP / 0a, 0b, 1a / ≥200 HP *[Note (not new code language): Climate Zones 0a and 0b to be included in table above only if ano proposal introducing these new very hot climate zones is approved.]*					
CE163-16	**Section: C403.4.2.6** ***AEI Summary: This proposal changes language from boiler plant to boiler system.*** **Revise as follows:** **C403.4.2.6 Pump isolation.** Chilled water plants including more than one chiller shall have the capability to reduce flow automatically		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	through the chiller plant when a chiller is shut down. Chillers piped in series for the purpose of increased temperature differential shall be considered as one chiller. Boiler ~~plants~~ systems including more than one boiler shall have the capability to reduce flow automatically through the boiler ~~plant~~ system when a boiler is shut down.					
CE165-16	**Section: C403.4.3, C403.4.3.1, C403.4.3.2, C403.4.3.2.1, C403.4.3.2.2** ***AEI Summary: This proposal reduces the threshold where variable speed drives (VSD) are required for heat rejection fan systems.*** **Revise as follows:** **C403.4.3 Heat rejection equipment.** ~~Each fan powered by a motor of 7.5 hp (5.6 kW) or larger~~ Heat rejection equipment including air-cooled condensers, dry coolers, open-circuit cooling towers, closed-circuit cooling towers and evaporative condensers shall ~~have~~ comply with this section. Exception: Heat rejection devices where energy usage is included in the ~~capability to operate that fan at two-thirds of full speed or less,~~ equipment efficiency ratings listed in Tables C403.2.3(6) and ~~shall have controls that automatically change the fan speed to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device~~C403.2.3(7). **Exception~~:~~** ~~Factory-installed heat rejection devices within HVAC equipment tested and rated in accordance with Tables C403.2.3(6) and C403.2.3(7).~~ **C403.4.3.1 ~~General~~ Fan speed control.** ~~Heat~~ Each fan system powered by an individual motor or array of motors with a connected power, including the motor service factor, totaling 5 hp (3.7 kW) or more shall have controls and devices configured to automatically modulate the fan speed to control the leaving fluid temperature or condensing temperature and pressure of the heat rejection ~~equipment such as air-cooled condensers, dry coolers, open-circuit~~ device. Fan motor power input shall be not more than 30% of design wattage at 50% of the design airflow. **Exceptions**: 1. Fans serving multiple refrigerant or fluid cooling ~~towers, closed-circuit cooling towers and evaporative~~ circuits.			X	$800.00 per device	Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. Condenser fans serving flooded condensers ~~used for comfort cooling applications shall comply with this section~~. ~~**Exception:** Heat rejection devices where energy usage is included in the equipment efficiency ratings listed in Tables C403.2.3(6) and C403.2.3(7).~~ **C403.4.3.2 ~~Fan speed control~~ Multiple-cell heat rejection equipment.** Multiple-cell heat rejection equipment with variable speed fan drives shall be controlled to operate the maximum number of fans allowed that comply with the manufacturer's requirements for all system components and so that all fans operate at the same fan speed required for the instantaneous cooling duty, as opposed to staged on and off operation. The minimum fan speed shall be ~~controlled as provided~~ the minimum allowable speed of the fan drive system in ~~Sections C403.4.3.2.1 and C403.4.3.2.2~~ accordance with the manufacturer's recommendations. **Delete without substitution:** ~~**C403.4.3.2.1 Fan motors not less than 7.5 hp.** Each fan powered by a motor of 7.5 hp (5.6 kW) or larger shall have the capability to operate that fan at two-thirds of full speed or less, and shall have controls that automatically change the fan speed to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device.~~ ~~**Exception:** The following fan motors over 7.5 hp (5.6 kW) are exempt:~~ ~~1. Condenser fans serving multiple refrigerant circuits.~~ ~~2. Condenser fans serving flooded condensers.~~ ~~3. Installations located in *Climate Zones* 1 and 2.~~ ~~**C403.4.3.2.2 Multiple-cell heat rejection equipment.** Multiple-cell heat rejection equipment with variable speed fan drives shall be controlled in both of the following manners:~~					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. ~~To operate the maximum number of fans allowed that comply with the manufacturer's requirements for all system components.~~ 2. ~~So all fans can operate at the same fan speed required for the instantaneous cooling duty, as opposed to staged (on/off) operation.~~ ~~Minimum fan speed shall be the minimum allowable speed of the fan drive system in accordance with the manufacturer's recommendations.~~					
CE166-16	**Section: C403.4.4, C403.4.4 (New)** ***AEI Summary: This proposal reflects efficiency advances in control strategies for VAV zone control.*** **Add new text as follows:** **C403.4.4 Requirements for complex mechanical systems serving multiple zones** Sections C403.4.4.1 through C403.4.4.7 shall apply to mechanical systems. **Revise as follows:** **~~C403.4.4~~ C403.4.4.1 ~~Requirements for complex mechanical systems serving multiple zones~~Zone controls.** ~~Sections C403.4.4.1 through C403.4.6.4 shall apply to complex mechanical systems serving multiple zones.~~ Supply air systems serving multiple zones shall be variable air volume (VAV) systems that~~, during periods of occupancy, are designed and~~ have zone controls capable of ~~being controlled~~ and configured to reduce ~~primary~~ the volume of air ~~supply to~~ that is reheated, resolved, or mixed in each *zone* to one of the following ~~before reheating, recooling~~: 1. Twenty percent of the *zone* design peak supply for systems with DDC and 30 percent for other systems. 2. Systems with DDC where items 2.1 through 2.3 apply. 2.1 The airflow rate in dead band between heating and cooling does not exceed 20 percent of the *zone* design peak supply rate or higher allowed rates under items 3, 4, or 5 of this section. 2.2 The first stage of heating modulates the zone supply air temperature setpoint up to a maximum		X			Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	setpoint while the airflow is maintained at the dead band flow rate. 2.3 The second stage of heating modulates the airflow rate from the dead band flow rate up to the heating maximum flow rate that is less than 50 percent of the zone design peak supply rate. 3. The outdoor airflow rate required to meet the minimum ventilation requirements of Chapter 4 of the *International Mechanical Code*. 4. Any higher rate that can be demonstrated to reduce overall system annual energy use by offsetting reheat and recool energy losses through a reduction in *outdoor air* intake for the system, as *approved* by the *code official*. 5. The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates. **Exception:** The following individual *zones* or ~~mixing takes place~~ entire air distribution systems are exempted from the requirement for VAV control: 6. *Zones* or supply air systems where not less than 75 percent of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered energy source including condenser heat or from a site-solar energy source. 7. Systems that prevent reheating, recooling, mixing or simultaneous supply of air that has been previously cooled, either mechanically or through the use of economizer systems, and air that has been previously mechanically heated. 1. ~~Thirty percent of the maximum supply air to each *zone*.~~ 2. ~~Three hundred cfm (142 L/s) or less where the maximum flow rate is less than 10 percent of the total fan system supply airflow rate.~~ 3. ~~The minimum ventilation requirements of Chapter 4 of the *International Mechanical Code*.~~ 4. Any higher rate that can be demonstrated to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in ~~*outdoor air* intake for the system, as *approved* by the *code official*.~~					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	5. ~~The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates.~~ ~~**Exception:** The following individual *zones* or entire air distribution systems are exempted from the requirement for VAV control:~~ 1. ~~*Zones* or supply air systems where not less than 75 percent of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered or site-solar energy source.~~ 2. ~~*Zones* where special humidity levels are required to satisfy process needs.~~ 3. ~~*Zones* with a peak supply air quantity of 300 cfm (142 L/s) or less and where the flow rate is less than 10 percent of the total fan system supply airflow rate.~~ 4. ~~*Zones* where the volume of air to be reheated, recooled or mixed is not greater than the volume of outside air required to provide the minimum ventilation requirements of Chapter 4 of the *International Mechanical Code*.~~ 5. ~~*Zones* or supply air systems with thermostatic and humidistatic controls capable of operating in sequence the supply of heating and cooling energy to the *zones* and which are capable of preventing reheating, recooling, mixing or simultaneous supply of air that has been previously cooled, either mechanically or through the use of economizer systems, and air that has been previously mechanically heated.~~					
CE167-16	**Section: C403.4.3, C403.4.3.1, C403.4.3.2, C403.4.3.2.1, C403.4.3.2.2** ***AEI Summary: This proposal removes the exception to the VAV system ventilation optimization when ERV is installed.*** **Revise as follows:** **C403.4.4.6 Multiple-zone VAV system ventilation optimization control.** Multiple-zone VAV systems with direct digital control of individual zone boxes reporting to a central control panel shall have automatic controls configured to reduce outdoor air intake flow below design rates in response to changes in system *ventilation* efficiency (*Ev*) as defined by the International Mechanical Code. **Exceptions:**			X	$500.00 per box	Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. VAV systems with zonal transfer fans that recirculate air from other zones without directly mixing it with outdoor air, dual-duct dual-fan VAV systems, and VAV systems with fan- powered terminal units. 2. ~~Systems having exhaust air energy recovery complying with Section C403.2.7.~~ 2. Systems where total design exhaust airflow is more than 70 percent of total design outdoor air intake flow requirements.					
CE168-16	**Section: C403.4.4.7 (New)** ***AEI Summary: This proposal addresses control of fans in fan powered parallel VAV boxes.*** **Add new text as follows:** **C403.4.4.7 Parallel-flow fan-powered VAV air terminal control.** Parallel-flow fan-powered VAV air terminals shall have automatic controls configured to: 1. Turn off the terminal fan except when space heating is required or where required for ventilation. 2. Turn on the terminal fan as the first stage of heating before the heating coil is activated 3. During heating for warmup or setback temperature control, either: 3.1 Operate the terminal fan and heating coil without primaryair. 3.2 Reverse the terminal damper logic and provide heating from the central air handler by primary air.			X	$800.00 per box	Efficiency
CE171-16	**Section(s): C404.2** ***AEI Summary: This proposal updates the values and equations in the table to reflect the new federal minimum standards for water heating products.*** **Revise as follows:**			X	$10.00 per increased V,EF	Revised efficiency standards

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						

TABLE C404.2
MINIMUM PERFORMANCE OF WATER-HEATING EQUIPMENT

EQUIPMENT TYPE	SIZE CATEGORY (input)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED[a, b]
Water heaters, electric	≤ 12 kW[d]	Tabletop, > 20 gallons and < 120 gallons	0.93 - 0.00132*V*, EF
		Resistance > 20 gallons and < 55 gallons	~~0.97 - 0.00 132*V*~~ 0.960 - 0.0003*V*, EF
		Grid-enabled > 20 gallons and < 120 gallons	1.06 - 0.00168*V*, EF
	> 12 kW	Resistance	$(0.3 + 27/V_m)$, %/h
	≤ 24 amps and ≤ 250 volts	Heat pump > 55 gallons and ≤120 gallons	~~0.93 - 0.00 132*V*~~ 2.057 - 0.00113*V*, EF
Storage water heaters, gas	≤ 75,000 Btu/h	≥ 20 gallons and < 55 gallons	~~0.62 - 0.00 19*V*~~ 0.675 - 0.0015*V*, EF
		> 55 gallons and < 100 gallons	~~0.62 - 0.00 19*V*~~ 0.8012 - 0.00078*V*, EF
	> 75,000 Btu/h and ≤ 155,000 Btu/h		80% E_t (Q/800 + 110 V)SL, Btu/h
	> 155,000 Btu/h		80% E_t (Q/800 + 110 V)SL, Btu/h
Instantaneous water heaters, gas	> 50,000 Btu/h and c	≥ 4,000 (Btu/h)/gal and	~~0.62~~ 0.82 - 0.0019*V*, EF
	≥ 200,000 Btu/h	≥ 4,000 Btu/h/gal and	80% E_t
	≥ 200,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	80% E_t (Q/800 + 110 V)SL, Btu/h
Storage water heaters, oil	≤ 105,000 Btu/h	≥ 20 gal and ≤ 50 gallons	~~0.59~~ 0.68 - 0.0019*V*, EF
	≥ 105,000 Btu/h		80% E_t (Q/800 + 110 V)SL, Btu/h
Instantaneous	≤ 210,000 Btu/h	≥ 4,000 Btu/h/gal and	0.59 - 0.0019V, EF

EQUIPMENT TYPE	SIZE CATEGORY (input)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED[a, b]
water heaters, oil			
	> 210,000 Btu/h	≥ 4,000 Btu/h/gal and	80% E_t
	> 210,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	78% E_t (Q/800 + 110 V)SL, Btu/h
Hot water supply boilers, gas and oil	≥ 300,000 Btu/h and	≥ 4,000 Btu/h/gal and	80% E_t
Hot water supply boilers, gas	≥ 300,000 Btu/h and	≥ 4,000 Btu/h/gal and ≥ 10 gal	80% E_t (Q/800 + 110 V)SL, Btu/h
Hot water supply boilers, oil	> 300,000 Btu/h and	> 4,000 Btu/h/gal and > 10 gal	78% E_t (Q/800 + 110 V)SL, Btu/h
Pool heaters, gas and oil	All	—	82% E_t
Heat pump pool heaters	All	—	4.0 COP
Unfired storage tanks	All	—	Minimum insulation requirement R-12.5 (h · ft² · °F)/Btu

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	For SI: °C = [(°F) - 32]/1.8, 1 British thermal unit per hour = 0.2931 W, 1 gallon = 3.785 L, 1 British thermal unit per hour p 0.078 W/L. a. Energy factor (EF) and thermal efficiency (Et) are minimum requirements. In the EF equation, V is the rated volume i b. Standby loss (SL) is the maximum Btu/h based on a nominal 70°F temperature difference between stored water and requirements. In the SL equation, Q is the nameplate input rate in Btu/h. In the equations for electric water heaters, V is tl volume in gallons and Vm is the measured volume in gallons. In the SL equation for oil and gas water heaters and boilers rated volume in gallons. c. Instantaneous water heaters with input rates below 200,000 Btu/h shall comply with these requirements where the wa is designed to heat water to temperatures 180°F or higher. d. Electric water heaters with an input rating of 12 kW (40,950 Btu/hr) or less that are designed to heat water to temperz 180°F or greater shall comply with the requirements for electric water heaters that have an input rating greater than 12 kV Btu/h).					
CE172-16	**Section: C404.2.1** ***AEI Summary*: This proposal adds clarifications and updates regarding exceptions and compliance of renewable energy systems.** **Revise as follows:** **C404.2.1 High input-rated service water-heating systems.** Gas-fired water-heating equipment installed in new buildings shall be in compliance with this section. Where a singular piece of water-heating equipment serves the entire building and the input rating of the equipment is 1,000,000 Btu/h (293 kW) or greater, such equipment shall have a thermal efficiency, E_t, of not less than 90 percent. Where multiple pieces of water-heating equipment serve the building and the combined input rating of the water-heating equipment is 1,000,000 Btu/h (293 kW) or greater, the combined input-capacity-weighted-average thermal efficiency, E_t, shall be not less than 90 percent. **Exceptions:** 1. Where not less than 25 percent of the annual *service water-heating* requirement is provided by ~~site-solar~~ *on-site renewable energy* or site-recovered energy, the minimum thermal efficiency requirements of this section shall not apply. 2. The input rating of water heaters installed in individual dwelling units shall not be required to be included in the total input rating of *service water-heating* equipment for a building. 3. The input rating of water heaters with an input rating of not greater than 100,000 Btu/h (29.3 kW) shall not be required to be included in the total input rating of *service water-heating* equipment for a building.		X			Clarification
CE173-16	**Section: C404.3**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	AEI Summary: This proposal clarifies the existing text regarding the intent of the provision and how to design complying installations. **Revise as follows:** **C404.3 Heat traps. for hot water storage tanks** ~~Water-heating equipment not supplied Storage tank-type water heaters and hot water storage tanks that have vertical water pipes connecting to the inlet and outlet of the tank shall be provided~~ with integral heat traps at those inlets and ~~serving noncirculating systems~~ outlets or shall ~~be provided with~~ have pipe configured heat traps ~~on~~ in the ~~supply~~ piping connected to those inlets and ~~discharge piping~~ outlets. Tank inlets and outlets associated with ~~the equipment~~ solar water heating system circulation loops shall not be required to have heat traps.					
CE174-16 Part I	**Section: C202, C404.7** ***AEI Summary: This proposal creates a definition of Demand Recirculation Water Systems, requires system controls, and limits the entering water temperature.*** **Revise as follows:** **C404.7 Demand recirculation controls.** ~~A~~ Demand recirculation water ~~distribution system having one or more recirculation pumps that pump water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe shall be a *demand recirculation water system*.~~ Pumps systems shall have controls that comply with both of the following: 1. The ~~control~~ controls shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture or sensing the flow of hot or tempered water to a fixture fitting or appliance. 2. The ~~control~~ controls shall limit the temperature of the water entering the cold-water piping to not greater than 104°F (40°C). **DEMAND RECIRCULATION WATER SYSTEM.** A water distribution system ~~where~~ having one or more recirculation pumps ~~prime~~ that pump water from a heated-water supply pipe back to the ~~service hot water piping with heated water upon demand for hot water~~ heated-water source through a code-water supply pipe.		X			Clarification
CE177-16 Part I	**Section: C404.9.3** ***AEI Summary: This proposal revises the exception for heated pools and spas requiring vapor retardant covers.***			X	$10.00 per SF of pool area	Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **C404.9.3 Covers.** Outdoor heated pools and outdoor permanent spas shall be provided with a vapor- retardant cover or other approved vapor-retardant means. **Exception:** Where more than ~~70~~75 percent of the energy for heating, computed over an operating season of at least 3 calendar months, is from site-recovered energy such as from a heat pump or ~~solar~~ on-site renewable energy ~~source~~ system, covers or other vapor-retardant means shall not be required.					
CE179-16	**Section: C405.1, C405.2.2, C405.2.3, C405.2.4, C405.4.1** ***AEI Summary: This proposal clarifies the treatment of sleeping unit and dwelling unit lighting and limits required controls.*** **Revise as follows:** **C405.1 General (Mandatory).** This section covers lighting system controls, the maximum ligh for interior and exterior applications and electrical energy consumption. **Exception:** ~~Dwelling units within commercial buildings shall not be required to comply wit C405.2 through C405.5, provided that they comply with Section R404.1.~~ *Dwelling units* wi family buildings shall comply with Section R404.1. All other *dwelling units* shall comply w Section R404.1, or with Sections C405.2.4 and C405.4. *Sleeping units* shall comply with S C405.2.4, and with either Section R404.1 or C405.4. Walk-in coolers, walk-in freezers, re warehouse coolers and refrigerated warehouse freezers shall comply with Section C403.2 C403.2.16. Walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehou shall comply with Section C403.2.15 or C403.2.16. **C405.2.2 Time-switch controls.** Each area of the building that is not provided with *occupant controls* complying with Section C405.2.1.1 shall be provided with *time switch controls* compl C405.2.2.1. **Exception:** Where a *manual control* provides light reduction in accordance with Section C automatic controls shall not be required for the following: ~~1. *Sleeping units.*~~ 1. Spaces where patient care is directly provided. 2. Spaces where an automatic shutoff would endanger occupant safety or security. 3. Lighting intended for continuous operation. 4. Shop and laboratory classrooms. **C405.2.3 Daylight-responsive controls.** *Daylight-responsive controls* complying with Sectio C405.2.3.1 shall be provided to control the electric lights within *daylight zones* in the following 1. Spaces with a total of more than 150 watts of *general lighting* within sidelight *daylight zones* complying with Section C405.2.3.2. *General lighting* does not include lighting t required to have specific application control in accordance with Section C405.2.4. 2. Spaces with a total of more than 150 watts of *general lighting* within toplight *daylight zones* complying with Section C405.2.3.3. **Exceptions:** Daylight responsive controls are not required for the following: 1. Spaces in health care facilities where patient care is directly provided. ~~2. Dwelling units and sleeping units.~~		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact							
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. Lighting that is required to have specific application control in accordance wit C405.2.4. 3. Sidelight daylight zones on the first floor above grade in Group A-2 and Grou occupancies. **C405.2.4 Specific application controls.** Specific application controls shall be provided for tl 1. Display and accent light shall be controlled by a dedicated control that is independent controls for other lighting within the room or space. 2. Lighting in cases used for display case purposes shall be controlled by a dedicated c independent of the controls for other lighting within the room or space. 3. Hotel and motel sleeping units and guest suites *Sleeping units* shall have a master c that is capable of automatically switching off all permanently installed luminaires and receptacles within 20 minutes after all occupants ~~leave~~ have left the ~~room~~unit. ~~Exception~~ Exceptions: 1. Lighting and switched receptacles controlled by captive key systems. 2. Spaces where patient care is directly provided. 4. Permanently installed luminaires within *dwelling units* shall be provided with controls with either Section C405.2.2.2 or C405.2.1.1. 5. Supplemental task lighting, including permanently installed under-shelf or under-cabi shall have a control device integral to the luminaires or be controlled by a wall-mount device provided that the control device is readily accessible. 6. Lighting for nonvisual applications, such as plant growth and food warming, shall be a dedicated control that is independent of the controls for other lighting within the roo 7. Lighting equipment that is for sale or for demonstrations in lighting education shall be by a dedicated control that is independent of the controls for other lighting within the r space. **C405.4.1 Total connected interior lighting power.** The total connected interior lighting pow determined in accordance with Equation 4-9. *TCLP* = [*SL* + *LV* + *LTPB* + Other] **(Equation 4-9)** where: *TCLP*= Total connected lighting power (watts). *SL* = Labeled wattage of luminaires for screw-in lamps. *LV* = Wattage of the transformer supplying low-voltage lighting. *LTPB*= Wattage of line-voltage lighting tracks and plugin busways as the specified wattage of the luminaires, but at least 30 W/lin. ft. (100 W/lin m), or the wattage limit of the system's circuit breaker, or the wattage limit of other permanent current-limiting devices on the system. Other= The wattage of all other luminaires and lighting sources not covered previously and associated with interior lighting verified by data supplied by the manufacturer or other *approved* sources. **Exceptions:** 1. The connected power associated with the following lighting equipment is not incl calculating total connected lighting power. 1.1. Professional sports arena playing field lighting. ~~1.2. Lighting in sleeping units, provided that the lighting complies with Section R4~~					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1.2. Emergency lighting automatically off during normal building operation. 1.3. Lighting in spaces specifically designed for use by occupants with special light including those with visual impairment and other medical and age-related issu 1.4. Lighting in interior spaces that have been specifically designated as a register historic landmark. 1.5. Casino gaming areas. 1.6. Mirror lighting in dressing rooms. 2. Lighting equipment used for the following shall be exempt provided that it is in add general lighting and is controlled by an independent control device: 2.1. Task lighting for medical and dental purposes. 2.2. Display lighting for exhibits in galleries, museums and monuments. 3. Lighting for theatrical purposes, including performance, stage, film production and production. 4. Lighting for photographic processes. 5. Lighting integral to equipment or instrumentation and installed by the manufacture 6. Task lighting for plant growth or maintenance. 7. Advertising signage or directional signage. 8. In restaurant buildings and areas, lighting for food warming or integral to food prep equipment. 9. Lighting equipment that is for sale. 10. Lighting demonstration equipment in lighting education facilities. 11. Lighting *approved* because of safety or emergency considerations, inclusive of exi 12. Lighting integral to both open and glass-enclosed refrigerator and freezer cases. 13. Lighting in retail display windows, provided the display area is enclosed by ceiling-partitions. 14. Furniture-mounted supplemental task lighting that is controlled by automatic shuto 15. Exit signs.					
CE180-16	**Section: C405.1** ***AEI Summary: This proposal clarifies the language in Section C405.1 pertaining to walk-in coolers, freezers, and other refrigeration equipment lighting.*** **Revise as follows:** **C405.1 General (Mandatory).** This section covers lighting system controls, the maximum lighting power for interior and exterior applications and electrical energy consumption. **Exception:** Dwelling units within commercial buildings shall not be required to comply with Sections C405.2 through C405.5, provided that they comply with Section R404.1. Walk-~~in~~ Lighting installed in walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with the lighting requirements of Section C403.2.15 or C403.2.16.		X			Clarification
CE182-16	**Section: C405.2, C405.2.4** ***AEI Summary: This proposal clarifies certain automatic lighting controls requirements.*** **Revise as follows:**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C405.2 Lighting controls (Mandatory). Lighting systems shall be provided with controls as specified in Sections C405.2.1~~, C405.2.2, C405.2.3, C405.2.4 and~~ through C405.2.5. **Exceptions:** Lighting controls are not required for the following: 1. Areas designated as security or emergency areas that are required to be continuously lighted. 2. Interior exit stairways, interior exit ramps and exit passageways. 3. Emergency egress lighting that is normally off. C405.2.4 Specific application controls. Specific application controls shall be provided for th ~~1. Display and accent light shall be controlled by a dedicated control that is independent controls for other lighting within the room or space.~~ ~~2. Lighting in cases used for display case purposes shall be controlled by a dedicated co independent of the controls for other lighting within the room or space.~~ 1. The following lighting shall be controlled by an occupant sensor complying with Sectio C405.2.1.1 or a time-switch control complying with Section C405.2.2.1. In addition, a control shall be provided to control such lighting separately from the general lighting in 1.1. Display and accent. 1.2. Lighting in display cases. 1.3. Supplemental task lighting, including permanently installed under-shelf or under-c lighting. 1.4. Lighting equipment that is for sale or demonstration in lighting education. 2. Hotel and motel sleeping units and guest suites shall have a master control device tha of automatically switching off all installed luminaires and switched receptacles within 2 after all occupants leave the room. Exception: Lighting and switched receptacles controlled by captive key systems. ~~3. Supplemental task lighting, including permanently installed under-shelf or under-cabin shall have a control device integral to the luminaires or be controlled by a wall-mounte device provided that the control device is readily accessible.~~ 3. Lighting for nonvisual applications, such as plant growth and food warming, shall be c a ~~dedicated~~ time switch control complying with Section C405.2.2.1 that is independent controls for other lighting within the room or space. ~~4. Lighting equipment that is for sale or for demonstrations in lighting education shall be by a dedicated control that is independent of the controls for other lighting within the r space.~~					
CE183-16	**Section: C202 (New), C405.2** ***AEI Summary: This proposal acknowledges lighting control technology that meets the intent of the provisions of the IECC that have specific capabilities.*** **Add new text as follows:** **LUMINAIRE LIGHT LEVEL CONTROLS.** A lighting system consisting of one or more luminaires with embedded lighting control logic, occupancy and ambient light sensors, wireless networking capabilities, and local override switching capability, where required.		X			Additional options

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **C405.2 Lighting controls (Mandatory).** Lighting systems shall be provided with controls ~~as specified in Sections C405.2.1, C405.2.2, C405.2.3, C405.2.4~~ that comply with one of the following: 1. Lighting controls as specified in Sections C405.2.1, C405.2.2, C405.2.3, C405.2.4, and C405.2 2. Luminaire light level controls (LLLC) and lighting controls as specified in Sections C405.2.4, an C405.2.5. The LLLC luminaire shall be independently capable of: 1. Monitoring occupant activity to brighten or dim its lighting when occupied or unoccupied respectively. 2. Monitoring ambient light, both electric light and ~~C405.2.5~~daylight, and brighten or dim artifi light to maintain desired light level 3. Configuration and re-configuration of performance parameters including; bright and dim se points, time-outs, dimming fade rates, sensor sensitivity adjustments, and wireless zoning configurations, for each control strategy. **Exceptions:** Lighting controls are not required for the following: 1. Areas designated as security or emergency areas that are required to be continuously lighted. 2. Interior exit stairways, interior exit ramps and exit passageways. 3. Emergency egress lighting that is normally off.					
CE184-16	**Section: C405.2.1** ***AEI Summary: This proposal revises this section for clarity, and for consistency with other parts of the code, with no change in stringency.*** **Revise as follows:** **C405.2.1 Occupant sensor controls.** Occupant sensor controls shall be installed to control lights in the following space types: 1. Classrooms/lecture/training rooms. 2. Conference/meeting/multipurpose rooms. 3. Copy/print rooms. 4. ~~Lounges~~ Lounge/breakrooms. 5. ~~Employee lunch and break rooms.~~ 6. ~~Private offices.~~ 7. Enclosed offices. 8. Restrooms. 9. Storage rooms. 10. ~~Janitorial closets.~~ 11. Locker rooms. 12. Other spaces 300 square feet (28 m^2) or less that are enclosed by floor-to-ceiling height partitions. 13. ~~Warehouses~~ Warehouse storage areas.		X			Clarification
CE185-16	**Section: C405.2.1, C405.2.1.1, C405.2.1.3 (New)** ***AEI Summary: This proposal adds occupant sensor control to open plan office areas.***		X			Additional area inclusion

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **C405.2.1 Occupant sensor controls.** Occupant sensor controls shall be installed to control lights in the following space types: 1. Classrooms/lecture/training rooms. 2. Conference/meeting/multipurpose rooms. 3. Copy/print rooms. 4. Lounges. 5. Employee lunch and break rooms. 6. Private offices. 7. Open plan office areas. 8. Restrooms. 9. Storage rooms. 10. Janitorial closets. 11. Locker rooms. 12. Other spaces 300 square feet (28 m^2) or less that are enclosed by floor-to-ceiling height partitions. 13. Warehouses. **C405.2.1.1 Occupant sensor control function.** Occupant sensor controls in spaces other than warehouses and open plan office areas, as specified in Section C405.2.1 shall comply with the following: 1. Automatically turn off lights within 30 minutes of all occupants leaving the space. 2. Be manual on or controlled to automatically turn the lighting on to not more than 50 percent power. **Exception:** Full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants. 3. Shall incorporate a *manual control* to allow occupants to turn lights off.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Add new text as follows: C405.2.1.3 Occupant sensor control function in open plan office areas. Occupant sensc open plan office spaces less than 250 square feet (23 m2) in area shall comply with Section C Occupant sensor controls in all other open plan office spaces shall comply with all of the follov 1. The controls shall be configured so that general lighting can be controlled separately i zones with floor areas not greater than 600 square feet (55 m2) within the open plan o 2. The controls shall automatically turn off general lighting in all control zones within 20 r after all occupants have left the open plan office space. 3. The controls shall be configured so that general lighting power in each control zone is by not less than 80 percent of the full zone general lighting power in a reasonably unifc illumination pattern within 20 minutes of all occupants leaving that control zone. Contrc that switch control zone lights completely off when the zone is vacant meet this require 4. The controls shall be configured such that any *daylight responsive control* will activate office space general lighting or control zone general lighting only when occupancy for t area is detected.					
CE186-16	**Section: C405.2.1, C405.2.1.1, C405.2.1.2** ***AEI Summary: This proposal offers guidance regarding occupancy sensor control placement.*** **C405.2.1 Occupant sensor controls.** Occupant sensor controls shall be installed to control lights in the following space types: 1. Classrooms/lecture/training rooms. 2. Conference/meeting/multipurpose rooms. 3. Copy/print rooms. 4. Lounges. 5. Employee lunch and break rooms. 6. Private offices. 7. Restrooms. 8. Storage rooms. 9. Janitorial closets. 10. Locker rooms. 11. Other spaces 300 square feet (28 m^2) or less that are enclosed by floor-to-ceiling height partitions. 12. Warehouses. **Revise as follows:** **C405.2.1.1 Occupant sensor control function.** Occupant sensor controls in ~~spaces~~ warehouses shall comply with Section C405.2.1.2. Occupant sensor controls for other ~~than warehouses~~ spaces specified in Section C405.2.1 shall comply with the following: 1. ~~Automatically~~ They shall automatically turn off lights within 30 minutes of all occupants leaving the space. 2. ~~Be~~ They shall be manual on or controlled to automatically turn the lighting on to not more than 50 percent power.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Exception: Full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants. 3. ~~Shall~~ They shall incorporate a *manual control* to allow occupants to turn lights off. **C405.2.1.2 Occupant sensor control function in warehouses.** In warehouses, the lighting in aisleways and open areas shall be controlled with occupant sensors that automatically reduce lighting power by not less than 50 percent when the areas are unoccupied. The occupant sensors shall control lighting in each aisleway independently and shall not control lighting beyond the aisleway being controlled by the sensor.					
CE187-16	**Section: C405.2.1.1** ***AEI Summary: This proposal requires reduced shutoff time for occupancy sensors.*** **Revise as follows:** **C405.2.1.1 Occupant sensor control function.** Occupant sensor controls in spaces other than warehouses specified in Section C405.2.1 shall comply with the following: 1. Automatically turn off lights within ~~30~~ 20 minutes of all occupants leaving the space. 2. Be manual on or controlled to automatically turn the lighting on to not more than 50 percent power. **Exception:** Full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants. 3. Shall incorporate a *manual control* to allow occupants to turn lights off.		X			Clarification
CE188-16	**Section: C405.2.2, C405.2.2.1** ***AEI Summary: This proposal clarifies code requirements regarding automatic controls.*** **Revise as follows:** **C405.2.2 Time-switch controls.** Each area of the building that is not provided with *occupant sensor controls* complying with		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Section C405.2.1.1 shall be provided with *time switch controls* complying with C405.2.2.1. **Exception:** Where a *manual control* provides light reduction in accordance with Section C405.2.2.2, ~~automatic controls~~ *time-switch controls* shall not be required for the following: 1. *Sleeping units*. 2. Spaces where patient care is directly provided. 3. Spaces where an automatic shutoff would endanger occupant safety or security. 4. Lighting intended for continuous operation. 5. Shop and laboratory classrooms. **C405.2.2.1 Time-switch control function.** Each space provided with *time-switch controls* shall also be provided with a *manual control* for light reduction in accordance with Section C405.2.2.2. Time-switch *controls* shall include an override switching device that complies with the following: 1. Have a minimum 7-day clock. 2. Be capable of being set for seven different day types per week. 3. Incorporate an automatic holiday "shutoff" feature, which turns off all controlled lightin at least 24 hours and then resumes normally scheduled operations. 4. Have program backup capabilities, which prevent the loss of program and time settinç least 10 hours, if power is interrupted. 5. Include an override switch that complies with the following: 5.1. The override switch shall be a manual control. 5.2. The override switch, when initiated, shall permit the controlled lighting to remain o more than 2 hours. 5.3. Any individual override switch shall control the lighting for an area not larger than square feet (465 m²). **Exceptions:** 1. Within malls, arcades, auditoriums, single-tenant retail spaces, industrial arenas: 1.1. The time limit shall be permitted to be greater than 2 hours, provided override switch is a captive key device. 1.2. The area controlled by the override switch is permitted to be greater t square feet (465 m²), but shall not be greater than 20,000 square feet 1.3. Where provided with *manual control*, the following areas are not requ light reduction control: 1.3.1 Spaces that have only one luminaire with a rated power of les watts. 1.3.2. Spaces that use less than 0.6 watts per square foot (6.5 W/m ~~1.3.3. Corridors, equipment rooms, public lobbies, electrical or mecl rooms.~~ 1.3.3. Corridors, lobbies, electrical rooms and mechanical rooms.					
CE190-16	**Section: C202 (New), C405.2.2.1, C405.2.4** ***AEI Summary*: This proposal corrects the Captive Key Device verbiage to reference the correct device within these sections of the IECC.**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Add new definition as follows: **CAPTIVE KEY OVERRIDE** A lighting control that will not release the key that activates the override when the lighting is on. **Revise as follows:** **C405.2.2.1 Time-switch control function.** Each space provided with *time-switch controls* shall also be provided with a *manual control* for light reduction in accordance with Section C405.2.2.2. Time-switch *controls* shall include an override switching device that complies with the following: 1. Have a minimum 7-day clock. 2. Be capable of being set for seven different day types per week. 3. Incorporate an automatic holiday "shutoff" feature, which turns off all controlled lighting loads for at least 24 hours and then resumes normally scheduled operations. 4. Have program backup capabilities, which prevent the loss of program and time settings for at least 10 hours, if power is interrupted. 5. Include an override switch that complies with the following: 5.1. The override switch shall be a manual control. 5.2. The override switch, when initiated, shall permit the controlled lighting to remain on for not more than 2 hours. 5.3. Any individual override switch shall control the lighting for an area not larger than 5,000 square feet (465 m²). **Exceptions:** 1. Within malls, arcades, auditoriums, single-tenant retail spaces, industrial facilities and arenas: 1.1. The time limit shall be permitted to be greater than 2 hours, provided that the ~~override~~ switch is a captive key device. 1.2. The area controlled by the override switch ~~is permitted to~~ shall not be ~~greater than~~ limited to 5,000 square feet (465 m2)~~, but shall not be greater~~ provided that such area is less than 20,000 square feet (1860 m^2). 1.3. Where provided with *manual control*, the following areas are not required to have light reduction control: 1.3.1. Spaces that have only one luminaire with a rated power of less than 100 watts. 1.3.2. Spaces that use less than 0.6 watts per square foot (6.5 W/m^2). 1.3.3. Corridors, equipment rooms, public lobbies, electrical or mechanical rooms. **5.2.4 Specific application controls.** Specific application controls shall be provided for the following:					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. Display and accent light shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. 2. Lighting in cases used for display case purposes shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. 3. Hotel and motel sleeping units and guest suites shall have a master control device that is capable of automatically switching off all installed luminaires and switched receptacles within 20 minutes after all occupants leave the room. **Exception:** Lighting and switched receptacles controlled by captive key override systems. 4. Supplemental task lighting, including permanently installed under-shelf or under-cabinet lighting, shall have a control device integral to the luminaires or be controlled by a wall-mounted control device provided that the control device is readily accessible. 5. Lighting for nonvisual applications, such as plant growth and food warming, shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. 6. Lighting equipment that is for sale or for demonstrations in lighting education shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space.					
CE192-16	**Section: C405.2.3, C405.4** ***AEI Summary: This proposal allows the option for lighting power density (LPD) to be reduced by 40% in daylight areas in exchange for an exception to daylight responsive controls in daylit areas.*** **Revise as follows:** **C405.2.3 Daylight-responsive controls.** *Daylight-responsive controls* complying with Section C405.2.3.1 shall be provided to control the electric lights within *daylight zones* in the following spaces: 1. Spaces with a total of more than 150 watts of *general lighting* within sidelight *daylight zones* complying with Section C405.2.3.2. *General lighting* does not include lighting that is required to have specific application control in accordance with Section C405.2.4. 2. Spaces with a total of more than 150 watts of *general lighting* within toplight *daylight zones* complying with Section C405.2.3.3. **Exceptions:** *Daylight responsive controls* are not required for the following: 1. Spaces in health care facilities where patient care is directly provided. 2. Dwelling units and sleeping units. 3. Lighting that is required to have specific application control in accordance with Section C405.2.4. 4. Sidelight ~~daylight zones~~ *daylight zones* on the first floor above grade in Group A-2 and Group M occupancies. 5. Buildings where the total connected lighting		X			Lighting power density reduction

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	power calculated under Section C405.4.1 is not greater than the adjusted interior lighting power allowance (*LPAadj*) calculated in accordance with Equation 4-9: *LPAadj* = [*LPAnorm* · (1.0 - 0.4 · *UDZFA* / *TBFA*)] (**Equation 4-9**) where: *LPAadj* = Adjusted building interior Lighting Power Allowance in Watts *LPAnorm* = Normal building Lighting Power Allowance in Watts calculated in accordance with Section C405.4.2 and reduced in accordance with Section C406.3 where option 2 is used to comply with the requirements of Section C406. *UDZFA* = Uncontrolled *daylight zone* floor area is the sum of all sidelight and toplight *daylight zones,* calculated in accordance with Sections C405.2.3.2 and C405.2.3.3, that do not have *daylight responsive controls*. *TBFA* = Total building floor area is the sum of all floor areas included in the Lighting Power Allowance calculation in Section C405.4.2. **C405.4 Interior lighting power requirements (Prescriptive).** A building complies with this section where its total connected lighting power calculated under Section C405.4.1 is not greater than the interior lighting power allowance calculated under Section C405.4.2.					
CE196-16	**Section(s): C405.2.5, C405.2.5.1 (New), C405.2.5.2 (New), C405.2.5.3 (New), C405.2.5.4 (New)** ***AEI Summary: This proposal addresses language that does not conform to ICC code and adds an exception for lighting controlled from within dwelling units.*** **Revise as follows:**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	C405.2.5 Exterior lighting controls. Exterior lighting systems shall be provided with controls that comply with Sections C405.2.5.1 through C405.2.5.4. Exceptions: 1. Lighting for ~~exterior applications other than emergency lighting that is intended to be automatically off during building operation, lighting specifically~~ covered vehicle entrances and exits from buildings and parking structures where required ~~to meet health and life safety requirements or decorative~~ for eye adaptation. 2. Decorative gas lighting systems ~~shall:~~ 3. Lighting controlled from within dwelling units. ~~1. Be provided with a control that automatically turns off the lighting as a function of available daylight.~~ ~~2. Where lighting the building façade or landscape, the lighting shall have controls that automatically shut off the lighting as a function of dawn/dusk and a set opening and closing time.~~ ~~3. Where not covered in Item 2, the lighting shall have controls configured to automatically reduce the connected lighting power by not less than 30 percent from not later than midnight to 6 a.m., from one hour after business closing to one hour before business opening or during any period when activity has not been detected for a time of longer than 15 minutes.~~ ~~All time switches shall be able to retain programming and the time setting during loss of power for a period of at least 10 hours.~~ Exception: ~~Lighting for covered vehicle entrances or exits from buildings or parking structures where required for safety, security or eye adaptation.~~ Add new text as follows: C405.2.5.1 **Daylight shutoff.** Lights shall be automatically turned off when daylight is present and satifies the lighting needs. C405.2.5.2 **Decorative lighting shutoff.** Building facade and landscape lighting shall automatically shut off from not later than one hour after business closing to not earlier than one hour before business opening, or longer. C405.2.5.3 **Lighting setback.** Lighting that is not controlled in accordance with Section C405.2.5.2 shall be controlled so that the total wattage of such lighting is automatically reduced by not less than 30 percent by selectively switching off or dimming luminaires at one of the following times: 1. From not later than midnight to not earlier than 6 a.m. 2. From not later than one hour after business closing to not earlier than one hour befor opening. 3. During any time where activity has not been detected for 15 minutes or more. C405.2.5.4 **Exterior time-switch control function.** Time-switch controls for exterior lighting with the following: 1. They shall have a clock that is not less than 7 day. 2. They shall be capable of being set for seven different day types per week. 3. They shall incorporate an automatic holiday setback feature. 4. They shall have program backup capabilities that prevent the loss of program and tim for not less than 10 hours, if power is interrupted.					
CE201-16	**Section: C405.4, C405.4.1, C405.4.2, C406.1, C406.3** ***AEI Summary: This proposal seeks to clarify the language regarding lighting power budget.*** **Revise as follows:** **C405.4 Interior lighting power requirements (Prescriptive).** A building complies with this section where its total connected		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	interior lighting power calculated under Section C405.4.1 is not greater than the interior lighting power allowance calculated under Section C405.4.2. **C405.4.1 Total connected interior lighting ower.** The total connected interior lighting power shall be determined in accordance with Equation 4-9. *TCLP* = [*SL* + *LV* + *LTPB* + Other] **(Equation 4-9)** where: *TCLP* = Total connected lighting power (watts). *SL* = Labeled wattage of luminaires for screw-in lamps. *LV* = Wattage of the transformer supplying low-voltage lighting. *LTPB* = Wattage of line-voltage lighting tracks and plugin busways as the specified wattage of the luminaires, but at least 30 W/lin. ft. (100 W/lin m), or the wattage limit of the system's circuit breaker, or the wattage limit of other permanent current-limiting devices on the system. Other = The wattage of all other luminaires and lighting sources not covered previously and associated with interior lighting verified by data supplied by the manufacturer or other *approved* sources. **Exceptions:** 1. The connected power associated with the following lighting equipment is not included in calculating total connected lighting power. 1.1. Professional sports arena playing field lighting. 1.2. Lighting in sleeping units, provided that the lighting complies with Section R404.1. 1.3. Emergency lighting automatically off during normal building operation. 1.4. Lighting in spaces specifically designed for use by occupants with special lighting needs, including those with visual impairment and other medical and age-related issues. 1.5. Lighting in interior spaces that have been specifically designated as a registered interior historic landmark. 1.6. Casino gaming areas. 2. Lighting equipment used for the following shall be exempt provided that it is in addition to general lighting and is controlled by an independent control device: 2.1. Task lighting for medical and dental purposes. 2.2. Display lighting for exhibits in galleries, museums and monuments. 3. Lighting for theatrical purposes, including performance, stage, film production and video production. 4. Lighting for photographic processes. 5. Lighting integral to equipment or instrumentation and installed by the manufacturer.					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	6. Task lighting for plant growth or maintenance. 7. Advertising signage or directional signage. 8. In restaurant buildings and areas, lighting for food warming or integral to food preparation equipment. 9. Lighting equipment that is for sale. 10. Lighting demonstration equipment in lighting education facilities. 11. Lighting *approved* because of safety or emergency considerations, inclusive of exit lights. 12. Lighting integral to both open and glass-enclosed refrigerator and freezer cases. 13. Lighting in retail display windows, provided the display area is enclosed by ceiling-height partitions. 14. Furniture-mounted supplemental task lighting that is controlled by automatic shutoff. 15. Exit signs. C405.4.2 **Interior lighting power allowance.** *No change to text.* C406.1 **Requirements.** Buildings shall comply with at least one of the following: 1. More efficient HVAC performance in accordance with Section C406.2. 2. Reduced lighting power ~~density system~~ in accordance with Section C406.3. 3. Enhanced lighting controls in accordance with Section C406.4. 4. On-site supply of renewable energy in accordance with Section C406.5. 5. Provision of a dedicated outdoor air system for certain HVAC equipment in accordance with Section C406.6. 6. High-efficiency service water heating in accordance with Section C406.7. ~~C406.3 Reduced lighting power density.~~ The total connected interior lighting power ~~(watts) of the building~~ calculated in accordance with Section C405.4.1 shall be ~~determined by using~~ less than 90 percent of the ~~lighting power values specified in Table C405.4.2(1) times the floor area for the building types, or by using 90 percent of the interior~~ total lighting power allowance calculated ~~by the Space-by-Space Method~~ in accordance with Section C405.4.2.					
[CE202-16](#)	**Section: C202, C405.4.1** ***AEI Summary*: This proposal clarifies outdated lighting language.** **Delete without substitution:** ~~**LOW-VOLTAGE LIGHTING.** Lighting equipment powered through a transformer such as a cable conductor, a rail conductor and track lighting.~~ **Revise as follows:** **C405.4.1 Total connected interior lighting power.** The total connected interior lighting power shall be determined in accordance with Equation 4-9.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TCLP = [~~*SL*~~*LVL* ~~+ *LV* + *LTPB*~~ **+ BLL + LED + TRK** + Other] **(Equation 4-9)** where: *TCLP* = Total connected lighting power (watts). ~~*SL*~~ = ~~Labeled wattage of luminaires for screw-in lamps.~~ ~~Wattage~~ For luminaires with lamps connected directly to building power, such as line ~~*LV*~~ *LVL* = voltage lamps , the rated wattage of the ~~transformer supplying low voltage lighting~~ lamp. *BLL* = For luminaires incorporating a ballast or transformer, the rated input wattage of the ballast or transformer when operating that lamp. *LED* = For light emitting diode luminaires with either integral or remote drivers, the rated wattage of the luminaire. ~~Wattage~~ For lighting track, cable conductor, rail conductor, and plug-in busway systems that allow the addition and relocation of ~~line-voltage lighting tracks and plug-in busways as~~ luminaires without rewiring, the wattage shall be one of the following: 1. The specified wattage of the luminaires, but ~~at least~~ not less than 30 W/lin. ft. (100 ~~*LTPB*~~ *TRK* = W/lin m)~~, or the~~. 2. The wattage limit of the ~~system's circuit breaker, or~~ permanent current-limiting devices protecting the system. 3. The wattage limit of ~~other permanent current limiting devices on~~ the transformer supplying the system. Other = The wattage of all other luminaires and lighting sources not covered previously and associated with interior lighting verified by data supplied by the manufacturer or other *approved* sources. Exceptions: 1. The connected power associated with the following lighting equipment is not included in calculating total connected lighting power. 1.1. Professional sports arena playing field lighting. 1.2. Lighting in sleeping units, provided that the lighting complies with Section R404.1. 1.3. Emergency lighting automatically off during normal building operation. 1.4. Lighting in spaces specifically designed for use by occupants with special lig including those with visual impairment and other medical and age-related iss 1.5. Lighting in interior spaces that have been specifically designated as a registe historic landmark. 1.6. Casino gaming areas. 1.7. Mirror lighting in dressing rooms. 2. Lighting equipment used for the following shall be exempt provided that it is in ac general lighting and is controlled by an independent control device: 2.1. Task lighting for medical and dental purposes. 2.2. Display lighting for exhibits in galleries, museums and monuments. 3. Lighting for theatrical purposes, including performance, stage, film production an production. 4. Lighting for photographic processes. 5. Lighting integral to equipment or instrumentation and installed by the manufactur 6. Task lighting for plant growth or maintenance. 7. Advertising signage or directional signage. 8. In restaurant buildings and areas, lighting for food warming or integral to food pre equipment. 9. Lighting equipment that is for sale. 10. Lighting demonstration equipment in lighting education facilities. 11. Lighting *approved* because of safety or emergency considerations, inclusive of e 12. Lighting integral to both open and glass-enclosed refrigerator and freezer cases. 13. Lighting in retail display windows, provided the display area is enclosed by ceilin partitions. 14. Furniture-mounted supplemental task lighting that is controlled by automatic shut 15. Exit signs.					
CE203-16	**Section: C405.4.1** ***AEI Summary: This proposal reorganizes all interior lighting power exceptions into one list.***		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **C405.4.1 Total connected interior lighting power.** The total connected interior lighting power shall be determined in accordance with Equation 4-9. *TCLP* = [*SL* + *LV* + *LTPB* + Other] **(Equation 4-9)** where: *TCLP* = Total connected lighting power (watts). *SL* = Labeled wattage of luminaires for screw-in lamps. *LV* = Wattage of the transformer supplying low-voltage lighting. *LTPB* = Wattage of line-voltage lighting tracks and plugin busways as the specified wattage of the luminaires, but at least 30 W/lin. ft. (100 W/lin m), or the wattage limit of the system's circuit breaker, or the wattage limit of other permanent current-limiting devices on the system. Other = The wattage of all other luminaires and lighting sources not covered previously and associated with interior lighting verified by data supplied by the manufacturer or other *approved* sources. ~~Exceptions 1.~~ The connected power associated with the following lighting equipment and applications is not included in calculating total connected lighting power. ~~1.1~~ 1. Television broadcast lighting for playing areas in sports arenas. Professional sports arena playing field lighting. ~~1.2~~ 2. Lighting in sleeping units, provided the lighting complies with Section R404.1. ~~1.3~~. 3. Emergency lighting automatically off during normal business hours. ~~1.4~~. 4. Lighting in spaces specifically designed for use by occupants with special lighting needs, including those with visual impairment and other medical and age-related issues. ~~1.5. Lighting in interior spaces that have been specifically designated as a registered interior historic landmark.~~ ~~1.6~~. 5. Casino gaming areas. ~~1.7~~. 6. Mirror lighting in dressing rooms. ~~2. Lighting equipment used for the following shall be exempt provided that it is in addition to general~~					

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	~~lighting and is controlled by an independent control device.~~ ~~2.~~1. 7. Task lighting for medical and dental purposes that is in addition to general lighting and controlled by an independent control device. ~~2.~~2. 8. Display lighting for exhibits in galleries, museums and monuments that is in addition to general lighting and controlled by an independent control device. ~~3.~~ 9. Lighting for theatrical purposes, including performance, state, film production and video production. ~~4.~~ 10. Lighting for photographic processes. ~~5~~11. Lighting integral to equipment or instrumentation and installed by the manufacturer. ~~6.~~ 12. Task lighting for plant growth or maintenance. ~~7.~~13. Advertising signage or directional signage. ~~8.~~ 14. ~~In restaurant buildings and areas~~, Lighting for food warming ~~or integral to food preparation equipment~~ ~~9.~~15. Lighting equipment that is for sale. ~~10.~~ 16. Lighting demonstration equipment in lighting education facilities. ~~11.~~ 17. Lighting approved because of safety ~~or emergency~~ considerations, ~~inclusive of exit lights~~. ~~12. Lighting integral to both open and glass enclosed refrigerator and freezer cases.~~ ~~13.~~ 18. Lighting in retail display windows, provided the display area is enclosed by ceiling height partitions. ~~14.~~19. Furniture-mounted supplemental task lighting that is controlled by automatic shutoff. ~~15.~~ 20. Exit signs.					
CE204-16	**Section: C405.4.1** ***AEI Summary: This proposal requires that at least 30 W/ft be accounted to track lighting because track lighting does not have a fixed power consumption.*** **Revise as follows:** **C405.4.1 Total connected interior lighting power.** The total connected interior lighting power shall be determined in accordance with Equation 4-9.	X			$5.00 per watt of reduction	Reduced construction code and cost

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TCLP = [*SL* + *LV* + *LTPB* + Other] **(Equation 4-9)** where: *TCLP* = Total connected lighting power (watts). *SL* = Labeled wattage of luminaires for screw-in lamps. *LV* = Wattage of the transformer supplying low-voltage lighting. *LTPB* = Wattage of line-voltage lighting tracks and plugin busways as the specified wattage of the luminaires, but at least ~~30~~ 8 W/lin. ft. (~~100~~ 25 W/lin m), or the wattage limit of the system's circuit breaker, or the wattage limit of other permanent current-limiting devices on the system. Other = The wattage of all other luminaires and lighting sources not covered previously and associated with interior lighting verified by data supplied by the manufacturer or other *approved* sources. **Exceptions:** 1. The connected power associated with the following lighting equipment is not included in calculating total connected lighting power. 1.1. Professional sports arena playing field lighting. 1.2. Lighting in sleeping units, provided that the lighting complies with Section R404.1. 1.3. Emergency lighting automatically off during normal building operation. 1.4. Lighting in spaces specifically designed for use by occupants with special lighting needs, including those with visual impairment and other medical and age-related issues. 1.5. Lighting in interior spaces that have been specifically designated as a registered interior historic landmark. 1.6. Casino gaming areas. 1.7. Mirror lighting in dressing rooms. 2. Lighting equipment used for the following shall be exempt provided that it is in addition to general lighting and is controlled by an independent control device: 2.1. Task lighting for medical and dental purposes. 2.2. Display lighting for exhibits in galleries, museums and monuments. 3. Lighting for theatrical purposes, including performance, stage, film production and video production. 4. Lighting for photographic processes. 5. Lighting integral to equipment or instrumentation and installed by the manufacturer. 6. Task lighting for plant growth or maintenance. 7. Advertising signage or directional signage. 8. In restaurant buildings and areas, lighting for food warming or integral to food preparation equipment. 9. Lighting equipment that is for sale. 10. Lighting demonstration equipment in lighting education facilities. 11. Lighting *approved* because of safety or emergency considerations, inclusive of exit lights. 12. Lighting integral to both open and glass-enclosed refrigerator and freezer cases. 13. Lighting in retail display windows, provided the display area is enclosed by ceiling-height partitions. 14. Furniture-mounted supplemental task lighting that is controlled by automatic shutoff. 15. Exit signs.					
CE205-16	**Section: C405.4.2** ***AEI Summary*: This proposal adds clarifying footnotes to the LPD Tables to result in a more consistent use and application of the code.*** **Revise as follows:** (Use hyperlink to view revisions and tables)		X			Clarification
CE206-16	**Section: C405.4.2** ***AEI Summary*: This proposal revises the Lighting Power Density (LPD) allowances to be appropriate for currently available lighting technology.*** **Revise as follows:** (Use hyperlink to view revisions and tables)	X		X	$1.00 per increase/ decrease of specific area	Efficiency
CE207-16	**Section: C405.4.2**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	AEI Summary: This proposal defines classes of Facilities for Sports Arena playing area Lighting Power Allowances. **Revise as follows:** (Use hyperlink to view revisions and tables)					
CE209-16	**Section(s): C405.4.2.2.1** ***AEI Summary: This proposal allows additional lighting wattage for display lighting in retail areas to acknowledge the need for bright merchandise lighting.*** **Revise as follows:** **C405.4.2.2.1 Additional interior lighting power.** Where using the Space-by-Space Method, an increase in the interior lighting power allowance is permitted for specific lighting functions. Additional power shall be permitted only where the specified lighting is installed and automatically controlled separately from the general lighting, to be turned off during nonbusiness hours. This additional power shall be used only for the specified luminaires and shall not be used for any other purpose. An increase in the interior lighting power allowance is permitted in the following cases: 1. For lighting equipment to be installed in sales areas specifically to highlight merchandise, the additional lighting power shall be determined in accordance with Equation 4-10. ~~Additional interior lighting power allowance = 500 watts + (Retail Area 1 • 0.6 W/ft 2) + (Retail Area 2 • 0.6 W/ft 2) + (Retail Area 3 • 1.4 W/ft 2) + (Retail Area 4 • 2.5 W/ft 2)~~ ~~(Equation 4-10)~~ Additional interior lighting power allowance = 300 W + (*Retail Area 1* • 0.36 W/ft 2) + (*Retail Area 2* • (+ (*Retail Area 3* • 0.84 W/ft 2) + (*Retail Area 4* • 1.87 W/ft 2) For SI units: Additional interior lighting power allowance = 300 W + (*Retail Area 1* • 3.87 W/m2) + (*Retail Area 2* • 3. (*Retail Area 3* • 9.04 W/m2) + (*Retail Area 4* • 20.1 W/m2) **(Equation 4-10)** where: Retail Area 1 = The floor area for all products not listed in Retail Area 2, 3 or 4. Retail Area 2 = The floor area used for the sale of vehicles, sporting goods and small electroni Retail Area 3 = The floor area used for the sale of furniture, clothing, cosmetics and artwork. Retail Area 4 = The floor area used for the sale of jewelry, crystal and china. **Exception:** Other merchandise categories are permitted to be included in Retail Area 4, provided that justification documenting the need for additional lighting power based inspection, contrast, or other critical display is *approved* by the code official.			X	$5.00 per SF of building	Better display lighting

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. For spaces in which lighting is specified to be installed in addition to the general lighting for the purpose of decorative appearance or for highlighting art or exhibits, provided that the additional lighting power shall be not more than 1.0 ~~w~~W/ft^2 ~~(~~ (10.7 ~~w~~W/m^2) of such spaces.					
CE210-16	**Section: C405.4.2.2.1** ***AEI Summary: This proposal allows additional lighting wattage for decorative lighting to acknowledge the need for highlighting art or architectural features.*** **Revise as follows:** **C405.4.2.2.1 Additional interior lighting power.** Where using the Space-by-Space Method, an increase in the interior lighting power allowance is permitted for specific lighting functions. Additional power shall be permitted only where the specified lighting is installed and automatically controlled separately from the general lighting, to be turned off during nonbusiness hours. This additional power shall be used only for the specified luminaires and shall not be used for any other purpose. An increase in the interior lighting power allowance is permitted in the following cases: 1. For lighting equipment to be installed in sales areas specifically to highlight merchandise, the additional lighting power shall be determined in accordance with Equation 4-10. Additional interior lighting power allowance = 500 watts + (Retail Area 1 ~~• 0.6 W/ft 2) + (Retail Area 2 • 0.6 W/ft 2) + (Retail Area 3 • 1.4 W/ft 2) + (Retail Area 4 • 2.5 W/ft 2)~~ **(Equation 4-10)** Additional interior lighting power allowance = 500 watts + (Retail Area 1 • 0.6 W/ft 2) + (Retail Area 2 • 0.6 W/ft 2) + (Retail Area 3 • 1.4 W/ft 2) + (Retail Area 4 • 2.5 W/ft 2) **(Equation 4-10)** where: Retail Area 1 = The floor area for all products not listed in Retail Area 2, 3 or 4. Retail Area 2 = The floor area used for the sale of vehicles, sporting goods and small electronics. Retail Area 3 = The floor area used for the sale of furniture, clothing, cosmetics and artwork. Retail Area 4 = The floor area used for the sale of jewelry, crystal and china. **Exception:** Other merchandise categories are permitted to be included in Retail Areas 2 through 4, provided that justification documenting the need for additional lighting power based on visual inspection, contrast, or other critical display is *approved* by the code official. 2. For spaces in which lighting is specified to be installed in addition to the general lighting for the purpose of decorative appearance or for highlighting art or exhibits, provided that the additional lighting power shall be not more than ~~1.0 w~~0.9 W/ft^2 ~~(10.7 w~~ (9.7 W/m2) in lobbies o exhibition areas and not more than 0.75 W/ft2 (8.1 W/m^2) ~~of such~~ in other spaces.			X	$5.00 per SF of building	Better display lighting

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE211-16	**Section: C405.5, C405.5.1, C405.5.2 (New), C405.5.2(3) (New), C405.5.2.1 (New)** ***AEI Summary: This proposal is intended as an editorial re-write to make the exterior lighting power section read like the interior lighting power section.*** **Revise as follows:** **C405.5 Exterior lighting power requirements (Mandatory).** ~~Where the power for~~ A building complies with this section where its total connected exterior lighting power calculated under Section C405.5.1 is ~~supplied through~~ not greater than the ~~energy service to the building, all~~ exterior lighting ~~shall comply with~~ power allowance calculated under Section ~~C405.5.1~~C405.5.2. **Exception~~:~~** ~~Where *approved* because of historical, safety, signage or emergency considerations.~~ **~~C405.5.1 Exterior~~ Total connected building lighting power.** The total exterior connected lighting power ~~allowance for~~ shall be the total maximum rated wattage of all ~~exterior building applications~~ lighting that is ~~the sum of~~ powered through the ~~base site allowance plus the individual allowances for areas that are~~ energy service to ~~be illuminated and are permitted in Table C405.5.1(2) for the applicable lighting zone. Trade-offs are allowed only among exterior lighting applications listed in Table C405.5.1(2), in the Tradable Surfaces section. The lighting zone for~~ the building ~~exterior is determined from Table C405.5.1(1) unless otherwise specified by the local jurisdiction~~. **Exception:** Lighting used for the following ~~exterior~~ applications ~~is exempt where equipped with a control device independent of the control of the nonexempt lighting:~~ shall not be included. 1. Lighting approved because of safety considerations. 2. Emergency lighting automatically off during normal business operation. 3. Exit signs. 4. Specialized signal, directional and marker lighting associated with transportation. 5. Advertising signage or directional signage. 6. Integral to equipment or instrumentation and is installed by its manufacturer. 7. Theatrical purposes, including performance, stage, film production and video production.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	8. Athletic playing areas. 9. Temporary lighting. 10. Industrial production, material handling, transportation sites and associated storage areas. 11. Theme elements in theme/amusement parks. 12. ~~Used to highlight features of public monuments and registered historic landmark structures or buildings.~~ 12. Used to highlight features of public monuments. **Add new text as follows:** **C405.5.2 Exterior lighting power allowance** The total exterior lighting power allowance is the sum of the base site allowance plus the individual allowances for areas that are to be illuminated by lighting that is powered through the energy service to the building. Lighting power allowances are as specified in Table C405.5.2(2). The lighting zone for the building exterior is determined in accordance with Table C405.5.2(1) unless otherwise specified by the authority having jurisdiction. (Use hyperlink to view tables)					
CE212-16	**Section: C405.5.1** ***AEI Summary: This proposal adds some minor types of lighting to be exempted from the exterior lighting power limits.*** **Revise as follows:** **C405.5.1 Exterior building lighting power.** The total exterior lighting power allowance for all exterior building applications is the sum of the base site allowance plus the individual allowances for areas that are to be illuminated and are permitted in Table C405.5.1(2) for the applicable lighting zone. Trade-offs are allowed only among exterior lighting applications listed in Table C405.5.1(2), in the Tradable Surfaces section. The lighting zone for the building exterior is determined from Table C405.5.1(1) unless otherwise specified by the local jurisdiction. **Exception:** Lighting used for the following exterior applications is exempt where equipped with a control device independent of the control of the nonexempt lighting: 1. Specialized signal, directional and marker lighting associated with transportation. 2. Advertising signage or directional signage. 3. Integral to equipment or instrumentation and is installed by its manufacturer.		X			Lighting exemptions

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	4. Theatrical purposes, including performance, stage, film production and video production. 5. Athletic playing areas. 6. Temporary lighting. 7. Industrial production, material handling, transportation sites and associated storage areas. 8. Theme elements in theme/amusement parks. 9. ~~Used to highlight features of public monuments and registered historic landmark structures or buildings.~~ 9. Used to highlight features of art, public monuments, and the National flag. 10. Lighting for water features and swimming p ools. 11. Lighting that is controlled from within dwelling units, where the lighting complies with Section R404.1.					
CE213-16	**Section: C405.5.2 (New)** ***AEI Summary: This proposal will make the lighting section of commercial code consistent with the lighting section of the residential code section.*** **Add new text as follows:** **C405.5.2 Lighting equipment (Mandatory)** Gas-fired lighting appliances shall not be equipped with continuously burning pilot ignition systems.			X	$500.00 per appliance	Efficiency/ Safety
CE215-16	**Section: C405.5.1** ***AEI Summary: This proposal revises the Lighting Power Density (LPD) allowances to be appropriate for currently available lighting technology.*** **Revise as follows:** (Use hyperlink to view tables and revisions)		X			Update/ Revision
CE220-16	**Section: C405.7** ***AEI Summary: This proposal is a simple editorial connection between sections relative to regulated transformers listed in the table.*** **Revise as follows:** **C405.7 Electrical transformers (Mandatory).** ~~Electric~~ Low-voltage dry-type distribution electric transformers shall meet the minimum efficiency requirements of Table C405.7 as tested and rated in accordance with the test procedure listed in DOE 10 CFR 431. The		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	efficiency shall be verified through certification under an approved certification program or, where a certification program does not exist, the equipment efficiency ratings shall be supported by data furnished by the transformer manufacturer. **Exceptions:** The following transformers are exempt: 1. Transformers that meet the *Energy Policy Act of 2005* exclusions based on the DOE 10 CFR 431 definition of special purpose applications. 2. Transformers that meet the *Energy Policy Act of 2005* exclusions that are not to be used in general purpose applications based on information provided in DOE 10 CFR 431. 3. Transformers that meet the *Energy Policy Act of 2005* exclusions with multiple voltage taps where the highest tap is at least 20 percent more than the lowest tap. 4. Drive transformers. 5. Rectifier transformers. 6. Auto-transformers. 7. Uninterruptible power system transformers. 8. Impendance transformers. 9. Regulating transformers. 10. Sealed and non-ventilating transformers. 11. Machine tool transformers. 12. Welding transformers. 13. Grounding transformers. 14. Testing transformers. TABLE C405.7 MINIMUM NOMINAL EFFICIENCY LEVELS FOR 10 CFR 431 LOW-VOLTAGE DRY-TYPE DISTRIBUTION TRANSFORMERS					

SINGLE-PHASE TRANSFORMERS		THREE-PHASE TRANSFORMERS	
kVA[a]	Efficiency (%)[b]	kVA[a]	Efficiency (%)[b]
15	97.7	15	97.0
25	98.0	30	97.5
37.5	98.2	45	97.7
50	98.3	75	98.0
75	98.5	112.5	98.2
100	98.6	150	98.3
167	98.7	225	98.5
250	98.8	300	98.6
333	98.9	500	98.7
		750	98.8
		1000	98.9

a. kiloVolt-Amp rating.
b. Nominal efficiencies shall be established in accordance with the DOE 10 CFR 431 test procedure for low-voltage dry-type transformers.

Table 3. 2018 IECC Commercial Changes Cost Impact

CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE221-16	**Section: C405.7** ***AEI Summary: This proposal updates the minimum efficiency values required for newly purchased low-voltage dry-type transformers, and ensures that the 2018 IECC is updated with the latest information.*** **Revise as follos:** TABLE C405.7 MINIMUM NOMINAL EFFICIENCY LEVELS FOR 10 CFR 431 LOW-VOLTAGE DRY-TYPE DISTRIBUTION TRANSFORMERS SINGLE-PHASE TRANSFORMERS / THREE-PHASE TRANSFORMERS kVA[a] | Efficiency (%)[b] | kVA[a] | Efficiency (%)[b] 15 | 97.70 | 15 | ~~97.0~~ 97.89 25 | 98.00 | 30 | ~~97.5~~ 98.23 37.5 | 98.20 | 45 | ~~97.7~~ 98.40 50 | 98.30 | 75 | ~~98.0~~ 98.60 75 | 98.50 | 112.5 | ~~98.2~~ 98.74 100 | 98.60 | 150 | ~~98.3~~ 98.83 167 | 98.70 | 225 | ~~98.5~~ 98.94 250 | 98.80 | 300 | ~~98.6~~ 99.02 333 | 98.90 | 500 | ~~98.7~~ 99.14 | | 750 | ~~98.8~~ 99.23 | | 1000 | ~~98.9~~ 99.28 a. kiloVolt-Amp rating. b. Nominal efficiencies shall be established in accordance with the DOE 10 CFR 431 test procedure for low-voltage dry-type transformers.		X			Efficiency value updates
CE223-16	**Section: C202 (New), C405.8** ***AEI Summary: This proposal updates two motor efficiency tables to be consistent with the new federal standards.*** **Delete without substitution:** (Use hyperlink to view tables and revisions)			X	$2.00 per SF of building	Consistency with Federal Standards
CE209-16	**Section(s): C405.9.2** ***AEI Summary: This proposal reduces the speed or power factor of escalators and moving walks, when not in use or during light use, to save energy.*** **Revise as follows:** **C405.9.2 Escalators and moving walks.** Escalators and moving walks shall comply with ASME A17.1/CSA B44 and shall have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers. **Exception:** A power factor controller that reduces operating voltage in response to light loading conditions is an alternative to the reduced speed function.		X			Efficiency

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
CE226-16	**Section: C202 (New), C405.10 (New)** ***AEI Summary: This proposal will make the IECC consistent with other standards in addressing voltage drop.*** **Add new definition as follows:** **VOLTAGE DROP.** A decrease in voltage caused by losses in the wiring systems that connect the power source to the load. **Add new text as follows:** **C405.10 Voltage drop in feeders and branch circuits.** The total voltage drop across the combination of feeders and branch circuits shall not exceed 5 percent.			X	$1.00 per SF of building	Efficiency
CE230-16	**Section: C406, C406.1, C406.8 (New), C406.9 (New)** ***AEI Summary: This proposal clarifies by striking the words "additional" and "option" from the title of the section to avoid confusion.*** **Revise as follows:**		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	SECTION C406 ~~ADDITIONAL~~ EFFICIENCY ~~PACKAGE OPTIONS~~ PACKAGES **C406.1 Requirements.** Buildings shall comply with at least one of the following: 1. More efficient HVAC performance in accordance with Section C406.2. 2. Reduced lighting power density system in accordance with Section C406.3. 3. Enhanced lighting controls in accordance with Section C406.4. 4. On-site supply of renewable energy in accordance with Section C406.5. 5. Provision of a dedicated outdoor air system for certain HVAC equipment in accordance with Section C406.6. 6. High-efficiency service water heating in accordance with Section C406.7. 7. Enhanced envelope performance in accordance with Section C406.8. 8. Reduced air infiltration in accordance with Section C406.9 9. Increased lamp efficacy in dwelling units in accordance with Section C406.10. **Add new text as follows:** **C406.8 Enhanced envelope performance.** The total UA of the building thermal envelope as designed shall be not less than 15 percent below the total UA of the building thermal envelope in accordance with Section C402.1.5. **C406.9 Reduced air infiltration.** Air infiltration shall be verified by whole building pressurization testing conducted in accordance with ASTM E779 or ASTM E1827 by an independent third party. The measured air leakage rate of the building envelope shall not exceed 0.25 cfm/ft2 (2.0 L/s•m2) under a pressure differential of 0.3 in. water (75 Pa), with the calculated surface area being the sum of the above and below grade building envelope. A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the code official and the building owner. **Exception.** For buildings having over 250,000 square feet (25,000 m2) of conditioned floor area, air leakage testing need not be conducted on the whole building where testing is conducted on representative above- grade sections of the building. Tested areas shall total not less than 25 percent of the conditioned floor area and shall be tested in accordance with this section. **C406.10 Increased lamp efficiency in dwelling unit.** To use the compliance method of Section C406.10.1, buildings shall be of the following types: 1. Group R-1: Boarding houses, hotels and motels. 2. Group R-2: Buildings with residential occupancies. **C406.10.1 Lamp fraction.** Ninety-five percent of the lamps in permanently installed lighting fixtures in dwelling units shall be lamps with a minimum efficacy of: 1. 90 lumens per watt for lamps over 40 watts; 2. 60 lumens per watt for lamps over 15 watts to 40 watts; 3. 45 lumens per watt for lamps over 5 watts to 15 watts; and 4. 30 lumens per watt for lamps 5 watts and less.					
CE242-16	**Section: C406.5** ***AEI Summary*: This proposal provides a minimum for both types of renewable energy equipment.** **Revise as follows:** **C406.5 On-site renewable energy.** ~~Total~~ The total minimum ratings of on-site renewable energy systems shall ~~comply with~~ be one of the following: 1. ~~Provide not~~ Not less than 1.71 Btu/h per square foot (5.4 W/m^2) or 0.50 watts per square foot (5.4 W/m^2) of conditioned floor area.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. ~~Provide not~~ Not less than 3 percent of the energy used within the building for building mechanical and service water heating equipment and lighting regulated in Chapter 4.					
CE246-16	**Section: 406.7.1** ***AEI Summary: This proposal clarifies minimum percentage requirements, removes the combined heat and power system options, and expands the qualifying renewable energy technology options.*** **Revise as follows:** **C406.7.1 Load fraction.** The building service water-heating system shall have one or more of the following that are sized to provide not less than 60 percent of the building's annual hot water requirements, or sized to provide 100 percent of the building's annual hot water requirements if the building shall otherwise comply with Section C403.4.5. 1. Waste heat recovery from service hot water, heat- recovery chillers, building equipment, or process equipment~~, or a combined heat and power system~~. 2. ~~Solar~~ *On site renewable energy* water-heating systems.		X			Clarification/ Expansion
CE248-16 Part I	**Section: C407.1** ***AEI Summary: This proposal provides an exception for the energy used to recharge or refuel a vehicle that is used for off-site transportation purposes.*** **Revise as follows:** **C407.1 Scope.** This section establishes criteria for compliance using total building performance. The following systems and loads shall be included in determining the total building performance: heating systems, cooling systems, service water heating, fan systems, lighting power, receptacle loads and process loads. **Exception:** Energy used to recharge or refuel vehicles that are used for on-road and off-site transportation purposes.		X			Clarification
CE274-16 Part I	**Section: C501.4** ***AEI Summary: This proposal corrects an oversight regarding the compliance of buildings that are relocated, altered, repaired, or experienced occupancy changes.***		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **C501.4 Compliance.** *Alterations*, *repairs*, *additions* and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions for *alterations*, *repairs*, *additions* and changes of occupancy or relocation, respectively, in this code and in the *International Building Code*, *International Existing Building Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *International Plumbing Code*, *International Property Maintenance Code*, *International Private Sewage Disposal Code* and NFPA 70.					
CE276-16	**Section: C502.1, C503.1** ***AEI Summary: This proposal, regarding additions and alterations, was modified to require application of C405.2 without requiring the application of Sections C402, C403, C404 and C405.*** **Revise as follows:** **C502.1 General.** *Additions* to an existing building, building system or portion thereof shall conform to the provisions of this code as those provisions relate to new construction without requiring the unaltered portion of the existing building or building system to comply with this code. *Additions* shall not create an unsafe or hazardous condition or overload existing building systems. An *addition* shall be deemed to comply with this code if the *addition* alone complies or if the existing building and *addition* comply with this code as a single building. *Additions* shall comply with ~~Section~~ Sections C402, C403, C404, C405 and C502.2. *Additions* complying with ANSI/ASHRAE/IESNA 90.1. need not comply with Sections C402, C403, C404 and C405. **C503.1 General.** *Alterations* to any building or structure shall comply with the requirements of Section C503 and the code for new construction. *Alterations* shall be such that the existing building or structure is no less conforming to the provisions of this code than the existing building or structure was prior to the *alteration*. *Alterations* to an existing building, building system or portion thereof shall conform to the provisions of this code as those provisions relate to new construction without requiring the unaltered portions of the existing building or building system to comply with this code. *Alterations* shall not create an unsafe or hazardous condition or overload existing building systems.		X			Clarification

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Alterations complying with ANSI/ASHRAE/IESNA 90.1. need not comply with Sections C402, C403, C404 and C405. **Exception:** The following *alterations* need not comply with the requirements for new construction, provided the energy use of the building is not increased: 1. Storm windows installed over existing *fenestration*. 2. Surface-applied window film installed on existing single-pane *fenestration* assemblies reducing solar heat gain, provided the code does not require the glazing or *fenestration* to be replaced. 3. Existing ceiling, wall or floor cavities exposed during construction, provided that these cavities are filled with insulation. 4. Construction where the existing roof, wall or floor cavity is not exposed. 5. *Roof recover*. 6. *Air barriers* shall not be required for *roof recover* and roof replacement where the *alterations* or renovations to the building do not include *alterations*, renovations or *repairs* to the remainder of the building envelope. 7. *Alterations* that replace less than 50 percent of the luminaires in a space, provided that such *alterations* do not increase the installed interior lighting power.					
CE285-16	**Section: C503.2, C505.1** ***AEI Summary*: This proposal allows a limited amount of "wiggle room" for buildings undergoing a change in space conditioning or change in use, where they use either the component performance tradeoff method or the total building performance method to determine energy use.*** **Revise as follows:** **C503.2 Change in space conditioning.** Any nonconditioned or low-energy space that is altered to become conditioned space shall be required to be brought into full compliance with this code. **Exceptions:** 1. Where the component performance alternative in Section C402.1.5 is used to comply with this section, the proposed UA shall be not greater than 110 percent of the target UA.		X			Design Flexibility

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. Where the total building performance option in Section C407 is used to comply with this section, the annual energy cost of the proposed design shall be not greater 110 percent of the annual energy cost otherwise permitted by Section C407.3. **C505.1 General.** Spaces undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with this code. Where the use in a space changes from one use in Table C405.4.2(1) or C405.4.2(2) to another use in Table C405.4.2(1) or C405.4.2(2), the installed lighting wattage shall comply with Section C405.4. **Exceptions:** 1. Where the component performance alternative in Section C402.1.5 is used to comply with this section, the proposed UA shall be not greater than 110 percent of the target UA. 2. Where the total building performance option in Section C407 is used to comply with this section, the annual energy cost of the proposed design shall be not greater than 110 percent of the annual energy cost otherwise permitted by Section C407.3.					
CE294-16	**Section: Appendix X (New)** ***AEI Summary: This proposal adds a new non-mandatory Appendix to the IECC – Commercial Code relative to Solar Ready Zones.*** **Add new text as follows:**		X			Appendix Update

Table 3. 2018 IECC Commercial Changes Cost Impact						
CODE CHANGE #	2018 IECC COMMERCIAL CHANGE SUMMARY	IECC COMMERCIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	APPENDIX (X) SOLAR READY ZONE - COMMERCIAL *(The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.)* SECTION XA101 SCOPE **XA101.1 General.** These provisions shall be applicable for new construction where solar ready provisions are required. Add new definition as follows: SECTION XA102 GENERAL DEFINITIONS **SOLAR READY ZONE.** A section or sections of the roof or building overhang designated and reserved for the future installation of a solar photovoltaic or solar thermal system. Add new text as follows: SECTION XA103 SOLAR READY ZONE **XA103.1 General.** A solar ready zone shall be located on the roof of buildings that are five stories or less in height above grade plane, and are oriented between 110 degrees and 270 degrees of true north or have low-slope roofs. Solar ready zones shall comply with Sections XA103.2 through XA103.8. **Exceptions:** 1. A building with a permanently installed on-site renewable energy system. 2. A building with a solar ready zone that is shaded for more than 70 percent of daylight hours annually. 3. A building where the licensed design professional certifies that the incident solar radiation available to the building is not suitable for a solar ready zone 4. A building where the licensed design professional certifies that the solar zone area required by Section XA103.3 cannot be met because of extensive rooftop equipment, skylights, vegetative roof areas or other obstructions. **XA103.2 Construction document requirements for solar ready zone.** Construction documents shall indicate the *solar ready zone.* **XA103.3 Solar ready zone area.** The total *solar ready zone* area shall be not less than 40% of the roof area calculated as the horizontally projected gross roof area less the area covered by skylights, occupied roof decks, vegetative roof areas and mandatory access or set back areas as required by the *International Fire Code*. The *solar ready zone* shall be a single area or smaller separated sub-zone areas. Each sub-zone shall be not less than 5 feet in width in the narrowest dimension. **XA103.4 Obstructions.** *Solar ready zones* shall be free from obstructions, including pipes, vents, ducts, HVAC equipment, skylights, and roof mounted equipment. **XA103.5 Roof loads and documentation.** A collateral dead load of not less than 5 pounds per square foot (5 psf) shall be included in the gravity and lateral design calculations for the solar ready zone. The structural design loads for roof dead load and roof live load shall be indicated on the construction documents. **XA103.6 Interconnection pathway.** Construction documents shall indicate pathways for routing of conduit or piping from the *solar ready zone* to the electrical service panel or service hot water system. **XA103.7 Electrical service reserved space.** The main electrical service panel shall have a reserved space to allow installation of a dual pole circuit breaker for future solar electric installation and shall be labeled "For Future Solar Electric". The reserved space shall be positioned at the end of the panel that is opposite from the panel supply conductor connection. **XA103.8 Construction documentation certificate.** A permanent certificate, indicating the *solar ready zone* and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.					

*For prescriptive Code changes only.

APPENDIX D

Table 4. 2018 IECC Residential Changes Cost Impact						
CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RE90-16	**Section: R402.4.2 (IRC N1102.4.2)** ***AEI Summary: The intent of this code is to ensure a better seal on appliances, specifically fireplaces, thereby decreasing air infiltration and exfiltration.*** **Revise as follows:** **R402.4.2 (N1102.4.2) Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace. ~~Where using tight-fitting doors on masonry fireplaces, the doors shall be listed and labeled in accordance with UL 907.~~		X			Clarification
RE99-16	**Section: R403.3 (IRC N1103.3), R403.3.6 (New) [IRC N1103.3.6 (New)]** ***AEI Summary: The intent of this code is to address requirements for ducting that will be buried in attic insulation.*** **Revise as follows:** **R403.3 Ducts.** Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through ~~R403.3.5~~ R403.3.6. **Add new text as follows:** **R403.3.6 Ducts buried within ceiling insulation** Supply and return ducts shall be permitted to be installed partially, or fully buried within ceiling insulation provided the ducts comply with all of the following: 1. Supply and return ducts shall be insulated with an R-value of not less than R-8. 2. At all points along the duct, the sum of the ceiling insulation R-values above the top of the duct and below the bottom of the duct shall be not less than R-18 excluding the duct R-valu. 3. In *Climate Zones* 1A, 2A, 3A, where supply ducts are completely covered with ceiling insulation, the supply ducts shall be insulated to an R-value of not less than R-18 and the ducts shall be in accordance with the vapor retarder requirements in Section 604.11 of the *International Mechanical Code or Section* M1601.4.6 of the *International Residential Code* as applicable.		X			Clarification

Table 4. 2018 IECC Residential Changes Cost Impact						
CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Exception: Sections of supply ducts less than 3 feet from the supply outlet.					
RE100-16	**Section: R403.3 (IRC N1103.3), R403.3.6 (New) [IRC N1103.3.6 (New)], R403.3.7 (New) [(IRCN1103.3.7 (New)]** ***AEI Summary: This code allows ducting to be buried in attic insulation and sets requirements for conditioned space ducting.*** **Revise as follows:** **R403.3 (N1102.3) Ducts.** Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through ~~R403.3.5~~ R403.3.7. **R403.3.6 (N1103.3.6) Ducts buried within ceiling insulation** Where supply and return air ducts are partially or completely buried in ceiling insulation, such ducts shall comply with all of the following: 8. The supply and return ducts have insulation of an R-value not less than of R-8. 9. At all points along each duct, the sum of the ceiling insulation R-values against and above the top of the duct, and against and below the bottom of the duct is not less than R-19, excluding the R- value of the duct insulation. 10. In climate zones 1A, 2A and 3A, the supply ducts are completely buried within ceiling insulation, are insulated to an R-value of not less than R-18 and are in compliance with the vapor retarder requirements of Section 604.11 of the *International Mechanical Code* or Section M1601.4.6 or the *International Residential Code*, as applicable. **Exception:** Sections of the supply duct that are less than 3 feet from the supply outlet shall not be required to comply with these requirements. **R403.3.7 (N1103.3.7) Ducts located in conditioned space** For ducts to be be considered as inside a conditioned space, the ducts shall comply with either of the following: 22. The duct system is located completely within the continuous air barrier and within the building thermal envelope.		X			Clarification

Table 4. 2018 IECC Residential Changes Cost Impact						
CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	23. The ducts are buried within ceiling insulation in accordance with Section R403.3.6 and all of the following conditions exist: 2.1 The air handler is located completely within the continuous air barrier and within the building thermal envelope. 2.2 The duct leakage, as measured either by a rough-in test of the ducts or a post-construction total system leakage test to outside the building thermal envelope in accordance with Section R403.3.4, is less than or equal to 1.5 cubic feet per minute (42.5 L/min) per 100 square feet (9.29 m_2) of conditioned floor area served by the duct system. 2.3 The ceiling insulation R-value installed against and above the insulated duct is greater than or equal to the proposed ceiling insulation R-value, less the R-value of the insulation on the duct.					
RE102-16	**Section: R403.3.2 (IRC N1103.3.2)** ***AEI Summary: This removes redundancy regarding duct sealing, which is already covered in the International Mechanical Code.*** **Revise as follows:** **R403.3.2 (N1103.3.2) Sealing (Mandatory).** Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with either the *International Mechanical Code* or *International Residential Code*, as applicable. ~~**Exceptions:**~~ 1. ~~Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.~~ 2. ~~For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams, and locking-type joints and seams of other than the snap-lock and button-lock types.~~		X			Clarification
RE105-16	**Section: R403.3.3 (IRC N1103.3.3)** ***AEI Summary: This section contains requirements for testing dwelling units' primary heating or cooling system ducts and exempts H/ERV systems that are ducted separately from testing.*** **Revise as follows:**		X			Clarification

Table 4. 2018 IECC Residential Changes Cost Impact						
CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	R403.3.3 (N1103.3.3) Duct testing (Mandatory). Ducts shall be pressure tested to determine air leakage by one of the following methods: 1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test. 2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test. ~~Exception~~ Exceptions: 1. A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope. 2. A duct air leakage test is not required for ducts serving heat or energy recovery ventilators that are not integrated with ducts serving heating or cooling systems. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*.					
RE110-16	**Section: R403.3 (IRC N1103.3), R403.3.6 (New) [IRC N1103.3.6 (New)], R403.3.7 (New) [(IRCN1103.3.7 (New)]** ***AEI Summary: This proposal, in addition to allowing ducts to be installed within ceiling insulation, also provides additional effective insulation credit for ducts deeply buried to claim a higher effective R-value.*** **Revise as follows:** **R403.3 (N1103.3) Ducts.** Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through ~~R403.3.5~~ R403.3.6. **R403.3.6 (N1103.3.6) Ducts buried within ceiling insulation** Supply and return ducts shall be permitted to be installed partially, or fully buried within ceiling insulation provided they meet the following requirements: 1. Supply and return ducts shall be insulated to a minimum of R-8;		X			Clarification

Table 4. 2018 IECC Residential Changes Cost Impact						
CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	2. At all points along the duct, the sum of the ceiling insulation above the top of the duct and below the bottom of the duct shall be a minimum of R-19 excluding the duct R-value; 3. In *climate zone*s 1A, 2A, 3A, where supply ducts are fully buried within ceiling insulation, the supply ducts shall be insulated to minimum R-18 and in accordance with the vapor retarder requirements in Chapter 16 (M1601.4.6) of the *International Residential Code* or Chapter 6 (604.11) of the *International Mechanical Code* **Exception**: Sections of supply ducts less than 3 feet from the supply outlet. **Add new text as follows:** **R403.3.6.1(N1103.6.1) Deeply buried duct effective R-value.** Sections of ducts installed in accordance with Section R403.3.6 and directly on or within 5.5 inches of the ceiling board and surrounded with blown attic insulation of R-30 or greater and the top of the duct is buried a minimum of 3.5 inches below the insulation shall be permitted to claim an effective duct insulation of R-25 for the deeply buried section of the duct when using a simulated energy performance analysis.					
RE121-16	**Section: R403.6.1 (IRC N1103.6.1), Table R403.6.1 (IRC Table N1103.6.1)** ***AEI Summary*: This proposal introduces a minimum fan efficacy for H/ERVs. The efficacy proposed is the minimum required by the ENERGY STAR H/ERV specification used in Canada.*** **Revise as follows:** **R403.6.1 (N1103.6.1) Whole-house mechanical ventilation system fan efficacy.** When installed to function as a whole house mechanical ventilation system fans shall meet the efficacy requirements of Table R403.6.1. **Exception:** ~~Where whole-house mechanical ventilation fans are integral to tested and listed HVAC equipment, they shall be powered by an electronically commutated motor.~~ Where an air handler that is integral to tested and listed HVAC equipment is used to provide whole-house mechanical ventilation, the air handler shall be powered by an electronically commutated motor.		X			Reorganization/ Efficiency

Table 4. 2018 IECC Residential Changes Cost Impact

CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE R403.6.1 (N1103.6.1) WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY– FAN LOCATION | AIR FLOW RATE MINIMUM (CFM) | MINIMUM EFFICACY[a] (CFM/WATT) | AIR FLOW HRV or ERV | Any | 1.2 cfm/watt Range hoods | Any | 2.8 cfm/watt In-line fan | Any | 2.8 cfm/watt Bathroom, utility room | 10 | 1.4 cfm/watt Bathroom, utility room | 90 | 2.8 cfm/watt For SI: 1 cfm = 28.3 L/min. a. When tested in accordance with HVI Standard 916					
RE126-16	**Section: R404.1 (IRC N1104.1)** ***AEI Summary: Removes obsolete exemption.*** **Revise as follows:** **R404.1 Lighting equipment (Mandatory).** Not less than 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps. ~~**Exception:** Low-voltage lighting.~~		X			Reorganization/ Clarification
RE127-16	**Section: R404.1 (IRC N1104.1)** ***AEI Summary: This code raises the minimum lighting efficacy from 75% to 90% to align with market trends for high-efficacy performance and efficiency.*** **Revise as follows:** **R404.1 (N1104.1) Lighting equipment (Mandatory).** Not less than ~~75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75~~90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps. **Exception:** Low-voltage lighting.		X			Efficiency
RE183-16	**Section: R502.1.1.2 (IRC N1108.1.1.2), R503.1.2 (IRC N1109.1.2)** ***AEI Summary: This proposal updates standards for new HVAC systems and components.*** **Revise as follows:** **R502.1.1.2 (N1108.1.1.2) Heating and cooling systems.** New heating, cooling and duct systems that are part of the addition shall comply with Section R403 ~~Sections R403.1, R403.2, R403.3, R403.5 and R403.6.~~			X	$1.00/SF of Building	Performance Consistency

Table 4. 2018 IECC Residential Changes Cost Impact						
CODE CHANGE #	2018 IECC RESIDENTIAL CHANGE SUMMARY	IECC RESIDENTIAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Exception: Where ducts from an existing heating and cooling system are extended to an addition, duct systems with less than 40 linear feet (12.19 m) in unconditioned spaces shall not be required to be tested in accordance with Section R403.3.3. **R503.1.2 (N1109.1.2) Heating and cooling systems.** New heating, cooling and duct systems that are part of the alteration shall comply with ~~Sections R403.1, R403.2, R403.3 and R403.6~~ Section R403. **Exception:** Where ducts from an existing heating and cooling system are extended, duct systems with less than 40 linear feet (12.19 m) in unconditioned spaces shall not be required to be tested in accordance with Section R403.3.3.					

*For prescriptive Code changes only.

APPENDIX E

Table 5. 2018 IFGC Changes Cost Impact						
CODE CHANGE #	2018 IFGC MEP CHANGE SUMMARY	IFGC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
FG11-15	***AEI Summary: This proposal requires a permanent and passive ventilation area for a gas clothes dryer to access common space.*** **303.3 Prohibited locations**. Appliances shall not be located in sleeping rooms, bathrooms, toilet rooms, storage closets or surgical rooms, or in a space that opens only into such rooms or spaces, except where the installation complies with one of the following: 1. The *appliance* is a direct-vent *appliance* installed in accordance with the conditions of the listing and the manufacturer's instructions. 2. Vented room heaters, wall furnaces, vented decorative appliances, vented gas fireplaces, vented gas fireplace heaters and decorative appliances for installation in vented solid fuel burning fireplaces are installed in rooms that meet the required volume criteria of Section 304.5. 3. A single wall-mounted unvented room heater is installed in a bathroom and such unvented room heater is equipped as specified in Section 621.6 and has an input rating not greater than 6,000 Btu/h (1.76 kW). The bathroom shall meet the required volume criteria of Section 304.5. 4. A single wall-mounted unvented room heater is installed in a bedroom and such unvented room heater is equipped as specified in Section 621.6 and has an input rating not greater than 10,000 Btu/h (2.93 kW). The bedroom shall meet the required volume criteria of Section 304.5. 5. The *appliance* is installed in a room or space that opens only into a bedroom or bathroom, and such room or space is used for no other purpose and is provided with a solid weather-stripped door equipped with an *approved* self-closing device. All *combustion air* shall be taken directly from the outdoors in accordance with Section 304.6. 6. A ~~gas~~ clothes dryer is installed in a residential bathroom or toilet room ~~and~~ having a permanent opening ~~having~~ with an area of not less than 100 square inches ~~is provided~~ that ~~allows the toilet room or bathroom to communicate~~ communicates with a ~~common hallway~~ space outside of a sleeping room, bathroom, toilet room, or ~~common space~~ storage closet.		X			Ventilation/ Safety
FG12-15	***AEI Summary: This proposal addresses gas burning fireplace and decorative appliance use in healthcare facilities.*** **303.3.1 Fireplaces and decorative appliances in Group I-2 Condition 2 occupancies.** Gas fireplace appliances and decorative gas appliances shall be prohibited in Group I-2, condition 2		X			Safety

Table 5. 2018 IFGC Changes Cost Impact						
CODE CHANGE #	2018 IFGC MEP CHANGE SUMMARY	IFGC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	occupancies except where such appliances are *direct-vent appliances* installed in public lobby and waiting areas that are not within smoke compartments containing patient sleeping areas. Such fireplace appliances and decorative appliances shall be installed in accordance with all of the following: **1.** The appliances shall be vented to the outdoors. **2.** The appliances be of the direct-vent type. **3.** The appliances shall automatically shut off upon activation of the fire alarm system serving the occupancy. **4.** The appliance controls shall be located where they can be accessed only by facility staff. **5.** A carbon monoxide detector with a local alarm shall be provided and installed in accordance with Section 915 of the International Fire Code.					
FG17-15	***AEI Summary: This proposal creates manufacturing label exceptions for gas piping components.*** **401.9 Identification.** Each length of pipe and tubing and each pipe fitting, utilized in a fuel gas system, shall bear the identification of the manufacturer. Exceptions: 1. Steel pipe sections that are: two feet and less in length and cut from longer sections of pipe ~~in the field and threaded in the field.~~ 2. Steel pipe fittings 2 inch and less in size. 3. Where identification is provided on the product packaging or crating. 4. Where other approved documentation is provided.		X			Ease of Install/ Cost
FG20-15	***AEI Summary: This proposal clarifies piping material manufacturing standards and removes excess third-party testing language.*** **401.10 ~~Third-party testing and certification.~~ Piping materials standards.** ~~Piping, tubing and fittings shall comply with the applicable referenced standards, specifications and performance criteria of this code and shall be identified in accordance with Section 401.9. Piping, tubing and fittings shall either be tested by an approved third party testing agency or certified by an approved third party certification agency.~~ Piping, tubing and fittings shall be manufactured to the applicable referenced standards, specifications and performance criteria listed in Section 403 of this code and shall be identified in accordance with Section 401.9.		X			Clarification
FG24-15	***AEI Summary: This proposal replaces the former approved corrosion prevention manner with additional enforceable code requirements.***		X			Clarification

Table 5. 2018 IFGC Changes Cost Impact						
CODE CHANGE #	2018 IFGC MEP CHANGE SUMMARY	IFGC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	404.11 Protection against corrosion. ~~Metallic Steel~~ pipe or tubing exposed to corrosive action, such as soil condition or moisture, shall be protected in an ~~*approved* manner.~~ ~~Zinc coatings (galvanizing) shall not be deemed adequate protection for gas *piping* underground. Where dissimilar metals are joined underground, an insulating coupling or fitting shall be used. *Piping* shall not be laid in contact~~ accordance with ~~cinders~~ Sections 404.11.1 through 404.11.5. 404.11.1 Galvanizing Zinc coating shall not be deemed adequate protection for underground gas piping. 404.11.2 Protection methods. Underground piping shall comply with one or more of the following: 1. The piping shall be made of corrosion-resistant material that is suitable for the environment in which it will be installed. 2. Pipe shall have a factory-applied, electrically-insulating coating. Fittings and joints between sections of coated pipe shall be coated in accordance with the coating manufacturer's instructions. 3. The piping shall have a cathodic protection system installed and the system shall be monitored and maintained in accordance with an approved program. ~~404.11.2 **Protective coatings and wrapping.** Pipe protective coatings and wrappings shall be *approved* for the application and shall be factory applied.~~ ~~**Exception:** Where installed in accordance with the manufacturer's instructions, field application of coatings and wrappings shall be permitted for pipe nipples, fittings and locations where the factory coating or wrapping has been damaged or necessarily removed at joints.~~ ~~404.11.3~~ **Dissimilar metals.** Where dissimilar metals are joined underground, an insulating coupling or fitting shall be used. ~~404.11.4~~ **Protection of risers.** Steel risers connected to plastic piping shall be cathodically protected by means of a welded anode, except where such risers are anode-less risers. ~~**404.11.**~~**1404.11.5 Prohibited use.** *No change to text.*					
FG25-15	***AEI Summary*: This proposal includes the option of a listed sleeve system for underground piping.** **404.14 Piping underground beneath buildings.** *Piping* installed underground beneath buildings is prohibited except where the *piping* is encased in a conduit of wrought iron, plastic pipe, steel pipe, a piping or encasement system listed ~~sleeve system~~ or for installation beneath buildings, or other *approved* conduit material designed to withstand the superimposed loads. The conduit shall be protected from corrosion in accordance with Section 404.11 and shall be installed in accordance with Section 404.14.1 or 404.14.2.		X			Increased Product Offering/ Cost

Table 5. 2018 IFGC Changes Cost Impact						
CODE CHANGE #	2018 IFGC MEP CHANGE SUMMARY	IFGC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
FG26-15	***AEI Summary: This proposal includes the option of additional piping tracing materials for use when installing underground piping.*** **404.17.3 Tracer.** A yellow insulated copper tracer wire or other *approved* conductor, or a product specifically designed for that purpose, shall be installed adjacent to underground nonmetallic *piping*. *Access* shall be provided to the tracer wire or the tracer wire shall terminate above ground at each end of the nonmetallic *piping*. The tracer wire size shall be not less than 18 AWG and the insulation type shall be suitable for direct burial.		X			Increased Product Offering/ Cost
FG29-15	***AEI Summary: This proposal clarifies access relevant to movable gas appliances.*** **409.5.1 Located within same room.** The shutoff valve shall be located in the same room as the *appliance*. The shutoff valve shall be within 6 feet (1829 mm) of the *appliance*, and shall be installed upstream of the union, connector or quick disconnect device it serves. Such shutoff valves shall be provided with *access*. Shutoff valves serving movable appliances, such as cooking appliances and clothes dryers, shall be considered to be provided with access where installed behind such appliances. *Appliance* shutoff valves located in the firebox of a *fireplace* shall be installed in accordance with the *appliance* manufacturer's instructions.		X			Clarification
FG31-15	***AEI Summary: This proposal requires a rigid and securely supported gas shutoff valve when installed in a tubing type system.*** **409.7 Shutoff valves in tubing systems.** Shutoff valves installed in tubing systems shall be rigidly and securely supported independently of the tubing.			X	$25 per Valve	Safety/ Clarification
FG32-15	***AEI Summary: This proposal eliminates the requirement for a tee fitting/ test port for regulator outlet pressure when a port is present at an appliance.*** **410.2 MP regulators.** MP pressure regulators shall comply with the following: 1. The MP regulator shall be *approved* and shall be suitable for the inlet and outlet gas pressures for the application. 2. The MP regulator shall maintain a reduced outlet pressure under lock-up (no-flow) conditions. 3. The capacity of the MP regulator, determined by published ratings of its manufacturer, shall be adequate to supply the *appliances* served.		X			Clarification/ Cost

Table 5. 2018 IFGC Changes Cost Impact						
CODE CHANGE #	2018 IFGC MEP CHANGE SUMMARY	IFGC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	4. The MP pressure regulator shall be provided with *access.* Where located indoors, the regulator shall be vented to the outdoors or shall be equipped with a leak limiting device, in either case complying with Section 410.3. 5. A tee fitting with one opening capped or plugged shall be installed between the MP regulator and its upstream shutoff valve. Such tee fitting shall be positioned to allow connection of a pressure-measuring instrument and to serve as a sediment trap. 6. A tee fitting with one opening capped or plugged shall be installed not less than 10 pipe diameters downstream of the MP regulator outlet. Such tee fitting shall be positioned to allow connection of a pressure-measuring instrument. ~~A gas~~ The tee fitting is not required where the MP regulator serves an appliance that has a pressure test port on the gas control inlet side ~~of~~ and ~~the gas control of an appliance served by the MP regulator is an alternative to the downstream tee fitting, where~~ such appliance is located in the same room as the MP regulator. 7. Where connected to rigid piping, a union shall be installed within 1 foot (304 mm) of either side of the MP regulator.					
FG33-15	***AEI Summary: This proposal adds a standard requirement regarding excess flow valve installation.*** **410.4 Excess flow valves**. Where automatic *excess flow valves* are installed, they shall be listed ~~for the application~~ in accordance with ANSI Z21.93/CSA 6.30, and shall be sized and installed in accordance with the manufacturer's instructions. ANSI Z21.93/CSA 6.30 - 2013 Excess Flow Valves for Natural and LP Gas with Pressures Up To 5 psig			X	$50 per Valve	Standard Requirement
FG34-15	***AEI Summary: This proposal will allow the use of unlisted gas burner hoses, approved by the AHJ, in laboratories and educational facilities.*** **411.1 Connecting appliances. Except as required by Section 411.1.1, *appliances* shall be connected to the *piping* system by one of the following:** **1.** Rigid metallic pipe and fittings. **2.** Corrugated stainless steel tubing (CSST) where installed in accordance with the manufacturer's instructions. **3.** Semirigid metallic tubing and metallic fittings. Lengths shall not exceed 6 feet (1829 mm) and shall be located entirely in the same room as the *appliance*. Semirigid metallic tubing shall not enter a motor-operated *appliance* through an unprotected knockout opening.		X			Clarification/ Product Offering

Table 5. 2018 IFGC Changes Cost Impact						
CODE CHANGE #	2018 IFGC MEP CHANGE SUMMARY	IFGC MEP COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	4. *Listed* and *labeled appliance* connectors in compliance with ANSI Z21.24 and installed in accordance with the manufacturer's instructions and located entirely in the same room as the *appliance*. **5.** *Listed* and *labeled* quick-disconnect devices used in conjunction with *listed* and *labeled appliance* connectors. **6.** *Listed* and *labeled* convenience outlets used in conjunction with *listed* and *labeled appliance* connectors. **7.** Listed and *labeled* outdoor *appliance* connectors in compliance with ANSI Z21.75/CSA 6.27 and installed in accordance with the manufacturer's instructions. **8.** Listed outdoor gas hose connectors in compliance with ANSI Z21.54 used to connect portable outdoor appliances. The gas hose connection shall be made only in the outdoor area where the appliance is used, and shall be to the gas *piping* supply at an appliance shutoff valve, a listed quick disconnect device or listed gas convenience outlet. **9.** Gas hose connectors for use in laboratories and educational facilities in accordance with Section 411.4 **411.4 Injection Bunsen-type burners Injection** Bunsen-type burners used in laboratories and educational facilities shall be connected to the gas supply system by either a listed or unlisted hose.					
FG40-15	***AEI Summary: This proposal allows an exception for commercial cooking equipment installation in residential applications.*** **623.2 Prohibited location.** Cooking appliances designed, tested, *listed* and *labeled* for use in commercial occupancies shall not be installed within dwelling units or within any area where domestic cooking operations occur. ~~**Exception**~~**Exceptions:** 1. Appliances that are also listed as domestic cooking appliances. **2.** Where the installation is designed by a licensed Professional Engineer, in compliance with the manufacturer's ~~installation~~ instructions.		X			Product Offerings
FG43-15	***AEI Summary: This proposal replaces brass with copper-ally for consistency and clarification with other codes and standards.*** **[M] PIPING.** Where used in this code, "*piping*" refers to either pipe or tubing, or both. Pipe. A rigid conduit of iron, steel, copper, ~~brass~~ copper-ally or plastic. Tubing. Semirigid conduit of copper, copper-alloy, aluminum, plastic or steel.		X			Clarification/ Consistency

*For prescriptive Code changes only.

APPENDIX F

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
M11-15	**Section(s): 303.7** ***AEI Summary: This proposal completes language relevant to appliance installation in excavation pits.*** **303.7 Pit locations.** Appliances installed in pits or excavations shall not come in direct contact with the surrounding soil and shall be installed not less than 6 inches above the pit floor. The sides of the pit or excavation shall be held back not less than 12 inches (305 mm) from the *appliance*. Where the depth exceeds 12 inches (305 mm) below adjoining grade, the walls of the pit or excavation shall be lined with concrete or masonry. Such concrete or masonry shall extend not less than 4 inches (102 mm) above adjoining grade and shall have sufficient lateral load-bearing capacity to resist collapse. Excavation on the control side of the appliance shall extend not less than 30 inches (762mm) horizontally. The *appliance* shall be protected from flooding in an *approved* manner.		X			Clarification
M12-15	**Section: 303.9 (New), 901.5 (New)** ***AEI Summary: This proposal addresses fuel burning appliances and prohibits wood burning appliances in healthcare settings.*** **303.9 Fireplaces in Group I-2 Condition 2 occupancies.** Fuel burning appliances and fireplaces in Group I-2 condition 2 occupancies in accordance with Section 901.5. **901.5 Solid fuel-burning fireplaces and appliances in Group I-2 Condition 2.** In Group I-2 Condition 2 occupancies, solid fuel-burning fireplaces and appliances are prohibited.		X			Safety
M13-15	**Section: Table 305.4** ***AEI Summary: This proposal addresses proper spacing for the support of large and small diameter PE-RT and PEX tubing.*** **TABLE 305.4** **PIPING SUPPORT SPACING** **PIPING MATERIAL** / **MAXIMUM HORIZONTAL SPACING (feet)** / **MAXI VERT SPACIN** PE-RT one inch and smaller / 2 ⅔ (32 inches) / 1(PE-RT > 1 1/4 inches / 4 / 1(PEX tubing one inch and smaller / 2 ⅔ (32 inches) / 1(PEX tubing 1 1/4 inch and larger / 4 / 1(*(Portions of table not shown remain unchanged)*		X			Update/ Clarification

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. See Section 301.18. b. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed. c. Mid-story guide.					
M14-15	**Section(s): 305.4** ***AEI Summary: This proposal replaces brass in the language with copper alloy and clarifies the table regarding tubing.***		X			Clarification

TABLE 305.4 (305.4)
PIPING SUPPORT SPACING

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXI VERT SPACIN
ABS pipe	4	10
Aluminum pipe and tubing	10	15
~~Brass pipe~~	~~10~~	~~10~~
~~Brass tubing, 11 /4 -inch diameter and smaller~~	~~6~~	~~10~~
~~Brass tubing, 11 /2 -inch diameter and larger~~	~~10~~	~~10~~
Cast-iron pipe[b]	5	15
Copper or copper-alloy pipe and tubing	~~12~~8	10
~~Copper or copper-alloy tubing, 11 /4-inch diameter and smaller~~	~~6~~	~~10~~
~~Copper or copper-alloy tubing, 11 /2-inch diameter and larger~~	~~10~~	~~10~~
CPVC pipe or tubing, 1 inch and smaller	3	10
CPVC pipe or tubing, 11 /4-inch and larger	4	10
Lead pipe	Continuous	4
PB pipe or tubing	2⅔ (32 inches)	4
PE-RT	2⅔ (32 inches)	10
PE-RT > 11 /4 inches	4	10
PEX tubing	2⅔ (32 inches)	10

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Polypropylene (PP) pipe or tubing, 1 inch or smaller — 2⅔ (32 inches) — 10[c]					
	Polypropylene (PP) pipe or tubing, 11/4 inches or larger — 4 — 10[c]					
	PVC pipe — 4 — 10[c]					
	Steel tubing — 8 — 10					
	Steel pipe — 12 — 15					
	For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. See Section 301.18. b. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed. c. Mid-story guide.					
M17-15	**Section: 307.2.2** ***AEI Summary: This proposal adds copper alloys fittings and pipe to the drain pipe materials list.*** **307.2.2 Drain pipe materials and sizes.** Components of the condensate disposal system shall be cast iron, galvanized steel, copper and copper alloy, cross-linked polyethylene, polyethylene, ABS, CPVC, PVC, or polypropylene pipe or tubing. Components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the *International Plumbing Code* relative to the material type. Condensate waste and drain line size shall be not less than 3 /4-inch (19.1 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of condensate disposal. Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 307.2.2.		X			Clarification/ Product Offerings
M22-15	**Section: Table 401.5** ***AEI Summary: This proposal changes the language to allow slotted louvers and grilles for air intake openings.*** **TABLE 401.5 (401.5)** **OPENING SIZES IN LOUVERS, GRILLES AND SCREENS PROTECTING AIR INTAKE OPENINGS** **OUTDOOR OPENING TYPE** — **MINIMUM AND MAXI OPENING SIZES IN LOU**		X			Clarification/ Product Offerings

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						

	GRILLES AND SCREENS[a] ~~MEASURED IN ANY DIRECTION~~
Intake openings in residential occupancies	Not < 1 /4 inch and not > 1 /2 inch
Intake openings in other than residential occupancies	> 1 /4 inch and not > 1 inch

For SI: 1 inch = 25.4 mm.

a. For rectangular openings, the table requirements apply to the shortest side. For round openings, the table requirements apply to the diameter. For square openings, the table requirements apply to any side.

M24-15	**Section: 403.3.1.1** ***AEI Summary: This proposal adds a refrigerated warehouse space type to Table 6-1, providing revised ventilation rates for these spaces.***			X	$.50 per SF of louver area	Clarification

TABLE 403.3.1.1 (403.3.1.1)
MINIMUM VENTILATION RATES

OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY #/1000 FT^2 [a]	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R_pCFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R_aCFM/FT^2 [a]
Correctional facilities			
Booking/waiting	50	7.5	0.06
Cells			
without plumbing fixtures	25	5	0.12
with plumbing fixtures[g]	25	5	0.12
Day room	30	5	0.06
Dining halls	—	—	—
(see food and beverage service)			
Guard stations	15	5	0.06
Dry cleaners, laundries			

Table 6. 2018 IMC Changes Cost Impact									
CODE CHANGE #	2018 IMC CHANGE SUMMARY				IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
					Decrease	None	Increase		
Sub Code:									
	Coin-operated dry cleaner	20	15	—	—				
	Coin-operated laundries	20	7.5	~~0.06~~0.12	—				
	Commercial dry cleaner	30	30	—	—				
	Commercial laundry	10	25	—	—				
	Storage, pick up	30	7.5	0.12	—				
	Education								
	Art classroom[g]	20	10	0.18	0.7				
	Auditoriums	150	5	0.06	—				
	Classrooms (ages 5-8)	25	10	0.12	—				
	Classrooms (age 9 plus)	35	10	0.12	—				
	Computer lab	25	10	0.12	—				
	Corridors (see public spaces)	—	—	—	—				
	Day care (through age 4)	25	10	0.18	—				
	Lecture classroom	65	7.5	0.06	—				
	Lecture hall (fixed seats)	150	7.5	0.06	—				
	Locker/dressing rooms[g]	—	—	—	0.25				
	Media center	25	10	0.12	—				
	Multiuse assembly	100	7.5	0.06	—				
	Music/theater/dance	35	10	0.06	—				
	Science laboratories[g]	25	10	0.18	1.0				
	Smoking lounges[b]	70	60	—	—				
	Sports locker rooms[g]	—	—	—	0.5				
	Wood/metal shops[g]	20	10	0.18	0.5				
	Food and beverage service								
	Bars, cocktail lounges	100	7.5	0.18	—				
	Cafeteria, fast food	100	7.5	0.18	—				
	Dining rooms	70	7.5	0.18	—				
	Kitchens (cooking)[b]	—20	—7.5	—0.12	0.7				

Table 6. 2018 IMC Changes Cost Impact									
CODE CHANGE #	2018 IMC CHANGE SUMMARY				IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
					Decrease	None	Increase		
Sub Code:									
	Hotels, motels, resorts and dormitories								
	Bathrooms/toilet—private[g]	--	—	—	25/50f				
	Bedroom/living room	10	5	0.06		—			
	Conference/meeting	50	5	0.06		—			
	Dormitory sleeping areas	20	5	0.06		—			
	Gambling casinos	120	7.5	0.18		—			
	Lobbies/prefunction	30	7.5	0.06		—			
	Multipurpose assembly	120	5	0.06		—			
	Offices								
	Conference rooms	50	5	0.06		—			
	Main entry lobbies	10	5	0.06		—			
	Office spaces	5	5	0.06		—			
	Reception areas	30	5	0.06		—			
	Telephone/data entry	60	5	0.06		—			
	Private dwellings, single and multiple								
	Garages, common for multiple units[b]	—	—	—	0.75				
	Kitchens[b]	—	—	—	25/100f				
	Living areas[c]	Based upon number of bedrooms. First bedroom, 2; each additional bedroom, 1	0.35 ACH but not less than 15 cfm/person	—		—			
	Toilet rooms and bathrooms[g]	—	—	—	25/50f				
	Public spaces								
	Corridors	—	—	0.06		—			
	Courtrooms	70	5	0.06		—			

Table 6. 2018 IMC Changes Cost Impact									
CODE CHANGE #	2018 IMC CHANGE SUMMARY				IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
					Decrease	None	Increase		
Sub Code:									
	Elevator car	—	—	—		1.0			
	Legislative chambers	50	5	0.06		—			
	Libraries	10	5	0.12		—			
	Museums (children's)	40	7.5	0.12		—			
	Museums/galleries	40	7.5	0.06		—			
	Places of religious worship	120	5	0.06		—			
	Shower room (per shower head)[g]	—	—	—		50/20f			
	Smoking lounges[b]	70	60	—		—			
	Toilet rooms — public[g]	—	—	—		50/70e			
	Retail stores, sales floors and showroom floors								
	Dressing rooms	—	—	—		0.25			
	Mall common areas	40	7.5	0.06		—			
	Sales	15	7.5	0.12		—			
	Shipping and receiving	—2	—10	0.12		—			
	Smoking lounges[b]	70	60	—		—			
	Storage rooms	—	—	0.12		—			
	Warehouses (see storage)	—	—10	—0.06		—			
	Specialty shops								
	Automotive motor-fuel dispensing stations[b]	—	—	—		1.5			
	Barber	25	7.5	0.06		0.5			
	Beauty salons[b]	25	20	0.12		0.6			
	Nail salons[b, h]	25	20	0.12		0.6			
	Embalming room[b]	—	—	—		2.0			
	Pet shops (animal areas)[b]	10	7.5	0.18		0.9			
	Supermarkets	8	7.5	0.06		—			
	Sports and amusement								
	Bowling alleys (seating areas)	40	10	0.12		—			

Table 6. 2018 IMC Changes Cost Impact									
CODE CHANGE #	2018 IMC CHANGE SUMMARY				IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
					Decrease	None	Increase		
Sub Code:									
	Disco/dance floors	100	20	0.06		—			
	Game arcades	20	7.5	0.18		—			
	Gym, stadium, arena (play area)	—7	—20	0.300.18		—			
	Health club/aerobics room	40	20	0.06		—			
	Health club/weight room	10	20	0.06		—			
	Ice arenas without combustion engines	—	—	0.30		0.5			
	Spectator areas	150	7.5	0.06		—			
	Swimming pools (pool and deck area)	—	—	0.48		—			
	Storage								
	Repair garages, enclosed parking garages[b,d]	—	—	—		0.75			
	Refrigerated warehouses/Freezers Warehouses	— —	10 —10	— 0.06		— —			
	Theaters								
	Auditoriums (see education)	—	—	—		—			
	Lobbies	150	5	0.06		—			
	Stages, studios	70	10	0.06		—			
	Ticket booths	60	5	0.06		—			
	Transportation								
	Platforms	100	7.5	0.06		—			
	Transportation waiting	100	7.5	0.06		—			
	Workrooms								
	Bank vaults/safe deposit	5	5	0.06		—			
	Computer (without printing)	4	5	0.06		—			
	Copy, printing rooms	4	5	0.06		0.5			
	Darkrooms	—	—	—		1.0			

Table 6. 2018 IMC Changes Cost Impact									
CODE CHANGE #	2018 IMC CHANGE SUMMARY				IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
					Decrease	None	Increase		
Sub Code:									
	Meat processing[c]	10	15	—	—				
	Pharmacy (prep. area)	10	5	0.18	—				
	Photo studios	10	5	0.12	—				
M25-15	**Section(s): 403.3.2.4 (New)** ***AEI Summary: This proposal requires functional labeling for outdoor air ventilation system control devices.*** **403.3.2.4 System controls.** Control devices for outdoor air ventilation systems shall be provided with text or a symbol indicating the device's function.						X	$5.00 per device	Clarification/ Safety
M26-15	**Section: 403.3.2.4 (New)** ***AEI Summary: This proposal provides labeling requirements for single dwelling unit exhaust systems and lists a reference standard.*** **403.3.2.4 Ventilating Equipment.** Exhaust equipment serving single dwelling units shall be listed and labeled to provide the minimum required air flow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51. ANSI/AMCA 210 - ANSI/ASHRAE 51 -07 Laboratory Methods of Testing Fans for Aerodynamic Performance Rating						X	$5.00 per device	Clarification/ Safety
M27-15	**Section: 404.1** ***AEI Summary: This proposal clarifies that the detectors required by this section must be listed to UL 2075 and installed in accordance with their listing.*** **404.1 Enclosed parking garages.** Where mechanical ventilation systems for enclosed parking garages operate intermittently, such operation shall be automatic by means of carbon monoxide detectors applied in conjunction with nitrogen dioxide detectors. Such detectors shall be listed in accordance with UL 2075 and installed in accordance with their listing and the manufacturers' ~~recommendations~~ instructions. UL 2075-2013 Standard for Gas and Vapor Detectors and Sensors						X	$1000.00 per device	Clarification/ Safety
M28-15	**Section: 404.1, 404.2** ***AEI Summary: This proposal removes confusing language regarding intermittent operation of parking garage ventilation systems.***					X			Clarification

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	404.1 Enclosed parking garages. ~~Where mechanical~~ Mechanical ventilation systems for enclosed parking garages shall operate ~~intermittently, such operation~~ continuously or shall be ~~automatic~~ automatically operated by means of carbon monoxide detectors applied in conjunction with nitrogen dioxide detectors. Such detectors shall be installed in accordance with their manufacturers~~''~~ recommendations. Automatic operation shall cycle the ventilation system between the following two modes of operation: 1. Full-on at an airflow rate of not less than 0.75 cfm per square foot of the floor area served. 2. Standby at an airflow rate of not less than 0.05 cfm per square foot of the floor area served. ~~**404.2 Minimum ventilation.** Automatic operation of the system shall not reduce the ventilation airflow rate below 0.05 cfm per square foot (0.00025 m3/s • m2) of the floor area and the system shall be capable of producing a ventilation airflow rate of 0.75 cfm per square foot (0.0038 m3/s • m2) of floor area.~~					
M30-15	**Section(s): 501.2, 506.1, 507.1, 507.1.2, 509.1** ***AEI Summary: This proposal clarifies that hoods and fire suppression systems are required where the hazard justifies such protection, regardless of the type of equipment.*** **501.2 Independent system required.** Single or combined mechanical exhaust systems for environmental air shall be independent of all other exhaust systems. Dryer exhaust shall be independent of all other systems. Type I exhaust systems shall be independent of all other exhaust systems except as provided in Section 506.3.5. Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. Kitchen exhaust systems shall be constructed in accordance with Section 505 for domestic ~~equipment~~ cooking operations and Sections 506 through509 for commercial ~~equipment~~ cooking operations. **506.1 General.** Commercial kitchen hood ventilation ducts and exhaust *equipment* shall comply with the requirements of this section. Commercial kitchen grease ducts shall be designed for the type of cooking ~~*appliance*~~ and hood served. **507.1 General.** Commercial kitchen exhaust hoods shall comply with the requirements of this section. Hoods shall be Type I or II and shall be designed to capture and confine cooking vapors and residues. A Type I or Type II hood shall be installed at or above ~~all *commercial cooking*~~ *appliances* in accordance with Sections 507.2 and 507.3. Where any cooking *appliance* under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hoods required, a Type I or Type		X			Clarification

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	II hood shall be installed. Where a Type I hood is installed, the installation of the entire system, including the hood, ducts, exhaust equipment and makeup air system shall comply with the requirements of Sections 506, 507, 508 and 509. **Exceptions:** 1. Factory-built commercial exhaust hoods that are listed and labeled in accordance with UL 710, and installed in accordance with Section 304.1, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5. 2. Factory-built commercial cooking recirculating systems that are listed and labeled in accordance with UL 710B, and installed in accordance with Section 304.1, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5. Spaces in which such systems are located shall be considered to be kitchens and shall be ventilated in accordance with Table 403.3.1.1. For the purpose of determining the floor area required to be ventilated, each individual *appliance* shall be considered as occupying not less than 100 square feet (9.3 m2). 3. Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be required at or above them. **507.1.2 Domestic cooking appliances used for commercial purposes.** Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of ~~appliances and~~ cooking processes in accordance with Sections 507.2 and507.3. Domestic cooking appliances utilized for domestic ~~purposes~~ cooking shall comply withSection505. **509.1 Where required.** ~~*Commercial cooking*~~ *Cooking appliances* required by Section 507.2 to have a Type I hood shall be provided with an *approved* automatic fire suppression system complying with the *International Building Code* and the *International Fire Code*.					
M37-15	**Section: 504.4** ***AEI Summary: This proposal clarifies the requirement to seal dryer ducts.*** **504.4 Exhaust installation.** Dryer exhaust ducts for clothes dryers shall terminate on the outside of the building and shall be equipped with a		X			Clarification

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		Decrease	None	Increase		
Sub Code:						
	backdraft damper. Screens shall not be installed at the duct termination. Ducts shall not be connected or installed with sheet metal screws or other fasteners that will obstruct the exhaust flow. Clothes dryer exhaust ducts shall not be connected to a vent connector, vent or *chimney*. Clothes dryer exhaust ducts shall not extend into or through ducts or plenums. Clothes dryer exhaust ducts shall be sealed in accordance with Section 603.9					
M38-15	**Section: 504.4.1 (New)** ***AEI Summary: This proposal requires an undiminished passageway for dryer exhaust ducting, usually meaning a deeper utility area mechanical wall.*** **504.4.1 Exhaust termination outlet and passageway size.** The passageway of dryer exhaust duct terminals shall be undiminished in size and shall provide an open area of not less than 12.5 square inches (8,065 sq mm).			X	$500.00 per vent	Safety/ Performance
M42-15	**Section(s): 504.8.2** ***AEI Summary: This proposal requires utility area mechanical wall cavities to be at least 4.25" deep.*** **504.8.2 Duct installation.** Exhaust ducts shall be supported at 4-foot (1219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude more than 1/ 8 inch (3.2 mm) into the inside of the duct. Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall have a least dimension of not less than 4.25 inches (108 mm). Round duct shall not be deformed.			X	$200.00 per vent	Safety/ Performance
M44-15	**Section(s): 505, 505.1, 505.1 (New), 505.2 (New), 505.4.** ***AEI Summary: This proposal clarifies language regarding domestic cooking exhaust fans and adds a reference standard.*** **SECTION 505** **DOMESTIC ~~KITCHEN~~ COOKING EXHAUST EQUIPMENT** **505.1 General.** Domestic cooking exhaust equipment shall comply with the requirements of this section. **505.2 Domestic cooking exhaust.** Where domestic cooking exhaust equipment is provided it shall comply with the following as applicable:			X	$600.00 per fan	Safety/ Performance

Table 6. 2018 IMC Changes Cost Impact						
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		Decrease	None	Increase		
Sub Code:						
	11. Overhead range hoods and downdraft exhaust equipment not integral with the cooking appliance shall be listed and labeled in accordance with UL 507. 12. Domestic cooking appliances with integral downdraft exhaust equipment shall be listed and labeled in accordance with UL 858 or ANSI Z21.1. 13. Microwave ovens with integral exhaust for installation over the cooking surface shall be listed and labeled in accordance with UL 923. **505.~~1~~ 505.3 ~~Domestic systems~~ Exhaust ducts.** ~~Where domestic range hoods and domestic appliances equipped with downdraft~~ Domestic cooking exhaust ~~are provided, such hoods and appliances~~ equipment shall discharge to the outdoors through sheet metal ducts constructed of galvanized steel, stainless steel, aluminum or copper. Such ducts shall have smooth inner walls, shall be air tight, shall be equipped with a backdraft damper, and shall be independent of all other exhaust systems. **Exceptions:** 1 In other than Group I-1 and I-2, where installed in accordance with the manufacturer's instructions and where mechanical or natural ventilation is otherwise provided in accordance with Chapter 4, listed and labeled ductless range hoods shall not be required to discharge to the outdoors. 2 Ducts for domestic kitchen cooking appliances equipped with downdraft exhaust systems shall be permitted to be constructed of Schedule 40 PVC pipe and fittings provided that the installation complies with all of the following: 2.1 The duct shall be installed under a concrete slab poured on grade. 2.2 The underfloor trench in which the duct is installed shall be completely backfilled with sand or gravel. 2.3 The PVC duct shall extend not more than 1 inch (25 mm) above the indoor concrete floor surface. 2.4 The PVC duct shall extend not more than 1 inch (25 mm) above grade outside of the building. 2.5 The PVC ducts shall be solvent cemented. **505.4 Other than Group R.** In other than Group R occupancies, where domestic cooktops, ranges, and open-top broilers are used for domestic					

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		Decrease	None	Increase		
Sub Code:						
	purposes, domestic cooking ~~appliances are utilized for domestic purposes, such appliances shall be provided with domestic range hoods. Hoods and~~ exhaust systems shall be ~~in accordance with Sections 505.1 and 505.2.~~ provided. ANSI Z21.1 - 2010 Household Cooking Gas Appliances UL 507 - 2014 Standard for Safety Electric Fans					
M48-15	**Section: 506.3.13.2** ***AEI Summary: This proposal clarifies language regarding exterior wall exhaust terminations and opening clearances.*** **506.3.13.2. Termination through an exterior wall.** Exhaust outlets shall be permitted to terminate through exterior walls where the smoke, grease, gases, vapors and odors in the discharge from such terminations do not create a public nuisance or a fire hazard. Such terminations shall not be located where protected openings are required by the *International Building Code*. ~~Other exterior openings~~ Such terminations shall be located in accordance with Section 506.3.13.3 and shall not be located within 3 feet ~~(914 mm)~~ of ~~such terminations~~ any opening in the exterior wall.		X			Clarification/ Fire Safety
M51-15	**Section(s): 202 (New), 506.5.2 (New)** ***AEI Summary: This proposal adds minimum construction and installation standards for exhaust pollution control units.*** **SECTION 202** **DEFINITIONS** **POLLUTION CONTROL UNIT (PCU)** Manufactured equipment that is installed in a grease exhaust duct system for the purpose of extracting smoke, grease particles, and odors from the exhaust flow by means of a series of filters. **506.5.2 Pollution Control Units.** Pollution control units shall be installed in accordance with the manufacturer's installation instructions and shall be in accordance with all of the following: 1. Pollution control units shall be listed and labeled in accordance with UL 1978. 2. Fans serving pollution control units shall be listed and labeled in accordance with with UL 762. 3. Pollution control units shall be mounted and secured in accordance with the manufacturer's installation instructions and the International Building Code. 4. Pollution control units located indoors shall be listed and labeled for such use. Where enclosed duct systems, as required by Section 506.3.11, are connected to a pollution control unit, such unit shall			X	$6.00 per SF of kitchen	Clarification/ Safety

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		Decrease	None	Increase		
Sub Code:						
	be located in a room or space having the same fire-resistance rating as the duct enclosure. Access shall be provided for servicing and cleaning of the unit. The space or enclosure shall be ventilated in accordance with the manufacturer's installation instructions. 5. A clearance of not less than 18 inches (457 mm) shall be maintained between the pollution control unit and combustible material. 6. Roof mounted pollution control units shall be listed for exterior installation and shall be mounted not less than 18 inches (457 mm) above the roof. 7. Exhaust outlets for pollution control units shall be in accordance with Section 506.3.13. 8. An airflow differential pressure control shall be provided to monitor the pressure drop across the filter sections of a pollution control unit. When the airflow is reduced below the design velocity, the airflow differential pressure control shall activate a visual alarm located in the area where cooking operations occur. 9. Pollution control units shall be provided with a factory installed fire suppression system. 10. Service space shall be provided in accordance with the manufacturer's instructions for the pollution control unit and the requirements of Section 306. 11. Wash down drains shall discharge through a grease interceptor and shall be sized for the flow. Drains, shall be sealed with a trap or other approved means to prevent air bypass. Where a trap is utilized it shall have a seal depth that accounts for the system pressurization and evaporation between cleanings. 12. Protection from freezing shall be provided for the water supply and fire suppression systems where such systems are subject to freezing. 13. Duct connections to pollution control units shall be in accordance with Section 506.3.2.3. Where water splash or carryover can occur in the transition duct as a result of a washing operation, the transition duct shall slope downward toward the cabinet drain pan for a length not less than 18 inches (457 mm). Ducts shall transition to the full size of the units inlet and outlet openings. 14. Extra heavy duty appliance exhaust systems shall not be connected to pollution control units except where such units are specifically designed and listed for use with solid fuels. 15. Pollution control units shall be maintained in accordance with the manufacturer's instructions.					
M55-15	**Section: 507.2.6**		X			Clarification/ Product Offering

Table 6. 2018 IMC Changes Cost Impact						
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		Decrease	None	Increase		
Sub Code:						
	AEI Summary: This proposal adds an exception permitting specially labeled exhaust hoods with less than typical clearances to be installed. **507.2.6 Clearances for Type I hood.** A Type I ho d shall be installed with a ~~*clearance*~~ *clearance* to combustibles of not less than 18 inches (457 mm). ~~**Exception**~~ **Exceptions:** 1. *Clearance* shall not be required from gypsum wallboard or ½-inch (12.7 mm) or thicker cementitious wallboard attached to noncombustible structures provided that a smooth, cleanable, nonabsorbent and noncombustible material is installed between the hood and the gypsum or cementitious wallboard over an area extending not less than 18 inches (457 mm) in all directions from the hood. 2. Type I hoods listed and labeled for clearances less than 18 inches in accordance with UL710 hall be installed with the clearances specified by such listings.					
M59-15	**Section(s): 510.8.4 (New)** ***AEI Summary: This proposal requires access and clean outs for duct cleaning and servicing of ducts conveying dust and debris.*** **510.8.4 Duct cleanout.** Ducts conveying combustible dust as part of a dust collection system shall be equipped with cleanouts that are provided with access. The cleanouts shall be located at the base of each vertical duct riser and at intervals not exceeding 20 foot in horizontal sections of duct.			X	$700.00 per riser	Performance/ Safety
M61-15	**Section: 512.2** ***AEI Summary: This proposal removes brass, because brass is a copper alloy, and reworded the sentence without changing the meaning.*** **512.2 Materials.** Sub-slab soil exhaust system duct material shall be air duct material *listed* and *labeled* to the requirements of UL 181 for Class 0 air ducts, or any of the following piping materials that comply with the *International Plumbing Code* as building sanitary drainage and vent pipe: cast iron; galvanized steel; ~~brass or~~ copper and copper-alloy pipe~~; copper~~ and tube of a weight not less than ~~that of copper drainage tube, Type~~ type DWV; and plastic piping.		X			Clarification
M62-15	**Section(s): 601.5** ***AEI Summary: This proposal prohibits return air from indoor swimming pool enclosures.***		X			Safety/ Performance

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	601.5 Return air openings: Return air openings for heating, ventilation and air-conditioning systems shall comply with all of the following: 1 Openings shall not be located less than 10 feet (3048 mm) measured in any direction from an open combustion chamber or draft hood of another appliance located in the same room or space. 2 Return air shall not be taken from a hazardous or insanitary location or a refrigeration room as defined in this code. 3 The amount of return air taken from any room or space shall be not greater than the flow rate of supply air delivered to such room or space. 4 Return and transfer openings shall be sized in accordance with the appliance or equipment manufacturer's installation instructions, ACCA Manual D or the design of the registered design professional. 5 Return air taken from one dwelling unit shall not be discharged into another dwelling unit. 6 Taking return air from a crawl space shall not be accomplished through a direct connection to the return side of a forced air furnace. Transfer openings in the crawl space enclosure shall not be prohibited. 7 Return air shall not be taken from a closet, bathroom, toilet room, kitchen, garage, boiler room, furnace room or unconditioned attic. **Exceptions:** 24. Taking return air from a kitchen is not prohibited where such return air openings serve the kitchen and are located not less than 10 feet (3048 mm) from the cooking appliances. 25. Dedicated forced air systems serving only the garage shall not be prohibited from obtaining return air from the garage 8 Return air shall not be taken from indoor swimming pool enclosures and associated deck areas except where such spaces are dehumidified.					
M64-15	**Section: 602.1** ***AEI Summary: This proposal prohibits includes framing cavities as a suitable location for ventilation air plenums.*** **602.1 General.** Supply, return, exhaust, relief and ventilation air plenums shall be limited to uninhabited crawl spaces, areas above a ceiling or below the floor, attic spaces ~~and~~, mechanical equipment rooms and the framing cavities addressed in Section 602.3. Plenums			X	$5.00 per SF of plenum	Clarification

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	shall be limited to one fire area. Air systems shall be ducted from the boundary of the fire area served directly to the air-handling equipment. Fuel-fired appliances shall not be installed within a plenum.					
M66-15	**Section: 602.2.1** ***AEI Summary: This proposal adds revisions for insulation material types that can be installed within a plenum.*** **602.2.1 Materials within plenums.** Except as required by Sections 602.2.1.1 through 602.2.1.7, materials within plenums shall be noncombustible or shall be listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723. **Exceptions:** 1. Rigid and flexible ducts and connectors shall conform to Section 603. 2. Duct coverings, linings, tape and connectors shall conform to Sections 603 and 604. 3. This section shall not apply to materials exposed within plenums in one- and two-family dwellings. 4. This section shall not apply to smoke detectors. 5. Combustible materials fully enclosed within one of the following: 5.1 Continuous noncombustible raceways or enclosures. 5.2 Approved gypsum board assemblies. 5.3 Materials listed and labeled for installation within a plenum and listed for the application. 6. Materials in Group H, Division 5 fabrication areas and the areas above and below the fabrication area that share a common air recirculation path with the fabrication area.			X	$5.00 per SF of plenum	Safety/ Clarification
M67-15	**Section: 602.2.1.1, 602.2.1.2, 602.2.1.3.** ***AEI Summary: This proposal provides consistency with pass fail criteria for wiring, fire sprinkler piping and pneumatic tubing.*** **602.2.1.1 Wiring.** Combustible electrical wires and cables and optical fiber cables exposed within a plenum shall be listed and labeled as having a ~~maximum~~ peak optical density ~~of~~ not greater than 0.50 ~~or less~~, an average optical density ~~of~~ not greater than 0.15 ~~or less~~, and a ~~maximum~~ flame spread distance ~~of~~ not greater than 5 feet (1524 mm) ~~or less~~ when tested in accordance with NFPA 262 or shall be installed in metal raceways or metal sheathed cable. Combustible optical fiber and communication raceways exposed within a plenum shall be listed and labeled as having a ~~maximum~~ peak optical density ~~of~~ not greater than 0.5 ~~or less~~, an average optical density ~~of~~ not greater than 0.15 ~~or less~~,		X			Clarification/ Consistency

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	and a ~~maximum~~ flame spread distance ~~of~~ not greater than 5 feet (1524 mm) ~~or less~~ when tested in accordance with ~~ANSI/~~UL 2024. Only plenum-rated wires and cables shall be installed in plenum-rated raceways. ~~Electrical wires and cables, optical fiber cables and raceways addressed in this section shall be listed and labeled and shall be installed in accordance with NFPA 70.~~ **602.2.1.2 Fire sprinkler piping.** Plastic fire sprinkler piping exposed within a ~~*plenum*~~ plenum shall be used only in wet pipe systems and shall ~~have~~ be listed and labeled as having a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread ~~of~~ distance not greater than 5 feet (1524 mm) when tested in accordance with UL 1887. ~~Piping shall be *listed* and *labeled*.~~ **602.2.1.3 Pneumatic tubing.** Combustible pneumatic tubing exposed within ~~*plenum*~~ plenum shall ~~have~~ be listed and labeled as having a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread ~~of~~ distance not greater than 5 feet (1524 mm) when tested in accordance with UL 1820. ~~Combustible pneumatic tubing shall be *listed* and *labeled*.~~					
M70-15 Part I,	**Section(s): IMC: 602.2.1.6, 602.2.1.6 (New), 602.2.1.6.1, 602.2.1.6.2, 602.2.1.6.3** ***AEI Summary: This proposal revises the requirements for foam plastic in plenums.*** ~~**602.2.1.6 Foam plastic insulation.** Foam plastic insulation used in plenums as interior wall or ceiling finish or as interior trim shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 and shall also comply with one or more of Sections 602.2.1.6.1, 602.2.1.6.2 and 602.2.1.6.3.~~ **602.2.1.6 Foam plastic insulation in plenums as interior finish or interior trim.** Where exposed to the airflow in plenums, foam plastic insulation in plenums used as interior wall or ceiling finish or interior trim, shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, and shall be tested in accordance with NFPA 286 and meet the acceptance criteria of Section 803.1.2 of the *International Building Code*. Exceptions: 1. Foam plastic insulation in plenums used as interior wall or ceiling finish or interior trim, shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for		X			Clarification/ Consistency

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		Decrease	None	Increase		
Sub Code:						
	use, where it is separated from the airflow in the plenum by a thermal barrier complying with Section 2603.4 of the *International Building Code*. 2. Foam plastic insulation in plenums used as interior wall or ceiling finish or interior trim, shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm). 3. Foam plastic insulation in plenums used as interior wall or ceiling finish or interior trim, shall exhibit a flame spread index of 75 or less and a SD index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by not less than a 1 inch (25mm) thickness of masonry or concrete. ~~**602.2.1.6.1 Separation required.** The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 of the *International Building Code* and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.~~ ~~**602.2.1.6.2 Approval.** The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria 1.2 of the *International Building Code* when tested in accordance with NFPA 286.~~ ~~The foam plastic insulation shall be approved based on tests conducted in accordance with plastic insulation shall be approved based on tests conducted in accordance with Section 2603.9 of the *International Building Code*.~~ ~~**602.2.1.6.3 Covering.** The foam plastic insulation shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.~~					
M76-15	**Section(s): 602.2.1.7** ***AEI Summary: This proposal clarifies that this section is only applicable to plastic piping and tubing exposed within a plenum.***		X			Clarification/ Consistency

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	602.2.1.7 Plastic plumbing ~~pipe~~ piping and ~~tube~~ tubing. Plastic piping and tubing used in plumbing systems exposed within a plenum shall be listed and ~~shall exhibit~~ labeled as having a flame spread index ~~of~~ not ~~more~~ greater than 25 and a smoke-developed index ~~of~~ not ~~more~~ greater than 50 when tested in accordance with ASTM E 84 or UL 723. **Exception:** Plastic water distribution piping and tubing listed and labeled in accordance with UL 2846 as having a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread distance not greater than 5 feet (1524 mm), and installed in accordance with its listing. UL 2846-14, Fire Test of Plastic Water Distribution Plumbing Pipe for Visible Flame and Smoke Characteristics					
M79-15	**Section: 602.2.1.8 (New)** ***AEI Summary: This proposal clarifies flammability standards for pipe and duct insulation within a plenum.*** **602.2.1.8 Pipe and duct insulation within plenums.** Pipe and duct insulation contained within plenums, including insulation adhesives, shall have a flame spread index of not more than 25 and a smoke developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231. Pipe and duct insulation shall not flame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature at which they are exposed in service. The test temperature shall not fall below 250ºF (121ºC) . Pipe and duct insulation shall be listed and labeled.		X			Clarification/ Consistency
M89-15	**Section(s): 603.5.2 (New), CHAPTER 15** ***AEI Summary: This proposal adds phenolic ducts and the SMACNA Phenolic Duct Construction Standard for reference.*** **603.5.2 Phenolic ducts.** Nonmetallic phenolic ducts shall be constructed in accordance with the SMACNA Phenolic Duct Construction Standards. SMACNA Phenolic Duct Construction Standard 1st edition 2015		X			Clarification/ Product Offering
M94-15	**Section(s): 603.8.2** ***AEI Summary: This proposal revises inspection and test requirements for buried and encased ducting.*** **603.8.2 Sealing.** Ducts shall be sealed and secured and then tested with air to a pressure of not less than 2-inches water column (498 Pa) for not less than 5 minutes. Testing shall be performed in the presence of the			X	$2.00 per LF of duct	Quality/ Clarification

Table 6. 2018 IMC Changes Cost Impact						
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		Decrease	None	Increase		
Sub Code:						
	code official and prior to ~~pouring the~~ encasement in concrete ~~encasement~~ or direct burial.					
M96-15	**Section: 603.9** ***AEI Summary: This proposal reduces construction cost and still reduces energy loss that would occur due to duct leakage outside of conditioned space.*** **603.9 Joints, seams and connections.** All longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA *HVAC Duct Construction Standards—Metal and Flexible* and NAIMA *Fibrous Glass Duct Construction Standards*. All joints, longitudinal and transverse seams and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants or tapes. Tapes and mastics used to seal fibrous glass ductwork shall be listed and labeled in accordance with UL 181A and shall be marked "181 A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape. Tapes and mastics used to seal metallic and flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181 B-FX" for pressure-sensitive tape or "181 B-M" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked "181 B-C." Closure systems used to seal all ductwork shall be installed in accordance with the manufacturer's instructions. **Exception:** For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams of other than the snap-lock and buttonlock types for ducts that are located outside of conditioned spaces.		X			Clarification/ Conservation
M100-15	**Section: 805.7 (New)** ***AEI Summary: This proposal adds an exception for vapor retarder on spray polyurethane foam insulation.*** **604.11 Vapor retarders.** Where ducts used for cooling are externally insulated, the insulation shall be covered with a vapor retarder having a maximum permeance of 0.05 perm [2.87 ng/(Pa • s • m2)] or aluminum foil having a minimum thickness of 2 mils (0.051 mm). Insulations having a permeance of 0.05 perm [2.87 ng/(Pa • s • m2)] or less shall not be required to be covered. All joints and seams shall be sealed to maintain the continuity of the vapor retarder.		X			Product Offering

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Exception: A vapor retarder is not required for spray polyurethane foam insulation having a water vapor permeance of not greater than of 3 perm per inch [1722 ng/(s · m2 · Pa)] at the installed thickness.					
M102-15	**Section: 805.7 (New)** ***AEI Summary: This proposal requires insulation shields for factory-built and metal chimneys.*** **805.7 Insulation shield** Where factory-built chimneys pass through insulated assemblies, an insulation shield constructed of steel having a thickness of not less than 0.0187 inch (0.4712 mm) (No. 26 gage) shall be installed to provide clearance between the chimney and the insulation material. The clearance shall be not less than the clearance to combustibles specified by the chimney manufacturer's installation instructions. Where chimneys pass through attic space, the shield shall terminate not less than 2 inches (51 mm) above the insulation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a *listed* chimney system shall be installed in accordance with the manufacturer's instructions.		X			Safety/ Consistency
M104-15	**Section(s): 916.1, CHAPTER 15** ***AEI Summary: This proposal will ensure consistency with what standards are required for various pool heaters.*** **916.1 General.** Pool and spa heaters shall be installed in accordance with the manufacturer's instructions. Oil-fired pool and spa heaters shall be tested in accordance with UL 726. Electric pool and spa heaters shall be tested in accordance with UL 1261, UL 1563 or CSA C22.2 No. 218.1. Gas-fired pool heaters shall comply with ANSI Z21.56/CSA 4.7. Pool and spa heat pump water heaters shall comply with UL 1995, AHRI 1160, or CSA C22.2 No. 236. AHRI 1160 (I-P) -09 Performance rating of Heat Pump Pool Heaters ANSI Z21.56a/CSA 4.7 -2013 Gas Fired Pool Heaters CSA C22.2 No. 236-11 Cooling Equipment CSA C22.2 No. 218.1-M89(R2011) Spas, Hot Tubs and Associated Equipment UL 1563-2009 Standard for Electric Spas, Hot Tubs and Associated Equipment-with revisions through July 2012		X			Consistency
M108-15	**Section(s): 202 (New), 929 (New), 929.1 (New), CHAPTER 35** ***AEI Summary: This proposal adds the appropriate test standard, installation instructions, and a definition for high volume large diameter fans.***		X			Clarification/ Standards Inclusion

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	HIGH VOLUME LARGE DIAMETER FAN. A low speed ceiling fan that circulates large volumes of air and that is greater than 7 feet (2134 mm) in diameter. **SECTION 929** **HIGH VOLUM E DIAMETER FANS** **929.1 General.** High volume large diameter fans shall be tested in accordance with AMCA 230 and Installed in accordance with the manufacturer's instructions. AMCA 230-CD1 Laboratory Methods of Testing Air Circulating Fans for Rating and Certification.					
M110-15	**Section: 1002.1, 1401.4, 1401.4.1 (New), CHAPTER 15** ***AEI Summary: This proposal updates reference standards for solar thermal water heaters.*** **1002.1 General.** Potable water heaters and hot water storage tanks shall be listed and labeled and installed in accordance with the manufacturer's instructions, the *International Plumbing Code* and this code. All water heaters shall be capable of being removed without first removing a permanent portion of the building structure. The potable water connections and relief valves for all water heaters shall conform to the requirements of the *International Plumbing Code*. Domestic electric water heaters shall comply with UL 174 or UL 1453. Commercial electric water heaters shall comply with UL 1453. Oil-fired water heaters shall comply with UL 732. Solid-fuel-fired water heaters shall comply with UL 2523. ~~Thermal solar~~ Solar thermal water ~~heaters~~ heating systems shall comply with Chapter 14 and ~~UL 174 or UL 1453~~SRCC 300. **1401.4 Solar ~~energy~~ thermal equipment and appliances.** Solar ~~energy~~ thermal *equipment* and appliances shall conform to the requirements of this chapter. Solar thermal systems shall be listed and labeled to SRCC 300 and shall be installed ~~in~~ accordance with the ~~manufacturer's~~ manufacturers' instructions and SRCC 300.		X			Standards Update
M111-15	**Section(s): 1006.6, CHAPTER 15** ***AEI Summary: This proposal updates language regarding safety and relief valve discharge installation.*** **1006.6 Safety and relief valve discharge.** Safety and relief valve discharge pipes shall be of rigid pipe that is *approved* for the temperature of the system. ~~The discharge pipe shall be the same diameter as the safety or relief valve outlet. Safety and relief valves shall not discharge so as to be a hazard, a potential cause of damage or otherwise a nuisance.~~ High pressure- steam safety valves shall be vented		X			Clarification/ Conservation

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	to the outside of the structure. ~~Where a low-pressure safety valve or a~~ The discharge piping serving pressure relief ~~valve discharges~~ valves, temperature relief valves and combinations of such valves shall: 1. Not be directly connected to the drainage system. 2. Discharge through an air gap located in the ~~installation~~ same room as the appliance. 3. Not be smaller than the diameter of the outlet of the valve served and shall ~~conform~~ discharge full size to the air gap. 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment. 5. Discharge to the floor, to the pan serving the boiler or storage tank, to a waste receptor or to the outdoors. 6. Discharge in a manner that does not cause personal injury or structural damage. 7. Discharge to a termination point that is readily observable by the building occupants. 8. Not be trapped. 9. Be installed so as to flow by gravity. 10. Not terminate more than 6 inches (152 mm) above the floor or waste receptor. 11. Not have a threaded connection at the end of such piping. 12. Not have valves or tee fittings. 13. Be constructed of those materials listed in Section 605.4 of the *International Plumbing Code*. or materials tested, rated and approved for such use in accordance with ASME A112.4.1 ASME A112.4.1 Water Heater Relief Valve Drain Tubes					
M113-15	**Section(s): 202 (New), 1009.1, Chapter 15** ***AEI Summary: This proposal provides consistency regarding solar thermal installation and adds an exemption for expansion tanks on drain back systems.*** **1009.1 Where required.** An expansion tank shall be installed in every hot water system. For multiple boiler installations, not less than one expansion tank is required. Expansion tanks shall be of the closed or open type. Tanks shall be rated for the pressure of the hot water system. **Exception:** Expansion tanks shall not be required in the collector loop of *drain-back systems.* **SECTION 202** **DEFINITIONS** **DIRECT SYSTEM.** A solar thermal system in which the gas or liquid in the solar collector loop is not separated from the load.		X			Clarification/ Conservation

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	DRAIN-BACK SYSTEM. A solar thermal system in which the fluid in the solar collector loop is gravity drained from the collector into a holding tank under prescribed circumstances. **FOOD GRADE FLUID.** Potable water or a fluid containing additives listed in accordance with the Code of Federal Regulations, Title 21, Food and Drugs, Chapter 1, Food and Drug Administration, Parts 174-186, **INDIRECT SYSTEM.** A solar thermal system in which the gas or liquid in the solar collector loop circulates between the solar collector and a heat exchanger and such gas or liquid is not drained from the system or supplied to the load during normal operation. **NO-FLOW CONDITION.** A condition where thermal energy is not transferred from a solar thermal collector by means of flow of a heat transfer fluid. **NON-FOOD GRADE FLUID.** Any fluid that is not designated as a food grade fluid. **SOLAR THERMAL SYSTEM.** A system that converts solar radiation to thermal energy for use in heating or cooling.					
M115-15	**Section: 1101.6, CHAPTER 15** ***AEI Summary: This proposal includes reference standards for ammonia refrigeration facilities.*** **1101.6 General.** Refrigeration systems shall comply with the requirements of this code and, except as modified by this code, ASHRAE 15. Ammonia-refrigerating systems shall comply with this code and, except as modified by this code, ASHRAE 15 and IIAR 2, IIAR 3, IIAR 4 and IIAR 5. IIAR 3-2012 Ammonia Refrigeration Valves IIAR 4-2015 (pending completion) Installation of Closed-Circuit Ammonia Mechanical Refrigerating Systems IIAR 5-2013 Start up and Commissioning of Ammonia Refrigeration Systems		X			Standards Update
M116-15	**Section: Table 1103.1** ***AEI Summary: This proposal updates the refrigerant table with the new refrigerants added since the last code cycle.*** **TABLE 1103.1** **REFRIGERANT CLASSIFICATION, AMOUNT AND OEL**		X			Product Table Update

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						

Chemical Refrigerant	Formula	Chemical Name of Blend	Refrigerant Classification	Pounds per 1000 CF of spac	ppm	g/m^3	OEL[e]
R-444B	zeotrope	R-32/152a/1234ze(E) (41.5/10.0/48.5)	A2[f]	4.3	23,000	69	890
R-448A	zeotrope	R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)	A1	24	110,000	390	890
R-449A	zeotrope	R-32 /125 /1234yf /134a (24.3/24.7/25.3/25.7)	A1	23	100,000	370	830
R-450A	zeotrope	R-134a /1234ze(E) (42.0/58.0)	A1	20	72,000	320	880
R-1233zd(E)	CF3 CH=CHCl	trans-1-chloro-3,3,3-trifluoro-1-propene	A1	5.3	16,000	85	800
R-417C	zeotrope	R-125/134a/600 (19.5/78.8/1.7)	A1	5.4	21,000	87	1,000
R-419B	zeotrope	R-125/134a/E170 (48.5/48.0/3.5)	A2	4.6	17,000	74	1,000
R-422E	zeotrope	R-125/134a/600a (58.0/39.3/2.7)	A1	16	57,000	260	1,000
R-445A	zeotrope	R-744/134a/1234ze(E)(6.0/9.0/85.0)	A2[f]	4.2	16,000	67	930
R-446A	zeotrope	R-32/1234ze(E)/600 (68.0/29.0/3.0)	A2[f]	2.5	16,000	39	960
R-447A	zeotrope	R-32/125/1234ze(E) (68.0/3.5/28.5)	A2[f]	2.6	16,000	42	900
R-30	CH2Cl2	dichloromethane (methylene chloride)	B1	-	-	-	-
R-40	CH3Cl	chloromethane (methyl chloride)	B2	-	-	-	-
R-50	CH4	methane	A3	-	-	-	1,000
R-443A	zeotrope	R-1270/290/600a (55.0/40.0/5.0)	A3	0.19	1,700	3.1	580
R-444A	zeotrope	R-32/152a/1234ze(E) (12.0/5.0/83.0)	A2[f]	5.1	21,000	81	850
R-445A	zeotrope	R-744/134a/1234ze(E) (6.0/9.0/85.0)	A2[f]	4.2	16,000	67	930
R-610	ethoxyethane (ethyl ether)	CH3CH2OCH2CH3	-	-	-	-	400
R-611	methyl formate	HCOOCH3	B2	-	-	-	100
R-451A	zeotrope	R-1234yf/134a (89.8/10.2)	A2f	5.3	18,000	81	520
R-451B	zeotrope	R-1234yf/134a (88.8/11.2)	A2f	5.3	18,000	81	530
R-452A	zeotrope	R-32/125/1234yf (11.0/59.0/30.0)	A1	27	100,000	440	780
R-513A	azeotrope	R-1234yf/134a (56.0/44.0)	A1	20	72,000	320	650

(Portions of table not shown remain unchanged)

For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.028 m 3.

a. Degrees of hazard are for health, fire, and reactivity, respectively, in accordance with NFPA 704.

b. Reduction to 1-0-0 is allowed if analysis satisfactory to the code official shows that the maximum concentration for a rupture or full loss of refrigerant charge would not exceed the IDLH, considering both the refrigerant quantity and room volume.

c. For installations that are entirely outdoors, use 3-1-0.

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	d. Class I ozone depleting substance; prohibited for new installations. e. Occupational Exposure Limit based on the OSHA PEL, ACGIH TLV-TWA, the AIHATERA WEEL or consistent value on a timeweighted average (TWA) basis (unless noted C for ceiling) for an 8 hr/d and 40 hr/wk. f. The ASHRAE Standard 34 flammability classification for this refrigerant is 2L, which is a subclass of Class 2.					
M118-15	**Section: 1104.2.2** ***AEI Summary: This proposal clarifies that Section 1104.2.2 only applies when a machinery room is otherwise required.*** **1104.2.2 Industrial occupancies and refrigerated rooms.** This section applies only to industrial occupancies and refrigerated rooms for manufacturing, food and beverage preparation, meat cutting, other processes and storage. ~~Machinery rooms are~~ Where a machinery room would otherwise be required by Section 1104.2, a machinery room shall not be required where all of the following conditions are met: 1. The space containing the machinery is separated from other occupancies by tight construction with tight-fitting doors. 2. Access is restricted to authorized personnel. 3. The floor area per occupant is not less than 100 square feet (9.3 m2) where machinery is located on floor levels with exits more than 6.6 feet (2012 mm) above the ground. Where provided with egress directly to the outdoors or into approved building exits, the minimum floor area shall not apply. 4. Refrigerant detectors are installed as required for machinery rooms in accordance with Section 1105.3. 5. Surfaces having temperatures exceeding 800°F (427°C) and open flames are not present where any Group A2, B2, A3 or B3 refrigerant is used (see Section 1104.3.4). 6. All electrical equipment and appliances conform to Class 1, Division 2, hazardous location classification requirements of NFPA 70 where the quantity of any Group A2, B2, A3 or B3 refrigerant, other than ammonia, in a single independent circuit would exceed 25 percent of the lower flammability limit (LFL) upon release to the space. 7. All refrigerant-containing parts in systems exceeding 100 horsepower (hp) (74.6 kW) drive power, except evaporators used for refrigeration or dehumidification; condensers used for heating; control and pressure relief valves for either; and		X			Clarification

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	connecting piping, shall be located either outdoors or in a *machinery room*.					
M121-15	**Section(s): 1104.2.2** ***AEI Summary*: This proposal adds exceptions for scenarios in which refrigerant detectors are not necessary.** **1104.2.2 Industrial occupancies and refrigerated rooms.** This section applies only to industrial occupancies and refrigerated rooms for manufacturing, food and beverage preparation, meat cutting, other processes and storage. Machinery rooms are not required where all of the following conditions are met: 1. The space containing the machinery is separated from other occupancies by tight construction with tight-fitting doors. 2. Access is restricted to authorized personnel. 3. The floor area per occupant is not less than 100 square feet (9.3 m2) where machinery is located on floor levels with exits more than 6.6 feet (2012 mm) above the ground. Where provided with egress directly to the outdoors or into approved building exits, the minimum floor area shall not apply. 4. Refrigerant detectors are installed as required for machinery rooms in accordance with Section 1105.3. **Exceptions:** 1. Refrigerant detectors are not required in unoccupied areas that contain only continuous piping that does not include valves, valve assemblies, equipment, or equipment connections. 2. Where approved alternatives are provided, refrigerant detectors are not required for rooms or areas that are always occupied, and for rooms or areas that have high humidity or other harsh environmental conditions that are incompatible with detection devices. 5. Surfaces having temperatures exceeding 800°F (427°C) and open flames are not present where any Group A2, B2, A3 or B3 refrigerant is used (see Section 1104.3.4). 6. All electrical equipment and appliances conform to Class 1, Division 2, hazardous location classification requirements of NFPA 70 where the quantity of any Group A2, B2, A3 or B3 refrigerant, other than ammonia, in a single independent circuit would exceed 25 percent of the lower flammability limit (LFL) upon release to the space. 7. All refrigerant-containing parts in systems exceeding 100 horsepower (hp) (74.6 kW) drive power, except evaporators		X			Exceptions Inclusion

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	used for refrigeration or dehumidification; condensers used for heating; relief valves for either; and connecting piping, shall be located either outdoors or in a *machinery room*.					
M122-15	**Section: 202, 1104.2.2** ***AEI Summary*: This proposal reworks the language regarding refrigerated space for clarification and consistency.** ~~**REFRIGERATED ROOM OR SPACE.** A room or space in which an evaporator or brine coil is located for the purpose of reducing or controlling the temperature within the room or space to below 68ºF (20ºC).~~ **1104.2.2 Industrial occupancies and refrigerated rooms.** This section applies only to rooms and spaces that are within industrial occupancies, that contain a refrigerant evaporator, that are maintain at temperatures below 68°F (20°C) and ~~refrigerated rooms~~ that are used for manufacturing, food and beverage preparation, meat cutting, other processes and storage. Machinery rooms are not required where all of the following conditions are met: 1. The space containing the machinery is separated from other occupancies by tight construction with tight-fitting doors. 2. Access is restricted to authorized personnel. 3. The floor area per occupant is not less than 100 square feet (9.3 m2) where machinery is located on floor levels with exits more than 6.6 feet (2012 mm) above the ground. Where provided with egress directly to the outdoors or into approved building exits, the minimum floor area shall not apply. 4. Refrigerant detectors are installed as required for machinery rooms in accordance with Section 1105.3. 5. Surfaces having temperatures exceeding 800°F (427°C) and open flames are not present where any Group A2, B2, A3 or B3 refrigerant is used (see Section 1104.3.4). 6. All electrical equipment and appliances conform to Class 1, Division 2, hazardous location classification requirements of NFPA 70 where the quantity of any Group A2, B2, A3 or B3 refrigerant, other than ammonia, in a single independent circuit would exceed 25 percent of the lower flammability limit (LFL) upon release to the space. 7. All refrigerant-containing parts in systems exceeding 100 horsepower (hp) (74.6 kW) drive power, except evaporators used for refrigeration or dehumidification; condensers used		X			Clarification/ Consistency

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	for heating; control and pressure relief valves for either; and connecting piping, shall be located either outdoors or in a *machinery room*.					
M123-15	**Section(s): 1105.6.1.1 (New)** ***AEI Summary: This proposal requires indoor mechanical exhaust intake openings to be located where refrigerant leakage is likely to occur.*** **1105.6.1.1 Indoor exhaust opening location.** Indoor mechanical exhaust intake openings shall be located where refrigerant leakage is likely to concentrate based on the refrigerant's relative density to air. Air current paths and machinery location shall be accounted for in locating such intake openings.		X			Safety
M128-15	**Section(s): 1107.2** ***AEI Summary: This proposal gives means of egress a reasonable interpretation that identifies specific locations where refrigerant piping is prohibited.*** **1107.2 Piping location.** Refrigerant piping that crosses an open space that affords passageway in any building shall be not less than 7 feet 3 inches (2210 mm) above the floor unless the piping is located against the ceiling of such space. Refrigerant piping shall not be placed in any of the following: 1. A fire-resistance-rated exit access corridor. 2. An interior exit stairway. 3. An interior exit ramp. 4. An exit passageway. 5. An elevator, dumbwaiter or other shaft containing a moving object ~~or in any~~. 6. A shaft that has ~~openings to living quarters~~ one or ~~to means of egress. Refrigerant piping shall not be installed in an enclosed public stairway~~ more openings into a dwelling unit or sleeping unit. 7. A shaft that has one or more openings into a fire-resistance-rated exit access corridor, interior exit stairway ~~landing~~ or ramp, or ~~means of egress~~ exit passageway.		X			Clarification
M130-15	**Section: 1107.5.2** ***AEI Summary: This proposal removes brass because brass is a copper alloy.***		X			Clarification/ Consistency

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1107.5.2 Copper and ~~brass~~ copper-alloy pipe. Standard iron-pipe size, copper and ~~red brass (~~copper- alloy (not less than 80-percent copper) pipe shall conform to ASTM B 42 and ASTM B 43.					
M132-15	**Section: 1107.5.3, Chapter 15** ***AEI Summary: This proposal changes language regarding copper tubing for refrigeration and adds a reference standard.*** **1107.5.3 Copper tube.** Copper tube used for refrigerant piping erected on the premises shall be seamless copper tube of Type ACR (hard or annealed) complying with ASTM B 280~~. Where *approved*, copper tube for refrigerant piping erected on the premises shall be seamless copper tube of Type K, L~~ or ~~M (drawn or annealed) in accordance with~~ ASTM ~~B 88~~B819. Annealed temper copper tube shall not be used in sizes larger than a 2-inch (51 mm) nominal size. Mechanical joints shall not be used on annealed temper copper tube in sizes larger than -inch (22.2 mm) OD size. ASTM B819-00 (R2011) Standard Specification for Seamless Copper Tube for Medical Gas Systems		X			Revision/ Standard Inclusion
M133-15	**Section(s): 1107.5.3** ***AEI Summary: This proposal identifies press-connect joints as the only mechanical joint permitted on refrigerant copper tubing sizes larger than 7/8".*** **1107.5.3 Copper tube.** Copper tube used for refrigerant piping erected on the premises shall be seamless copper tube of Type ACR (hard or annealed) complying with ASTM B 280. Where *approved*, copper tube for refrigerant piping erected on the premises shall be seamless copper tube of Type K, L or M (drawn or annealed) in accordance with ASTM B 88. Annealed temper copper tube shall not be used in sizes larger than a 2-inch (51 mm) nominal size. Mechanical joints, other than press-connect joints, shall not be used on annealed temper copper tube in sizes larger than 7/ 8-inch (22.2 mm) OD size.		X			Product Identification
M135-15	**Section: Table 1202.4, Table 1210.4** ***AEI Summary: This proposal removes an antiquated standard from the hydronic pipe table.***		X			Clarification/ Consistency

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE 1202.4 HYDRONIC PIPE MATERIAL | STANDARD (see Chapter 15) Cross-linked polyethylene (PEX) tubing | ASTM F 876; ~~ASTM F 877~~ *(Portions of table not shown remain unchanged)* TABLE 1210.4 GROUND-SOURCE LOOP PIPE MATERIAL | STANDARD (see Chapter 15) Cross-linked polyethylene (PEX) | ASTM F 876; ~~ASTM F 877;~~ CSA B137.5 *(Portions of table not shown remain unchanged)*					
M136-15	**Section: Table 1202.4, Table 1210.4, Chapter 15** ***AEI Summary: This proposal adds a reference standard to the table for PE-RT installations.*** TABLE 1202.4 HYDRONIC PIPE MATERIAL | STANDARD (see Chapter 15) Raised temperature polyethylene (PE-RT) | ASTM F 2623; ASTM F 2769; CSA B1 *(Portions of table not shown remain unchanged)* TABLE 1210.4 GROUND-SOURCE LOOP PIPE MATERIAL | STANDARD (see Chapter 15) Raised temperature polyethylene (PE-RT) | ASTM F 2623; ASTM F2769; CSA B13 *(Portions of table not shown remain unchanged)* CSA B137.18 - 13 Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications.		X			Standards Table Update
M137-15	**Section(s): Table1202.5, CHAPTER 15** ***AEI Summary: This proposal adds a reference standard to the table for push fitting installations.***		X			Standards Table Update

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE 1202.5 (1202.5) HYDRONIC PIPE FITTINGS MATERIAL | STANDARD (see Chapter 15) Copper and copper alloys | ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.26; ASTM F 1974; ASTI B16.24; ASME B16.51; ASSE 1061 Ductile iron and gray iron | ANSI/AWWA C110/A21.10; AWWA C153/A21.53; ASTM A 395; ASTM A 536; AS 1476; ASTM F 1548 Ductile iron | ANSI/AWWA C153/A21.53 Gray iron | ASTM A 126 Malleable iron | ASME B16.3 PE-RT fittings | ASTM F 1807; ASTM F 2098; ASTM F 2159; ASTM F 2735; ASTM F 2769; ASSE PEX fittings | ASTM F 877; ASTM F 1807; ASTM F 2159; ASSE 1061 Plastic | ASTM D 2466; ASTM D 2467; ASTM F 438; ASTM F 439; ASTM F 877; ASTM F 2 ASTM F 2735 Steel | ASME B16.5; ASME B16.9; ASME B16.11; ASME B16.28; ASTM A 53; ASTM A 1 ASTM A 234; ASTM A 420; ASTM A 536; ASTM A 395; ASTM F 1476; ASTM F 1 ASSE 1061-2011 Performance Requirements for Push Fit Fittings.					
M138-15	**Section: Table 1202.5, Table 1210.5, Chapter 15** ***AEI Summary: This proposal adds a reference standard to the table for PE-RT fitting installations.*** TABLE 1202.5 HYDRONIC PIPE FITTINGS MATERIAL | STANDARD (see Chapter 15) PE-RT fittings | ASTM F 1807; ASTM F 2098; ASTM F 2159; AS 2735; ASTM F 2769; ASTM D3261; CSA B137. B137.1 *(Portions of table not shown remain unchanged)* TABLE 1210.5 GROUND-SOURCE LOOP PIPE FITTINGS PIPE MATERIAL | STANDARD (see Chapter 15) Raised temperature polyethylene (PE-RT) | ASTM D 3261; ASTM F 1807; ASTM F 2159; C B137.1; ASTM F2098; ASTM F2735; ASTM F27 B137.18 *(Portions of table not shown remain unchanged)* CSA B137.18 - 13 Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications.		X			Standards Table Update
M139-15	**Section: Table 1202.5** ***AEI Summary: This proposal adds a reference standard to the table for PEX fitting installations.***		X			Standards Table Update

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE 1202.5 HYDRONIC PIPE FITTINGS MATERIAL | STANDARD (see Chapter 15) PEX fittings | ASTM F 877; ASTM F 1807; ASTM F 2159; AS F1960; ASTM F2080 *(Portions of table not shown remain unchanged)*					
M141-15	**Section: 1203.3.3, Chapter 15** ***AEI Summary: This proposal creates consistency between the IMC and the IPC regarding soldered joints.*** **1203.3.3 Soldered joints.** ~~Joint surfaces~~ Solder joints shall be ~~cleaned~~ made in accordance with ASTM B828. Cut tube ends shall be reamed to the full inside diameter of the tube end. A flux conforming to ASTM ~~B 813~~ B813 shall be applied. The joint shall be soldered with a solder conforming to ASTM ~~B 32~~ B32. ASTM B828 Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings.		X			Consistency
M145-15	**Section: 202, 1203.8, 1203.8.3** ***AEI Summary: This proposal creates consistency regarding designation and definition of PRESS-CONNECT fittings and joints throughout the code.*** ~~**PRESS**~~ **PRESS-CONNECT JOINT.** (*No change to text.)* **1203.8 Copper or copper-alloy tubing.** Joints between copper or copper-alloy tubing or fittings shall be brazed, mechanical or soldered joints conforming to Section 1203.3, flared joints conforming to Section 1203.8.1, push-fit joints conforming to Section 1203.8.2 or ~~press-type~~ press-connect type joints conforming to Section 1203.8.3. **1203.8.3 Press-connect joints.** *Press-connect joints* shall be installed in accordance with the manufacturer's instructions.		X			Consistency
M150-15	**Section(s): 1208.1** ***AEI Summary: This proposal creates an exception for air testing of plastic piping systems if certain conditions are met.*** **1208.1 General.** Hydronic piping systems shall be tested hydrostatically at one and one-half times the maximum system design pressure, but not less than 100 psi (689 kPa). The duration of each test shall be not less than 15 minutes. **Exception:** For plastic piping systems, testing with a compressed gas shall be an alternative to hydrostatic testing where compressed		X			Exception inclusion

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	air or other gas pressure testing is specifically authorized all of the manufacturer's instructions for the plastic pipe and fitting products installed at the time the system is being tested, and compressed air or other gas testing is not otherwise prohibited by applicable codes, laws or regulations outside of this code.					
M152-15	**Section: 1209.3, 1209.3.5 (New)** ***AEI Summary: This proposal provides consistency between the PEX and PE-RT joints through code sections.*** **SECTION 1209** **EMBEDDED PIPING** **1209.1 Materials.** *(No change to text.)* **1209.2 Pressurizing during installation.** *(No change to text.)* **1209.3 Embedded joints.** Joints of pipe or tubing that are embedded in a portion of the building, such as concrete or plaster, shall be in accordance with the requirements of Sections 1209.3.1 through ~~1209.3.4~~ 1209.3.5 **1209.3.1 Steel pipe joints.** *(No change to text.)* **1209.3.2 Copper tubing joints.** *(No change to text.)* **1209.3.3 Polybutylene joints.** *(No change to text.)* **1209.3.4 Polyethylene of raised temperature (PE-RT) joints.** PE-RT tubing shall be installed in continuous lengths or shall be joined by hydronic fittings listed in Table 1202.5. **1209.3.5 Cross-linked polyethylene (PEX) joints.** PEX tubing shall be installed in continuous lengths or shall be joined by hydronic fittings listed in Table 1202.5.		X			Consistency
M153-15	**Section: 1209.5, 1209.5.1, 1209.5.2** ***AEI Summary: This proposal relocates an existing insulation requirement from the IMC to the IECC.*** **1209.5 Thermal barrier required.** Radiant floor heating systems shall be provided with a thermal barrier in accordance with Sections 1209.5.1 ~~through 1209.5.4~~and 1209.5.2. Insulation R-values for slab-on- grade and suspended floor installation shall be in accordance with the International Energy Conservation Code. **Exception:** Insulation shall not be required in engineered systems where it can be demonstrated that the insulation will decrease the efficiency or have a negative effect on the installation.		X			Consistency

Table 6. 2018 IMC Changes Cost Impact

CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	~~**1209.5.1 Slab-on-grade installation.** Radiant piping utilized in slab-on-grade applications shall be provided with insulating materials installed beneath the piping having a minimum *R* value of 5.~~ ~~**1209.5.2 Suspended floor installation.** In suspended floor applications, insulation shall be installed in the joist bay cavity serving the heating space above and shall consist of materials having a minimum *R* value of 11.~~					
M154-15	**Section: Table 1210.4, Table 1210.5, CHAPTER 15** ***AEI Summary: This proposal adds a reference standard to the table for PP-R pipe and fittings.*** TABLE 1210.4 (1210.4) GROUND-SOURCE LOOP PIPE MATERIAL | STANDARD (see Chapter 15) Chlorinated polyvinyl chloride (CPVC) | ASTM D 2846; ASTM F 441; ASTM F 4 Cross-linked polyethylene (PEX) | ASTM F 876; ASTM F 877; CSA B137. Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe | ASTM F 1282; CSA B137.9 High-density polyethylene (HDPE) | ASTM D 2737; ASTM D 3035; ASTM F AWWA C901; CSA B137.1; CSA C448 358-1 Polypropylene (PP-R) | ASTM F 2389; CSA B137.11; NSF 358 Polyvinyl chloride (PVC) | ASTM D 1785; ASTM D 2241 Raised temperature polyethylene (PE-RT) | ASTM F 2623 TABLE 1210.5 (1210.5) GROUND-SOURCE LOOP PIPE FITTINGS PIPE MATERIAL | STANDARD (see Chapter 15) Chlorinated polyvinyl chloride (CPVC) | ASTM D 2846; ASTM F 437; ASTM F 438; 439; CSA B137.6 Cross-linked polyethylene (PEX) | ASTM F 877; ASTM F 1807; ASTM F 196(F 2080; ASTM F 2159; ASTM F 2434; CSA Polyethylene/aluminum/polyethylene (PE-AL-PE) | ASTM F 1282; ASTM F 2434; CSA B137.9 High Density Polyethylene (HDPE) | ASTM D 2683; ASTM D 3261; ASTM F 10 B137.1; CSA C448; NSF 358-1 Polypropylene (PP-R) | ASTM F 2389; CSA B137.11; NSF 358-2 Polyvinyl chloride (PVC) | ASTM D 2464; ASTM D 2466; ASTM D 24 B137.2; CSA B137.3 Raised temperature polyethylene (PE-RT) | ASTM D 3261; ASTM F 1807; ASTM F 21 B137.1 NSF 358-2-2012 Polypropylene Pipe & fittings for water-based ground-source "geothermal" heat pump systems		X			Standards Table Update
M159-15	**Section: 1402.4, 1402.4.1** ***AEI Summary: This proposal clarifies language regarding light transmitting roof mounted solar collectors.***		X			Clarification

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1402.4 Roof-mounted collectors. Roof-mounted solar collectors that also serve as a roof covering shall conform to the requirements for roof coverings in accordance with the *International Building Code*. **Exception:** The use of plastic solar collector covers shall be limited to those *approved* light transmitting plastics meeting the requirements for plastic roof panels in Section 2609 of the *International Building Code.* **1402.4.1 Collectors mounted above the roof.** Where mounted on or above the roof covering, the collector array and supporting construction shall be constructed of noncombustible materials or fire- retardant-treated wood conforming to the *International Building Code* to the extent required for the type of roof construction of the building to which the collectors are accessory. **Exception:** The use of plastic solar collector covers shall be limited to those *approved* light transmitting plastics meeting the requirements for plastic roof panels in Section 2609 of the *International Building Code*.					
M1-16	**Section: [F] 502.4, [F] 502.4.1, [F] 502.4.2, [F] 502.4.3, [F] 502.5, [F] 502.5.1, [F] 502.5.2, [F] 502.5.3** ***AEI Summary: This proposal relocates stationary storage battery system regulation to the International Fire Code.*** **[F] 502.4 Stationary storage battery systems.** Stationary storage battery systems~~, as~~ shall be regulated ~~by~~ and ventilated in accordance with Section 608 of the *International Fire Code*,~~ shall be provided with ventilation in accordance with~~ and the general requirements of this chapter~~ and Section 502.4.1 or 502.4.2~~. ~~**Exception:** Lithium-ion and lithium-metal polymer batteries shall not require additional ventilation beyond that which would normally be required for human occupancy of the space.~~ ~~**[F] 502.4.1 Hydrogen limit in rooms.** For flooded lead-acid, flooded nickel-cadmium and VRLA batteries, the ventilation system shall be designed to limit the maximum concentration of hydrogen to 1.0 percent of the total volume of the room.~~ ~~**[F] 502.4.2 Ventilation rate in rooms.** Continuous ventilation shall be provided at a rate of not less than~~ 1 cubic foot per minute per square foot (cfm/ft^2) [0.00508 m^3/(s • m^2)] of floor area of the room. ~~**[F] 502.4.3 Supervision.** Mechanical ventilation systems required by Section 502.4 shall be supervised by an approved central, proprietary or~~		X			Consistency

Table 6. 2018 IMC Changes Cost Impact						
CODE CHANGE #	2018 IMC CHANGE SUMMARY	IMC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	~~remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.~~ ~~**[F] 502.5 Valve-regulated lead-acid batteries in cabinets.** Valve-regulated lead-acid (VRLA) batteries installed in cabinets, as regulated by Section 608.6.2 of the *International Fire Code*, shall be provided with ventilation in accordance with Section 502.5.1 or 502.5.2.~~ ~~**[F] 502.5.1 Hydrogen limit in cabinets.** The cabinet ventilation system shall be designed to limit the maximum concentration of hydrogen to 1.0 percent of the total volume of the cabinet during the worst-case event of simultaneous boost charging of all batteries in the cabinet.~~ ~~**[F] 502.5.2 Ventilation rate in cabinets.** Continuous cabinet ventilation shall be provided at a rate of not~~ less than 1 cubic foot per minute per square foot (cfm/ft^2) [0.00508 m^3/(s • m^2)] of the floor area covered~~by the cabinet. The room in which the cabinet is installed shall be ventilated as required by Section 502.4.1 or 502.4.2.~~ ~~**[F] 502.5.3 Supervision.** Mechanical ventilation systems required by Section 502.5 shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.~~					

*For prescriptive Code changes only.

APPENDIX G

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
P8-15	**Section: 303.4** ***AEI Summary: This change requires a third-party listing of products and materials required by code to be incompliance with a reference standard.*** **303.4 Third-party certification.** All plumbing products and materials required by the code to be in compliance with a referenced standard shall be listed by a third-party certification agency as complying with the referenced standards. Products and materials shall be identified in accordance with Section 303.1.		X			Quality Assurance
P9-15	**Section: 303.5 (New)** ***AEI Summary: This change requires a third-party listing and inspection of cast iron soil pipe, fittings and components.*** **303.5 Cast iron soil pipe, fittings and components** Cast iron soil pipes and fittings, and the couplings used to join these products together, shall be third party listed and labeled. Third party certifiers or inspectors shall comply with the minimum inspection requirements of Annex A or Annex A1 of the ASTM and CISPI product standards indicated in the code for such products.		X			Quality Assurance
P12-15	**Section: 305.6** ***AEI Summary: This change encourages quality piping workmanship and reduces the in-wall setback.*** **305.6 Protection against physical damage.** In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than $1\frac{1}{2}$ 4 inches (~~38~~ 31.8 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage). Such plates shall cover the area of the pipe where the member is notched or bored, and shall extend not less than 2 inches (51 mm) above sole plates and below top plates.		X			Quality work/ ease of install
P15-15 Part I	**Section: 308.10 (New)** ***AEI Summary: This change requires thermal expansion tanks to be supported per manufacturers instructions.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **308.10 Thermal expansion tanks.** A thermal expansion tank shall be supported according to the manufacturer's instructions. Tanks shall		X			Damage Prevention

Table 7. 2018 IPC Changes Cost Impact

CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	not be supported by the piping that connects to the thermal expansion tank.					
P16-15	**Section: Table 308.5** ***AEI Summary: This change includes updates to the support spacing for both PEX and PE-RT tubing for sizes larger than 1".*** TABLE 308.5 HANGER SPACING PIPING MATERIAL | MAXIMUM HORIZONTAL SPACING (feet) | MAXIMUM V SPACINC Cross-linked polyethylene (PEX) pipe 1 inch and smaller | 2.67 (32 inches) | 10[b] Cross-linked polyethylene (PEX) pipe 1 1/4 inch and larger | 4 | 10[b] Polyethylene of raised temperature (PE-RT) pipe 1 inch and smaller | 2.67 (32 inches) | 10[b] Polyethylene of raised temperature (PE-RT) pipe 1 1/4 inch and larger | 4 | 10[b] *(Portions of table not shown remain unchanged)* For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed. b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe		X			Clarification
P18-15	**Section: Table 308.5** ***AEI Summary: This change includes updates to the support spacing for large diameter PE-RT tubing.*** TABLE 308.5 HANGER SPACING PIPING MATERIAL | MAXIMUM HORIZONTAL SPACING (feet) | MAXIMUM V SPACINC Polyethylene of raised temperature (PE-RT) pipe 1" and less | 2.67 (32 inches) | 10[b] Polyethylene of raised temperature (PE-RT) pipe 1 1/4" and greater | 4 (48 inches) | 10[b] *(Portions of table not shown remain unchanged)* For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed. b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe		X			Damage Prevention

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
P19-15 Part I	**Section: 308.6** ***AEI Summary*: This change requires additional support to prevent undue stress on drainage system joints.** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **308.6 Sway bracing.** ~~Rigid support sway bracing shall be provided at~~ Where horizontal pipes 4 inches (102 mm) and larger convey drainage or waste, and where a pipe fitting changes ~~in~~ the flow direction greater than 45 degrees (0.79 rad) ~~for~~, rigid bracing or other rigid support arrangements shall be installed to resist movement of the upstream pipe ~~sizes 4 inches (102 mm) and larger~~ in a direction opposite the pipe flow. A change of flow direction into a vertical pipe shall not require the upstream pipe to be braced.		X			Damage Prevention
P19-15 Part II	**Section: P2605.1** ***AEI Summary*: This change requires additional support to prevent undue stress on drainage system joints.** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **P2605.1 General.** Piping shall be supported in accordance with the following: 14. Piping shall be supported to ensure alignment and prevent sagging, and allow movement associated with the expansion and contraction of the piping system. 15. Piping in the ground shall be laid on a firm bed for its entire length, except where support is otherwise provided. 16. Hangers and anchors shall be of sufficient strength to maintain their proportional share of the weight of pipe and contents and of sufficient width to prevent distortion to the pipe. Hangers and strapping shall be of *approved* material that will not promote galvanic action. ~~Rigid support sway bracing shall be provided at changes in direction greater than 45 degrees (0.79 rad) for pipe sizes 4 inches (102 mm) and larger.~~ 17. Where horizontal pipes 4 inches (102 mm) and larger convey drainage or waste, and where a pipe fitting changes the flow direction greater than 45 degrees (0.79 rad), rigid bracing or other rigid support arrangements shall be installed to resist movement of the upstream pipe in a direction opposite the pipe flow. A change of flow direction		X			Damage Prevention

Table 7. 2018 IPC Changes Cost Impact

CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	into a vertical pipe shall not require the upstream pipe to be braced. 18. Piping shall be supported at distances not to exceed those indicated in Table P2605.1.					
P33-15	**Section: Table 403.1 (IBC Table 2902.1)** ***AEI Summary: This change clarifies requirements for showers in factories and storage facilities.*** TABLE 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES* (See Sections 403.1.1 and 403.2) (Portions of table and notes not shown remain unchanged)		X			Clarification
P45-15	**Section: 403.3 (IBC 2902.3)** ***AEI Summary: This change clarifies requirements for toilets in public and facility settings.*** **403.3 Required public toilet facilities.** ~~Customers~~ For structures and tenant spaces intended for *public* utilization, customers, patrons and visitors shall be provided with *public* toilet facilities ~~in~~. Employees associated with structures and tenant spaces ~~intended for public utilization~~ shall be provided with toilet facilities. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 403 for all users. ~~Employees shall be provided with toilet facilities in all *occupancies*.~~ Employee toilet facilities shall be either separate or combined employee and *public* toilet facilities. **Exception:** *Public* toilet facilities shall not be required ~~in~~ for:		X			Clarification

NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 419.2) MALE	WATER CLOSETS (URINALS: SEE SECTION 419.2) FEMALE	LAVATORIES MALE	LAVATORIES FEMALE	BATHTUBS / SHOWERS	DRIN FOUI (S SEC 4
4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials					~~(see Section 411)~~	
8	Storage	S-1 S-2	Structures for the storage of goods, warehouses, store- house and freight depots. Low and Moderate Hazard.					~~See Section 411~~ =	

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. Open or enclosed parking garages where there are no parking attendants. 2. Structures and tenant spaces intended for quick transactions, including takeout, pickup and drop-off, having a public access area less than or equal to 300 square feet (28 m^2).					
P48-15	**Section: 405.3.1** ***AEI Summary: This change indicates the reduced measurement of adjacent fixtures for children's water closet installation.*** **Revise as follows:** **405.3.1 Water closets, urinals, lavatories and bidets.** A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of the water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floor mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall hung water closets. **Exception:** An accessible children's water closet shall be set not closer than 12 inches from its center to the required partition or to the wall on one side.		X			Clarification
P49-15	**Section: 405.3.1, 405.3.5** ***AEI Summary: This change indicates the required space for partitions from fixtures.*** **405.3.1 Water closets, urinals, lavatories and bidets.** A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction. Where partitions or other obstructions do not separate adjacent fixtures, ~~or~~ fixtures shall not be set closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of ~~the~~ a water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floormounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wallhung water closets. **405.3.5 Urinal partitions.** Each urinal utilized by the *public* or employees shall occupy a separate area with walls or partitions to		X			Clarification

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	provide privacy. The width between walls or partitions at each urinal shall be not less than 30 inches (762 mm). The walls or partitions shall begin at a height not greater than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater. **Exceptions:** 1. Urinal partitions shall not be required in a single-occupant or family/assisted-use toilet room with a lockable door. 2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.					
P50-15	**Section: 405.4.1** ***AEI Summary: This change clarifies copper-alloy compositions used in plumbing.*** **405.4.1 Floor flanges.** Floor flanges for water closets or similar fixtures shall be not less than 0.125 inch (3.2 mm) thick for ~~brass~~ copper alloy, 0.25 inch (6.4 mm) thick for plastic and 0.25 inch (6.4 mm) thick and not less than a 2-inch (51 mm) caulking depth for cast iron or galvanized malleable iron. Floor flanges of hard lead shall weigh not less than 1 pound, 9 ounces (0.7 kg) and shall be composed of lead alloy with not less than 7.75-percent antimony by weight. Closet screws and bolts shall be of ~~brass~~ copper alloy. Flanges shall be secured to the building structure with corrosion-resistant screws or bolts.		X			Clarification
P52-15	**Section: 405.5 (New)** ***AEI Summary: This change addresses fixtures with pumped waste.*** **405.5 Plumbing fixtures with a pumped waste** Plumbing fixtures with a pumped waste shall comply with ASME A112.3.4/CSA B45.9. The plumbing fixture with a pumped waste shall be installed in accordance with the manufacturer's instructions.		X			Clarification
P53-15 Part II	**Section: P2704, P2704.1, P3201.1** ***AEI Summary: This change addresses slip joint location on waste systems.***		X			Clarification

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **SECTION P2704** **~~ACCESS TO~~SLIP JOINT CONNECTIONS** **~~P2704.1 General~~ Slip joints.** Slip joints connections shall be installed only for tubular waste piping and only between the trap outlet of a fixture and the connection to the drainage piping. Slip joint connections shall be made with an *approved* ~~elastomeric~~ sealing gasket ~~and shall be installed only on the trap outlet, trap inlet and within the trap seal~~. ~~Fixtures with concealed slip joint~~ Slip joint connections shall be ~~provided with~~ accessible. Such access shall provide an ~~access panel or utility space~~ opening that is not less than 12 inches (~~305 mm~~305mm) in its smallest dimension ~~or other *approved* arrangement so as to provide access to the slip connections for inspection and repair~~. **P3201.1 Design of traps.** Traps shall be of standard design, shall have smooth uniform internal waterways, shall be self-cleaning and shall not have interior partitions except where integral with the fixture. Traps shall be constructed of lead, cast iron, copper or copper alloy or *approved* plastic. Copper or copper alloy traps shall be not less than No. 20 gage (0.8 mm) thickness. Solid connections, slip joints and couplings shall be permitted to be used on the trap inlet, trap outlet, or within the trap seal. ~~Slip joints~~ Trap having slip joint connections shall ~~be accessible~~ comply with Section P2704.1.					
P55-15 Part II	**Section: P2713.1** ***AEI Summary: This change removes the requirement for overflows on bathtubs.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **P2713.1 Bathtub waste outlets and overflows.** Bathtubs shall be equipped with a waste outlet ~~and an overflow outlet. The outlets shall be connected to waste tubing or piping~~ that is not less than $1^{1}/_{2}$ 2 inches (38 mm) in diameter. The waste outlet shall be equipped with a water-tight stopper. Where an overflow is installed, the overflow shall be not less than $1^{1}/_{2}$ inches (38 mm) in diameter.		X			Standard Clarification
P56-15	**Section: 409.1, Chapter 14** ***AEI Summary: This change adds the correct reference standard for residential dishwashers.***		X			Reference Standard

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	409.1 Approval. Commercial dishwashing machines shall conform to ASSE 1004 and NSF 3. Residential dishwashers shall conform to NSF 184. NSF 184-2014 Residential Dishwashers					
P57-15	**Section: 409.3, 409.4 (New), 802.1.6** ***AEI Summary: This change clarifies the waste connections for residential and commercial dishwashers.*** **409.3 Waste connection.** The waste connection of a commercial dishwashing machine shall comply with Section ~~802.1.6 or~~ 802.1.7~~, as applicable~~. **409.4 Residential dishwasher waste connection.** The waste connection of a residential dishwasher shall connect directly to a wye branch fitting on the tailpiece of the kitchen sink, directly to the dishwasher connection of a food waste disposer, or through an air break to a standpipe. The waste line of a residential dishwasher shall rise and be securely fastened to the underside of the sink rim or counter top. ~~**802.1.6 Domestic dishwashing machines.** Domestic dishwashing machines shall discharge indirectly through an *air gap* or *air break* into a waste receptor in accordance with Section 802.2, or discharge into a wye branch fitting on the tailpiece of the kitchen sink or the dishwasher connection of a food waste disposer. The waste line of a domestic dishwashing machine discharging into a kitchen sink tailpiece or food waste disposer shall connect to a deck-mounted air gap or the waste line shall rise and be securely fastened to the underside of the sink rim or counter.~~		X			Clarification
P58-15	**Section: 410.1, Chapter 14** ***AEI Summary: This change requires that water dispensers conform to the same standards as drinking fountains.*** **410.1 Approval.** Drinking fountains shall conform to ASME A112.19.1/CSA B45.2 or ASME A112.19.2/CSA B45.1 and water coolers shall conform to ~~AHRI 1010~~ASHRAE 18. Drinking fountains, water coolers and ~~*water coolers*~~ water dispensers shall conform to NSF 61, Section 9. Electrically operated, refrigerated drinking ~~*water coolers*~~ water coolers and water dispensers shall be listed and labeled in accordance with UL 399. ASHRAE 18-2008 (RA 2013) Methods of Testing for Rating Drinking-Water Coolers with Self Contained Mechanical Refrigeration		X			Clarification
P63-15	**Section: 411.3 (New), Chapter 14**		X			Safety

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	AEI Summary: This change addresses temperature control of emergency shower or eyewash stations. **411.3 Water supply.** Where hot and cold water is supplied to an emergency shower or eyewash station the temperature of the water supply shall only be controlled by a temperature actuated mixing valve complying with ASSE 1071. ASSE 1071 - 2012 Performance Requirements for Temperature Actuated Mixing Valves for Plumbed Emergency Equipment					
P69-15	**Section: 422.1, 609.1, 713.1** ***AEI Summary: This change addresses healthcare facility plumbing system code compliance.*** **422.1 Scope.** This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following *occupancies*: ~~nursing homes~~ Group I-1, ~~homes for the aged~~ Group I-2, ~~orphanages, infirmaries, first aid stations, psychiatric~~ Group B ambulatory care facilities, ~~clinics, professional~~ medical offices ~~of dentists~~ and ~~doctors, mortuaries, educational facilities, surgery, dentistry,~~ research and testing laboratories, ~~establishments~~ and Group F facilities manufacturing pharmaceutical drugs and medicines ~~and other structures with similar apparatus and equipment classified as plumbing~~. **609.1 Scope.** This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: ~~nursing homes~~ Group I-1, ~~homes for the aged~~ Group I-2, ~~orphanages, infirmaries, first aid stations, psychiatric~~ Group B ambulatory care facilities, ~~clinics, professional~~ medical offices ~~of dentists~~ and ~~doctors, mortuaries, educational facilities, surgery, dentistry,~~ research and testing laboratories, ~~establishments~~ and Group F facilities manufacturing pharmaceutical drugs and medicines ~~and other structures with similar apparatus and equipment classified as plumbing~~. **713.1 Scope.** This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to this section		X			Clarification

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: ~~nursing homes; homes for the aged; orphanages; infirmaries; first aid stations; psychiatric~~ Group I-1, Group I-2, Group B ambulatory care facilities~~; clinics; professional~~, medical offices ~~of dentists~~ and ~~doctors; mortuaries; educational facilities; surgery, dentistry,~~ research and testing laboratories~~; establishments~~, and Group F facilities manufacturing pharmaceutical drugs and medicines~~; and other structures with similar apparatus and equipment classified as plumbing~~.					
P75-15	**Section: 422.8** ***AEI Summary: This change restricts ice making plumbing appliances from being installed in soiled utility rooms.*** **422.8 Ice prohibited in soiled utility room.** Machines for ~~manufacturing~~ producing ice, or any device for the ~~handling or~~ storage of ice, shall not be located in a soiled utility room.		X			Safety
P76-15	**Section: 423.3, 424.10 (New)** ***AEI Summary: This change limits supply water temperature on specialty plumbing fixtures.*** **423.3 Footbaths, and pedicure baths ~~and head shampoo sinks~~.** The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub~~, footbaths,~~ and ~~head shampoo sinks,~~ footbaths shall be limited to a maximum temperature of 120°F (49°C) by a water temperature limiting device that conforms to ASSE 1070 or CSA B125.3. **424.10 Head shampoo sink faucets** Head shampoo sink faucets shall be supplied with hot water at is limited to a maximum temperature of 120°F (49°C) by a water temperature limiting device that conforms to ASSE 1070 or CSA B125.3. Each faucet shall have integral check valves to prevent crossover flow between the hot and cold water supply connections.		X			Safety
P83-15	**Section: 424.7** ***AEI Summary: This change addresses standard conformity for temperature-actuated flow reduction (TAFR) valves.*** **424.7 Temperature-actuated, flow reduction ~~valves~~ devices for individual fixture fittings.** Temperature-actuated, flow reduction devices, where installed for individual fixture fittings, shall conform to ASSE 1062. A temperature-actuated, flow reduction device shall be an *approved* method for limiting the water temperature to not greater than 120º F (49º C) at the outlet of a faucet or fixture fitting. Such ~~valves~~ devices shall not be used alone as a substitute for the balanced-		X			Clarification

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	pressure, thermostatic or combination shower valves required in Section 424.3 or as a substitute for bathtub or whirlpool tub water-temperature limiting valves required in Section 424.5.					
P89-15	**Section: 502.1, Chapter 14** ***AEI Summary: This change addresses standard conformity for water heater installation.*** **502.1 General.** Water heaters shall be installed in accordance with the manufacturer's instructions. Oil- fired water heaters shall conform to the requirements of this code and the *International Mechanical Code*. Electric water heaters shall conform to the requirements of this code and provisions of NFPA 70. Gas- fired water heaters shall conform to the requirements of the *International Fuel Gas Code*. Solar thermal water heating systems shall conform to the requirements of the *International Mechanical Code* and SRCC 300. SRCC Standard 300, Minimum Standard for Solar Thermal Water Heating Systems, January 3, 2013, Solar Rating and Certification Corporation.		X			Consistency
P93-15 Part I	**Section: 504.6** ***AEI Summary: This proposal lists requirements of piping when connected to temperature and pressure relief valves.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **504.6 Requirements for discharge piping.** The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall: 1. Not be directly connected to the drainage system. 2. Discharge through an air gap located in the same. 3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap. 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment. 5. Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors. 6. Discharge in a manner that does not cause personal injury or structural damage. 7. Discharge to a termination point that is readily observable by the building occupants. 8. Not be trapped. 9. Be installed so as to flow by gravity.		X			Safety

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	10. Terminate not more than 6 inches (152 mm) above and not less than two times the discharge pipe diameter above the floor or flood level rim of the waste receptor. 11. Not have a threaded connection at the end of such piping. 12. Not have valves or tee fittings. 13. Be constructed of those materials listed in Section 605.4 or materials tested, rated and approved for such use in accordance with ASME A112.4.1. 14. Be one nominal size larger than the size of the relief valve outlet, where the relief valve discharge piping is constructed of PEX or PE-RT tubing installed with insert fittings. The outlet end of such tubing shall be fastened in place.					
P97-15	**Section: 504.7** ***AEI Summary: This proposal addresses pan types and their requirement for storage type water heaters.*** **504.7 Required pan.** Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a ~~galvanized~~ pan constructed of one of the following: 1 Galvanized steel ~~pan having a material thickness~~ or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness. 2 Plastic not less than 0.036 inch (0.9 mm) in thickness. 3 Other approved materials. A plastic pan shall not be installed beneath a gas-fired water heater. ~~(No. 24 gage), or other pans *approved* for such use.~~		X			Consistency
P98-15 Part I	**Section: 602.3.1, Chapter 14** ***AEI Summary: This proposal addresses well installation standards where state and local laws do not.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **602.3.1 Sources.** Dependent on geological and soil conditions and the amount of rainfall, individual water supplies are of the following types: drilled well, driven well, dug well, bored well, spring, stream or cistern. Surface bodies of water and land cisterns shall not be sources of individual water supply unless properly treated by *approved* means to prevent contamination. Individual water supplies shall be constructed and installed in accordance with the applicable state and local laws. Where such laws do not address all of the requirements set			X	$1.00/SF of Building	Safety

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	forth in NGWA-01, individual w NGWA-01 for those requirements not addressed by state and local laws. ANSI/NGWA-01-14 Water Well Construction Standard					
P132-15 Part I	**Section: 605.14.7 (New), 605.15.4 (New), 605.17.3 (New).** ***AEI Summary: This proposal addresses standards for push-fit plumbing joints.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **Add new text as follows:** **605.14.7 Push-fit joints** Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions. **605.15.4 Push-fit joints.** Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions. **605.17.3 Push-fit joints.** Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.		X			Clarification
P135-15 Part I	**Section: P2906.17.2 (New)** ***AEI Summary: This proposal addresses connections of PVC and CPVC at the beginning of a water distribution system.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **Add new text as follows:** **P2906.17.2 Joint between PVC water service and CPVC water distribution** Where a PVC water service pipe connects to a CPVC pipe at the beginning of a water distribution system, the transition shall be by a mechanical fitting, an *approved* adapter fitting, a transition fitting or by a single solvent-cemented transition joint. A single, solvent cement transition joint shall be in compliance with ASTM F493 and the pipe, fitting, and solvent cement manufacturers' instructions. Solvent cement joint surfaces shall be clean, free from moisture and prepared with an approved primer. Solvent cement conforming to ASTM F493 shall be applied to the joint surfaces and the joint assembled while the cement is wet.		X			Quality Assurance

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
P141-15	**Section: 607.3** ***AEI Summary: This proposal opens thermal expansion control up to devices other than tanks.*** **Revise as follows:** **607.3 Thermal expansion control.** Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion ~~tank~~ control device shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion ~~tanks~~ control devices shall be sized in accordance with the ~~tank~~ manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section 604.8.		X			Increased Product Offerings
P149-15	**Section: 608.3, 608.4 (New)** ***AEI Summary: This proposal addresses backflow protection for specialty devices connected to a water supply system.*** **Revise as follows:** **608.3 Devices, appurtenances, appliances and apparatus.** Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. ~~Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water shall be protected against contamination.~~ **Add new text as follows:** **608.4 Potable water handling and treatment equipment.** Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water to be supplied to the potable water distribution system shall be located to prevent contamination from entering the appliances and devices. Overflow, relief valve and waste discharge pipes from such appliances and devices shall terminate in accordance with the appliance or device manufacturer's installation instructions. Where such instructions do not specify the termination arrangement, the termination shall be to an air gap.		X			Contamination Prevention
P150-15 Part I	**Section: 608.7**			X	$300.00 per	Contamination Prevention

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	AEI Summary: The intent of this change is to protect against yard hydrant stop and waste contamination from lawn fertilizer, animal wastes, garden fertilizer or septic tank effluent. THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **Revise as follows:** **608.7 Valves and outlets prohibited below grade.** Potable water outlets and combination stop-and- waste valves shall not be installed underground or below grade. ~~Freezeproof~~ A freezeproof yard ~~hydrants~~ hydrant that ~~drain~~ drains the riser into the ground ~~are~~ shall be considered ~~to be~~ as having a stop-and- waste ~~valves~~ valve below grade. ~~**Exception:** Freezeproof yard hydrants that drain the riser into the ground shall be permitted to be installed, provided that the potable water supply to such hydrants is protected upstream of the hydrants in accordance with Section 608 and the hydrants are permanently identified as nonpotable outlets by *approved* signage that reads as follows: "Caution, Nonpotable Water. Do Not Drink."~~ **Exception:** Freezeproof yard hydrants that drain the riser into the ground shall be permitted to be installed provided that the potable water supply to such hydrants is protected in accordance with Section 608.13.2 or 608.13.5 and the hydrants and the piping from the backflow preventer to the hydrant are identified in accordance with Section 608.8.				Backflow Device	
P151-15	**Section: 608.9** ***AEI Summary: This proposal attempts to clarify and address possible cross connections between heating hot water and domestic hot water systems.*** **Revise as follows:** **608.9 Reutilization prohibited.** Water utilized for the heating or cooling of equipment or other processes shall not be returned to the potable water system. Such water shall be discharged into a drainage system through an *air gap* or shall be utilized for non-potable purposes.		X			Clarification
P159-15	**Section: 608.16.1, 608.16.1 (New), 608.16.1.2 (New)** ***AEI Summary: This proposal addresses backflow protection on beverage and drink dispensers.***		X			Contamination Prevention

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Add new text as follows: **608.16.1 Beverage dispensers.** The water supply connection to beverage dispensers shall be protected against backflow in accordance with Sections 608.16.1.1 and 608.16.1.2. **Revise as follows:** ~~**608.16.1**~~ **608.16.1.1** ~~**Beverage**~~ **Carbonated beverage dispensers.** The water supply connection to carbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an ~~*air gap*~~ air gap. The portion of the backflow preventer device downstream from the second check valve of the device and the piping downstream therefrom shall not be affected by carbon dioxide gas. **Add new text as follows:** **608.16.1.2 Coffee machines and non carbonated drink dispensers.** The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022, ASSE 1024 or by an air gap.					
P160-15	**Section: 608.16.1, 608.16.10, 608.16.9** ***AEI Summary: The intent of this change is to protect each "unit" individually from other units by ensuring backflow on each unit.*** **Revise as follows:** **608.16.1 Beverage dispensers.** The water supply connection to each beverage ~~dispensers~~ dispenser shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an *air gap*. The portion of the backflow preventer device downstream from the second check valve and the piping downstream therefrom shall not be affected by carbon dioxide gas. **608.16.9 Dental ~~pump~~ pumping equipment.** ~~Where~~ The water supply connection to each dental pumping equipment ~~connects to the water distribution system, the water supply~~ system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6 or 608.13.8. **608.16.10 Coffee machines and noncarbonated beverage dispensers.** The water supply connection to each coffee ~~machines~~ machine and each noncarbonated beverage ~~dispensers~~ dispenser shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an *air gap*.			X	$75.00 per Air Gap ***OR*** $300.00 per Backflow Device	Contamination Prevention

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
P161-15	**Section: 608.16.1, 608.16.1.1 (New), 608.16.1.2 (New), 608.16.10** ***AEI Summary: This proposal removes redundant backflow protections for drink dispensing devices that are already protected.*** **Revise as follows:** **608.16.1 Beverage dispensers.** The water supply connection to beverage dispensers shall be protected against backflow ~~by a backflow preventer conforming to ASSE 1022 or by an *air gap*. The portion of the backflow preventer device downstream from the second check valve~~ in accordance with Section 608.16.1.1 and ~~the piping downstream therefrom shall not be affected by carbon dioxide gas~~ 608.16.1.2. **Add new text as follows:** **608.16.1.1 Carbonated beverage dispensers.** The water supply connection to carbonated beverage dispensers shall be protected against backflow by a backflow prevention device conforming to ASSE 1022 or by an air gap. The portion of the backflow preventer device downstream from the second check valve of the device and the piping downstream therefrom shall not be affected by carbon dioxide gas. **608.16.1.2 Coffee machines and noncarbonated beverage dispensers.** The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow prevention device conforming to ASSE 1024 or by an air gap. **Delete without substitution:** ~~**608.16.10 Coffee machines and noncarbonated beverage dispensers.** The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an *air gap*.~~		X			Consistency
P162-15 Part I	**Section: 608.16.11 (New), 801.1, 802.1** ***AEI Summary: This code change requires backflow protection for humidifiers.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE.			X	$75.00 per Air Gap ***OR*** $300.00 per	Contamination Prevention

Table 7. 2018 IPC Changes Cost Impact

CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	Add new text as follows: **608.16.11 Humidifiers.** The water supply connection to humidifiers shall be protected against backflow by a backflow preventer conforming to ASSE 1012 or CSA B64.3, or by an *air gap*. **Revise as follows:** **801.1 Scope.** This chapter shall govern matters concerning indirect waste piping and special wastes. This chapter shall further control matters concerning food-handling establishments, sterilizers, humidifiers, clear-water waste, swimming pools, methods of providing *air breaks* or *air gaps*, and neutralizing devices for corrosive wastes. **801.2 Protection.** Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, humidification, distillation, processing, cooling, or storage of ice or foods, and that discharge to the drainage system, shall be provided with protection against backflow, flooding, fouling, contamination and stoppage of the drain. **802.1 Where required.** Food-handling equipment, in other than dwelling units, clear-water waste, humidifiers, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an *air gap* in accordance with this chapter and Section 713.3. Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.				Backflow Device	
P170-15 Part I	**Section: Table 702.2** ***AEI Summary: This code change offers another option for installation material.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **Revise as follows:** **TABLE 702.2** **UNDERGROUND BUILDING DRAINAGE AND VENT PIPE** MATERIAL | STANDARD Polyolefin pipe | ASTM F 1412; ASTM F714; CSA B181.3 *(Portions of table not shown remain unchanged)*		X			Improved Options
P185-15	**Section: 705.18**		X			Clarification

Table 7. 2018 IPC Changes Cost Impact						
CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	AEI Summary: This proposal clarifies copper-alloy as the ferrule material make-up. **Revise as follows:** **705.18 Caulking ferrules.** Ferrules shall be of ~~red brass~~ copper-alloy and shall be in accordance with Table 705.18.					
P194-15 Part I	**Section: 712.3.2** ***AEI Summary: This proposal changes the height of the sump pit relative to ground level.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **Revise as follows:** **712.3.2 Sump pit.** The sump pit shall be not less than 18 inches (457 mm) in diameter and not less than 24 inches (610 mm) in depth, unless otherwise *approved*. The pit shall be accessible and located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, concrete, steel, plastic or other *approved* materials. The pit bottom shall be solid and provide permanent support for the pump. The sump pit shall be fitted with a gastight removable cover that is installed ~~flush with grade or floor level, or above~~ not more than 2 inches (51 mm) below grade or floor level. The cover shall be adequate to support anticipated loads in the area of use. The sump pit shall be vented in accordance with Chapter 9.		X			Consistency
P207-15	**Section: 802.1** ***AEI Summary: This proposal clarifies code regarding fixtures that are typical in healthcare facilities and removes certain requirements.*** **Revise as follows:** **802.1 Where required.** Food-handling equipment, in other than dwelling units, clear-water waste, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. ~~Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an *air gap* in accordance with this chapter and Section 713.3.~~ Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.		X			Consistency
P212-15	**Section: 802.3.3.1 (New)**		X			Consistency

Table 7. 2018 IPC Changes Cost Impact

CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	AEI Summary: This proposal establishes consistency with the IRC and removes certain existing requirements. **Add new text as follows:** **802.3.3.1 Connection of laundry tray to standpipe.** As an alternative for a laundry tray fixture connecting directly to a drainage system, a laundry tray waste line without a fixture trap shall connect to a standpipe for an automatic clothes washer drain. The standpipe shall extend not less than 30 inches (732 mm) above the weir of the standpipe trap and shall extend above the flood level rim of the laundry tray. The outlet of the laundry tray shall not be greater than 30 inches (762 mm) horizontal distance from the side of the standpipe.					
P226-15 Part I	**Section: 918.8** ***AEI Summary: This proposal addresses the installation of air admittance valves in specific applications.*** THIS IS A 2 PART CODE CHANGE. PART I WAS HEARD BY THE IPC COMMITTEE. PART II WAS HEARD BY THE IRC-PLUMBING COMMITTEE. **Revise as follows:** **918.8 Prohibited installations.** Air admittance valves shall not be installed in non-neutralized special waste systems as described in Chapter 8 except where such valves are in compliance with ASSE 1049, are constructed of materials *approved* in accordance with Section 702.5 and are tested for chemical resistance in accordance with ASTM F 1412. Air admittance valves shall not be located in spaces utilized as supply or return air plenums. Air admittance valves without an engineered design shall not be utilized to vent sumps or tanks of any type. Air admittance valves shall not be installed on outdoor vent terminals for the sole purpose of reducing clearances to gravity air intakes or mechanical air intakes.		X			Consistency
P236-15	**Section: Table 1102.4, Chapter 14** ***AEI Summary: This code change offers another option for PP installation material.*** **Revise as follows:** TABLE 1102.4 BUILDING STORM SEWER PIPE MATERIAL | STANDARD Polypropylene (PP) Pipe | CSA B182.13 *(Portions of table not shown remain unchanged)* **Reference standards type:** **Add new standard(s) as follows:** CSA B182.13-2011 Profile Polypropylene (Pp) Sewer Pipe and Fittings For Leak-Proof Sewer Applications			X	$3.00 per LF of Pipe	Improved Options

Table 7. 2018 IPC Changes Cost Impact

CODE CHANGE #	2018 IPC CHANGE SUMMARY	IPC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
P239-15	**Section: Table 1102.4, Chapter 14** ***AEI Summary: This code change offers another option for PP installation material.*** **Revise as follows:** TABLE 1102.4 BUILDING STORM SEWER PIPE MATERIAL | STANDARD Polypropylene (PP) Pipe | ASTM F2881 *(Portions of table not shown remain unchanged)* **Reference standards type:** **Add new standard(s) as follows:** ASTM F2881-11 "Standard Specification for 12 to 60 in. [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications"			X	$3.00 per LF of Pipe	Improved Options
P247-15	**Section: 1301.1.1 (New)** ***AEI Summary: This proposal aligns use of non-potable water with the IFC.*** **Add new text as follows:** **1301.1.1 Fire Protection Systems** The storage, treatment and distribution of non-potable water to be used for fire protection systems shall be in accordance with the *International Fire Code*.		X			Consistency
P259-15	**Section: 1301.9.9** ***AEI Summary: This proposal establishes requirements for tank draining.*** **1301.9.9 Draining of tanks.** ~~Where tanks require draining~~ Tanks shall be provided with a means of emptying the contents for the purpose of service or cleaning~~, tanks~~. Tanks shall be drained by using a pump or by a drain located at the lowest point in the tank. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. Not less than one cleanout shall be provided on each drain pipe in accordance with Section 708.		X			Health and Safety
P276-15	**Section: 1303.15.8** ***AEI Summary: This proposal establishes standards for rainwater water quality tests.*** **Revise as follows:** **1303.15.8 Water quality test.** The quality of the ~~water~~ rainwater for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction. ~~Except where site conditions as specified in ASTM E 2727 affect the rainwater, collected rainwater shall be considered to have the parameters indicated in Table 1303.15.8.~~		X			Health and Safety

*For prescriptive Code changes only.

APPENDIX H

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RM1-15	**Section: M1305.1.4.2** ***AEI Summary*: This proposal includes the information necessary for a consistent code compliant installation in pit locations.*** **M1305.1.4.2 ~~Excavations.~~ Pit locations** ~~Excavations for appliance installations shall extend to a depth of 6 inches (152 mm) below the appliance and 12 inches (305 mm) on all sides, except that the control side shall have a clearance of 30 inches (762 mm).~~ Appliances installed in pits or excavations shall not come in direct contact with the surrounding soil and shall be installed not less than 6 inches (152 mm) above the pit floor. The sides of the pit or excavation shall be held back not less than 12 inches (305 mm) from the appliance. Where the depth exceeds 12 inches (305 mm) below adjoining grade, the walls of the pit or excavation shall be lined with concrete or masonry. Such concrete or masonry shall extend not less than 4 inches (102 mm) above adjoining grade and shall have sufficient lateral load-bearing capacity to resist collapse. Excavation on the control side of the appliance shall extend horizontally not less than 30 inches (762 mm). The appliance shall be protected from flooding in an *approved* manner.		X			Clarification/ Consistency
RM3-15	**Section: M1401.3** ***AEI Summary*: This proposal removes exceptions from the Manual S requirements.*** **M1401.3 Equipment and appliance sizing.** Heating and cooling *equipment* and *appliances* shall be sized in accordance with ACCA Manual S or other approved sizing methodologies based on building loads calculated in accordance with ACCA Manual J or other *approved* heating and cooling calculation methodologies. **~~Exception:~~** ~~Heating and cooling equipment and appliance sizing shall not be limited to the capacities determined in accordance with Manual S where either of the following conditions applies:~~ 19. ~~The specified equipment or appliance utilizes multistage technology or variable refrigerant flow technology and the loads calculated in accordance with the approved heating and cooling calculation methodology are within the range of the manufacturer's published capacities for that equipment or appliance.~~ 20. ~~The specified equipment or appliance manufacturer's published capacities cannot satisfy both the total and~~		X			Exception Removal

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	~~sensible heat gains calculated in accordance with the approved heating and cooling calculation methodology and the next larger standard size unit is specified.~~					
RM5-15	**Section: M1411.6.1 (New)** ***AEI Summary: This proposal requires refrigerant line insulation protections.*** **M1411.6.1 Refrigerant line insulation protection** Refrigerant Piping insulation exposed to weather shall be protected from damage, including that caused by sunlight, moisture, equipment maintenance and wind. Adhesive tape shall not be considered as a means of protection.		X			Clarification
RM11-15	**Section: M1502.3.1 (New)** ***AEI Summary: This proposal revises dryer duct requirements to ensure adequate airflow.*** **M1502.3.1 Exhaust termination outlet and passageway size.** The passageway of dryer exhaust duct terminals shall be undiminished in size and shall provide an open area of not less than 12.5 square inches (8,065 sq mm).		X			Lower Friction Resistance
RM12-15	**Section: M1502.4.2** ***AEI Summary: This proposal revises dryer duct requirements to ensure adequate airflow.*** **M1502.4.2 Duct installation.** Exhaust ducts shall be supported at intervals not to exceed 12 feet (3658 mm) and shall be secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Exhaust duct joints shall be sealed in accordance with Section M1601.4.1 and shall be mechanically fastened. Ducts shall not be joined with screws or similar fasteners that protrude more than 1/8 inch (3.2 mm) into the inside of the duct. Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall have a least dimension allow the installation of not less than 4.25 inches (108 mm). Round ducts shall not be deformed. the duct without deformation.		X			Lower Friction Resistance
RM14-15	**Section: M1503, M1503.1, M1503.1 (New), M1503.2, M1503.2 (New), M1503.2.1 (New), M1505, M1505.1** ***AEI Summary: This proposal adds language, describes standards and offers clarity regarding domestic cooking exhaust equipment.*** **SECTION M1503** **~~RANGE HOODS~~ DOMESTIC COOKING EXHAUST EQUIPMENT**		X			Clarification

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Add new text as follows: **M1503.1 General.** Domestic cooking exhaust equipment shall comply with the requirements of this section. **M1503.2 Domestic cooking exhaust.** Where domestic cooking exhaust equipment is provided it shall comply with one of the following: 1. Overhead range hoods and downdraft exhaust equipment not integral with the cooking appliance shall be listed and labeled in accordance with UL507. 2. Domestic cooking appliances with integral downdraft exhaust equipment shall be listed and labeled in accordance with UL 858 or ANSI Z21.1. 3. Microwave ovens with integral exhaust for installation over the cooking surface shall be listed and labeled in accordance with UL923. **M1503.2.1 Open top broiler exhaust.** Domestic open-top broiler units shall be provided with a metal exhaust hood, having a thickness of not less than 0.0157-inch (0.3950 mm) (No. 28 gage). Such hood shall be installed with a clearance of not less than 1 /4 inch (6.4 mm) between the hood and the underside of combustible material and cabinets. A clearance of not less than 24 inches (610 mm) shall be maintained between the cooking surface and combustible material and cabinets. The hood width shall be not less than the width of the broiler unit and shall extend over the entire unit. **Exception**: Broiler units that incorporate an integral exhaust system, and that are listed and labeled for use without an exhaust hood, shall not be required to have an exhaust hood. **Revise as follows:** **M1503.~~1~~M1503.3 ~~General~~ Exhaust discharge.** ~~Range hoods~~ Domestic cooking exhaust equipment shall discharge to the outdoors through a duct. The duct ~~serving the hood~~ shall have a smooth interior surface, shall be air tight, shall be equipped with a back-draft damper and shall be independent of all other exhaust systems. Ducts serving ~~range hoods~~ domestic cooking exhaust equipment shall not terminate in an attic or crawl space or areas inside the building. **Exception:** Where installed in accordance with the manufacturer's instructions, and where mechanical or natural *ventilation* is					

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	otherwise provided, *listed* and *labeled* ductless range hoods shall not be required to discharge to the outdoors. **M1503.2M1503.4 Duct material.** Ducts serving ~~range hoods~~ domestic cooking exhaust equipment shall be constructed of galvanized steel, stainless steel or copper. **Exception:** Ducts for domestic kitchen cooking *appliances* equipped with down-draft exhaust systems shall be permitted to be constructed of schedule 40 PVC pipe and fittings provided that the installation complies with all of the following: 1. The duct is installed under a concrete slab poured on grade. 2. The underfloor trench in which the duct is installed is completely backfilled with sand or gravel. 3. The PVC duct extends not more than 1 inch (25 mm) above the indoor concrete floor surface. *4.* The PVC duct extends not more than 1 inch (25 mm) above grade *outside of the building.* 5. The PVC ducts are solvent cemented. **Delete without substitution:** ~~**SECTION M1505**~~ ~~**OVERHEAD EXHAUST HOODS**~~ ~~**M1505.1 General.** Domestic open-top broiler units shall have a metal exhaust hood, having a minimum thickness of 0.0157-inch (0.3950 mm) No. 28 gage) with 1/4 inch (6.4 mm) clearance between the hood and the underside of combustible material or cabinets. A clearance of not less than 24 inches (610 mm) shall be maintained between the cooking surface and the combustible material or cabinet. The hood shall be not less than the width of the broiler unit, extend over the entire unit, discharge to the outdoors and be equipped with a backdraft damper or other means to control infiltration/exfiltration when not in operation. Broiler units incorporating an integral exhaust system, and *listed* and *labeled* for use without an exhaust hood, need not have an exhaust hood.~~ **Modify as follows:** **M1503.3 Exhaust discharge.** Domestic cooking exhaust equipment shall discharge to the outdoors through a duct. The duct shall have a smooth interior surface, shall be air tight, shall be equipped with a back-draft damper and shall be independent of all other exhaust systems. Ducts serving ~~range hoods~~ domestic cooking exhaust equipment shall not terminate in an attic or crawl space or areas inside the building.					

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Exception: Where installed in accordance with the manufacturer's instructions, and where mechanical or natural ventilation is otherwise provided, listed and labeled ductless range hoods shall not be required to discharge to the outdoors. **Modify as follows:** **M1503.2 Domestic cooking exhaust.** Where domestic cooking exhaust equipment is provided it shall comply with one of the following: 1. ~~Overhead~~ The fan for overhead range hoods and downdraft exhaust equipment not integral with the cooking appliance shall be listed and labeled in accordance with UL 507. 2. Overhead range hoods and downdraft exhaust equipment with intergral fans shall compy with UL 507. 3. Domestic cooking appliances with integral downdraft exhaust equipment shall be listed and labeled in accordance with UL 858 or ANSI Z21.1. 4. Microwave ovens with integral exhaust for installation over the cooking surface shall be listed and labeled in accordance with UL 923.					
RM15-15	**Section: M1503.4, M1503.4.1, M1503.4.2 (New)** ***AEI Summary*: This proposal requires makeup air in exhausted spaces to prevent back drafting in combustion appliances.** **M1503.4 Makeup air required.** ~~Exhaust hood systems~~Where one or more gas-, liquid-, or solid-fuel- burning appliance that is neither direct -vent nor uses a mechanical draft venting system is located within a dwelling unit's air barrier, each exhaust systemcapable of exhausting in excess of 400 cubic feet per minute (0.19 m^3/s) shall be mechanically or ~~naturally~~ passively provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with not less than one damper complying with Section M1503.4.2. ~~Each damper shall~~ ~~**Exception:**~~ Makeup air is not required for exhaust systems installed for the exclusive purpose of space cooling and intended to be ~~a gravity damper~~operated only when windows or ~~an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any~~ other ~~ducts not connected to the damper being inspected, serviced, repaired or replaced~~air inlets are open.		X			ASHRAE 62.2 Alignment/ Safety

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	M1503.4.1 Location. Kitchen exhaust makeup air shall be discharged into the same room in which the exhaust system is located or into rooms or *duct systems* that communicate through one or more permanent openings with the room in which such exhaust system is located. Such permanent openings shall have a net cross-sectional area not less than the required area of the makeup air supply openings. **Add new text as follows:** **M1503.4.2 Makeup air dampers** Where makeup air is required by Section M1503.4, makeup air dampers shall comply with this section. Each damper shall be a gravity damper or an electrically ted damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced. Gravity or barometric dampers shall not be used in passive makeup air systems except where the dampers are rated to provide the design makeup airflow at a pressure differential of 0.01 in. w.c. (3 Pa) or less.					
RM16-15	**Section: M1503.4** ***AEI Summary: This proposal requires makeup air in exhausted spaces and provides requirements for operation and maintenance.*** **M1503.4 Makeup air required.** Exhaust ~~hood~~ systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m^3/s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.		X			Inclusion of Systems
RM19-15	**Section: M1504.1, M1901.1, M1901.2** ***AEI Summary: This proposal clarifies installation criteria for microwave ovens with integral exhaust fans that are installed above cooking surfaces.*** ~~**M1504.1 Installation of a microwave oven over a cooking appliance.** The installation of a *listed* and *labeled* cooking *appliance* or microwave oven over a *listed* and *labeled* cooking *appliance* shall conform to the terms of the upper *appliance's listing* and *label* and the manufacturer's installation instructions. The microwave oven shall conform to UL 923.~~		X			Clarification

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **M1901.1 Clearances.** Freestanding or built-in ranges shall have a vertical clearance above the cooking top of not less than 30 inches (762 mm) to unprotected combustible material. Reduced clearances are permitted in accordance with the *listing* and *labeling* of the range hoods or ~~*appliances*. The installation of a listed and labeled cooking appliance or~~ microwave ~~oven over a listed and labeled cooking appliance shall be in accordance~~ ovens with ~~Section M1504.1~~integral exhaust. ~~The clearances for a domestic open- top broiler unit shall be in accordance with Section M1505.1.~~ **M1901.2 Cooking appliances.** Cooking *appliances* shall be *listed* and *labeled* for household use and shall be installed in accordance with the manufacturer's instructions. The installation shall not interfere with *combustion air* or access for operation and servicing. Electric cooking appliances shall comply with UL 1026 or UL 858. Solid-fuel-fired fireplace stoves shall comply with UL 737. Microwave ovens shall comply with UL 923.					
RM21-15	**Section: M1506.3** ***AEI Summary: This proposal provides new requirements for exhaust opening termination.*** **M1506.3 Exhaust openings.** ~~Air exhaust openings shall terminate not less than 3 feet (914 mm) from property lines; 3 feet (914 mm) from operable and nonoperable openings into the building and 10 feet (3048 mm) from mechanical air intakes except where the opening is located 3 feet (914 mm) above the air intake. Openings shall comply with Sections R303.5.2 and R303.6.~~ Air exhaust openings shall terminate as follows: 1. Not less than 3 feet (914 mm) from property lines. 2. Not less than 3 feet (914 mm) from gravity air intake openings, operable windows and doors.. 3. Not less than 10 feet (3048 mm) from mechanical air intakes openings except where the exhaust opening is located not less than 3 feet (914 mm) above the air intake opening. Openings shall comply with Sections R303.5.2 and R303.6.		X			Clarification
RM22-15	**Section: M1507.2** ***AEI Summary: This proposal includes requirements for recirculation of exhaust air from kitchens.***			X	$1.00 per SF of building	Includes Kitchen Exhaust

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	M1507.2 Recirculation of air. Exhaust air from bathrooms and toilet rooms shall not be recirculated within a residence or circulated to another *dwelling unit* and shall be exhausted directly to the outdoors. Exhaust air from bathrooms ~~and~~, toilet rooms and kitchens shall not discharge into an *attic*, crawl space or other areas inside the building. This section shall not prohibit the installation of ductless range hoods in accordance with the exception to Section M1503.1.					
RM23-15	**Section: M1507.3 (New)** ***AEI Summary: This proposal requires airflow labeling on exhaust equipment for single dwelling units.*** **M1507.3 Ventilating equipment.** Exhaust equipment serving single dwelling units shall be listed and labeled as providing the minimum required air flow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.			X	$10 per device	Clarification
RM26-15	**Section: M1507.3.3, Chapter 44** ***AEI Summary: This proposal provides more precise specification of the air that is utilized to ventilate a home.*** **M1507.3.3 Mechanical ventilation rate.** The whole-house mechanical ventilation system shall provide outdoor air at a continuous rate ~~of not less than that~~ as determined in accordance with Table M1507.3.3(1) or in accordance with Equation 15-1. **Equation 15-1** Ventilation rate =(0.01 CFM x total square foot area of house) + [(number of bedrooms +1) x 7.5 CFM] **Exception:** The whole-house mechanical ventilation system is permitted to operate intermittently where the system has controls that enable operation for not less than 25-percent of each 4-hour segment and the ventilation rate prescribed in Table M1507.3.3(1) is multiplied by the factor determined in accordance with Table M1507.3.3(2). **Reference standards type:** **Add new standard(s) as follows:** ASHRAE 62.2 - 2010 Ventilation and Acceptable Indoor Air Quaility in Low-Rise Residential Buildings		X			Specification Tool
RM31-15	**Section: M1601.1.1** ***AEI Summary: This proposal requires access to above-ground duct system components for system balancing.*** **M1601.1.1 Above-ground duct systems.** Above-ground *duct systems* shall conform to the following:			X	$1.00 per SF of building	Clarification

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	1. *Equipment* connected to *duct systems* shall be designed to limit discharge air temperature to not greater than 250°F (121°C). 2. Factory-made ducts shall be listed and labeled in accordance with UL 181 and installed in accordance with the manufacturer's instructions. 3. Fibrous glass duct construction shall conform to the SMACNA *Fibrous Glass Duct Construction Standards* or NAIMA *Fibrous Glass Duct Construction Standards*. 4. Field-fabricated and shop-fabricated metal and flexible duct constructions shall conform to the SMACNA HVAC *Duct Construction Standards—Metal and Flexible* except as allowed by Table M1601.1.1. Galvanized steel shall conform to ASTM A 653. 5. The use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation. 6. *Duct systems* shall be constructed of materials having a flame spread index of not greater than 200. 7. Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions: 7.1 These cavities or spaces shall not be used as a plenum for supply air. 7.2 These cavities or spaces shall not be part of a required fire-resistance-rated assembly. 7.3 Stud wall cavities shall not convey air from more than one floor level. 7.4 Stud wall cavities and joist-space plenums shall be isolated from adjacent concealed spaces by tight-fitting fireblocking in accordance with Section R602.8. 7.5 Stud wall cavities in the outside walls of building envelope assemblies shall not be utilized as air plenums. 8. Volume dampers, equipment and other means of supply, return and exhaust air adjustment used in system balancing shall be provided with access.					
RM34-15	**Section: M1601.1.2** ***AEI Summary: This proposal provides pressure testing requirements for underground duct systems prior to covering.*** **M1601.1.2 Underground duct systems.** Underground *duct systems* shall be constructed of *approved* concrete, clay, metal or plastic. The maximum ~~duct~~ design temperature for systems utilizing plastic ~~ducts~~			X	$1.00 per Sf of building	Clarification/ Consistency

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	duct and fittings shall ~~not~~ be ~~greaterthan~~ 150°F (66°C). Metal ducts shall be protected from corrosion in an *approved* manner or shall be completely encased in concrete not less than 2 inches (51 mm) thick. Nonmetallic ducts shall be installed in accordance with the manufacturer's instructions. Plastic pipe and fitting materials shall conform to cell classification 12454-B of ASTM D 1248 or ASTM D 1784 and external loading properties of ASTM D 2412. Ducts shall slope to an accessible point for drainage. ~~Where encased in concrete, ducts~~ Ducts shall be sealed, secured and ~~secured~~ tested with air at a pressure of not less than 2 inches of W.C. for not less than 5 minutes in the presence of the code official prior to ~~any~~ encasing the ducts in concrete ~~being poured~~ or direct burial. Metallic ducts having an *approved* protective coating and nonmetallic ducts shall be installed in accordance with the manufacturer's instructions.					
RM36-15	**Section: M1601.4.1** ***AEI Summary*: This proposal addresses energy loss through duct joints, seams and connections located outside of conditioned spaces.** **M1601.4.1 Joints, seams and connections.** Longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC *Duct Construction Standards—Metal and Flexible* and NAIMA*Fibrous Glass Duct Construction Standards*. Joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants or tapes. Tapes and mastics used to seal fibrous glass ductwork shall be *listed* and *labeled* in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape. Tapes and mastics used to seal metallic and flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181 B-FX" for pressure-sensitive tape or "181 BM" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metallic ducts shall have a contact lap of not less than 1 inch (25 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws or rivets equally spaced around the joint. Closure systems used to seal all ductwork shall be installed in accordance with the manufacturers' instructions. **Exceptions:** 1. Spray polyurethane foam shall be permitted to be applied without additional joint seals. 2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced	X			($.15 per SF of building)	Reduced Construction Cost

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	on the exposed portion of the joint so as to prevent a hinge effect. 3. For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams of other than the snap-lock and button-lock types that are located outside of conditioned spaces.					
RM37-15	**Section: M1602.2** ***AEI Summary: This proposal prohibits return air from indoor swimming pool enclosures.*** **M1602.2 Return air openings.** Return air openings for heating, ventilation and air conditioning systems shall comply with all of the following: 1. Openings shall not be located less than 10 feet (3048 mm) measured in any direction from an open combustion chamber or draft hood of another appliance located in the same room or space. 2. The amount of return air taken from any room or space shall be not greater than the flow rate of supply air delivered to such room or space. 3. Return and transfer openings shall be sized in accordance with the appliance or equipment manufacturers' installation instructions, Manual D or the design of the registered design professional. 4. Return air shall not be taken from a closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room or unconditioned attic. **Exceptions:** 26. Taking return air from a kitchen is not prohibited where such return air openings serve the kitchen only, and are located not less than 10 feet (3048 mm) from the cooking appliances. 27. Dedicated forced-air systems serving only the garage shall not be prohibited from obtaining return air from the garage. 4. Taking return air from an unconditioned crawl space shall not be accomplished through a direct connection to the return side of a forced-air furnace. Transfer openings in the crawl space enclosure shall not be prohibited. 5. Return air from one dwelling unit shall not be discharged into another dwelling unit. 6. For other than dedicated HVAC systems, return air shall not be taken from indoor swimming pool enclosures and		X			Safety/ Consistency

<table>
<tr><th colspan="7">Table 8. 2018 IRC Mechanical Changes Cost Impact</th></tr>
<tr><th rowspan="2">CODE CHANGE #</th><th rowspan="2">2018 IRC MECHANICAL CHANGE SUMMARY</th><th colspan="3">IRC MECHANICAL COST IMPACT</th><th rowspan="2">ESTIMATED AMOUNT*</th><th rowspan="2">BENEFIT OF CHANGE</th></tr>
<tr><th>Decrease</th><th>None</th><th>Increase</th></tr>
<tr><td colspan="7">Sub Code:</td></tr>
<tr><td></td><td>associated deck areas except where the air in such spaces is dehumidified,</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>RM39-15</td><td>Section: M2006.1, M2006.3, Chapter 44

<u>AEI Summary</u>: This proposal provides consistency with what standards are required for the various pool heaters.

M2006.1 General. Pool and spa heaters shall be installed in accordance with the manufacturer's installation instructions. Oil-fired pool heaters shall comply with UL 726. Electric pool and spa heaters shall comply with UL 1261, <u>UL 1563 or CSA C22.2 No. 218.1. Gas-fired pool heaters shall comply with ANSI Z21.56/CSA 4.7. Pool and spa heat pump water heaters shall comply with UL 1995, AHRI 1160, or CSA C22.2 No. 236.</u>

<s>M2006.3 Temperature-limiting devices.</s> <s>Pool heaters shall have temperature-relief valves.</s>
Reference standards type:
Add new standard(s) as follows:
<u>AHRI 1160 (I-P) -09 Performance rating of Heat Pump Pool Heaters</u>
<u>ANSI Z21.56a/CSA 4.7 -2013 Gas Fired Pool Heaters</u>
<u>CSA C22.2 No. 236-11 Cooling Equipment</u>
<u>CSA C22.2 No. 218.1-M89(R2011) Spas, Hot Tubs and Associated Equipment</u>
<u>UL 1563-2009 Standard for Electric Spas, Hot Tubs and Associated Equipment-with revisions through July 2012</u></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>RM40-15</td><td>Section: Table M2101.1, M2103.3

<u>AEI Summary</u>: This proposal adds Copper and Copper Alloy Press-Connect Pressure Fittings.

Revise as follow:

TABLE M2101.1
HYDRONIC PIPING <u>AND FITTING</u> MATERIALS
<table><tr><th>MATERIAL</th><th>USE CODE[a]</th><th>STANDARD[b]</th><th>JOINTS</th><th>NOTES</th></tr><tr><td>Copper tubing (type K, L or M)</td><td>1, 2</td><td>ASTM B 75, B 88, B 251, B 306, <u>ASME B16.51</u></td><td>Brazed, soldered, <u>press-connected</u> and flared mechanical fittings</td><td>Joints embedded in concrete</td></tr></table>(Portions of table not shown remain unchanged)

For SI: °C = [(°F)-32]/1.8.
a. Use code:
1. Above ground.
2. Embedded in radiant systems.
3. Temperatures below 180°F only.
4. Low temperature (below 130°F) applications only.
5. Temperatures below 160°F only.
b. Standards as listed in Chapter 44.</td><td></td><td>X</td><td></td><td></td><td>Includes New Fitting Types</td></tr>
</table>

Table 8. 2018 IRC Mechanical Changes Cost Impact

CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	M2103.3 Piping joints. Copper and copper alloy systems shall be soldered, brazed, or press-connected. Soldering shall be in accordance with ASTM B 828. Fluxes for soldering shall be in accordance with ASTM B 813. Brazing fluxes shall be in accordance with AWS A5.31. Press-connect shall be in accordance with ASME B16.51. Piping joints that are embedded shall be installed in accordance with the following requirements: 1. Steel pipe joints shall be welded. 2. Copper tubing shall be joined by brazing complying with Section P3003.6.1. 3. Polybutylene pipe and tubing joints shall be installed with socket-type heat-fused polybutylene fittings. 4. CPVC tubing shall be joined using solvent cement joints. 5. Polypropylene pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings. 6. Cross-linked polyethylene (PEX) tubing shall be joined using cold expansion, insert or compression fittings. 7. Raised temperature polyethylene (PE-RT) tubing shall be joined using insert or compression fittings.					
RM41-15	**Section: Table M2101.1, Table M2105.4** ***AEI Summary: This proposal clarifies standards listed for PEX hydronic materials.*** **Revise as follows:** TABLE M2101.1 HYDRONIC PIPING MATERIALS MATERIAL | USE CODE[a] | STANDARD[b] | JOINTS | NOTES Cross-linked polyethylene (PEX) | 1, 2, 3 | ASTM F 876, ~~F 877~~ | (See PEX fittings) | Install in accordance with manufacturer's instructions *(Portions of table and notes not shown remain unchanged)* TABLE M2105.4 GROUND-SOURCE LOOP PIPE MATERIAL | STANDARD Cross-linked polyethylene (PEX) | ASTM F 876; ~~ASTM F 877~~ CSA B137.5 *(Portions of table not shown remain unchanged)*		X			Clarification
RM42-15	**Section: Table M2101.1** ***AEI Summary: This proposal removes brass, as it is a copper-alloy.*** **Revise as follows:**		X			Removes Brass/ Clarification

Table 8. 2018 IRC Mechanical Changes Cost Impact

CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	TABLE M2101.1 HYDRONIC PIPING MATERIALS (Portions of table not shown remain unchanged) For SI: °C = [(°F)-32]/1.8. a. Use code: 1. Above ground. 2. Embedded in radiant systems. 3. Temperatures below 180°F only. 4. Low temperature (below 130°F) applications only. 5. Temperatures below 160°F only. b. Standards as listed in Chapter 44.					
RM43-15	**Section: Table M2101.1, Table M2105.4, Table M2105.5, M2105.13, M210 .13.3 (New), M2105.13.4 (New), Chapter 44** ***AEI Summary: This proposal adds PE-RT tubing systems to the appropriate tables.*** **Revise as follows:**		X			Provides Revisions/ Alternatives

TABLE M2101.1
HYDRONIC PIPING MATERIALS

MATERIAL	USE CODE[a]	STANDARD[b]	JOINTS	NOTES
~~Brass pipe~~	~~1~~	~~ASTM B 43~~	~~Brazed, welded, threaded, mechanical and flanged fittings~~	
~~Brass tubing~~	~~1~~	~~ASTM B 135~~	~~Brazed, soldered and mechanical fittings~~	
Copper and copper-alloy pipe	1	ASTM B42, B43, B302	Brazed, soldered and mechanical fittings threaded, welded and flanged	
Copper and copper-alloy tubing (type K, L or M)	1, 2	ASTM B75, B88, B135, B251, B306	Brazed, soldered and flared mechanical fittings	Joints embedded in concrete shall be brazed

(Portions of table not shown remain unchanged)

TABLE M2101.1
HYDRONIC PIPING MATERIALS

MATERIAL	USE CODE[a]	STANDARD[b]	JOINTS	NOTES
Raised temperature polyethylene (PE-RT)	1, 2, 3	ASTM F 2623 ASTM F 2769 CSA B137.18	Copper crimp/insert fitting stainless steel clamp, insert fittings	
Raised Temperature Polyethylene (PE-RT) fittings	1, 2,3	ASTM F 1807 ASTM F 2159 ASTM F 2735 ASTM F 2769 ASTM F 2098 ASTM D3261 CSA B137.18	Copper crimp/insert fitting stainless steel clamp, insert fittings	

(Portions of table not shown remain unchanged)

TABLE M2105.4
GROUND-SOURCE LOOP PIPE

MATERIAL	STANDARD
Raised temperature polyethylene (PE-RT)	ASTM F 2623; ASTM F 2769; CSA B137.18

(Portions of table not shown remain unchanged)

TABLE M2105.5
GROUND-SOURCE LOOP PIPE FITTINGS

PIPE MATERIAL	STANDARD
Raised temperature polyethylene (PE-RT)	ASTM D 3261; ASTM F 1807; ASTM F 2159; ASTM F 2769; CSA B137.1; ASTM F1055, ASTM F2098, ASTM F2735, ASTM D2683, ASTM D3261, CSA B137.18

(Portions of table not shown remain unchanged)

Table 8. 2018 IRC Mechanical Changes Cost Impact

CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	M2105.13 Raised temperature polyethylene (PE-RT) plastic tubing. Joints between raised temperature polyethylene tubing and fittings shall comply with Sections M2105.13.1, M2105.13.2, M2105.13.3, and ~~M2105.13.2~~ M2105.13.4. Mechanical joints shall comply with Section M2105.8.1. **Add new text as follows:** **M2105.13.3 Heat fusion joints.** Heat fusion joints shall be of the socket-fusion, saddle-fusion or butt- fusion type, and shall be joined in accordance with ASTM D2657. Joint surfaces shall be clean and free of moisture. Joint surfaces shall be heated to melt temperatures and joined. The joint shall remain undisturbed until cool. Fittings shall be manufactured in accordance with ASTM D2683 or ASTM D3261. **M2105.13.4 Electrofusion joints** Joints shall be of the electrofusion type. Joint surfaces shall be clean and free of moisture and scoured to expose virgin resin. Joint surfaces shall be heated to melt temperatures to a time specified by the manufacturer and joined. The joint shall remain undisturbed until cool. Fittings shall be manufactured in accordance with ASTM F1055. **Reference standards type:** **Add new standard(s) as follows:** CSA B137.18 - 2013 - Polyethylene of raised temperature (PE-RT) tubing systems for pressure applications.					
RM44-15	**Section: Table M2101.9** ***AEI Summary: This proposal adds large diameter PEX tubing hanging requirements to the appropriate tables.*** **Revise as follows:** TABLE M2101.9 HANGER SPACING INTERVALS PIPING MATERIAL / MAXIMUM HORIZONTAL SPACING (feet) / MAXIMUM VERTICAL SPACING (feet) PEX tubing ≤ 1 inch / 2.67 / 4 PEX tubing ≥ 1 1/4 inches / 4 / 10a *(Portions of table not shown remain unchanged)* For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe.		X			Consistency with Manufacturers
RM45-15	**Section: M2101.10** ***AEI Summary: This proposal provides a compressed gas testing substitution for hydrostatic testing, where authorized.***		X			New Air Testing Policy

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	Revise as follows: **M2101.10 Tests.** Hydronic piping systems shall be tested hydrostatically at a pressure of one and one- half times the maximum system design pressure, but not less than 100 pounds per square inch (689 kPa). The duration of each test shall be not less than 15 minutes and not more than 20 minutes. **Exception:** For PEX piping systems, testing with a compressed gas shall be an alternative to hydrostatic testing where compressed air or other gas pressure testing is specifically authorized by all of the manufacturer's instructions for the PEX pipe and fittings products installed at the time the system is being tested, and compressed air or other gas testing is not otherwise prohibited by applicable codes, laws, or regulations outside of this code.					
RM47-15	**Section: M2101.10** ***AEI Summary: This proposal provides consistency with industry practice and does not limit duration of pressure test.*** **Revise as follows:** **M2101.10 Tests.** Hydronic piping systems shall be tested hydrostatically at a pressure of one and one- half times the maximum system design pressure, but not less than 100 pounds per square inch (689 kPa). The duration of each test shall be not less than 15 minutes ~~and not more than 20 minutes~~.		X			Consistency
RM48-15	**Section: M2103.2, M2103.2.1, M2103.2.2** ***AEI Summary: This proposal deletes certain sections, relevant to radiant floor heating installation, to avoid confusion.*** **Revise as follows:** **M2103.2 Thermal barrier required.** Radiant floor heating systems shall have a thermal barrier in accordance with Sections M2103.2.1 through M2103.2.4. Insulation R-values for slab-on-grade and suspended floor installations shall be in accordance with Chapter 11. **Exception:** Insulation shall not be required in engineered systems where it can be demonstrated that the insulation will decrease the efficiency or have a negative effect on the installation. **Delete without substitution:** ~~**M2103.2.1 Slab-on-grade installation.** Radiant piping used in slab-on-grade applications shall have insulating materials having a minimum *R*-value of 5 installed beneath the piping.~~		X			Consistency

Table 8. 2018 IRC Mechanical Changes Cost Impact

CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	~~**M2103.2.2 Suspended floor installation.** In suspended floor applications, insulation shall be installed in the joist bay cavity serving the heating space above and shall consist of materials having a minimum *R*-value of 11.~~					
RM51-15	**Section: Table M2105.4, Table M2105.5** ***AEI Summary: This proposal adds standard NSF-358-2 to the ground source loop pipe and fittings tables.*** **Revise as follows:** TABLE M2105.4 GROUND-SOURCE LOOP PIPE MATERIAL | STANDARD Polypropylene (PP-R) | ASTM F 2389; CSA B137.11; NSF 358-2 *(Portions of table not shown remain unchanged)* TABLE M2105.5 GROUND-SOURCE LOOP PIPE FITTINGS PIPE MATERIAL | STANDARD Polypropylene (PP-R) | ASTM F 2389; CSA B137.11; NSF 358-2 *(Portions of table not shown remain unchanged)* **Reference standards type:** **Add new standard(s) as follows:** NSF 358-2-2012 Polypropylene Pipe & fittings for water-based ground-source "geothermal" heat pump systems		X			Standards Inclusion
RM52-15	**Section: M2005.1, M2301.2.1, M2301.2.11.1, M2301.2.2.2, M230 .2.4, M2301.2.6, M2301.2.6.1 (New), M2301.2.6.2 (New), M2301.2.8, M2301.3, M2301.3.1, M2301.3.2.** ***AEI Summary: This proposal adds a reference standard regarding hot water storage tanks that replaces and older standard.*** **Revise as follows:** **M2005.1 General.** Water heaters shall be installed in accordance with Chapter 28, the manufacturer's instructions and the requirements of this code. Water heaters installed in an attic shall comply with the requirements of Section M1305.1.3. Gas-fired water heaters shall comply with the requirements in Chapter 24. Domestic electric water heaters shall comply with UL 174. Oiled-fired water heaters shall comply with UL 732. ~~Thermal solar~~ Solar thermal water ~~heaters~~ heating systems shall comply with Chapter 23 and ~~UL 174~~SRCC 300. Solid fuel-fired water heaters shall comply with UL 2523. **M2301.2.1 Access.** ~~Solar energy collectors, controls, dampers, fans, blowers and pumps~~ Access shall be ~~accessible~~ provided to solar energy *equipment* for ~~inspection,~~ maintenance~~, repair~~. Solar systems and ~~replacement~~ appurtenances shall not obstruct or interfere with the operation of any doors, windows or other building components requiring operation or access. Roof-mounted solar thermal equipment shall not obstruct or		X			Clarification/ Consistency

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	interfere with the operation of roof-mounted equipment, appliances, chimneys, plumbing vents, roof hatches, smoke vents, skylights and other roof penetrations and openings. **M2301.2.2.2 Collector sensors.** Collector sensor installation, sensor location and the protection of exposed sensor wires from ~~ultraviolet light~~ degradation shall be in accordance with SRCC 300.X **M2301.2.4 Vacuum relief.** System components that might be subjected to ~~pressure drops below atmospheric pressure~~ a vacuum during operation or shutdown shall be designed to withstand such vacuum or shall be protected ~~by a vacuum relief valve~~ with vacuum relief valves. ~~**M2301.2.6 Protection from freezing.**~~ System components shall be protected from damage resulting from freezing of heat-transfer liquids at the winter design temperature provided in Table R301.2(1). Freeze protection shall be provided ~~by heating, insulation, thermal mass and heat transfer fluids~~in accordance with SRCC 300. Drain-back systems shall be installed in compliance with Section M2301.2.6.1 and systems utilizing freeze ~~points lower than the winter design temperature, heat tape or other *approved* methods, or combinations thereof~~protection valves shall comply with Section M2301.2.6.2. **Exception:** Where the 97.5-percent winter design temperature is greater than ~~32~~or equal to 48°F (~~0~~9°C). **M2301.2.8 Expansion tanks.** Expansion tanks in solar energy systems shall be installed in accordance with Section M2003 in solar collector loops that contain pressurized heat transfer fluid. Where expansion tanks are used, the system shall be designed in accordance with SRCC 300 to provide an expansion tank that is sized to withstand the maximum operating pressure of the system. **Exception:** Expansion tanks shall not be required in the collector loop of *drain-back systems*. **M2301.2.11.1 Solar loop isolation.** Valves shall be installed to allow the solar ~~collectors~~ loop to be isolated from the remainder of the system **M2301.3 Labeling.** *Labeling* shall comply with Sections M2301.3.1 and M2301.3.2. **M2301.3.1 Collectors and panels.** Solar thermal collectors and panels shall be listed and labeled in accordance with SRCC 100 or SRCC 600. ~~Collectors and panels~~ Factory-built collectors shall ~~be *listed* and *labeled* to show~~ bear a label showing the manufacturer's					

Table 8. 2018 IRC Mechanical Changes Cost Impact						
CODE CHANGE #	2018 IRC MECHANICAL CHANGE SUMMARY	IRC MECHANICAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	name, model number, and serial number~~, collector weight, collector maximum allowable temperatures and pressures, and the type of heat transfer fluids that are compatible with the collector or panel. The *label* shall clarify that these specifications apply only to the collector or panel.~~ **M2301.3.2 Thermal storage units.** Pressurized ~~thermal~~ water storage ~~units~~ tanks shall ~~be *listed* and *labeled* to show~~ bear a label showing the manufacturer's name and address, model number, serial number, storage unit maximum and minimum allowable operating temperatures and ~~pressures,~~ storage unit maximum and ~~the type of heat transfer fluids that are compatible with the storage unit~~ minimum allowable operating pressures. The *label* shall clarify that these specifications apply only to the ~~thermal~~ water storage ~~unit~~ tanks. **Add new text as follows:** **M2301.2.6.1 Drain-back systems** Drain-back systems shall be designed and installed to allow for manual gravity draining of fluids from areas subject to freezing to locations not subject to freezing, and air filling of the components and piping. Such piping and components shall maintain a horizontal slope in the direction of flow of not less than one-fourth unit vertical in 12 units horizontal (2-percent slope). Piping and components subject to manual gravity draining shall permit subsequent air filling upon drainage and air venting upon refilling. **M2301.2.6.2 Freeze protection valves.** Freeze protection valves shall discharge in a manner that does not create a hazard or structural damage.					

*For prescriptive Code changes only.

APPENDIX I

Table 9. 2018 IRC Plumbing Changes Cost Impact

CODE CHANGE #	2018 IRC PLUMBING CHANGE SUMMARY	IRC PLUMBING COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
RP5-15	**Section: P2801.6** ***AEI Summary: This proposal removes the restrictions placed on plastic pans beneath gas-fired heaters and tanks.*** **Revise as follows:** **P2801.6 Required pan.** Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following: 21. Galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness. 22. Plastic not less than 0.036 inch (0.9 mm) in thickness. 23. Other approved materials. A plastic pan ~~shall not be installed~~ beneath a gas-fired water heater shall be constructed of material having a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723.	X			$50.00 per pan	Increased Product Offerings
RP8-15	**Section: P2902.5.4, P2904.1.** ***AEI Summary: This proposal clarifies the code regarding backflow protection when following a specific standard.*** **Revise as follows:** **P2902.5.4 Connections to automatic fire sprinkler systems.** The potable water supply to automatic fire sprinkler systems shall be protected against backflow by a double check backflow prevention assembly, a double check fire protection backflow prevention assembly, a reduced pressure principle backflow prevention assembly or a reduced pressure principle fire protection backflow prevention assembly. ~~**Exception:** Where systems are installed as a portion of the water distribution system in accordance with the requirements of this code and are not provided with a fire department connection, backflow protection for the water supply system shall not be required.~~ **Exception:** Where sprinkler systems are installed in accordance with Section P2904.1, backflow protection for the water supply system shall not be required.		X			Clarification

Table 9. 2018 IRC Plumbing Changes Cost Impact						
CODE CHANGE #	2018 IRC PLUMBING CHANGE SUMMARY	IRC PLUMBING COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	P2904.1 General. The design and installation of residential fire sprinkler systems shall be in accordance with NFPA 13D or Section P2904, which shall be considered equivalent to NFPA 13D. Partial residential sprinkler systems shall be permitted to be installed only in buildings not required to be equipped with a residential sprinkler system. Section P2904 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall provide domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system. A backflow preventer shall not be required to separate a ~~stand-alone~~ sprinkler system from the water distribution system, provided that the sprinkler system complies with all of the following: 1. The system complies with NFPA 13D or Section P2904. 2. The piping material complies with Section P2905. 3. The system does not contain antifreeze. 4. The system does not have a fire department connection.					
RP10-15	**Section: P2903.5** ***AEI Summary: This proposal aligns standards regarding water hammer prevention.*** **Revise as follows:** **P2903.5 Water hammer.** The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water hammer arrestor shall be installed when quick-closing valves are utilized. Water-hammer arrestors shall be installed in accordance with the manufacturer's instructions. Water-hammer arrestors shall conform to ASSE 1010.		X			Clarification
RP12-15	**Section: Table P2906.6, Chapter 44** ***AEI Summary: This proposal adds PE-RT to the list of tubing that can be used with push fittings.*** **Revise as follows:** TABLE P2906.6 PIPE FITTINGS MATERIAL | STANDARD Fittings for polyethylene of raised temperature (PE-RT) plastic tubing | ASSE 1061; ASTM F 1807; ASTM F2098; ASTM F 2159; ASTM F 2735; ASTM F 2769 *(Portions of table not shown remain unchanged)* **Reference standards type:** **Add new standard(s) as follows:**		X			Consistency

Table 9. 2018 IRC Plumbing Changes Cost Impact						
CODE CHANGE #	2018 IRC PLUMBING CHANGE SUMMARY	IRC PLUMBING COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	ASSE 1061-2011 Peformance Requirements for Push-Fit Fittings (UPDATE of edition year).					
RP13-15	**Section: P2906.6.1 (New)** ***AEI Summary: This proposal prohibits the use of saddle tap fittings.*** **Add new text as follows:** **P2906.6.1 Saddle tap fittings.** The use of saddle tap fittings and combination saddle tap and valve fittings shall be prohibited.			X	$12 per fitting	Less Leakage Opportunities
RP14-15	**Section: P2906.9.1.5, P2906.9.1.5.1, P2906.9.1.5.2** ***AEI Summary: This proposal gives PEX Plastic piping its own category.*** **Revise as follows:** ~~**P2906.9.1.5**~~ **P2906.10 Cross-linked polyethylene plastic (PEX).** Joints between cross-linked polyethylene plastic tubing or fittings shall comply with Section ~~P2906.9.1.5.1~~ P2906.10.1 or Section ~~P2906.9.1.5.2~~ P2906.10.2. ~~**P2906.9.1.5.1**~~ **P2906.10.1 Flared joints.** *No change to text.* ~~**P2906.9.1.5.2**~~ **P2906.10.2 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions. Fittings for cross-linked polyethylene (PEX) plastic tubing shall comply with the applicable standards indicated in Table P2906.6 and shall be installed in accordance with the manufacturer's instructions. PEX tubing shall be factory marked with the applicable standards for the fittings that the PEX manufacturer specifies for use with the tubing.		X			Oversight Correction
RP15-15	**Section: P2906.9.1.4** ***AEI Summary: This proposal gives PEX Plastic its own category.*** **Revise as follows:** ~~**P2906.9.1.5**~~ **P2906.10 Cross-linked polyethylene plastic (PEX).** Joints between cross-linked polyethylene plastic tubing or fittings shall comply with Section ~~P2906.9.1.5.1~~ P2906.10.1 or Section ~~P2906.9.1.5.2~~ P2906.10.2. ~~**P2906.9.1.5.1**~~ **P2906.10.1 Flared joints.** *No change to text.* ~~**P2906.9.1.5.2**~~ **P2906.10.2 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions. Fittings for cross-linked polyethylene (PEX) plastic tubing shall comply		X			Oversight Correction

Table 9. 2018 IRC Plumbing Changes Cost Impact

CODE CHANGE #	2018 IRC PLUMBING CHANGE SUMMARY	IRC PLUMBING COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	Sub Code:					
	with the applicable standards indicated in Table P2906.6 and shall be installed in accordance with the manufacturer's instructions. PEX tubing shall be factory marked with the applicable standards for the fittings that the PEX manufacturer specifies for use with the tubing.					
RP16-15	**Section: Table P2906.4, Table P2906.5, Table P2906.6, P2906.19, P2906.19.2 (New), P2906.19.3 (New)** ***AEI Summary: This proposal revises applicable tables to include PE-RT tubing systems.*** **Revise as follows:** **TABLE P2906.4** **WATER SERVICE PIPE** MATERIAL | STANDARD Polyethylene of raised temperature (PE-RT) plastic tubing | ASTM F 2769; CSA B137.18 *(Portions of table not shown remain unchanged)* **TABLE P2906.5** **WATER DISTRIBUTION PIPE** MATERIAL | STANDARD Polyethylene of raised temperature (PE-RT) plastic tubing | ASTM F 2769; CSA B137.18 *(Portions of table not shown remain unchanged)* **TABLE P2906.6** **PIPE FITTINGS** MATERIAL | STANDARD Fittings for polyethylene of raised temperature (PE-RT) plastic tubing | ASTM F 1807; ASTM F2098; ASTM F 2159; ASTM F 2735; ASTM F 2769; ASTM F1055; ASTM D2683; ASTM D3261; CSA B137.18 *(Portions of table not shown remain unchanged)* **P2906.19 Polyethylene of raised temperature plastic.** Joints between polyethylene of raised temperature plastic tubing and fittings shall be in accordance with ~~Section~~ Sections P2906.19.1, P2906.19.2 and P2906.19.3. **Add new text as follows:** **P2906.19.2 Heat fusion Joints** Joints shall be of the socket-fusion, saddle-fusion, or butt-fusion type, and shall be joined in accordance with ASTM D2657. Joint surfaces shall be clean and free of moisture. Joint surfaces shall be heated to melt temperatures and joined. The joint shall remain undisturbed until cool. Fittings shall be manufactured in accordance with ASTM D2683 or ASTM D3261. **P2906.19.3 Electrofusion Joints** Joints shall be of the electrofusion type. Joint surfaces shall be clean and free of moisture and scoured to expose virgin resin. Joint surfaces shall be heated to melt temperatures for a period of time specified by the manufacturer and		X			Increased Product Selection and Installation Standards

Table 9. 2018 IRC Plumbing Changes Cost Impact						
CODE CHANGE #	2018 IRC PLUMBING CHANGE SUMMARY	IRC PLUMBING COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	joined. The joint shall remain undisturbed until cool. Fittings shall be manufactured in accordance with ASTM F1055. **Reference standards type:** **Add new standard(s) as follows:** CSA B137.18 - 2013 - Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications.					
RP17-15	**Section: P3003.9.2** ***AEI Summary: This proposal allows the inclusion of "other approved primers" within the Solvent Cementing section of the code..*** **Revise as follows:** **P3003.9.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer, or other *approved* primer, that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3 or CSA B181.2 shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and shall be in accordance with ASTM D 2855. Solvent- cement joints shall be installed above or below ground. **Exception:** A primer shall not be required where all of the following conditions apply: 1. The solvent cement used is third-party certified as conforming to ASTM D 2564. 2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in non-pressure applications in sizes up to and including 4 inches (102 mm) in diameter.		X			Increased Product Selection

*For prescriptive Code changes only.

APPENDIX J

Table 10. Fire Protection and Life Safety Change Summary						
CODE CHANGE #	**FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY**	**COST IMPACT**			**ESTIMATED AMOUNT***	**BENEFIT OF CHANGE**
		Decrease	**None**	**Increase**		
International Building Code (IBC), 2018 Edition						
Chapter 2: Definitions						
G237-15	Modified: An attic is now defined as "the space between the ceiling framing of the top story and the underside of the roof."		X		n/a	Improves the definition of an attic.
ADM9-16 Part I/II	Modified: The definition of a "Change of Occupancy" has changed.		X		n/a	Improves this definition in conjunction with IEBC.
G4-15	New: A definition was added for "Children's Play Structure."		X		n/a	This was a necessary change.
FS94-15	New: A definition was added for "Delayed-Action Closer."		X		n/a	This was a necessary change, as their use is increasing.
ADM14-16 Part I	Modified: The definition of a "Historic Building" has changed.		X		n/a	Improves this definition in conjunction with IEBC.
G9-15	Modified: The definition of a "Sleeping Unit" has changed to clarify that it can be more than one room.		X		n/a	This was a necessary change.
E5-15 Part II	301 Modified: This section was modified to clarify the difference between classification and use.		X			This clarification will allow better application and enforcement of this section.
G24-15, E5-15 Part II	302 Modified: This section was modified throughout to clarify the difference between classification and use.		X			This clarification will allow better application and enforcement of this section.
G36-15	309.1 Modified: Greenhouses for display and sale of plants that provide public access are added to list of occupancies considered under Mercantile Group M.		X		n/a	Provides a clarification on when greenhouses are mercantile use. There is also a new clarification on when

Table 10. Fire Protection and Life Safety Change Summary						
CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
						greenhouses are assembly use.
G37-15	310.3 Modified: Monasteries that are congregate living facilities (nontransient) with 16 or fewer occupants are no longer required to be Group R-2. Note that there appears to be redline errors with IBC material for this change, but the final change is correct.	X			$50,000	This change is consistent with other sections of the code. This change reduces the required construction type in some projects.
G43-15	311.1.1 Modified: The area requirement of 100 sq. ft. was removed when determining if storage is accessory. This verbiage was added during the 2015 revision cycle.	X			$4,000 per room	There is no technical justification for this area requirement. It gives the user more flexibility in determining accessory occupancies.
G44-15	311.2 Modified: "Self-service storage facility (mini-storage)" was added as an S-1 occupancy.			X	$25,000 per floor	This could be potentially applied to residential buildings that have self-storage. This could create a burden on owners, thus an exception could be warranted. The Florida Building Commission should review this change and form a consensus.
Chapter 4: Special Detailed Requirements Based on Occupancy and Use						
Section 401: Scope						
E5-15 Part II	401 Modified: This section was modified to clarify the difference between classification and use.		X			This clarification will allow better

Table 10. Fire Protection and Life Safety Change Summary						
CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
						application and enforcement of this section.
Section 403: High-Rise Buildings						
G80-15	403.2.1.1 Modified: Group H-2, H-3, and H-5 high-rise occupancies are no longer allowed the reduction to Type IIA construction.			X	$100,000	This change is similar to other hazards that are not allowed this reduction.
G28-16	403.4.8.3/4 Modified: Power and lighting for the fire command center in high-rise buildings is now required to be on emergency power load, in lieu of standby.			X	$10,000	This change was seen as necessary by the ICC committee.
G81-15	403.5.2 Modified: Clarifies that Group R-2 and their ancillary spaces that are more than 420 ft. do not require an additional stair.		X			Provides a clarification.
G84-15	403.5.2 Modified: An exception was added to indicate that portions of a building where floors less than 420 ft do not require an additional stair, for example in a two-tower building.		X			Provides a clarification.
Section 404: Atriums						
G94-15	404.6 Modified: An exception was added to state that a fire barrier is not required where a smoke control system is not required in an atrium.		X			Provides a clarification.
Section 405: Underground Buildings						
FS74-15	405.4.3 Modified: Clarifies smoke and draft control assembly requirements at elevators in underground buildings.		X			Provides a clarification.
G28-16	405.8 Modified: Fire pumps in underground buildings are now required to be on emergency power load, in lieu of standby.			X	$25,000 per pump	This change was seen as necessary by the ICC committee.
Section 406: Motor-vehicle-related Occupancies						
G95-15	406 Modified: This section has been re-organized and provided with updated references throughout.		X			This was a necessary change per the committee.
Section 420: Groups I-1, R-1, R-2, R-3, and R-4						
G9-15	420.2 Modified: This section now includes exceptions that rooms within a sleeping unit do not require fire partitions.		X			Provides a clarification.
G123-15	420.9 New: Group R-2 cooking appliance requirements were added.			X	$15,000 per kitchen	This is intended as a clarification. It could increase the cost by indicating new

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		Decrease	None	Increase		
						requirements by referencing IMC, but increase freedom of design.
G121-15	420.10 New: Requirements were added for cooking areas in Group R-2 dormitories. Limits cooking appliances to residential appliance or requires further protection.			X	$15,000 per kitchen	This is intended as a clarification. It could increase the cost by indicating new requirements, such as kitchen suppression, but increase design options.
Section 422: Ambulatory Care Facilities						
G125-15	422.6 New: Requires Ambulatory Care Facilities to comply with NFPA 99. This will require essential electrical systems and a generator.			X	$250,000	Provide consistent regulation of these types of facilities.
Section 423: Storm Shelters						
EB68-15 Part II	423.4 Modified: New language provides additional clarification on how the occupant load of a storm shelter is calculated and located.			X	$50,000	This was necessary revision on how the occupant load is calculated.
Section 428: Higher Education Laboratories						
F340-16	428 New: A section was added to address laboratories in university-type occupancies. Several definitions were also added in Chapter 2.			X	$25,000 per lab	Provides the necessary requirements for educational purposes above the 12th grade.
Chapter 5: General Building Heights and Areas						
Section 503: General Building Height and Area Limitations						
G130-15	503.1 Modified: Clarifies the intent that fire walls can separate area limits, height limits, and construction types.		X			This was a scoping clarification to differentiate from Section 706.

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		Decrease	None	Increase		
G24-15	503.1.4 New: Provides a clarification when roofs need to be classified as occupied.		X			Provides a clarification.
Section 505: Mezzanines and Equipment Platforms						
G138-15	505.2.1 Modified: Allows mezzanines in dwelling units up to one-half the room below.	X			$4,000	This is a design flexibility change.
Section 508: Mixed Use and Occupancy						
G149-15	508.3.2 Modified: Provides a clarification that number of stories must be considered in non-separated occupancies.		X			Provides a clarification.
G151-15	508.4.1 Modified: Provides a clarification on how fire protection systems are applied to separated occupancies.		X			Provides a clarification.
G149-15	508.4.3 Modified: Provides a clarification that number of stories must be considered in separated occupancies.		X			Provides a clarification.
Section 509: Incidental Uses						
G154-15	Table 509 Modified: Changes the classification of stationary storage battery systems to the thresholds established in the IFC.		X			This change is consistent with other sections of the code.
G157-15	Table 509 Modified: A new line was added to clarify that electrical installations and transformers must be fire rated per NFPA 70.		X			This change is consistent with NFPA 70.
Section 510: Special Provisions						
G160-15	510.2 Modified: Provides an allowance for vertical offsets in building separations.		X			This change allows design flexibility and is consistent with other sections of the code.
Chapter 6: Types of Construction						
Section 601: General						
G167-15	Table 601 Modified: Provides a clarification that roofs over 20 ft do not require their primary structure frame to be fire-rated.	X			$50,000	This change was technically stated as a clarification based on the original intent of this footnote. However, it has the potential to reduce construction costs.
Section 602: Construction Classification						

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		Decrease	None	Increase		
G175-15	602.3 Modified: States that where fire-retardant-treated wood is used in Type III construction, the exterior walls include the framing and sheathing.			X	unknown	This is technically a clarification based on the ASCE definition of a framing system. However, it has the potential to increase cost.
G179-15	602.4 Modified: The classification of Heavy Timber (HT) construction type has been clarified.		X			This consolidates Chapter 6 and Chapter 23.
Chapter 7: Fire and Smoke Protection Features						
Section 704: Fire-Resistance Rating of Structural Members						
FS7-15	704.2, 704.4.1 Modified: Provides a clarification on how columns can be treated as light framed construction.		X			Provides a clarification.
Section 705: Exterior Walls						
FS17-15	705.8.1 Modified: Clarifies that the maximum area of unprotected and protected openings is based on the fire separation of each story.		X			Provides a necessary clarification for stepped buildings.
Section 706: Fire Walls						
FS27-15	706.1.1 Modified: Clarifies that fire walls are not required solely because there is a lot line. Also requires documentation of any easements or contracts.		X			Provides a necessary clarification for fire walls on lot lines.
Section 708: Fire Partitions						
FS42-15	708.4 Modified: The fire partition continuity section has been mostly re-written.		X			This clarification will allow better application and enforcement of this section.
Section 713: Shaft Enclosures						
FS49-15	713.8.1 Modified: Clarifies that membrane penetrations of any type are allowed at shafts.		X			Provides a necessary clarification.
FS52-15	713.13.1 Modified: Allows a recycling chute in the same shaft as the trash chute as both are similar hazards.	X			$100,000 per chute	This change gives more design options and is consistent with

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		Decrease	None	Increase		
						other sections of the code.
Section 714: Penetrations						
FS55-15	714.2 New: Provides clarification that firestopping systems must comply with all manufacturer requirements.		X			Provides a clarification.
FS63-15	714.5.1.2 Modified: Provides a clarification that penetrations must be metal to be an exception from a listed firestop.		X			Provides a clarification.
FS67-15	714.5.2 Modified: Allows listed luminaires (light fixtures) or luminaires protected with listed materials to be an exception from a listed membrane firestop.		X			This change is consistent with other sections of the code.
Section 715: Fire-resistance Joint System						
FS69-15	715.1 Modified: States that the intersection of exterior curtain wall assemblies and the roof slab or roof deck does not require a fire joint.		X			Provides a necessary clarification and coordinates with other sections of the code.
FS70-15	715.2 Modified: Provides clarification that fire joint systems must comply with all manufacturer requirements.		X			Provides a clarification.
Section 716: Opening Protective						
FS75-15	716.1 Modified: Clarifies that NFPA 80 is applicable to opening protectives.		X			Provides a clarification.
n/a	Table 716.1(1) Modified: Provides a line item that compliance with ASTM E119 or UL 263 gives a "FC" marking for floor/ceiling for glazing.		X			Provides an update to a known listing.
FS79-15	Table 716.1(2): Provides new opening protective requirements for 2-hr fire-rated exterior walls.		X			Provides an update to known materials that have passed this test.
FS100-15	716 Modified: This section was mostly re-written to allow alternate methods of compliance for opening protectives.		X			Provides an update to methods of compliance.
Section 717: Ducts and Air Transfer Openings						
FS107-15	717.3.1 Modified: States that "only ceiling radiation dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air conditioning systems designed to operate with fans on during a fire."		X			Provides a clarification with other code sections.
FS111-15	717.5 Modified: Clarifies that dampers must be 'listed" rather than "approved" in two locations.		X			Provides consistent terminology.

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FS119-15	717.6.2 Modified: The exceptions in this section have been re-written to provide better understanding. This change was also made to the IMC.		X			Provides a clarification.
Section 718: Concealed Spaces						
FS42-15	718.3 Modified: This draftstopping section was mostly re-written to allow alternate methods of compliance for opening protectives.		X			Provides a clarification for better enforcement and application.
Section 720: Thermal and Sound Insulating Materials						
FS123-15	720.1: Expands upon insulating materials covered by this section.		X			Provides a clarification.
Chapter 8: Interior Finishes						
Section 803: Wall and Ceiling Finishes						
FS139-15	803.1 Modified: This section was mostly re-written to emphasize NFPA 286. ASTM E84 also remains an option.		X			Provides a clarification.
FS138-15	803.13.2 Modified: Allow materials other than Class A in set-out construction if filled with noncombustible material.		X			Provided an additional exception that meets the intent of the code and as allowed by other code sections.
Section 804: Floor Finishes						
FS140-15	804 Modified: This section was modified in two locations to allow floor finishes to comply with ASTM E648, as an alternative to NFPA 253.		X			Provide an alternative allowance as both standards are equivalent.
Section 806: Decorative Materials and Trim						
FS1-16	806 Modified: This section was partially re-written to coordinate with IFC by clarifying permitted materials.		X			Provides a clarification.
Chapter 9: Fire Protection and Life Safety Systems						
n/a	This Chapter was re-named to "Fire Protection and Life Safety Systems."		X		n/a	Terminology change to indicate this chapter covers different types of systems.
Section 901: General						
F145-16	901.6.2 New: Sections were added to coordinate integrated testing, especially for smoke control systems and high-rises. These sections are also to coordinate with NFPA 4. Companion code references were also added to *NFPA 101*.			X	$2,000 per story	This change is needed to address how integrated

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		Decrease	None	Increase		
						systems must be tested and to coordinate with NFPA changes.
Section 902: Pump and Riser Room Size						
F141-16	902 Modified: This section was moved from 901.8 and completely re-written. This change was intended as a clarification, but the ICC Committee acknowledges the strengthened code section will expand this requirement. The ICC Committee stated: "The modification was approved because it was decided by the committee that the same room requirements that are required for fire pump rooms should also be required for automatic sprinkler riser rooms." Note that a dedicated sprinkler room is not required, but if provided must meet these provisions.			X	$10,000 per room	This will improve firefighter access and access for maintenance.
Section 903: Automatic Sprinkler Systems						
F157-16	903.2.3 Modified: Providing a sprinkler system for Group E occupancies has been clarified for levels not on the level of exit discharge. Additionally, the occupant load threshold was established at 300.		X			This section has improved the applicability of this section by sprinkler protecting larger schools and not smaller ones.
unknown	903.3.1.2.1 Modified: This section was modified to clarify sprinkler requirements in NFPA 13R systems for balconies and decks if there is a roof or combustible project above.		X			This revised section provides clarification.
F172-16	903.3.1.2.3 New: A new section was added for sprinkler requirements in NFPA 13R systems for attics. Sprinkler protection is now required if there is occupancy or fuel-fired equipment.		X			This change is consistent with other sections of the code.
F172-16	903.3.1.2.3 New: A new section was added for sprinkler requirements in NFPA 13R systems for attics. Sprinkler protection is now required if the roof height is greater than 55 ft.			X	$50,000 for dry pipe valves and feed $50,000 per 10,000 sq. ft. of attic space	This change provides a greater level of safety for firefighters in buildings with tall attic spaces that are not sprinkler protected or have NFPA 13R systems. This

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		Decrease	None	Increase		
						change is based on several case studies. However, this requirement is a major change of intent of NFPA 13R and building code. The Florida Building Commission should review this change and form a consensus.
Section 904: Alternative Automatic Fire-Extinguishing System						
F174-16	904.12 Modified: This section now lists NFPA 96 as a required standard when protecting commercial cooking systems as a companion code.		X			Clarifies required reference.
F175-16	904.12 Modified: This section now allows automatic water mist systems per NFPA 750 to protecting commercial cooking systems.		X			This allows another design option.
F179-16	904.13 Modified: Sets fire protection system requirements for cooking areas in Group R-2 dormitories. Limits cooking appliances to residential appliance or requires further protection. This is a companion code change to IBC 420.10 as noted above.			X	$15,000 per kitchen	This is intended as a clarification. It could increase the cost by indicating new requirement, but increases freedom of design.
F180-16	904.14 New: A new section was added for aerosol fire-extinguishing systems per NFPA 2010.		X			This allows another design option.
Section 905: Standpipe Systems						
F184-16	905.3.1 Modified: A Class III standpipe system is now required for buildings that are four stories, regardless of height. Note that the previous height requirements are still triggers. This change was substantiated by the hose-lay requirements up a typical four-story building.			X	$25,000 per riser	Provides additional protection for firefighters.
F185-16	905.3.1 Modified: A Class III standpipe system is now exempted where “Class I standpipes are allowed in Group B and E occupancies” and “Class I standpipes are allowed in buildings		X			These two changes allow

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		Decrease	None	Increase		
	where occupant-use hose lines will not be utilized by trained personnel or the fire department."					more design options.
F187-16	905.4 Modified: Class I hose connections are now required on the main landing. This change correlates to NFPA 14.		X			Provide correlation with NFPA codes.
F188-16	905.4 Modified: An exception was added that a single hose connection is permitted to be installed in the open corridor or open breezeway between open stairs that are not greater than 75 ft. apart.		X			Provide correlation with NFPA codes.
F183-16	905.11 New: The fire code official is authorized to require locking caps on the outlets on dry standpipes where the responding fire department carries key wrenches for the removal that are compatible with locking FDC connection caps.			X	$100 per outlet	Will prevent theft of caps and increase firefighter safety.
Section 906: Portable Fire Extinguishers						
F190-16	906.1 Modified: Limits the number of fire extinguishers in Group E common areas if fire extinguishers are provided in each classroom.		X			This change allows another design option.
n/a	906.1 Modified: Fire extinguishers now required within 30 ft of domestic cooking equipment in Group R-2 dormitories.			X	$250 per location	This is intended as a clarification. It could increase the cost by indicating new requirements, but increases freedom of design.
F176-16	906.4 Modified: This section was modified to clarify that Type K fire extinguishers are needed where cooking equipment involves solid fuels or vegetable or animal oils and fats		X			This is a correlation change as this requirement was not referenced in this section.
Section 907: Fire Alarm and Detection Systems						
F192-16	907.1.2 Modified: The fire alarm shop drawings' requirements were removed from this section and a reference to NFPA 72 was provided.		X			Provide correlation with NFPA codes.
F197-16	907.2.12.3 New: In buildings with an occupied floor more than 120 ft above the lowest level of fire department vehicle access, voice evacuation systems for high-rise buildings shall be multiple-channel systems. This requirement is intended so that each floor can be notified independently. This requirement will increase the number of NAC panels and associated wiring.			X	$2,000 per floor	Provides greater usability of the fire alarm system and evacuation in

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		Decrease	None	Increase		
						super high-rise buildings.
F203-16	907.3.2 Modified: All special locking systems, not just delayed egress locks, must be connected to the building's fire alarm control unit.		X			Provides a necessary clarification.
F213-16	907.5.2.3.3 Modified: Provides options on how to achieve future expansion of visible notification appliances in Group R-2 to comply with ICC A117.1.		X			This change allows more design options and provides a necessary clarification. It can potentially reduce construction costs.
Section 909: Smoke Control Systems						
F218-16	909.6.1 Modified: Clarifies that the minimum pressure difference is only required at smoke barriers used to separate smoke zones due to smoke control. Thus, some zones could be further sub-divided by smoke barriers for other reasons.		X			Provides a clarification.
G117-15	909.20.6.1 Modified: Allows additional methods of wiring ventilation equipment for a smokeproof enclosure.		X			This change allows more design options and correlates with other code sections.
Section 912: Fire Department Connections						
F221-16	912.2.1 Modified: Clarifies that fire department connections can be located on the street side of buildings or “facing approved fire apparatus access roads.”		X			This change allows more design options.
Section 913: Fire Pumps						
G117-15	913.2.2 Modified: Clarifies that options for providing a circuit supplying a fire pump and clearly states the 1-hr rating requirement.		X			Provides consistency for the protection of cables and electrical circuits with other codes.
Section 915: Carbon Monoxide Detection						
F224-16	915 Modified: Clarifies where carbon monoxide detection is required between dwelling units and private garages in several sections.		X			Provides a clarification.
Section 916: Gas Detection Systems						
F75-16	916 New: A new section is provided on gas detection systems. Most of these requirements correlate with other codes.			X	$5,000	This is intended as a clarification and correlation.

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		Decrease	None	Increase		
						It could increase the cost by indicating new requirements.
Section 917: Mass Notification Systems						
F228-16	917 New: States: "Prior to construction of a new building requiring a fire alarm system on a multiple-building college or university campus having a cumulative building occupant load of 1,000 or more, a mass notification risk analysis shall be conducted in accordance with NFPA 72. Where the risk analysis determines a need for mass notification, an approved mass notification system shall be provided in accordance with the findings of the risk analysis."			X	$15,000 for study and $75,000 for system per building	This will increase costs for this study and potentially a necessary mass notification system. However, universities must comply with the Clery Act: https://clerycenter.org. This act is a consumer protection law that aims to provide transparency around campus crime policy and statistics. One of its requirements is to provide "timely warnings and emergency notifications." Thus, most colleges and universities should already have mass notification systems installed or have installed mass notification

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		Decrease	None	Increase		
						systems on some level.
Chapter 10: Means of Egress						
Section 1003: General Means of Egress						
E1-15	1003.2/3/4 Modified: These sections have been changed in several locations to indicate means of egress clear height is measured from the finished floor and to better define circulation paths in regards to projection.		X			Provides a clarification.
Section 1004: Occupant Load						
E7-15	1004.3 Added: Provides a new section that clarifies how occupant loads in multiple function spaces should be determined.		X			Provides a necessary clarification
E9-15	Table 1004.1.2 Modified, 1004.6 New: Changes the occupant load factor for business to 150 sq ft per persons. However, it also adds a new line item and section on when concentrated business use at 50 sq ft per persons is required. This change was substantiated by recent occupant load studies and that this requirement has not changed in codes since 1934.	X			$50,000	This change has the potential to reduce or increase egress requirements for business uses. However, this change will reduce cost as most business spaces do not comply with the concentrated use requirement.
Section 1006: Number of Exits and Exit Access Doorways						
n/a	1006.1 Modified: Clarifies that this section also applies to occupied roofs.		X			Provides a clarification.
E16-15	1006.2.1 Modified: Provides a clarification that occupant loads are cumulative when determining egress at a specific point.		X			Provides a clarification.
E27-15	1006.3 Modified: Clarifies that egress from a story is based on the occupant load of that story only.		X			Provides a clarification.
E27-15	1006.3.1 New: This new section clarifies when paths of egress travel through another adjacent story.		X			Provides a clarification for better enforcement and application.
Section 1008: Means of Egress Illumination						
E33-15	1008.2.3 New: This section clarifies and provides options for illuminating exit discharge, specifically in campus style arrangements of buildings.		X			This change allows more design options

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		Decrease	None	Increase		
						and provides a clarification.
Section 1009: Accessible Means of Egress						
E34-15	1009.1 Modified: The exception "Accessible means of egress are not required to be provided in existing buildings" has been removed.		X			This change allows correlation with the IEBC.
E39-15	1009.3 Modified: This section on stairways has been partially re-written for clarity.		X			Provides a clarification for better enforcement and application.
E40-15	1009.7.2 Modified: Provides an exception that buildings equipped throughout with automatic sprinklers do not require fire-rated construction at the exterior area of assisted rescue. This change was allowed as there are no requirements for areas of refuge in a sprinklered building on upper floors. Thus, this requirement is only applied on a floor at grade where people cannot access a public way via an accessible exterior path.	X			$15,000 per area	This change is consistent with other sections of the code.
Section 1010: Doors, Gates and Turnstiles						
E47-15	1010.1.1 Modified: Clarifies that several exceptions are not allowed in accessible units based on ICC A117.1.		X			Provides a necessary clarification.
E54-15	1010.1.4.2 Modified: A statement was added that low-energy power-operated sliding doors and low-energy power-operated folding doors shall comply with BHMA A156.38. This proposal was allowed as BHMA is an ANSI accredited standard development organization.		X			This change allows more design options.
E55-15	1010.1.4.2 Modified: Changed the term "horizontal sliding doors" to "special purpose horizontal sliding, accordion or folding doors."		X			Provides a necessary clarification.
E57-15 Part I	1010.1.4.4 New: A new section was added that addresses locking doors from various rooms in Group E.		X			This change allows more design options to address a specific security need in Group E.
E61-15	1010.1.9.3 New: A new section was added that addresses monitoring or recorded egress systems.		X			This change allows more design options to address a specific security need.
E62-15	1010.1.9.4 Modified: A statement was added that "Doors serving roofs not intended to be occupied shall be permitted to		X			This change allows more

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	be locked preventing entry to the building from the roof." This change was allowed to address security concerns and the roof is limited to maintenance personnel who should have keys.					design options to address a specific security need.
E64-15	1010.1.9.6.1: This section was revised for both security concerns and to allow free egress. Closets that latch must also unlatch from the inside. This now applies to all occupancies, not just R-4, but does not apply to bathrooms.		X			This change allows more design options to address both egress and specific security needs.
E68-15	1010.1.9.8 Modified: Group E classrooms with an occupant load of less than 50 are now allowed delayed egress locking systems.		X			This change allows more design options
E77-15	1010.1.10 Modified: Clarifies that panic and fire exit hardware is only required for swinging doors.		X			Provides a necessary clarification.
E81-15	1010.3 Modified: This section has changed throughout and new sections have been added as follows: 1) Now titled "turnstiles and similar devices"; 2) Limits each turnstile to a 50 persons egress capacity; 3) Adds requirements for "security access turnstiles."			X	$1,000 per individual turnstile	These changes allow more design options to address specific security needs. However, these changes could create additional construction concerns.
Section 1011: Stairways						
E82-15	1011.6 Modified: Clarifies how the stairway landings are measured.		X			This clarification will allow better application and enforcement of this section.
E86-15	1011.16 Modified: Clarifies that permanent ladders must also comply with IMC.		X			This change allows correlation with the IMC.
Section 1012: Ramps						
E1-15	1012.5.2 Modified: Clarifies that ramp headroom must not be less than 80 in. "above the finished floor of the ramp run and any intermediate landings. The minimum clearance shall be maintained for the full width of the ramp and landing."		X			This clarification will allow better application and

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		Decrease	None	Increase		
						enforcement of this section.
Section 1014: Exit Signs						
E89-15	1013.4 Modified: Clarifies that an exit sign is required at each door "providing direct access to a stairway."		X			Provides a necessary clarification.
Section 1017: Exit Access Travel Distance						
E100-15	1017.3 Modified: Clarifies that exit access travel distance shall be measured from the most remote point "of each room, area or space," rather than "within a story." This language is better and takes into account egressing through adjacent stories.		X			This clarification will allow better application and enforcement of this section.
Section 1019: Handrails						
E132-15	1019.3 Modified: Exit access stairways and ramps can be open in smoke-protected assemblies.		X			Provides a necessary clarification.
Section 1023: Interior Exit Stairways and Ramps						
E110-15	1023.3.1 Modified: An exception was added that a separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where the interior exit stairway and the exit passageway extension are pressurized. This change was justified in that the separation does not provide any added safety and could also impede egress.	X			$10,000 per stair	This change allows more design options.
Section 1025: Luminous Egress Path Markings						
E120-15	1025.2.5 Modified: The minimum width of 1 in. for obstacles shall not apply to markings listed in accordance with UL 1994.	X			$10,000	Provide correlation with the UL Listing.
Section 1026: Horizontal Exits						
E6-15	1026.4 Modified: Clarifies that areas of refuge are based on the capacity of the horizontal exit doors, "or the design occupant load of the adjoining compartment, whichever is less."		X			This clarification prevents cumulative occupant loads.
Section 1028: Exit Discharge						
E130-15	1028.4.1 Modified: Removes a requirement to provide a guardrail where an egress court changes width.	X			$10,000 per location	This was an unnecessary code requirement from a safety standpoint.
Section 1029: Assembly						
E134-15	1029.9.1 Modified: Clarifies that the aisle width cannot be reduced to 36 in. in an accessible aisle.		X			Provides a necessary clarification.

Table 10. Fire Protection and Life Safety Change Summary						
CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
E135-15	1029.10 Modified: The "transition" section had minor re-writes throughout for clarification.		X			Provides a clarification.
E137-15	1029.11 New: A new section was added to address "stepped aisles at vomitories." This addition is both a clarification and addresses a gap in the code.		X			This change allows more design options.
Section 1029: Emergency Escape and Rescue						
E141-15	1030.1 Modified. The Group R-2 requirements required at basements has been re-written.		X			Provides a clarification.
International Residential Code (IRC), 2018 Edition						
Chapter 3 Building Planning						
R302 Fire-Resistant Construction						
RB32-16	Table R302.1(1) and (2) Modified: Provides a reference to IBC 703.3 that fire-resistance rated exterior walls can be determined by the alternate methods allowed by this reference. This was also modified in several other parts of R302.	X			$10,000 per location	This change allows design flexibility and is consistent with other sections of the code.
RB32-16	Table R302.1(1) and (2) Modified: Allows heavy timber and fire-retardant-treated wood in fire-resistance rated projections.	X			$2,000 per location	This change allows design flexibility and is consistent with other sections of the code.
RB54-16	R302.4.2 Modified: Allows membrane penetrations by listed luminaires or by luminaires protected with listed materials.	X			$2,000	This change allows design flexibility and is consistent with other sections of the code.
RB58-16	R302.5 Modified: Allows openings between the garage and residence to be "automatic-closing."		X			This change gives more design options and is consistent with other sections of the code.
RB68-16	R302.13 Modified: Clarifies that floor assemblies located directly over a crawl space not intended for storage or for the installation of fuel-fired or electric-powered heating appliances cannot have penetrations		X			Provides a clarification.
R310 Emergency Escape and Rescue Openings						
RB89-16	R310.1 Modified: Allows dwellings and townhouses with sprinklers to not have emergency escape and rescue openings, provided that other means of egress is provided.		X			This change allows design flexibility.

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
RB96-16	R310.3 Modified: Clarifies how emergency escape and rescue opening discharges and defines requirements for an "area wells."		X			Provides a clarification.
R311 Means of Egress						
RB101-16	R311.7.8.2 Modified: Clarifies handrails' projection and allows an exception for up to 6.5-in.		X			Provides a clarification and allows design flexibility.
RB108-16	R311.7.8.3/4 Modified: The section on handrail continuity and clearance was re-written and split and into two sections.		X			This is mostly a re-writing for clarification.
RB112-16	311.7.11/12 Modified: Alternating tread devices and ship's ladders are allowed to be used as an element of a means of egress for lofts, mezzanines and similar areas of 200 gross sq ft or less where such devices do not provide exclusive access to a kitchen or bathroom.	X			$2,000 per location	This change allows design flexibility. Though, it reduces the means of egress, these spaces are becoming more common in modern buildings to save space.
R314 Smoke Alarms						
RB131-16	R314.4 Modified: There is now no longer an exception for interconnecting smoke alarms for alterations and repairs.			X	$2,000	This provides an increased level of safety with minimal cost impact due to wireless technology.
R315 Carbon Monoxide Alarms						
RB144-16	R315.5 New: Carbon monoxide alarms are now required to be interconnected.			X	$2,000	This provides an increased level of safety with low cost impact. This change is consistent with other sections of the code.
R316 Foam Plastics						
RB150-16	R316.5.4 Modified: 1/4-in. fiber-cement panel, soffit or backer board can now protect foam plastics in crawl spaces.		X			This change gives more design options

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
						and is comparable with other exceptions allowed by the code.
R317 Protection of Wood and Wood-Based Products Against Decay						
n/a	R317.3 Modified: Clarifies in three subsections that staples shall be of stainless steel for fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood.	X			$250 per 100 staples	Provides a clarification for better enforcement and application.
R322 Flood-Resistant Construction						
RB160-16	R322.3.3 Modified and R322.3.4 New: These sections have been re-written with new language added. This section sets new requirements for concrete foundations in coastal high-hazard areas and Coastal A Zones to prevent scouring. This section is based on FEMA research and is enforced by the National Flood Insurance Program.			X	$10,000 per 1,000 sq. ft. of foundation	The IBC committee did not completely agree with the proposal. It will increase the cost by indicating new requirements. The Florida Building Commission should review this change and form a consensus.
RB161-16	R322.3.7 New: Requirements were added for stairways and ramps that are located below the lowest floor elevations. One option is for the stairs to have open risers and guards. These requirements were considered a clarification to R322.3.56: "Enclosed areas below design flood elevation." This section is based on FEMA research and is enforced by the National Flood Insurance Program.			X	$500 per location	Provides a clarification for better enforcement and application. It could increase the cost by indicating new requirements.
RB162-16	R322.3.7 New: Requirements were added for decks and porches that are located below the lowest floor elevations. One option is to cantilever the deck.			X	$5,000 per deck	Provides a clarification for better enforcement and application.

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		Decrease	None	Increase		
	These new requirements were considered a clarification. This section is based on FEMA research and is enforced by the National Flood Insurance Program.					It could increase the cost by indicating new requirements.
R324 Solar Energy Systems						
multiple	R324.4 Modified: This structural section on rooftop-mounted photovoltaic panel systems has been re-written for clarity and correlation with other code sections.			X	$500 per panel	Provides a clarification for better enforcement and application. It could increase the cost by indicating new requirements.
F85-16 Part II	R324.4 New: This new section provides requirements on emergency roof access and pathways. It has been re-written for clarity and correlation with the IFC.			X	$1,000 per group of panels	Provides a clarification for better enforcement and application. It could increase the cost by indicating new requirements.
R325 Mezzanines						
RB167-16	R325.3 Modified: Allows an exception for mezzanines to be one-half the floor area below with sprinkler protection.		X			This change allows design flexibility and is consistent with other sections of the code.
RB166-16	R325.6 New: Clarifies the definition and requirements for a habitable attic.		X			This clarification will allow better application and enforcement of this section.
R327 Stationary Storage Battery System						
RB171-16	R327: A new section was added for stationary storage battery systems of electric vehicles. The systems must be listed and labeled for residential use in accordance with UL 9540.			X	$2,000	This change allows more design options to address a

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
						specific gap in the code. Though some requirements may already be included in NFPA 70.
International Existing Building Code (IEBC), 2018 Edition						
Chapter 1 Scope and Administration						
Section 101 General						
ADM31-16	101.2 Modified: An exception was added that the IEBC does not apply for IRC buildings.		X			This change was made as the IRC is intended as standalone document.
Chapter 2 Definitions						
EB50-16	New: A definition was added for "risk category" for categorization of buildings and other structures for determination of flood, wind, snow, ice and earthquake loads. This is primarily a structural change to coordinate with IBC. This change also affects IEBC Section 1007 and several other sections.		X			Provides a clarification for better enforcement and application.
G20-16	New: A definition was added for "substantial structural alteration" where gravity load carrying structural elements are altered within a 5-year period support more than 30 percent of the total floor and roof area. This is primarily a structural change to coordinate with IBC. This change also affects several other sections.			X	$10,000 per 500 sq. ft.	This addition is both a clarification and addresses a gap in the code.
Chapter 3 Provisions for All Compliance Methods						
Section 305 Accessibility for Existing Buildings						
EB49-15	305.8.11 New: In assembly and mercantile occupancies, where additional toilet fixtures are added, not fewer than one accessible family or assisted-use toilet room must be provided.			X	25,000	This change is consistent with other sections of the code.
Chapter 5 Prescriptive Compliance Methods						
Note that Chapters 4 through 7 have been completely re-written, mainly for organization.						
Section 501 General						
EB16-15	501.2 New: Allows buildings that follow the prescriptive method to have reduced fire-resistance ratings if sprinkler protected.		X			This change is consistent with other sections of the code.
Section 502 Additions						
EB21-15	502.7 New: Carbon monoxide are now required. This change also occurs in Chapter 8 and 11.		X			This change is consistent with

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		Decrease	None	Increase		
						other sections of the code.
Section 505 Windows and Emergency Escape Openings						
E147-15	505.4 New: Emergency escape and rescue openings		X			This change is consistent with other sections of the code.
Chapter 7 Alterations – Level 1						
Section 705 Reroofing						
EB46-16	706.3 New: Roof replacement options have been added to this section.		X			This change is consistent with other sections of the code.
Chapter 8 Alterations – Level 2						
Section 804 Fire Protection						
EB61-15	804.2.4 Deleted: Buildings listed in IBC Table 903.2.11.6 that have exits shared by more than one tenant or that have exits or corridors serving an occupant load greater than 30 shall be provided with an automatic sprinkler system.		X			We do not recommend this change, as it reduces sprinkler requirements.
Section 805 Means of Egress						
EB63-15	805.3.1 Modified: The requirements for single exit buildings have been revised to meet allowances of IBC.		X			This change is consistent with other sections of the code.
Chapter 9 Alterations – Level 3						
Section 904 Fire Protection						
EB61-15	904.1.4 New: Buildings listed in IBC Table 903.2.11.6 that have exits shared by more than one tenant or that have exits or corridors serving an occupant load greater than 30 shall be provided with an automatic sprinkler system, regardless if a fire pump is necessary.		X			This is a necessary change and clarifies that the exception for not installing a fire pump in 804.2.4 does not apply.
Chapter 11 Additions						
Section 1106 Storm Shelters						
EB68-15 Part I	1106 New: Requirements are now set for storm shelters for Group E. This section was also added to Chapter 13.			X	$100,000 per shelter	This change is consistent with other sections of the code.
Chapter 15 Construction Safeguards						
Section 1501 General						
G229-15	1501.6.1 Modified: The following requirement was added: "a walkway shall be provided for pedestrian travel that leads from			X	$25,000 per walkway	This change is consistent with changes to IBC

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
	a building entrance or exit of an occupied structure to a public way."					and is a necessary requirement.
International Mechanical Code (IMC), 2018 Edition						
Chapter 4 Ventilation						
Section 404 Enclose Parking Garages						
M27-15	404.1 Modified: Carbon monoxide detectors must be listed to UL 2075.			X	$10,000	This was a necessary change for life safety.
NFPA 1 Fire Code, 2018 Edition						
-	6.1.8.1.1 Modified: The definition of One- and Two-Family Dwelling Unit was changed to: "a building that contains not more than two dwelling units, each dwelling unit occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms."		X			Provides a clarification for better enforcement and application.
-	10.11.1.2 New: Address numbers shall be a minimum of 4 in. high with a minimum stroke width of 1⁄2 in.		X			Provides a clarification for better enforcement and application.
-	12.4.6.3.3 New: A section was added with requirements on prevention of door blockage.			X	Minimal	Provides a clarification for better enforcement and application.
-	12.4.6.5 New: A section was added with requirements on field labeling rated doors.		X			Provides a clarification for better enforcement and application.
-	12.5 Modified: The interior finish section has been partially re-written for clarity		X			Provides a clarification for better enforcement and application.
-	12.6 Modified: The contents and furnishings section has been partially re-written for clarity		X			Provides a clarification for better enforcement and application.
-	13.1.3 New: A section was added to address integrated fire protection and life safety system testing with NFPA 4. Sections were also added in each occupancy section			X	$2,000 per story	This change is needed to address how integrated

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
						systems must be tested.
-	13.7.1.15 New: A section was added to address risk analysis for mass notification systems per NFPA 72 Chapter 24. This will apply to assembly, education, university, and mercantile buildings.				$15,000 for study and $75,000 for system per building	See *NFPA 101* for further discussion
-	13.7.2.1.4 New: Requirements were added for carbon monoxide detection in new assembly occupancies.			X	$5,000	This change is consistent with other sections of the code.
-	13.7.2.6.6 New: Requirements were added for smoke alarms in existing day-care homes.			X	$500 per detector	This change is consistent with other sections of the code.
-	13.7.2.17.6.5 New: Where carbon monoxide detectors are installed outside dwelling units, the alarm signal shall be automatically transmitted to an approved location.			X	$500	This change is consistent with other sections of the code.
-	14.5.6 New: Requirements were added for revolving door assemblies, whether used or not used in the means of egress.		X			Provides a clarification for better enforcement and application.
-	14.5.7 New: Requirements were added for turnstiles and similar devices.		X			Provides a clarification for better enforcement and application.
-	14.5.8 New: Requirements were added for door openings in folding partitions.		X			Provides a clarification for better enforcement and application.
-	14.9.2.2 New: Egress requirements were added for electrical equipment over 600 Volts.		X			This change is consistent with NFPA 70.
-	18.2.3.4 New: Requirements were added for traffic signal pre-emption if provided on local fire department apparatus.		X			Some jurisdictions have already adopted this provision where applicable.

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
-	Chapter 35 New: Requirements were added for animal housing facilities to NFPA 150.			X	$25,000 per story	This requirement adopts a previously recommended standard and addresses a gap in the code for these facilities.
-	Chapter 38 New: Requirements were added for marijuana growing, processing, or extraction facilities. This requirement does not appear to have been coordinated with *NFPA 101.*			X	$10,000 per story	This requirement addresses a gap in the code for these facilities.
NFPA 13, Standard for the Installation of Sprinkler Systems, 2016 Edition						
-	Table 6.3.1.1 Modified: Stainless steel is now permitted that meets ASTM A312/312M. Fittings are also allowed.		X			This change allows more design options.
-	6.3.8 New: Metallic pipe and tube bending is now permitted.		X			This change allows more design options.
-	6.4.8 New: Extension fittings are now permitted on sprinklers K-8.0 or smaller.		X			This change allows more design options.
-	7.1.5 New: A single air vent with a connection conforming to 8.16.6 shall be provided on each wet pipe system utilizing metallic pipe. Venting from multiple points on each system shall not be required. This design changes attempts to address trapped air causing corrosion in pipes.			X	$1,000 per system	This new requirement does not appear to be fully developed. A single air vent may do little to prevent corrosion and is a burden to designers/ contractors to install properly. The Florida Building Commission should review this change and form a consensus.

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
-	8.6.5.3.7 New: Sprinklers installed under round ducts shall be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers. This requirement has been added for multiple sprinkler types.			X	$10 per sprinkler	This requirement addresses a gap in the code for these installations.
-	8.7.4.1.4 New: Requirements were added for where soffits are used for the installation of sidewall sprinklers.		X			This requirement addresses a gap in the code for these installations.
-	8.10.4.7 New: Requirements were added for deflector orientation in sloped ceilings for residential upright and pendent spray sprinklers.			X	Minimal	This requirement addresses a gap in the code for these installations.
-	8.16.6 New: The vent required by 7.1.5 shall be located near a high point in the system to allow air to be removed from that portion of the system by one of the following methods: (1) Manual valve, minimum 1⁄2 in. (15 mm) size (2) Automatic air vent (3) Other approved means			X	$1,000 per system	This requirement may create maintenance problems as the manual vents could be forgotten and automatic air vents discharge small amounts of water.
-	9.2.6 New: Requirements were added for pipe stands.		X			This requirement addresses a gap in the code for these installations.
-	11.1.6.3.1 New: Where the system is a combined sprinkler/standpipe system (Class I or Class III) and the building is fully Sprinkler protected, no inside hose demand shall be required at any of the standpipe outlets.		X			Provides a clarification for better enforcement and application.
-	11.2.3.2.3 Modified: Clarifies that quick-response sprinkler system areas of operation cannot be reduced if there are unprotected areas above cloud ceilings.		X			Provides a clarification for better enforcement and application.

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
-	23.4.1.4 New: Unless required by other NFPA standards, the velocity of water flow shall not be limited when hydraulic calculations are performed using the Hazen–Williams or Darcy Weisbach formulas.		X			Provides a clarification for better enforcement and application.
-	695.14 New: The integrity of the generator control wiring shall be continuously monitored.			X	$2,500 per generator	This change provides a greater level of safety.
-	700.10 New: Requirements were added for permanently marking emergency wiring systems with a distinctive symbol.			X	$5,000	This change provides a greater level of safety.
-	700.10 Modified: Emergency system wiring requirements added for educational occupancies with more than 300 occupants.			X	$10,000 per story	This change provides a greater level of safety.
-	700.12 Modified: Emergency system sources of power requirements added for educational occupancies with more than 300 occupants.			X	$10,000 per story	This change provides a greater level of safety.
-	760.3(L) New: Requirements were added for cable routing assemblies of power-limited fire alarm cables in plenums.		X			This change allows more design options.
-	760.3(M) New: Requirements were added for communication raceways in plenums.		X			This change allows more design options.
-	10.5.4 New: Requirements were added for plans' examiners and inspectors.		X			Provides a clarification for better enforcement and application.
-	12.3.6 New: Requirements were added for Class N circuits		X			This change allows more design options, as Class N circuits are being more commonly used.
-	23.6 Modified: This section on "Performance of Signaling Line Circuits (SLCs)" was rewritten mostly for clarity.		X			Provides a clarification for better enforcement and application.

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		Decrease	None	Increase		
-	23.6.3 New: Requirements were added for Class N Shared Pathways.		X			This change allows more design options as Class N circuits are being more commonly used.
-	3.3.19 New: Animal Housing Facility has been defined as an "area of a building or structure, including interior and adjacent exterior spaces, where animals are fed, rested, worked, exercised, treated, exhibited, or used for production."			X	$25,000 per story	This definition adopts a previously recommended standard and addresses a gap in the code for these facilities.
-	4.2.4 New: Where buildings are designed to mitigate physical violence against occupants, such measures shall not compromise compliance with other requirements of this Code.		X			This change allows more design options to address a specific security need.
-	4.6.15 New: Several new sections were added on fire-retardant-treated wood. Fire-retardant-treated and similar wood products.		X			Provides a clarification for better enforcement and application.
-	6.1.8.1.1 Modified: The definition One- and Two-Family Dwelling Unit was changed to: "a building that contains not more than two dwelling units, each dwelling unit occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms."		X			Provides a clarification for better enforcement and application.
-	7.4.2 New: Egress requirements were added for spaces about electrical equipment		X			This change is consistent with NFPA 70.
-	8.3.3.5.2 New: All fire window assemblies shall be labeled.		X			This change is consistent with other sections of the code.
-	9.11.4.2 New: Requirements were added for compliance with NFPA 4. Sections were added throughout this code.			X	$2,000 per story	This change is needed to address how integrated systems must be tested.

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CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
-	9.14 New: Requirements were added for conducting a risk analysis for mass notification systems and if one is required.			X	$15,000 for study and $75,000 for system per building	This change attempts to address a specific security need.
-	11.8.4.3 New: Requirements were added for risk analysis for mass notification systems in high-rise buildings with a total occupant load of 5,000 or more persons, or where greater than 420 ft.			X	$15,000 for study and $75,000 for system	This new requirement may be warranted for high-rise buildings as noted.
-	11.12 Animal Housing Facilities			X	$25,000 per story	This requirement adopts a previously recommended standard and addresses a gap in the code for these facilities.
-	14.2.2.2.4 New: Requirements were added for classroom door locking to prevent unwanted entry.		X			This change allows more design options to address a specific security need.
-	14.2.3.2.1 New. A requirement was added that exit access corridors shall have not less than 6-ft clear width.			X	Minimal	Provides an increase in the level of safety. Most school corridors are sized larger than 6 ft for circulation concerns.
-	14.3.4.4.2 New: Where carbon monoxide detectors are installed, the alarm signal shall be automatically transmitted to an approved location.			X	$500	This change is consistent with other sections of the code.
-	14.3.4.5 New: Requirements were added to conduct a risk analysis for mass notification Systems and determine if a mass notification system is required.			X	$15,000 for study and	This new requirement does not appear to be fully

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		Decrease	None	Increase		
	There are no minimum thresholds for this requirement.				$75,000 for system per building	developed. This requirement should be limited to high-risk buildings. Though there are potential needs in educational occupancies, minimum threshold should be developed. This requirement also puts a large burden on the designer on what is considered an optional system by owners and desired by building officials. The Florida Building Commission should review this change and form a consensus.
-	28.2.1.4 New: Where bathtubs, bathtub-shower combinations, or showers are present, grab bars shall be provided.		X			This addition is both a clarification and addresses a gap in the code.
-	28.3.4.4 New: Requirements were added to conduct a risk analysis for mass notification Systems and determine if a mass notification system is required for grades K through 12, college, or university dormitories with an occupant load greater than 100. There are no minimum thresholds for this requirement.			X	$15,000 for study and* $75,000 for system per building	This new requirement does not appear to be fully developed. This requirement should be limited to high-risk buildings. Though there are potential needs in dorms, but the

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		Decrease	None	Increase		
						minimum threshold appears low. This requirement also puts a large burden on the designer on what is considered an optional system by owners and desired by building officials. The Florida Building Commission should review this change and form a consensus.
-	30.2.1.3 New: Where bathtubs, bathtub-shower combinations, or showers are present, grab bars shall be provided.		X			This addition is both a clarification and addresses a gap in the code.
-	30.3.4.6.5 Where carbon monoxide detectors are installed in accordance with 30.3.4.6.4(1), the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 720			X	$500	This change is consistent with other sections of the code.
-	30.3.5.2.1 New: Where located in a building of Type III, Type IV, or Type V construction and where the roof assembly is located more than 55 ft above the lowest level of fire department vehicle access, attics shall be sprinkler protected or constructed of an alternative means.			X	$50,000 for dry pipe valves and feed and $50,000 per 10,000 sq ft of attic space	This change provides a greater level of safety for firefighters in buildings with tall attic spaces that are not sprinkler protected or have NFPA 13R systems. This change is based on several case

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		Decrease	None	Increase		
						studies. However, this requirement is a major change of intent of NFPA 13 and building code. The Florida Building Commission should review this change and form a consensus.
-	38.2.1.5.1 New: Where bathtubs, bathtub-shower combinations, or showers are present, grab bars shall be provided.		X			This addition is both a clarification and addresses a gap in the code.
-	38.2.2.2.2 New: Requirements were added for door locking to prevent unwanted entry.		X			This change allows more design options to address a specific security need.
-	38.3.4.5 New: Requirements were added to conduct a risk analysis for mass notification Systems and determine if a mass notification system is required. There are no minimum thresholds for this requirement.			X	$15,000 for study and $75,000 for system per building	This new requirement does not appear to be fully developed. and should be limited to high risk buildings. Though there are potential needs in business occupancies, minimum threshold should be developed. It also puts a large burden on the designer on what is considered an optional system by owners and

Table 10. Fire Protection and Life Safety Change Summary						
CODE CHANGE #	FIRE PROTECTION & LIFE SAFETY CHANGE SUMMARY	COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
						desired by building officials. **The Florida Building Commission should review this change and form a consensus.**

*For prescriptive Code changes only.

APPENDIX K

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Article 90	**Introduction**		X			
FR-0001	90.2(A)	Revision to clarify some NEC rules apply to removals.		X			
FR-0002	90.2(B)	Revision to include "Energy Storage" to the list of NEC scope exclusions.		X			
FR-0003	90.3	Revision to permit Chapters 5, 6, and 7 to modify each other.		X			
SR-0001	90.7	Revision to require suitability of product safety standards to be compatible with the Code.		X			
FR-0004	90.8(B)	Editorial		X			
	Article 100	**Definitions**					
FR-0006	Scope	Revision to specify the Part I definitions apply for electrical systems operating at 1000 volts or less and Part II definitions apply for electrical systems operating over 1000 volts.		X			
SCR-035	Accessible, Readily (Readily Accessible)	Revision to clarify that ready access is not precluded by the use of keys. New Informational Note covering supervised or controlled conditions.		X			
FR-3919	Associated Apparatus	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3923	Associated Nonincendive Field Wiring Apparatus	Relocation to Article 100 because the term is used in more than one article.		X			
FR-0009	Building	Revision for correlation with model building codes.		X			
FR-4503	Cable Routing Assembly	Revision to include Type PLTC cables in plenum, riser, and general-purpose applications.		X			
FR-4501	Coaxial Cable	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3929	Combustible Dust	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3904	Combustible Gas Detection System	Relocation to Article 100 because the term is used in more than one article.		X			
SR-4506	Communications Equipment	New informational note to identify that the definition includes computer/data processing equipment.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-4505	Communications Raceway	Revision to include Type PLTC cables and data cables associated with information technology and communications equipment.		X			
FR-4513	Composite Optical Fiber Cable	Relocation to Article 100 because the term is used in more than one article.		X			
FR-4513	Conductive Optical Fiber Cable	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3906	Control Drawing	Relocation to Article 100 because the term is used in more than one article.		X			
FR-2701	Coordination, Selective (Selective Coordination)	Editorial		X			
SR-3913	Cord Connector [as applied to Hazardous (Classified) Locations]	New term used in multiple hazardous (classified) location articles.		X			
FR-2402	Cutout Box	Editorial		X			
FR-3907	Dust-Ignitionproof	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3910	Dusttight	Relocation to Article 100 because the term is used in more than one article.		X			
FR-5144	Electric Sign	Revision to correlate with product standard by including signs that are electrically operated.		X			
FR-4502	Electrical Circuit Protective System	Relocation to Article 100 because the term is used in more than one article.		X			
FR-1041	Field Evaluation Body (FEB)	New definition extracted from NFPA 790-2014, Standard for Competency of Third-Party Field Evaluation Bodies.		X			
FR-1041	Field Labeled (as applied to evaluated products)	New definition associated with equipment that has been field evaluated.		X			
FR-3912	Hermetically Sealed	Relocation to Article 100 because the term is used in more than one article.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3340	Information Technology Equipment (ITE)	Relocation to Article 100 because the term is used in more than one article and revised to cover IT equipment rated up to 1000 volts.		X			
FR-4511	Innerduct	Relocation to Article 100 because the term is used in more than one article.		X			
FR-0995	Interactive Inverter	Revision to recognize that inverters can be interactive with other than utility power sources.		X			
FR-3920	Intrinsically Safe Apparatus	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3921	Intrinsically Safe System	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3926	Mobile Equipment	Relocation to Article 100 because the term is used in more than one article.		X			
FR-4514	Nonconductive Optical Fiber Cable	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3913	Nonincendive Circuit [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3913	Nonincendive Component [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3913	Nonincendive Equipment [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3913	Nonincendive Field Wiring [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3913	Nonincendive Field Wiring Apparatus [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3913	Oil Immersion [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-4514	Optical Fiber Cable	Relocation to Article 100 because the term is used in more than one article.		X			
FR-0901	Photovoltaic (PV) System	Editorial		X			
FR-3926	Portable Equipment	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3924	Pressurized [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-3999	Process Seal [as applied to Hazardous (Classified) Locations]	New term used in multiple hazardous (classified) location articles.		X			
FR-3915	Purged and Pressurized [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
FR-2147	Raceway	Editorial		`			
FR-5114	Receptacle	Editorial: MOS		X			
FR-3921	Simple Apparatus [as applied to	Relocation to Article 100 because the term is used in more than one article.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Hazardous (Classified) Locations]						
FR-0013	Structure	Revision to include the phrase "other than equipment."		X			
FR-3916	Unclassified Locations [as applied to Hazardous (Classified) Locations]	Relocation to Article 100 because the term is used in more than one article.		X			
SR-0024	Voltage, Nominal	Revision to update edition date of referenced standard in Informational Note No. 2. New informational note on battery units.		X			
FR-0007	Article 100, Part II	Revision to indicate that terms are unique to systems operating over 1000 volts.		X			
FR-2429	Substation	Relocation from Part I to Part II with revisions that distinguish substations from other types of electrical distribution and control equipment.		X			
	Article 110	**Requirements for Electrical Installations**					
FR-0031	110.3(A) Informational Note	New informational note to clarify equipment can apply to new, used, refurbished, or reconditioned.		X			
SR-0002	110.3(C)	New requirement for product testing, evaluation, and listing to be performed by a qualified testing laboratory in accordance with applicable product standards.		X			
FR-0039	110.5	Revision to include aluminum.		X			
FR-0037	110.9	Editorial		X			
FR-0035	110.11 Informational Note	New informational note referring to other codes for flood provision requirements.		X			
SR-0003	110.12	Editorial		X			
FR-0041	110.14	Revision to delete the informational note to correlate with new 110.14(D).		X			
FR-0040	110.14(D)	When a torque value is given by the manufacturer, a calibrated torque wrench "shall be used."			X	Minimal	Help ensure compliance with manufacturer's requirements

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0011	110.16	Revision to require additional marking requirements for non-dwelling unit service equipment rated 1200 amperes or more.	X			$ 25/sign	Simplifies Arc-flash labeling
SCR-022	110.21(A)	Revision to include equipment marking requirements for reconditioned equipment.		X			
SCR-022	110.21(B)	Editorial		X			
FR-0044	110.22(C) Informational Note	New informational note refers to a standard that provides additional information on series tested systems.		X			
SR-0010	110.24(A)	Revision to require calculation be documented and made available to those authorized to design, install, inspect, maintain, and operate the system.		X			
FR-0046	110.25	Editorial		X			
FR-0047	Part II	Revision to upper level of circuit voltages covered.		X			
FR-0015	110.26(A)	Revision to upper level of circuit voltages covered and new Informational Note referencing NFPA 70E - 2015, Standard for Electrical Safety in the Workplace.		X			
FR-0015	Table 110.26(A)(1)	Revision to address working spaces for upper level of circuit voltages.		X			
FR-0015	110.26(A)(3)	New exception to correlate with 480.9(D) for top clearances for battery systems on open racks.		X			
SR-0012	110.26(A)(4)	New working space requirements for "limited access" areas.			X	Varies with scope of work	Enhance safety
FR-0015	110.26(A)(5)	New requirement for separation from high-voltage equipment.			X	Varies with scope of work	Enhance safety
FR-0019	110.26(D)	Editorial		X			
SR-0014	110.26(E)(2) Exception	New exception to permit structural overhangs or roof extensions in this zone.		X			Clarification
SR-0016	110.27(A)	Revision to upper level of circuit voltages covered.		X			
FR-0049	110.27(C)	Revision to upper level of circuit voltages covered.		X			
SR-0017	110.28	Revision to upper level of circuit voltages covered and updates the standard title in Information Note No. 2.		X			
FR-0051	Part III	Revision to upper level of circuit voltages covered.		X			
SCR-021	110.30	Revision to upper level of circuit voltages covered and reference to 110.41.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0019	Table 110.31	Revision to correlate with 110.26(A)(5) and 110.26(F)(2) and updates the standard title in the table note.					
FR-0022	110.31(A)	Editorial		X			
SR-0018	110.31(A)(5)	Update to title and edition date of referenced standard.		X			
FR-0023	110.31(B)(1)	Revision to delete "unit substation" to correlate with the definition of "Substation" in Article 100.		X			
SCR-023	110.31(D)	Editorial		X			
FR-0024	110.33(A)(2)	Revision to upper level of circuit voltages covered.		X			
FR-0025	Table 110.34(A)	Revision to correlate with Table 110.26(A)(1).		X			
SR-0023	110.34(B)	Revision to upper level of circuit voltages covered.		X			
FR-0027	110.34(C)	Revision to upper level of circuit voltages covered.		X			
FR-0028	110.34(D)	Revision to prohibit control by automatic means only.		X			Already part of FEC
SR-0021	Table 110.34(E)	Revision to correlate with 110.27(A)(4).		X			
FR-0036	110.41	New section that requires pre-energization and operating tests and report for systems operating over 1,000V			X	$ 1,060 /test	Improve commissioning
FR-0053	Part IV	Revision to upper level of circuit voltages covered.					
FR-0029	Part V	Editorial		X			
SCR-024	110.73	Revision to upper level of circuit voltages covered.		X			
FR-0054	110.74	Revision to upper level of circuit voltages covered.		X			
	Chapter 2	**Wiring and Protection**					
	Article 200	**Use and Identification of Grounded Conductors**					
FR-1201	200.6(D)	Editorial		X			
	Article 210	**Branch Circuits**					
FR-7512	210.1	Revision to state Article 210 contains the general requirements for branch circuits.		X			
SR-0303	210.3 (formerly 210.2)	Table revised by removing cross-references to amendatory branch circuit requirements contained in Chapters 5, 6, and 7.		X			
FR-0322	210.4(D)	Revision to reference 200.4(B) for grouping of all conductors of multiwire branch circuits.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0304	210.5(C)(1)	New exception to requirement for marking conductors supplied from systems with different voltages. Also requires labels to be durable and not be handwritten.			X	$25 /label	
SR-0305	210.5(C)(2)	Revision to provide additional means for marking direct current conductors.		X			
FR-0345	210.6 D)	Revision to accommodate LED-type luminaires.		X			
SR-0306	210.7	Revision to clarify requirement applies to devices and/or equipment on the same mounting strap or yoke.		X			
SR-0318 FR-0333	210.8	Revision to provide direction on how receptacle proximity is determined.		X			
SR-0316	210.8(A)(7)	Revision to indicate receptacle proximity is measured from top inside edge of sink bowl.		X			Clarification
SR-0322	210.8(B)	Revision to expand GFCI protection to more receptacle voltage, phase, and current ratings. Expands coverage to 50 Amp on single phase and 100 Amp on 3-phase receptacles			X	$ 400 / recep.	
SR-0322	210.8(B)(3)	New exception to clarify ready access requirement for GFCI-type receptacles located on rooftops.		X			
SR-0322	210.8(B)(5)	Revision to indicate receptacle proximity is measured from top inside edge of sink bowl and to correlate Exception No. 2 with terms used in Article 517.		X			Clarification
SCR-117	210.8(B)(9)	New requirement for GFCI protection of receptacles in crawl spaces.		X			
SR-0322	210.8(B)(10)	New requirement for GFCI protection of receptacles in unfinished areas of basements.		X			
SR-0317	210.8(E)	New requirement for GFCI protection of 120-volt lighting outlets installed in crawl spaces.			X	$ 150 / circuit	Safety
FR-0330	210.11(C)(3)	Revision to clarify the required branch circuit can supply receptacle outlets in more than one bathroom.		X			
SR-0324	210.11(C)(4)	New requirement for a 20-ampere branch circuit dedicated to garage receptacle outlets.			X	$ 100 / circuit	Increase usability of the garage
SR-0320	210.12(B)	Revision to reference AFCI protection methods specified in 210.12 (A), to add bathrooms to the areas required to be protected, and to include “devices” installed at locations not meeting the definition of Outlet.			X	$ 150 / circuit	Occupant safety
FR-0352 SR-0328	210.12(C)	New requirement for AFCI protection in guest rooms and guest suites, includes wiring that is modified, replaced, or extended.			X	$ 150 / circuit	Occupant safety

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0328	210.12(D)[formerly 210.12 (B)]	Relocated from 210.12(B) and revised to also include dormitory units.		X			
FR-0353	210.17	Relocated to 625.40.		X			
FR-0357	210.17 (formerly 210.18)	Relocated from 210.18.		X			
FR-0357	210.18 (formerly 210.3)	Relocated from 210.3.		X			
SR-0307	210.52(A)(2)	Revision to include work surfaces that are not countertops and to cover fixed panels in exterior and interior walls.		X			
SR-0307	210.52(A)(4)	Revision to also apply to work surfaces that are not countertops.		X			
SR-0308	210.52(B)(1) Exception No. 2	Revision to permit the exception to be applied to any appliance.		X			
SR-0309	210.52(C)	Revision to also apply to work surfaces that are not countertops.		X			
SR-0309	210.52(C)(1)	Revision to also apply to work surfaces that are not countertops.		X			
SR-0309	210.52(C)(3)	Revision to specify that peninsula countertops are considered to extend from the perpendicular wall at the end of the peninsula.		X			
SR-0309	210.52(C)(5)	Revision to also apply to work surfaces that are not countertops.		X			
SR-0310	210.52(D)	Revision to clarify receptacle outlet location where the basin is installed in or on a countertop and to specify the type of receptacle outlet permitted in or on a bathroom countertop.		X			
FR-0310	210.52(G)	Revision to require receptacles in the basements, crawl spaces, and accessory buildings of two-family dwellings. Previously, this provision only included one-family dwellings.			X	$ 75 / recept	Increase usability of the spaces
SR-0326	210.52 (G) (1)	Revision to number and location of garage receptacle outlets to be one receptacle per vehicle bay			X	$ 75 / recept	Increase usability of the spaces
FR-0323	210.64	The required receptacle mounted near an electric service must now be mounted within 25' instead of 50'. Revisions on measurement, location, and applicability. New exception for		X			Improves maintenance

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CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		services rated more than 120 volts to ground that supply certain types of equipment.					
SR-0325	210.70(A)(2)	Revision to permit dimmer control of stairway lighting outlet(s).		X			Increased options
FR-7517 SR-0329	210.71	New requirement for receptacle outlets in meeting rooms. Receptacles required in walls and floors.			X	Varies with scope of work	Decrease fire hazards
	Article 215	**Feeders**					
FR-0338	215.1	Revision to clarify Article 215 requirements are not limited to only feeders supplying branch circuit loads.		X			
FR-0337	215.2(A)(1) Exception Nos. 1 and 3	Relocation of existing exceptions to directly follow the requirement to which they apply.		X			
FR-0337	215.2(A)(1) Exception No. 2	New exception permitting use of conductor ampacity associated with high insulation temperature rating for that portion of the feeder installed outside of supply and termination equipment enclosures.		X			
FR-0336	215.2(A)(2)	Editorial		X			
FR-0335	215.3	Clarification that conductors operating at up to 1000 volts are covered in Parts I through VIII.		X			
FR-0334	215.9	Revision to require feeder level GFCI devices be “readily accessible.”		X			
FR-0332	215.12(A)	Revision to clarify grounded conductor identification is required only where conductor is insulated.		X			
SR-0327	215.12(C)(2)	Revision to provide additional means for marking direct current conductors.		X			
	Article 220	**Branch-Circuit, Feeder, and Service Load Calculations**					
FR-0340	Table 220.3	Revision to remove references to requirements that are not directly related to calculating electrical load and those references to load calculation requirements contained in Chapters 5, 6, and 7.		X			
SR-0313	220.12 Exception No. 2	New exception for bank and office occupancies permitting reduction of lighting load based on allowable load density prescribed by adopted energy codes.		X			
FR-0327	220.14(G)	Revision to clarify that show window load calculation is based on linear measurement.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-0344	220.87	Revision to clarify how the 15 minute maximum demand is determined.		X			
	Article 225	**Outside Branch Circuits and Feeders**					
FR-0904	225.4	Revision to update conductor insulation type to reflect current wire and cable manufacturing practice.		X			
FR-0902	225.7(D)	Revision to upper level of circuit voltages covered.		X			
FR-1023	225.10	Editorial		X			
FR-0905	225.12	Revision to reflect materials currently used in the manufacture of insulators.		X			
FR-0906	225.17	Editorial		X			
SR-0907	225.18	Editorial		X			
FR-0908	225.19(A)	Revision to correlate with the National Electrical Safety Code.		X			
SR-0908	225.19(D)(2)	Editorial		X			
FR-0910	225.19(D)(3)	Editorial		X			
FR-0920	225.27	This revised language makes it clear that any raceway that enters a building from outside locations needs to be sealed.		X			
FR-0921 SR-0902	225.30(F)	New requirement to cover multiple feeders supplying a one- or two-family dwelling. The increased size of services and feeders to single family dwellings has made allowing more than one feeder to supply a dwelling unit necessary.		X			Allows multiple feeders into a dwelling
FR-0923	225.36	Editorial		X			
SR-0904	225.38(C)	Editorial		X			
Global SR-0916	225.56(B) Informational Note	Update to title and edition date of referenced standard.		X			
Global SR-0916	225.60(C) Informational Note	Update to title and edition date of referenced standard.		X			
Global SR-0916	225.61 (B) Informational Note	Update to title and edition date of referenced standard.		X			
	Article 230	**Services**					
SR-0905	230.7	Editorial: MOS		X			
FR-0926	230.7 Exception No. 1	Revision to use term that is more commonly associated with supply-side installations.		X			
SR-0905	230.7 Exception No. 2	Editorial (MOS)		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0906	230.9 (B)	Editorial		X			
FR-0928	230.10	Revision to also prohibit service equipment from being supported by vegetation.		X			Prohibits tree mounted service equipment
FR-0929	230.24(B)	New requirement covering service conductor clearance above railroad tracks.		X			
SR-0909	230.29	Revision covering bonding metal structures used to support service conductors to prevent electric shock.			X	$ 115 / service	Safety
FR-0930	230.30(A) Exception	Revision to replace "judged to be suitable" with “approved.”		X			
FR-0931	230.40 Exception No. 3	Editorial		X			
FR-0932	230.41 Exception	Revision to replace "judged to be suitable" with “approved.”		X			
SR-0910	230.42(A)	Revisions to clarify how minimum conductor ampacity and busway rating is determined.		X			
SR-0911	230.44	Revisions to clarify requirements for single conductors installed in cable tray and to provide separate list item for tray cable.		X			
FR-0903	230.53	Revision to provide more objective assessment criteria.		X			
SR-0912	230.54(C)	Revision to clarify requirement applies to service raceways and service cables.		X			
SR-0913	230.66	New exception to allow utility supplied and controlled meter sockets to be unlisted.		X			
FR-0938	230.75	Editorial		X			
FR-0939	230.82(6)	Revision to include additional electric supply systems.		X			
FR-0948	230.91	Revision to clearly indicate location of service disconnecting means in relation to fuses used as the service overcurrent protective device.		X			Safety
FR-0941 SR-0915	230.95(C)	Ground-fault protection of equipment must be tested by a qualified person			X		Commissioning
	Article 240	**Overcurrent Protection**					
FR-2702	240.2, Tap Conductor	Editorial		X			
FR-2703	240.6(A)	Revision to move the standard ampere rating sizes to new Table 240.6(A).		X			
FR-2705	240.21(C)(4)	Editorial		X			
SR-2701	240.24(A)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-2707 SR-2702	240.67	New requirement to provide means to reduce incident energy for fuses rated 1200 amperes or higher. This provision will become effective on January 1, 2020. The 2014 NEC included this provision for circuit breakers.			X	Un-determined	Safety
FR-2706	240.87	Revision to add two additional arc flash mitigation methods. New Informational Notes to assist with application. An instantaneous trip setting can meet the requirements if the trip level is less than the available arcing current.	X			Un-determined	Safety
	Article 250	**Grounding and Bonding**					
FR-1202	Table 250.3	Revision to include 820.106 and Articles 770 and 830.		X			
SCR-048	250.4(A)(1) Informational Note	New Informational Note to reference NFPA 780, Standard for the Installation of Lightning Protection Systems.		X			
SCR-049	250.4(B)(1) Informational Note	New Informational Note to reference NFPA 780, Standard for the Installation of Lightning Protection Systems.		X			
FR-1205	250.6(B)	Editorial		X			
FR-1207	250.21(A)	Editorial		X			
SR-1203	250.22	New list item (6) to correlate with 393.60(B).		X			
FR-1209	250.24(C)(1)	Revision to include “cable” to provide consistent sizing requirements for raceways and cables.		X			
FR-1210	250.24(C)(2)	Revision to include “cable” to provide consistent sizing requirements for raceways and cables.		X			
FR-1213	250.30(A)(1)	Revision to replace “transformer” with “separately derived system."		X			
SR-1210	250.30(A)(4)	Revision to better describe a grounding electrode and recognize the water pipe and the structural metal frame as covered in 250.68(C) that are being used are not grounding electrodes.		X			
SR-1205	250.30(A)(5)	Editorial		X			
SR-1206	250.36(A)(6)	Revision to better describe a grounding electrode and include the conductors that are suitable to extend the grounding electrode connection.		X			
FR-1234	250.36(A), (B) & (D)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-1217	250.52(A)(2)	Editorial revision. New informational note provides examples of metal in-ground support structures.		X			
FR-1217	250.52(A)(2)	Editorial		X			
SR-1209	250.52(B)(3)	New list item to specify a pool-bonding grid as prescribed in 680.26(B)(1) and (B)(2) shall not be used as a grounding electrode.		X			
FR-1221	250.53(F)	Editorial		X			
SR-1211	250.60 Informational Note 1 & 2	Revised editorially to correlate with NFPA 780, Standard for the Installation of Lightning Protection Systems.		X			
SCR-050	250.64(B)	Editorial		X			
SR-1214	250.64(E)	Editorial		X			
FR-1226	250.64(F)(3)	Revision to include length requirements to correlate with changes made to 250.64(D)(1)(3) in the 2014 NEC.		X			
SR-1215	250.66(A), (B), and (C)	Revision to clarify "daisy chaining" grounding electrodes to form a grounding electrode system and sizing requirements.		X			Clarification
SCR-051	250.68(C)(1)	Revision to identify interior metal water piping no more than 5 ft. inside of a building is permitted to extend the connection to a grounding electrode.		X			
SR-1216	250.68(C)(2)	Revision relocates text from 250.52(A)(2) to permit the structural metal frame of a building to serve as a conductor to interconnect electrodes when the hold-down bolts for a steel column are connected to a concrete encased electrode.		X			
SR-1216	250.68(C)(3)	Revision to permit a rebar-type concrete encased electrode to extend the grounding electrode connection and provides additional installation requirements to prevent any corrosion due to contact with the earth.		X			
FR-1206	250.80	Editorial		X			
SR-1217	250.86	Editorial		X			
FR-1215	250.94	Revision to include an alternate connection option that allows connections to be made on a common busbar with other bonding jumpers.		X			
FR-7509	250.102	Revision to add "grounded conductor" to the title and add aluminum and copper clad aluminum to clarify size requirements for larger conductors if the ungrounded supply		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		conductors are different material than the bonding jumper.					
SR-1220	250.104(A)(1)	Revised to provide permitted locations to bond metal water piping to and correlation with applicable sections for sizing bonding jumpers.		X			
SR-1220	250.104(A)(2)	Revised to replace reference to 250.122 with 250.102(D).		X			
SR-1220	250.104(A)(3)	Editorial		X			
SR-1220	250.104(B)	Revised to include that where bonded to one or more grounding electrodes, the grounding electrode conductor or bonding jumper to the grounding electrode must be of sufficient size and to replace reference to Table 250.102(C)(1) with 250.122.		X			
SR-1220	250.104(C)	Editorial		X			
SR-1220	250.104(D)	Editorial		X			
SR-1220	250.104(D)(1) and (2)	Revised by replacing the reference to Table 250.66 with Table 250.102(C)(1) for sizing bonding jumpers.		X			
SR-1220	250.104(D)(3)	Editorial		X			
FR-1229	250.118(5)c	Revision to provide a maximum trade size to correlate with the U.L. listing for flexible metal conduit used for equipment grounding.		X			
SR-1221	250.119(B)	Revision to require identification to encircle the conductor.		X			
FR-1231	250.119(C)	Revision to require equipment grounding conductors in flexible cords to be insulated.		X			
FR-1236	250.122(B)	Revision to clarify increasing size of the equipment grounding conductor shall be in the same proportion as the increase in the size of the ungrounded conductors and only applies to account for voltage drop.		X			Clarification
FR-1246 SCR-052 SCR-053	250.122(F)	Revision to separate requirements for conductors in parallel for individual conductors installed in raceways or cable tray and installation of multiconductor cables. Revision to include sizing requirements for the equipment grounding conductors.		X			
SR-1227	250.148	Revision to clarify that all of the equipment grounding conductors present in the box are		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		required to be connected together regardless of the circuit they are associated with.					
SR-1228	250.186	Revision to provide clarity and consistency with 250.24(C). Reference to Table 250.66 and 12 ½ percent requirements were deleted and replaced with reference to Table 250.102(C)(1).		X			
SR-1229	250.187(B)	Editorial		X			
SR-1230	250.191	Update to title and edition date of referenced standard.		X			
SR-1231	250.194	Update to reference standard edition year.		X			
	Article 280	**Surge Arresters, Over 1000 Volts**					
FR-3474	280.3	Editorial		X			
SR-1233	280.4	Update to title and edition date of referenced standard.		X			
SR-1234	280.12	Relocated from 280.2.		X			
FR-1248	280.14	Relocated from 280.12.		X			
SR-1235	280.24(A)	Editorial		X			
	Article 285	**Surge-Protective Devices (SPDs), 1000 Volts or Less**					
SR-1237	285.6	Revision to require SPDs be labeled in addition to listed.		X			
	Chapter 3	**Wiring Methods and Materials**					
FR-0601	300.3(B)(1)	Revision to include the neutral and grounded conductors are included in the isolation permitted.		X			Clarification
FR-0602	300.3(B)(4) Exception	Revision to add “column width panelboard” to the title.		X			
SR-0623	Table 300.5	Revision to add a note to address burial depth requirements for pool, spa, and fountain lighting. Will reduce burial depth for low voltage lighting circuits in non-metallic conduits.	X			Minimal	Clarification
FR-0605	300.5(B)	Revision to delete the last sentence since 110.14(B) already covers this requirement.		X			
FR-0606	300.5(D)(4)	Revision to include electrical metallic tubing to the permitted raceways in areas where the raceway is subject to physical damage.	X			Minimal	
FR-0607	300.5(F)	Revision to include conductor.		X			Clarification
FR-0608	300.5(G)	Revision to include spare or unused raceways to be sealed with sealants identified for use. Required where moisture could contact live parts.			X	$ 25 / raceway	

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-0609	300.5(J)	Revision to informational note that adds "cables and conductors."		X			
SR-0602	300.7(B)	Revision to include expansion-deflection or deflection fittings as acceptable methods.		X			
SR-0603	300.11	Revision to include a separate section to address requirements for wiring systems above suspended ceilings and to update the edition of referenced standards in the informational note.		X			Clarification
FR-0611	300.12	Editorial		X			
SR-0604	300.19(A)	Editorial		X			
FR-0613	300.19(C)	Editorial		X			
FR-0614	300.22(B) Exception	New exception that permits wiring methods meeting listed low smoke and flame spread properties - Limited in length and scope to equipment associated with the direct action or sensing of the air contained within the fabricated duct.		X			New exception
SR-0605	300.22(C)(3)	Revision to correlate with 300.22(C)(1) for low smoke and heat release properties.		X			
SR-0624	300.37 Exception	New exception for airfield lighting cable.		X			Clarification
	Article 310	**Conductors for General Wiring**					
FR-1501	310.10(H)(5)	Editorial		X			
FR-1502	310.15(A)(2)	Editorial		X			
FR-1503	310.15(B)(3)(a)(4)(d) Exception	New exception requires 60 percent adjustment factor when stacked or bundled longer than 2 in.		X			Clarification on a 2014 change
FR-1503 SR-1506	310.15(B)(3)(c)	Deletion of Table 310.15(B)(3)(c) for raceways exposed to sunlight on a roof. Added an addition of a requirement where the distance above the roof to the bottom of the raceway or cable is less than 23 mm (7⁄8 in.), a temperature adder of 33°C (60°F) shall be included.	X			Vary with size of raceways	Simplify rooftop temperature adjustments
SR-1505	310.15(B)(7)	Revision to include a single-phase 208Y/120-volt system to have reduced service conductors. Only applies to one-family dwellings or individual dwelling units.	X			($175) / dwelling	
FR-1504	310.15(B)(7)(5)	New item requiring application of correction or adjustment factors.		X			Clarification
FR-1505	Table 310.15(B)(16),	Revision to include a reference to 310.15(B)(3)(a).		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	(18), and (20)						
FR-1520	310.60(B)	Relocated from 310.60(C).		X			
FR-1506	310.60(B) Informational Note 1	Revision to delete reference to IPCEA publication.		X			
FR-1507	310.60(B)(2)	Editorial		X			
FR-1517	Table 310.104(A)	Revision to include Thermoset XHHN and moisture-resistant Thermoset XHWN and XHWN-2.		X			
	Article 312	**Cabinets, Cutout Boxes, and Meter Socket Enclosures**					
FR-2401	312.1	Revision to indicate application does not apply above 1000 volts unless specifically referenced elsewhere in the Code.		X			
SR-2402	312.5(C)	Editorial		X			
SR-2403	Table 312.6(A) and Note 2	Revision to include compact stranded aluminum conductors.		X			
SR-2401	312.8	Revision to permit power monitoring equipment to be installed within switch or overcurrent device enclosures.	X			($250) / enclosure	
	Article 314	**Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures**					
FR-2405	314.15	Revision to include specifications on the sizing and geometry for drainage openings.		X			
FR-2406	314.16(A) and (B)	Revision to include requirements for boxes that include internal barriers.		X			
FR-2407	314.17(B)	Revision to include requirements for minimum cable sheath length for metal boxes.		X			
FR-2408	314.19	Editorial		X			
SR-2404	314.20	Revision to clarify the requirements apply to flush-mounted installations.		X			Clarification
SR-2405	314.23(B)(1)	Revision to clarify mounting hole requirements.		X			Clarification
SR-2406	314.27(E)	Revision to clarify support requirements for separable attachment fittings.		X			Clarification
SR-2407	314.28(E)(1)	Revision to require power distribution blocks to be marked "suitable" when installed on the line side of service equipment or equivalent.		X			
	Article 320	**Armored Cable: Type AC**					
FR-1808	320.6	New requirement for Type AC cable and fittings to be listed.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-1802	320.30(A)	Revision to require listed cable ties identified for securement.		X			
FR-1810	320.30(B)	Editorial		X			
FR-1812	320.30(D)	Revision to clarify supporting and securing are not required for these specific applications.		X			Clarification
	Article 322	**Flat Cable Assemblies: Type FC**					
FR-1801	322.6	New requirement for Type FC cable and fittings to be listed.		X			
FR-1802	322 Part III	Editorial: MOS		X			
	Article 324	**Flat Conductor Cable: Type FCC**					
SR-1804	324.12 (5)	Revision to not prohibit Type FCC in administrative areas of hospital and school buildings.		X			Clarification
FR-1803	324 Part III	Editorial: MOS		X			
	Article 326	**Integrated Gas Spacer Cable: Type IGS**					
FR-1805	326.24	Editorial		X			
	Article 328	**Medium Voltage Cable: Type MV**					
FR-1814	328.6	New requirement for Type MV cable and fittings to be listed.		X			
FR-1819	328.14	Revision to informational note that adds reference to NECA MV cable installation standard.		X			
FR-1815	328.30	New requirement for supporting and securing Type MV cable.		X			Improved guidance
	Article 330	**Metal-Clad Cable: Type MC**					
FR-1816	330.6	New requirement for Type MC cable and connecting fittings to be listed. Listing requirement covering MC cable fittings was in deleted 330.40.		X			
FR-1820	330.15	New requirement covering exposed installations of Type MC cable.		X			
SR-1807	330.30(A)	Revision to require listed cable ties identified for securement.		X			
FR-1822	330.30(D)	Revision to clarify supporting and securing are not required for these specific applications.		X			
FR-1817	330.40	Requirement moved to new 330.6.		X			
	Article 332	**Mineral-Insulated, Metal-Sheathed Cable: Type MI**					
FR-1806	332.6	New requirement for Type MI cable and fittings to be listed.		X			
FR-1802	332 Part III	Editorial: MOS		X			
	Article 334	**Nonmetallic-Sheathed Cable: Types NM, NMC, and NMS**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-1826	334.12(A)(2)	Revision to more accurately describe the space above a dropped or suspended ceiling.		X			
SR-1811	334.30	Revision to require listed cable ties identified for securement.		X			
FR-1831	334.30(B)(2)	Revision to specify occupancy types in which unsupported length of cable can be installed in the space above an accessible ceiling.		X			
FR-1825	334.80	Revision to replace "derated" with "calculated."		X			
	Article 336	**Power and Control Tray Cable: Type TC**					
FR-1833	336.6	New requirement for Type TC cable and fittings to be listed.		X			
FR-1832	336.10(2)	Revision permitting Type TC cable in cable tray that is mechanically discontinuous.		X			
FR-1832	336.10(7)	Revisions to clarify installation conditions and to specify exception applies only to this permitted use.		X			
SR-1808	336.10(9)	New permitted use for generator connections at one- and two-family dwellings.		X			
FR-1839	336.10(10)	Relocation of condition covering direct burial from 336.12(4).		X			
SR-1809	336.10(11)	New permitted use for Class I, Division 1 and Zone 1 locations that correlates with requirements in Chapter 5 hazardous (classified) location articles.		X			
	Article 338	**Service-Entrance Cable: Types SE and USE**					
FR-1827	338.6	New requirement for Types SE and USE cables and fittings to be listed.		X			
FR-1828	338.10(B)(4)	Revision to limit conductor operating temperature restriction to cables with ungrounded conductors sized 10 AWG and smaller.		X			
FR-1841	338 Part III	Editorial: MOS		X			
	Article 340	**Underground Feeder and Branch-Circuit Cable: Type UF**					
FR-1829	340.6	Revision to require fittings used with Type UF cable to be listed.		X			
	Article 342	**Intermediate Metal Conduit: Type IMC**					
FR-2120	342.10(B)	Editorial		X			
FR-2121	342.10(C)	Editorial		X			
FR-2129	342.14	Revision to clarify acceptable fittings.		X			
FR-2130	342.30(B)	Editorial		X			
FR-2131	342.60	Revision to include stainless steel.		X			
FR-2132	342.12	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Article 344	**Rigid Metal Conduit: Type RMC**					
FR-2134	344.10(A)(3)	Editorial		X			
FR-2135	344.10(B)(1)	Editorial		X			
FR-2136	344.10(C)	Editorial		X			
FR-2137	344.14	Revision to clarify acceptable fittings.		X			
FR-2138	344.30(B)	Editorial		X			
FR-2139	344.1	Editorial		X			
	Article 348	**Flexible Metal Conduit: Type FMC**					
FR-2166	348.30(A)	Revision to require cable ties to be listed and identified for securement and support.		X			
	Article 350	**Liquidtight Flexible Metal Conduit: Type LFMC**					
FR-2168	350.10	Revision to remove specific references with a general reference to Chapter 5.		X			
FR-2169	350.28	New section to require trimming and removing of rough edges.			X	Minimal	Improve installation
FR-2170	350.3	Revision to require cable ties to be listed and identified for securement and support.		X			
	Article 355	**Reinforced Thermosetting Resin Conduit: Type RTRC**					
FR-2111	355.12(A)	Revision to update 501.10(B)(3) with 501.10(B)(1)(6).		X			
	Article 356	**Liquidtight Flexible Nonmetallic Conduit: Type LFNC**					
FR-2102	356.10 Informational Note and (5)	Editorial and revision to replace "LFNC-B" with "LFNC."		X			
FR-2103	356.12(2)	Revision to replace "approved" with "listed."		X			
FR-2104	356.30	Revision to replace "LFNC-B" with "LFNC" and require cable ties to be listed and identified for securement and support.		X			
	Article 358	**Electrical Metallic Tubing: Type EMT**					
SR-2102	358.10	Revision to add clarity, addition of stainless steel EMT, and relocation of requirements from 358.12.		X			Clarification
SR-2103	358.12	Revision to add clarity and to relocate requirements to 358.10.		X			Clarification
FR-2142	358.14	Section 358.12(6) relocated to new section and revision to clarify acceptable fittings.		X			Clarification
SR-2104	358.3	Editorial		X			
FR-2143	358.100	Revision to clarify metal types used in the manufacture of EMT.		X			Clarification
	Article 360	**Flexible Metallic Tubing: Type FMT**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-2117	360.2	Editorial		X			
	Article 362	**Electrical Nonmetallic Tubing: Type ENT**					
FR-2114	362.12	Revision to removes the upper voltage limitation.		X			Flexibility
FR-2116	362.20(B)	Revision to increase the maximum size permitted.		X			
FR-2115	362.30	Revision to require cable ties to be listed and identified for securement and support.		X			
	Article 366	**Auxiliary Gutters**					
FR-2171	366.1	Editorial		X			
FR-2172	366.2	Editorial		X			
FR-2178	366.6	Editorial		X			
FR-2173	366.10	Editorial		X			
FR-2179	366.20	New requirement for grouping where conductors are installed in parallel.		X			Reduce failures
FR-2174	366.22	Editorial revision and adds "cables."		X			
FR-2175	366.23	Editorial		X			
FR-2176	366.30	Editorial		X			
FR-2180	366.56(B)	Editorial		X			
FR-2177	366.60	Editorial		X			
FR-2181	366.100(E)	Editorial		X			
	Article 368	**Busways**					
FR-2146	368.2, Busway	Editorial		X			
FR-2148	368.17(C) Exception 4	New exception to permit alternative methods of providing ready access.		X			
FR-2149	Part IV	Revision to upper level of circuit voltages covered.		X			
FR-2150	368.214	Editorial		X			
FR-2151	368.240	Revision to upper level of circuit voltages covered.		X			
	Article 370	**Cablebus**					
FR-2152	370.12	Revision to correlate with Chapter 5.		X			
FR-2153	370.23 Exception	Revision to remove the upper voltage limitation.		X			
SR-2110	370.80	New requirements to clarify ampacities for cablebus installations.		X			
SR-2105	**Article 372**	**Cellular Concrete Floor Raceways**		X			
SR-2106	**Article 374**	**Cellular Metal Floor Raceways**		X			
	Article 376	**Metal Wireways**					
FR-2182	376.20	New requirement for grouping where conductors are installed in parallel.		X			Reduce failures
FR-2183	376.22	Revision to add "cables."		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-2184	376.23	Editorial		X			
SCR-038	376.56(B)(1)	Revision to require power distribution blocks to be marked "suitable" when installed on the line side of service equipment or equivalent.		X			Clarification
	Article 378	**Nonmetallic Wireways**					
FR-2106	378.20	New requirement for grouping where conductors are installed in parallel.		X			Reduce failures
FR-2107	378.22	Editorial revision and adds "cables."		X			
	Article 384	**Strut-Type Channel Raceway**					
FR-2156	384.2	Editorial		X			
SR-2111	384.6	Revised to remove "closure strips."		X			Clarification
FR-2158	384.10	Revision to remove the voltage limitation and revise the reference to Chapter 5.		X			
FR-2159	384.22	Revision to add "cables."		X			
	Article 386	**Surface Metal Raceways**					
FR-2155	386.2	Editorial		X			
SR-2111	384.6	Revision to remove "closure strips."		X			
FR-2162	386.70	Editorial		X			
	Article 390	**Underfloor Raceways**					
FR-2164	390.3(B)	Editorial		X			
	Article 392	**Cable Trays**					
FR-2122	392.1	Revision to update the reference standard edition year in the informational note.		X			
SR-2107	392.10(E)	New requirement for airport lighting cables installed in cable trays.		X			
FR-2123	392.20(A) and (B)	Revision to upper level of circuit voltages covered.		X			
FR-2124	392.22(A)	Revision to address requirements for fill calculations where dividers are used.		X			
FR-2125	392.60	Editorial		X			
SR-7506	392.80(A) and (B) Informational Notes	New informational note that refers to 110.14(C) and 110.40 for additional conductor limitations.		X			
	Article 396	**Messenger-Supported Wiring**					
SR-1814	396.2	New definition of Insulated Conductor.		X			
FR-1837	Table 396.10	Editorial		X			
	Article 398	**Open Wiring on Insulators**					
FR-1838	398.1	Revision to increase voltage limitation from 600 volts to 1000 volts.		X			
	Article 399	**Outdoor Overhead Conductors over 1000 Volts**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-1815	399.10	Revision to update existing reference and to add a reference standard in informational note.		X			
	Chapter 4	**Equipment for General Use**					
	Article 400	**Flexible Cords and Flexible Cables**					
Global FR-1510	Article 400 Title	Revision to add "flexible" before “cable” to correlate with 400.1.		X			
SCR-036	400.1 Informational Note	New informational note to advise that flexible cords used in listed cord sets and power supply cords are covered by this article.		X			
Global SR-1502	400.3	Revision to add "flexible" before “cable” to correlate with 400.1.		X			
FR-1509	400.4	Editorial		X			
FR-1518	Table 400.5(A)(1)	Revision to add ampacities for cords with conductor sizes 7, 5, and 3 AWG.		X			
Global SR-1502	400.6(A)	Revision to add "flexible" before “cable” to correlate with 400.1.		X			
Global FR-1519	400.10	Relocation from 400.7 for uses permitted and revised to include "flexible."		X			
Global SR-1504	400.12	Relocation from 400.8 for uses not permitted and revised to include "flexible cord sets and power supply cords."		X			
SR-1504	400.12(5)	New exception to correlate with 300.22(C)(3).		X			
Global SR-1502	400.14	Revision to add "flexible" before “cable” to correlate with 400.1.		X			
Global SR-1502	400.17	Revision to add "flexible" before “cable” to correlate with 400.1.		X			
FR-1508	400.21(A)	Revision to add "flexible" before “cable” to correlate with 400.1. and "copper" before “flexible stranding.”		X			
Global SR-1502	400.21(B)	Revision to add "flexible" before “cable” to correlate with 400.1.		X			
	Article 402	**Fixture Wires**					
FR-1515	402.3 Informational Note	Revision to correlate with 310.104.		X			
Global FR-1519	402.12	Relocation from 402.11 for uses not permitted.		X			
	Article 404	**Switches**					
FR-2416 SR-2408 SCR-054	404.2(C)	Revision to the requirement to install a grounded (neutral) conductor to light switches. Clarifies the definition of a habitable room. Sets a phase out date of Jan 1, 2020 for electronic switches that use the grounding		X			Improve enforcement

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		conductor as part of the circuit, but allows an exception for replacement or retrofit switches.					
FR-2417	404.9(B)	Revision to require metal faceplates be grounded.		X			
FR-7514	404.13(B)	Editorial		X			
FR-7523	404.14	Editorial		X			
FR-2418	404.14(F)	Revision to include "or control device."		X			
FR-2419	404.15	Revision to relocate to new 404.20.		X			
FR-2420	404.16	Revision to relocate to new 404.26.		X			
FR-2421	404.17	Revision to relocate to new 404.27.		X			
FR-2422	404.18	Revision to relocate to new 404.28.		X			
SR-2409 SCR-055	404.22	New requirement for electronic lighting control switches and exception to correlate with 404.2(C) Exception.		X			Improve enforcement
	Article 406	**Receptacles, Cord Connectors, and Attachment Plugs (Caps)**					
SCR-056	406.2	New definition for Outlet Box Hood in response to the term being used in 406.9(B)(1)		X			
SR-5111	406.3(E)	Revision to cover required content and location of the marking on controlled receptacles.		X			
FR-5101	406.3(F)	New requirement for 125 volt, 15- and 20-ampere receptacles that also provide Class 2 power. Requires that receptacles with USB chargers have listed power supplies.		X			
FR-5103	406.4 (B) Exception No. 2	Revision to expand applicability to "generator sets".		X			
SR-5104	406.4(D)(2)	Revision to marking requirement for replacement receptacles at outlets without an equipment grounding conductor. New informational notes covering cord-and-plug-connected utilization equipment requiring equipment grounding connection.		X			
FR-5106	406.4(D)(3)	Revision to recognize that an equipment grounding conductor could be present, or that a non- grounding receptacle is installed, at an outlet where a receptacle is replaced.		X			
SCR-047	406.4(D)(4)	Revision and new exceptions to requirement for AFCI protection of replacement receptacles.		X			
FR-5107	406.4(D)(5)	Revision to exempt replacement non-grounding receptacles from tamper-resistant requirement.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-5108 SR-5106	406.5(E)	Revision to limit applicability to only countertop surfaces.		X			
FR-5108 SR-5106	406.5(F)	New requirement specific to work surfaces that are not considered to be countertops.		X			
FR-5108 SR-5106	406.5(G)	Relocation of requirement covering orientation of receptacles in countertop and other work surfaces.		X			
FR-5108	406.5(H)	Relocation of requirement covering receptacles installed in seating areas. Revision to (1) to recognize that all furniture power distribution equipment is cord-and-plug-connected.		X			
FR-5109	406.6(D)	New requirement to cover receptacle faceplates with night light and/or USB port.		X			
SR-5101	406.9(A)	Revision to standard referenced in informational note.		X			
SR-5102	406.9(B)(1)	Revision to require "extra-duty" marking only on listed outlet box hoods. Additional revisions for MOS compliance.		X			
FR-5112 SR-5107 SCR-045	406.12	Revision to include receptacles rated 15- and 20-amperes, 250 volts and to add new informational note.			X		Safety
FR-5112 SR-5107 SCR-045	406.12(D)	New requirement for tamper-resistant receptacles in certain educational facilities.			X		Safety
FR-5112 SR-5107 SCR-045	406.12(E)	New requirement for tamper-resistant receptacles in certain health care facilities.			X		Safety
FR-5112 SR-5107 SCR-045	406.12(F)	New requirement for tamper-resistant receptacles in certain places of assembly.			X		Safety
FR-5112 SR-5107 SCR-045	406.12(G)	New requirement for tamper-resistant receptacle in dormitories.			X		Safety
FR-5112 SR-5107 SCR-045	406.12 Exception	Revision to exception to include added occupancy types.			X		Safety
FR-5113	406.15	Deletion of requirement covering dimmer-controlled receptacles for lighting loads.		X			
-	**Article 408**	**Switchboards, Switchgear, and Panelboards**					
SR-2410	408.3(A)(2)	Revision to add "panelboard" and new exception to correlate with 408.36.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-2412	408.3(C)	Revision to update the reference from "Table 250.66" with “250.102(C)(1).”		X			
FR-2426	408.3(D)	Editorial		X			
FR-2427	408.4(B)	Revision to require marking to be permanent, durable, and not handwritten.		X			Improve enforcement
	Article 409	**Industrial Control Panels**					
FR-3002 SR-3003 SCR-001	409.22	This change provides much needed information to aid the electrical inspector when enforcing 409.22. It will help the inspector ensure that the industrial control panel is installed within its short-circuit current rating.		X			Improve enforcement
SR-3004	409.110(3)	Revision to require documentation for location of disconnecting means for all circuits 50 volts or more.		X			
	Article 410	**Luminaires, Lampholders, and Lamps**					
FR-5117	410.62(B)	Revisions to correlate cord terminology with Table 400.4. New informational note regarding proper application of flexible cord.		X			
SR-5109	410.62(C)(1)	Revision to clarify conditions under which luminaires are permitted to be connected with flexible cord.		X			
FR-5119	410.130(G)(1) Exception No. 2	Revision to clarify that the exception applies to the entire luminaire rather than individual ballasts.		X			
SR-5110	410.136(B) Informational Note	Revision to existing referenced standard and inclusion of new reference.		X			
	Article 411	**Low-Voltage Lighting**					
FR-5147	Title of Article	Revision to correlate title with the types of "low-voltage" lighting systems covered. Now covers lighting 30V ac or 60V dc or less. In wet conditions, the limits are reduced to 15V ac or 30V dc.		X			
FR-5147	411.3(A)	Revision to remove 30-volt limitation.		X			
FR-5147	411.3(B)	Revision to remove reference to limited energy tables in Chapter 9.		X			
FR-5147	411.4(A) and (B)	Revisions for correlation with expanded types of "low-voltage" lighting systems covered and to clarify that fixed wiring methods are to be selected from Chapter 3.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-5147	411.6(D)	Revision to apply to insulated conductors in exposed and concealed locations.		X			
	Article 422	**Appliances**					
FR-4875	422.2	Deletion of Vending Machine definition.		X			
FR-4801	422.5	Revision to consolidate all appliance GFCI requirements into one section.		X			
FR-4801	422.5(A)	Revision to specify voltage, system, and current ranges of appliances requiring GFCI protection.		X			
FR-4801	422.5(B)	Revision to identify permitted methods for appliance GFCI protection and to specify requirements for the GFCI devices.		X			
SR-4801	422.6	New requirement on listing of appliances.		X			
FR-4874	422.14	Deletion of requirement on equipment covered in new Article 425.		X			
FR-4876	422.16(B)(1)	Editorial		X			
SR-4804	422.16(B)(2)	Revisions to create separate requirements on cord length and receptacle location for each appliance type and to delete unclear text from the exception.		X			
SR-4805	422.16(B)(4)	Revisions to maximum cord length, to delete unclear text from the exception, and for consistent terminology on "protecting against physical damage."		X			
SR-4806	422.18	Revision to add new listed method for supporting ceiling (paddle) fans.					
FR-4806	422.21	Revision to establish maximum amount of combustible surface area between ceiling (paddle) fan canopy and edge of associated outlet box.					
FR-4807	422.23	Relocation to 422.5(A).		X			
FR-4811	422.30	Revision to recognize that an appliance can be supplied by multiple feeders or multiple branch circuits and that the multiple disconnects for a single appliance have to be grouped and identified to indicate there are multiple disconnecting means.		X			
FR-4812	422.31(A)	Revision to establish safe work practice conditions for disconnecting means.		X			
FR-4813	422.31(C)	Revision for consistency with similar requirements on equipment disconnecting means.		X			
SR-4807	422.33(A)	Revision to expand requirement to cover separable connections other than cord and plug.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4814	422.33(B)	Editorial		X			
FR-4808	422.49	Relocation to 422.5(A).		X			
FR-4809	422.51	Relocation to 422.5(A).		X			
FR-4810	422.52	Relocation to 422.5(A).		X			
	Article 424	**Fixed Electric Space-Heating Equipment**					
FR-4872	424.3(A)	Revision to only specify maximum rating of branch circuits supplying two or more outlets for fixed electric space-heating equipment.		X			
FR-4821	424.9	Revision to delete text redundant to 110.2.		X			
FR-4822	424.19	Revision to disconnecting means requirements for heating equipment with multiple supply circuits.		X			
FR-4824	424.34	Revision to requirements covering nonheating leads installed by the equipment manufacturer.		X			
FR-4825	424.35	Revision to remove color-coding requirement for nonheating leads.		X			
FR-4815	424.36	Revision to clarify assumed ambient temperature for wiring installed above heated ceilings.		X			
FR-4826	424.38(A)	Revision to permit heating cables to leave the room in which they originate.		X			
FR-4827	424.38(B)	Revisions and additions to conditions under which heating cable cannot be used.		x			
SR-4809	424.39	Revision to clarify requirement applies only to ceiling installations of space heating cable.		X			
FR-4829	424.40	Revision of conditions under which heating cable can be spliced.		X			
FR-4831	424.41(B)	Revision of conditions under which adjacent runs of heating cable are permitted.		X			
FR-4832	424.41(C)	Revision of requirement for isolating conductive surfaces from heating cable.		X			
FR-4833	424.44(A) (2014)	Deletion of limitation on cable heat rating per linear foot.		X			
FR-4833	424.44(B)	Revision of conditions under which adjacent runs of heating cable are permitted.		X			
FR-4833	424.44(C) (2014)	Deletion of requirement for separation between heating cable and metal embedded in concrete or poured masonry floors.		X			
FR-4833	424.44(E)	Editorial		X			
FR-4834	424.45	New requirement covering installation of heating cables under floor coverings.		X			
FR-4834	424.45 (2014)	Relocation to 424.46		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4823	424.47	New requirement covering heating cable circuit labels.		X			
SCR-4042	424.66	Revision to remove all requirements on working space about duct heating equipment for correlation with new 110.26 (A)(4).		X			
FR-4820	424.70	Revision to clarify requirements for installation of electrode-type boilers are in Part VIII.		X			
SR-4811	424.92(D) (2014)	Deletion of requirement covering heating panel circuit labels.		X			
FR-4816	424.94	Revision to clarify assumed ambient temperature for wiring installed above heated ceilings.		X			
FR-4817	424.95	Revision to clarify assumed ambient temperature for wiring installed in interior walls.		X			
FR-4836	424.97	Revisions to condition under which excess nonheating leads can be cut in the field and to clarify which conductors are not subject to branch circuit ampacity requirements.		X			
FR-4837	424.98 (2014)	Deletion of limitation on panel or panel set heat rating per square foot.		X			
FR-4844	424.99(B) (2014)	Deletion of limitation on panel or panel set heat rating per square foot.		X			
FR-4839	424.99(B)(4)	Revision to remove installation condition that is otherwise specified in the manufacturers' installation instructions.		X			
SR-4812	424.99(B)(5)	Revisions to specify that GFCI protection is required for all installations and to incorporate informational note into a requirement.			X	$ 25 / recept	
SR-4812	424.99(B)(6)	New requirement for heating panels and heating panel sets to have integral grounding means.		X			
FR-4843	424 Part X (424.100 through 424.104)	New Part X containing installation requirements for low-voltage fixed electric space-heating equipment.		X			
FR-4841 SR-4813	**Article 425**	**New article covering fixed resistance and electrode industrial process heating equipment.**			X		
	Article 426	**Fixed Outdoor Electric Deicing and Snow-Melting Equipment**					
FR-4845	426.1(B)	New informational note referencing industry standard containing relevant testing, design, installation, and maintenance provisions.		X			
FR-4818	426.4	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4846	426.32	Revision to limit the secondary output to 30 volts maximum and to eliminate the condition permitting higher equipment operating voltages if GFCI protection is provided.		X			
	Article 427	**Fixed Electric Heating Equipment for Pipelines and Vessels**					
FR-4847	427.1 Informational Note	Revision of edition dates of referenced standards.		X			
FR-4848	427.20	Revision to clarify required marking of nonheating leads.		X			
FR-4849	427.27	Revision to limit the secondary output to 30 volts for general applications with new exception permitting higher secondary voltage output where installed at industrial establishments.		X			
FR-4819	427.57	Editorial		X			
	Article 430	**Motors, Motor Circuits, and Controllers**					
FR-3010	430.2, Part Winding Motor	Revision to relocate the first paragraph from 430.4 to a new definition.		X			
FR-3011	430.6(A)(1), Exception 1	Editorial		X			
FR-3012	Table 430.10(B)	Revision to permit smaller gauge conductors to correlate with 430.22(G)(1) and (2).		X			
FR-3019	Table 430.12(C)(1)	Revision to eliminate the gap in nominal voltages in the table.		X			
FR-3013	430.22(F)	Revision to reference all motors in 430.22(A)–(G).		X			
FR-3014	430.53(D)(4)	New subsection that includes requirements for a 25 ft. tap for a single motor.		X			
FR-3016	430.99	New requirement for documentation and availability of short circuit current calculation.		X			Improve enforcement
FR-3017	430.130(A)(4)	New requirement for the short circuit ground fault device to be provided as an integral part of power conversion equipment.		X			
FR-3020	430.231	Editorial		X			
FR-3018	Table 430.249 and Table 430.150	Revision to correlate voltages referenced above the tables with the voltages in the tables.		X			
	Article 440	**Air-Conditioning and Refrigerating Equipment**					
FR-3003	440.2, Rated-Load Current	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3004	440.4(B), Exception 3	Revision to remove equipment supplied from a branch circuit protected at 60 amperes or less.		X			
FR-3005	440.9	New requirement for a wire type equipment grounding conductor to be provided in the outdoor portion of the metallic raceways that use non-threaded fittings.			X	$ 50 / conduit	Safety
FR-3006	440.10	New requirements for short-circuit current and documentation data for calculations.		X			Enforcement
FR-3008	440.14	Editorial		X			
FR-3009	440.33	Revision into a list format for clarity.		X			
FR-3021	440.65	Revision to include a heat detecting circuit interrupter (HDCI).		X			
	Article 445	**Generators**					
FR-4587	445.10	New informational note referencing NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.		X			
FR-3617	445.11	Revisions to required markings on generators.		X			
SR-3618	445.13	Revision to add requirement for connecting tap conductors to load side of generator OCPDs other than portable generators rated 15 kW or less.		X			
SR-3614	445.14	Revision to include direct-current voltage level at which live parts have to be made inaccessible to accidental contact by unqualified persons.		X			
SCR-082	445.18(A)	New subdivision on generator disconnecting means with revision to requirement on interruption of ungrounded conductors by generator disconnecting means.		X			
FR-3661 SR-3620	445.18(B)	New subdivision on prime mover shutdown with revisions to the conditions under which it can be used as the generator disconnecting means and for a remotely operated shutdown for larger generators.			X	$ 500 / generator	Safety
FR-3661	445.18(C)	New subdivision on generators operating in parallel with revisions to disconnecting means and generator isolation requirements.		X			
	Article 450	**Transformers and Transformer Vaults (Including Secondary Ties)**					
FR-2431	450.5 Exception	Revision to delete the exception.		X			Safety
SR-2414	450.21 Informational Note	Revision to update the version and title of the referenced standard.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-2432	450.23(A)	New informational note that provides examples of restrictions for listing of liquid.		X			
SR-2415	450.23(B)	New informational note that provides examples of restrictions for listing of liquid.		X			
SR-2416	450.42Informational Note No. 1	Revision to update the version and title of the referenced standard.		X			
FR-2433	450.43(C)	Revision to correlate with 110.26(C)(3).		X			
	Article 455	**No changes**					
	Article 460	**No changes**					
	Article 470	**No changes**					
	Article 480	**Storage Batteries**					
SR-3628	480.1	Editorial: new informational note references and revisions to existing informational note references.		X			
SR-3629	480.3	New requirement on listing of batteries and battery management equipment.		X			
FR-3641	480.4(A)	Revision to requirement on corrosion prevention at battery connections.		X			
FR-3642	480.4(C)	New informational note providing guidance on conductor connections at battery terminals.		X			
SR-3615	480.6	Revision of maximum direct current voltage for batteries associated with engine starting, ignition, or control.		X			
SR-3616	480.7(A)	Revision of voltage level at which direct current disconnects are required.		X			
FR-3664	480.7(B)	Revisions to requirements for remotely controlled battery disconnecting means.		X			
SCR-083	480.7(D)	Revisions to notification requirements and addition of new informational note on equipment short- circuit current rating and its relationship to establishing safe work practices per NFPA 70E, Standard for Electrical Safety in the Workplace.		X			
FR-3644	480.8	Revisions to requirements for insulating conductive battery containers from ground.		X			
FR-3645	480.9	Revisions to consolidate requirements on battery support systems.		X			
FR-3646	480.10(A)	Addition of new informational note referencing standard containing provisions for ventilation of storage battery systems.		X			
FR-3647	480.10(D)	Revisions to working space requirements for top terminal batteries and to informational note by including reference			X	Varies with scope of work	Safety

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		to applicable standard for clearances about VRLA batteries.					
FR-3649	480.11(A)	Revisions to requirement on vented cell flame arresters and inclusion of new informational note on their function.		X			
FR-3650	480.11(B)	Revisions to requirement for pressure-release vents on only certain sealed batteries.		X			
	Article 490	**Equipment Over 1000 Volts, Nominal**					
FR-2434	490.3	Revision to change title to "Other Articles," relocate “oil-filled equipment” to subdivision "(A)," and add "(B)" for enclosures in damp or wet locations.					
SR-2418	490.30	Editorial		X			
	Chapter 5	**Special Occupancies**					
	Article 500	**Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2**					
FR-3918, FR-3904, FR-3906, FR-3907, FR-3909, FR-3912, FR-3913, FR-3915, FR-3916, FR-3929	500.2	Deletion of definition section because all defined terms have been relocated to Article 100.		X			
FR-3962	500.4 (B) Informational Notes	Revision to Informational Note No. 1 for MOS compliance, update of referenced standards in Informational Notes 2 through 5, and addition of Informational Note No. 6.		X			
FR-3934	500.5 (A)	Revision to section title and to correlate area classification information related to ammonia with relevant ASHRAE standard. Revision to update referenced standards in Informational Note No. 2.		X			
FR-3985	500.6 Exception	Revision to include Class III materials.		X			
FR-3935	500.6(A)(4) Informational Note No. 2	Revision to update referenced standard.		X			
FR-3961	500.6(B)(2)	Revisions to update referenced standard and extract attributions.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3937	500.7(K) Informational Note Nos. 1, 2, and 3	Revisions to update referenced standards.		X			
FR-3963	500.8(A) Informational Note	Revision to update referenced standards.		X			
FR-3984	500.8(C)(3)	Revision to permit alternate material group marking on equipment and addition of new informational note providing examples of the type of information that the alternate marking could include.		X			
FR-3982	500.8(D)(2)	Revision to delete Table 500.8 (D)(2) and associated text.		X			
SR-3920	500.8(E)(1) Informational Note Nos. 1 and 2	Revisions to update referenced standards.		X			
SR-3921	500.8(E)(2) and Informational Note	Revisions to make metric thread engagement uniform for all gas groups and to update referenced standards.		X			
	Article 501	**Class I Locations**					
FR-3940	501.10(A)(1)(a) Exception	Revisions to permit additional type of nonmetallic conduit and to clarify intended application of the exception.		X			
SCR-090	501.10(A)(2)	Revision to clarify only one of the methods can be employed for a given installation.		X			
SR-3901	501.10(B)(1)	Revisions to allow threadless fittings with metal conduit and cablebus.		X			
SR-3922	501.15(A)(1)	Revisions to provide additional conditions associated with factory-sealed enclosures and to no longer permit conduit bodies between a seal fitting and an explosion proof enclosure.		X			
FR-3973	501.15(D)(1)	Revision to establish proximity between cable seal and enclosure in which cable terminates.		X			
FR-3972	501.15(E)(3)	Revision clarifying the conditions under which sealing of cables is not required.		X			
FR-3971	501.105(B)(1) through (5)	Revision to reorganize, clarify, and expand temperature marking requirements for enclosures containing certain types of equipment.		X			
SCR-092	501.105(B)(6)	Revisions to permit interlocked receptacle and attachment plug connection that cannot be opened or energized under load and to clarify		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		existing requirements on cord-and-plug connection of instrumentation circuits.					
SR-3923	501.115(B)(1)(3)	Revision to describe markings on enclosures considered to be factory sealed.		X			
FR-3966	501.125(A)(4)	Revision to restrict the use of this type of machine to industrial locations that have restricted access and qualified persons servicing the equipment.		X			
SR-3927	501.125(B)	Revision to reorganize requirements for clarity and to add a condition under which a shaft bonding device is permitted. Added new informational note providing guidance on shaft bonding devices and preventing ignition capable energy discharge.		X			
FR-3975	501.145(B)	Deletion of exception for certain types of cord- and plug-connected equipment.		X			
	Article 502	**Class II Locations**					
FR-3942	502.10(A)(1)(5)	Addition of requirements under which Type ITC-HL cable can be installed in Class II, Division 1 locations.		X			
FR-3943	502.10(B)(1)(6) and (9)	Addition of Type MV, Type TC-ER, and cablebus to wiring methods permitted in Class II, Division 2 locations.		X			
SCR-004	502.125(B) Exception	Addition of machines with sealed components and openings to list of permitted alternative equipment.		X			
	Article 503	**Class III Locations**					
FR-3944	503.10(A)(1)(4) and (5)	Addition of Type MV cable and cablebus to wiring methods permitted in Class III, Division 1 locations.		X			
	Article 504	**Intrinsically Safe Systems**					
FR-3992	504.1	Revision to expand applicability to all hazardous (classified) locations covered in Chapter 5.		X			
FR-3919, FR-3920, FR-3921	504.2	Relocation of those definitions used in more than one article to Article 100.		X			
FR-3991	504.10 (A)	Revision to convert exception text into positive statement.		X			
FR-3990	504.10(B) and (D)	Revision for improved organization of requirements by relocating text related to the maximum surface temperature of “simple apparatus” from 504.10(B) to 504.10(D).		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3998	504.60(A) and (B)	Revisions to clarify hazardous (classified) location bonding requirements for metal intrinsically safe apparatus and metal raceways.		X			
	Article 505	**Zone 0, 1, and 2 Locations**					
FR-3905, FR-3917, FR-3922.	505.2	Relocation of those definitions used in more than one article to Article 100.		X			
SCR-007	505.2	Editorial revision for proper format of definition titles and updating of referenced standards edition dates and titles in informational notes.		X			
SR-3919	505.4(A)	Revision to existing informational note. New informational note on gas detection equipment.		X			
SR-3919	505.4(B)	Revision to existing informational notes to update referenced standards edition dates and titles and addition of new informational notes on portable/transportable equipment and equipment utilizing optical emissions technology.		X			
SCR-005	505.5(A)	Revision to section title and to correlate area classification information related to ammonia with relevant ASHRAE standard. Revision to informational note on ammonia refrigeration systems to clarify type of refrigerant system covered and to add a referenced standard.		X			
SCR-006	505.5(B)	Editorial revision and update of standards referenced in Informational Note No 1.		X			
FR-3948	505.6(A)	Revision to update extract reference.		X			
FR-3949	505.6(C)	Revision to update extract reference.		X			
FR-3978	505.7(F)	Revision to provide condition under which equipment with short-circuit current rating (SCCR) exceeding 10 kA is permitted.		X			
FR-3980	505.8(A)	Revision to correct title of protection technique for correlation use of the term in associated requirements.		X			
FR-3981	505.8(C)	Editorial revision for consistency with similar terms.		X			
FR-3977	505.9(C)(2) Informational Note No. 4	Revision to include Class I, Zone 1 in two examples of zone equipment marking.		X			
FR-3964	505.9(E)(1)	Editorial: MOS and update of standards referenced in informational note.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3979	505.9(E)(2)	Revisions to correlate metric thread engagement with equipment standards for flame-proof equipment and to update referenced standards		X			
FR-3988	505.9(F)	Revision to clarify requirement for sealing optical fiber cables with or without current-carrying conductors.		X			
FR-3986	505.15(A)	Revision to clarify limitations on type of circuits that can connect to equipment in Class I, Zone 0 locations.		X			
FR-3946	505.15(C)(1)(9)	Addition of cablebus to wiring methods permitted in Class I, Zone 2 locations.		X			
SR-3924	505.16(B)(2)	Revisions for MOS compliance and clarity and to describe markings on enclosures considered to be factory sealed.		X			
FR-3957	505.22	Revision of informational note to update title of referenced standard.		X			
	Article 506	**Zone 20, 21, and 22 Locations for Combustible Dusts or Ignitible Fibers/Flyings**					
FR-3933	506.1	Revision of informational note to update title and edition date of referenced standard.		X			
FR-3903, FR-3908, FR-3911, FR-3914, FR-3923, FR-3924, FR-3925	506.2	Relocation of those definitions used in more than one article to Article 100.		X			
SR-3903	506.2	Editorial revision for proper format of definition titles and updating of referenced standards edition dates and titles in informational notes.		X			
FR-4000	506.4(B)	Addition of new informational note on equipment utilizing optical emissions technology.		X			
FR-3958	506.5(B)(1)	Revision to Informational Note No. 1 to update title and edition date of referenced standard.		X			
SR-3904	506.5(B)(2)	Editorial: MOS and revision of Informational Note No. 1 to update title and edition date of referenced standard.		X			
SR-3905	506.5(B)(3)	Editorial: MOS and revision of Informational Note No. 1 to update title and edition date of referenced standard.		X			
SCR-009	506.6(A)	Revision to correlate with relevant materials standard and with Article 500. Informational		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		note incorporated into material group description.					
SCR-008	506.6(B)	Revision to correlate with relevant materials standard and with Article 500. Informational note incorporated into material group description.		X			
SCR-010	506.5(C)	Revision to correlate with relevant materials standard and with Article 500. Informational note incorporated into material group description.		X			
SR-3911	506.9(B)	Editorial and revision to correlate with how products are certified for use in Zone 20, 21, and 22 locations.		X			
SR-3910	506.9(C)(2)	Revisions to exception to correct required information required on equipment marking and to include additional information for the marking example contained in the informational note.		X			
FR-3965	506.9(E)(1)	Editorial and revision to informational note to update edition date of referenced standard.		X			
FR-3931	506.9(E)(2)	Revisions to clarify requirement applies only to enclosure with metric threaded openings and the associated metric threaded fittings or adapters.		X			
FR-3989	506.9(F)	Revision to clarify requirement for sealing optical fiber cables with or without current-carrying conductors.		X			
FR-3947	506.15(C)(10)	Addition of cablebus to wiring methods permitted in Zone 22 locations.		X			
	Article 510	**No changes**					
	Article 511	**Commercial Garages, Repair and Storage**					
FR-3950	511.3(A)	Revision to update extract reference.		X			
FR-3954	511.3(C)	Revision to tabularize area classification information for major and minor repair garages where heavier-than-air fuel is transferred or dispensed. Added new informational note referencing Table 8.3.2 in NFPA 30A.		X			
FR-3955	511.3(D)	Revision to tabularize area classification information for major repair garages where vehicles using lighter-than-air fuel are repaired or stored. Added new informational note referencing Table 8.3.2 in NFPA 30A.		X			
FR-3951	511.3(E)(2)	Revision to update extract reference.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3994	511.8	New requirement on wiring methods installed under a commercial garage.		X			
	Article 513	**Aircraft Hangars**					
FR-3926	513.2	Relocation of those definitions used in more than one article to Article 100.		X			
	Article 514	**Motor Fuel Dispensing Facilities**					
FR-3952	Table 514.3(B)(1)	Revision to update extract reference.		X			
FR-4001	514.3(B)(2) and Table 514.3(B)(2)	Revisions to area classification information where CNG, LNG, and LP-Gas are dispensed as motor fuels.		X			
FR-4002	514.3(B)(3)	New requirements on spatial separations where CNG, LNG, and LP-Gas are stored or dispensed.		X			
FR-3993	514.8 Exception No. 2	Revision to permit Type HDPE conduit as an underground wiring method.		X			
FR-3995	514.9	Revision to permit an explosionproof reducer at a seal fitting.		X			
FR-3996	514.11	Revision to requirements on emergency circuit disconnects for fuel dispensing and other electrically powered equipment at attended and unattended self-service motor fuel dispensing stations to correlate with NFPA 30A.		X			
	Article 515	**Bulk Storage Plants**					
SCR-011	515.3 and Table 515.3	Revisions to update extract reference and the requirement referenced in Informational Note No. 2. Table 515.3 revised by adding informational note with reference to associated requirement in NFPA 30.		X			
SR-3914	**Article 516**	**Revision to arrange requirements into five parts.**					
SR-3914	516.1	Revisions to include "spraying" in scope of article, to update edition date of referenced standards in Informational Note No. 1, and to add new Informational Note No. 2 on extracted material.		X			
SR-3914	516.2	Revisions to delete terms not used in the requirements, to update extracted definitions, and to add new definitions of terms used in revised article.		X			
SR-3914	516.3 (2014)	Revisions to delete this section and incorporate requirements into appropriate locations in new article arrangement.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-3914	516.4	Revision to include only those area classification requirements applicable to "open containers." Revisions to update extracted material to reflect the requirements in the current edition date of the source standard.		X			
SR-3914	516.5	Revision to include only those area classification requirements applicable to "spray application processes." Revisions to update extracted material to reflect the requirements in the current edition date of the source standard.		X			
SR-3914	516.6 (516.4–2014)	Revision to relocate requirements for wiring in Class I locations and to update extracted material to reflect the requirements in the current edition of the source standard.		X			
SR-3914	516.7(B)	Editorial: MOS and update of standards referenced in informational note.		X			
SR-3914	516 Part IV, 516.18 and 516.23	New requirements for hazardous (classified) area classification and control of ignition sources for spray application operations in temporary membrane enclosures.		X			
SR-3914	516 Part V, 516.29 through 516.40	Relocation of hazardous (classified) area classification requirements for coating and dipping processes. Part V requirements also apply to printing processes using flammable or combustible materials. Requirements included on luminaires, wiring, and equipment not installed within the classified location(s) and control of static electric discharges.		X			
	Article 517	**Health Care Facilities**					
FR-7513	517 Informational Note	Revision to update the version of the referenced standard.		X			
	517.2	Revision to update extract reference.		X			
FR-4231	Alternate Power Source	Revision to update extract reference.		X			
FR-4232	Ambulatory Health Care Occupancy	Revision to update extract reference.		X			
FR-4233	Critical Branch	Revision to update extract reference.		X			
FR-4234	Electrical Life-	Revision to update extract reference.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Support Equipment						
FR-4235	Equipment Branch	Revision to update extract reference.		X			
FR-4236	Essential Electrical System	Revision to update extract reference.		X			
SR-4212	Exposed Conductive Surfaces	Revision to move nonmandatory text to new informational note and to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4255	Governing Body	New definition that correlates with NFPA 99, Health Care Facilities Code.		X			
FR-4238	Health Care Facilities	Revision to include "mobile enclosures" and "human" to correlate with NFPA 99, Health Care Facilities Code, and relocates examples to a new informational note.		X			
FR-4239	Isolated Power System	Revision to include the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4240	Isolation Transformer	Editorial revision and added the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4256	Invasive Procedure	New definition that correlates with NFPA 99, Health Care Facilities Code.		X			
FR-4241	Life Safety Branch	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4242	Limited Care Facility	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4243	Line Isolation Monitor	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4244	Medical Office (Dental Office)	New definition that correlates with NFPA 99.		X			
FR-4245	Nursing Home	Revision to update the referenced section and standard from NFPA 99, Health Care Facilities Code,		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		to NFPA 101, Life Safety Code, extracted material.					
FR-4246	Patient Bed Location	Revision to update the referenced section to correlate with NFPA 99, extracted material.		X			
SR-4215	Patient Care Space	Revision to incorporate numbered health care category spaces to correlate with NFPA 99, Health Care Facilities Code, and informational notes that provide examples.		X			
FR-4248	Patient Care Vicinity	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4249	Patient Equipment Grounding Point	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4250	Reference Grounding Point	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4251	Selected Receptacles	Editorial revision and added the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4253	Task Illumination	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4252	Total Hazard Current	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4254	Wet Procedure Location	Editorial revision and added the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-7513	517.10(B), Informational Note	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4261	517.13	Revision to replace "Areas" with "Spaces" to correlate with NFPA 99, Health Care Facilities Code		X			
SCR-016	517.13(B)	Revision to specify the copper equipment grounding conductors must be insulated with green insulation and correlate with isolated ground receptacle requirements with 517.16.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-4228	517.16(A) and (B)	Revision to add isolated ground receptacle requirements with a new subdivision "(A)" for “Inside of Patient Care Vicinity” and “(B)” for “Outside of Patient Care Vicinity.”		X			
FR-4262	517.17	Revision to include "Category 1 spaces" to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4266	517.18	Revision to include Category 2 spaces to correlate with NFPA 99, Health Care Facilities Code, extracted material, and provide the governing body the authority to designate similar risk level spaces.		X			
FR-4267	517.19	Revision to include Category 1 spaces to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4267	517.19(A)	Revision to include distinctive color or marking for electrical receptacles or cover plates (extracted material).		X			
FR-4267	517.19(C)(1)	Revision to require a minimum of two branch circuits with at least 12 receptacles but no more than 24 on one of the required branch circuits.		X			
FR-4267	517.19(C)(2)	Revision to correlate with receptacle combinations in NFPA 99, Health Care Facilities Code.		X			
FR-4267	517.19(E)	Revision to prohibit standard locknuts for bonding.		X			
FR-4267	517.19(F)	Revision to include "Category 1 spaces" to correlate with NFPA 99, Health Care Facilities Code.		X			
FR-4263	517.20(A)	Editorial revision to correlate with NFPA 99, Health Care Facilities Code.		X			
FR-4264	517.21	Revision to include "Category 1 spaces" to correlate with NFPA 99, Health Care Facilities Code.		X			
FR-4265	517.25 Informational Note No. 2	Revision to update the version of the referenced standard.		X			
FR-4265	517.26 Informational Note No. 2	Revision to update the version of the referenced standard and to update the reference from 517.30 to 517.29.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4271	517.29	Revision to relocate requirements from 517.30 to a new section titled “Essential Electrical Systems for Hospitals and Other Health Care Facilities.”		X			
FR-4271	517.29(A) and (B)	Revision to incorporate numbered health care category spaces to correlate with NFPA 99, Health Care Facilities Code, extracted material, and provide introductory information related to “essential electrical systems.”		X			
FR-4276	517.30	Revision to relocate requirements from 517.35 to 517.30 to provide a logical sequence.		X			
FR-4276	517.30(B)(1) and (2)	Revision to relocate requirements from 517.35, changing the title to "Types of Power Sources," and clarifying permitted configurations for generating units/external utility service and adding new requirements for fuel cell systems.		X			
FR-4276	517.30(C)	Revision to relocate requirements from 517.35(C) to provide a logical sequence and editorial revision.		X			
FR-4276	517.31	Revision to relocate requirements from 517.30 to provide a logical sequence.		X			
FR-4276	517.31(A)	Revision to require division between branches to occur at transfer switches where more than one transfer switch is required.		X			
SR-4218	517.31(B)	Editorial		X			
FR-4276	517.31(C)(3) (e) and (f)	Revision to include two additional conditions where flexible metal raceways and metal sheathed cable assemblies are permitted.		X			
FR-4272	517.32	Revision to relocate requirements from 517.31 and to correlate language extracted from NFPA 99, Health Care Facilities Code.		X			
FR-4273	517.33	Revision to relocate requirements from 517.32 and to correlate language extracted from NFPA 99, Health Care Facilities Code.		X			
FR-4274	517.34	Revision to relocate requirements from 517.33 and to incorporate numbered health care category spaces to correlate with NFPA 99, Health Care Facilities Code.		X			
FR-4274	517.34(B)	New subdivision that permits controlling of task illumination on the critical branch.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4275	517.35	Revision to relocate requirements from 517.34 and to update the version of the referenced standard in the informational note.		X			
FR-4268	517.40	Revision to the title to include essential electrical system "Type 2." New informational note to incorporate numbered health care category spaces to correlate with NFPA 99, Health Care Facilities Code, and provide guidance on category space application and recognition that care used in these facilities necessitates compliance with 517.40 and 517.41, unless care is comparable to a hospital.		X			
FR-4268	517.40(A)	Revision to update referenced sections and the version of the referenced standard in the informational note.		X			
FR-4268	517.40(B)	Revision to update referenced sections. New Informational Note No. 2 to provide guidance on application of other requirements for emergency egress and loadshed conditions where optional loads are connected.		X			
FR-4279	517.41(A) and (B)	Revision to relocate requirements from 517.44 and to correlate language extracted from NFPA 99, Health Care Facilities Code.		X			
FR-4279	517.41(C)	Revision to relocate requirements from 517.44, correlate language extracted from NFPA 99, Health Care Facilities Code, and delete the informational note and relocate physical separation requirements from the informational note into mandatory language.		X			
FR-4277	517.42	Revision to relocate requirements from 517.41.		X			
SR-4219	517.42(A)	Revision to require division between branches to occur at transfer switches where more than one transfer switch is required. New Informational Note No. 2 referring to NFPA 99, Health Care Facilities Code.		X			
SR-4220	517.42(B)	Revision to update the referenced section to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
SR-4220	517.42(B)Information al Note Figures	Revision to remove references to the critical branch.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	517.42(a) and (b)						
FR-4277	517.42(D)	Revision to add "equipment branch," remove references to the critical branch, and add a new informational note referencing NFPA 99, Health Care Facilities Code.		X			
FR-4277	517.42(E)	Revision to include distinctive color or marking for electrical receptacles or cover plates and replace "essential electrical system" with "life safety or equipment branches." New informational note recommending the same color marking throughout the facility.		X			
FR-4270	517.43(A), (B), and (C)	Revision to relocate requirements from 517.42 and update the version of the referenced standard in the informational note.		X			
FR-4270	517.43(D)	Revision to add reference section of extracted material.		X			
FR-4270	517.43(E)	Revision to add reference section of extracted material and requirement for minimum of 5 ft-candles.		X			
FR-4270	517.43(F)	Revision to add reference section of extracted material.		X			
FR-4270	517.43(G)	Revision to update reference section of extracted material.		X			
FR-4278	517.44	Revision to relocate requirements from 517.43, remove, all references to “critical branch” and replace with “equipment branch,” and add reference section of extracted material.		X			
SR-4229	517.44(A)	Revision to correlate with NFPA 99, Health Care Facilities Code, extracted material.		X			
FR-4280	517.45(A)	Revision to correlate with the new definition of Governing Body and incorporate numbered health care Category 3 space and Requirements for alternate power systems to correlate with NFPA 99, Health Care Facilities Code. Updates the version of the referenced standard in the informational note.		X			
FR-4280	517.45(C)	Revision to incorporate numbered health care category spaces to correlate with NFPA 99, Health Care Facilities Code.		X			
FR-4280	517.45(D)	New subdivision for “General Care Patient Care Areas” and requirements for the essential electrical distribution system.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4280	517.45(E)	Revision to require alternate power sources to comply with the requirements of NFPA 99, Health Care Facilities Code.		X			
FR-4202	Part IV Title Informational Note	Revision to update the version of the referenced standard.		X			
FR-4206	517.80	Revision to replacing "Areas" with "Spaces" to correlate with NFPA 99, Health Care Facilities Code.		X			
FR-4207	517.160(B)(1)	Revision to require line isolation monitors to be listed.		X			
	Article 518	**Assembly Occupancies**					
	518.2 Informational Note	Revision to update the version of the referenced standard.		X			
	Article 520	**Theaters, Audience Areas of Motion Picture and Television Studios, Performance Areas, and Similar Locations**					
FR-4212	520.2, Adapter	New definition to address various configurations for attachment plugs or receptacles.		X			
FR-4213	520.2, Stage Switchboard	Revision to add "permanently installed" to clarify the definition does not include portable.		X			
FR-4214	520.2, Stage Switchboard, Portable	New definition to clarify the difference between a portable or permanently installed stage switchboard.		X			
SR-4227	520.2, Two-Fer	Revision to correlate with the new definition of adapter.		X			
SCR-013	520.9	Revision to add a reference to 210.23 and exemption from 210.8(B)(4).		X			
FR-4210	520.44(C)(2)	Revision to update the table references to correlate with the new table numbering.		X			
FR-4210	520.44(C)(3)	Editorial		X			
SR-4205	Table 520.44(C)(3)	Editorial		X			
FR-4210	Table 520.44(C)(3)(a)	Revision to add a separate table for ampacity adjustment where load diversity factor is 50 percent minimum.		X			
FR-4216	520.49	Revision to remove the requirement for the device to be located in the loft above the scenery with a tight, self-closing door but require door to remain closed except during servicing.		X			
FR-4215	520.51	Revision to replace "conductor derating" with "ampacity adjustment."		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4281	520.53	Revision to relocate requirements for feeders to new 520.54 and update the portable stage switchboard construction requirements. New requirements for portable stage switchboards to be listed.		X			
FR-4281	520.54	New section relocates the requirements for feeders and revised for clarity.		X			
FR-4218	520.62(F)	New subdivision for installation requirements of single-conductor feeders.		X			
FR-4220	520.68(A)(3)	Revision to increase the maximum length from 1.0 m to 2.0 m (3.3 ft to 6.6 ft).		X			
SR-4207	520.68(B)	Revision to update reference to tables and require load diversity to be 50 percent or less when ampacity adjustment factors are applied.		X			
FR-4219	520.68(C)	New subdivision to require compliance with 240.5 for overcurrent protection of conductors.		X			
FR-4221	520.(C)	Revision to increase the maximum length from 1.0 m to 2.0 m (3.3 ft to 6.6 ft).		X			
SR-4226	Part VI	Revision to title to include dressing areas and makeup areas.		X			
FR-4223	520.71	Revision to add makeup to the types of rooms where pendant lampholders are not permitted.		X			
FR-4223	520.72	Revision to add makeup areas and delete "incandescent" to include all types of light sources to be equipped with guards, excluding recessed lamps.		X			
FR-4223	520.73	Revision to replace "lights" with "luminaires, lampholders" adding makeup counters or rooms and relocate the requirements for pilot lights to new 520.74.		X			
FR-4222	520.74	New section to relocate pilot light requirements from 520.73 and adds new requirement for protecting from physical damage, permanent identification requirements, and lamp type.		X			
	Article 522	**Control Systems for Permanent Amusement Attractions**					
FR-4224	Table 522.22	Revision to update the referenced table for temperature correction factors.		X			
SR-7508	522.25	Revision to increase the voltage threshold from 50 volts to 60 volts.		X			
	Article 525	**Carnivals, Circuses, Fairs, and Similar Events**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SCR-120	525.23(D)	New subdivision to require that portable GFCI receptacles on branch circuits fed by a flexible cord be listed, labeled, and identified for portable use.		X			
FR-4226	525.32	Editorial		X			
	Article 530	**Motion Picture and Television Studios and Similar Locations**					
SCR-014	530.21(A)	Editorial		X			
SCR-015	530.23	Revision to add a reference exemption from 210.8(B)(4).		X			
	Article 540	**Motion Picture Projection Rooms**					
FR-4257	540.2, Nonprofessional Projector	Editorial		X			
FR-4258	540.2, Professional - Type Projector	Editorial		X			
	540.10	Revision to update the version of the referenced standard.		X			
	Article 547	**Agricultural Buildings**					
FR-5441	547.2, Equipotential Plane	Editorial		X			
FR-5442	547.5(F)	Revision to remove "covered." New informational note referencing 250.120(B) for aluminum and copper-clad aluminum conductors.		X			
FR-5443	547.5(G)	Revision to remove "general purpose" to provide GFCI protection for all receptacles.		X			
FR-5444	547.8(C)	Editorial		X			
FR-5445	547.10(B), Informational Note No. 3	Editorial		X			
	Article 550	**Mobile Homes, Manufactured Homes, and Mobile Home Parks**					
SR-5406	550.2, Manufactured Home	Revision to correlate with the definition in NFPA 501, Standard on Manufactured Housing.		X			
SR-5405	550.4(D)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-5414	550.13(B)	Revision to a list format for clarity and to expand GFCI protection for dishwasher outlets and receptacles within 6 ft of all sinks.			X	$ 25 / dishwasher	
SR-5407	550.15(H)	Revision to a list format for clarity and to require conduit or raceway to be identified for use in wet locations.		X			
SR-5403	550.25(B)	Revision to require all 120-volt branch circuits that supply 15- and 20-ampere outlets to comply with 210.12.		X			
FR-5405	550.32(A)	Editorial		X			
	Article 551	**Recreational Vehicles and Recreational Vehicle Parks**					
FR-5406	551.1, Informational Note	Revision to update the referenced standard edition year in the informational note.		X			
FR-5407	551.2, Recreational Vehicle Park	Revision to correlate with the definition in NFPA 1194, Standard for Recreational Vehicle Parks and Campgrounds.		X			
FR-5408	551.2, Recreational Vehicle Site	Revision to correlate with the definition in NFPA 1194, Standard for Recreational Vehicle Parks and Campgrounds.		X			
FR-5409	551.42(C)	Editorial		X			
FR-5450	551.43(C)	Revision to clarify that you cannot protect a single 15-amp receptacle with a 20-amp overcurrent device.		X			
FR-5410	551.60	Editorial		X			
SR-5408	551.71	Revision to create subdivisions for clarity.		X			
SR-5408	551.71(A)	New subdivision for 20-ampere receptacle and adds the term “recreational vehicle site supply equipment.”		X			
SR-5408	551.71(B)	New subdivision for 30-ampere receptacle requirements.		X			
SR-5408	551.71(C)	New subdivision for 50-ampere receptacle requirements. Revision to require a minimum of 20 percent for existing sites and 40 percent for new installations.		X			
SR-5408	551.71(D)	New subdivision for tent site requirements.		X			
SR-5408	551.71(E)	New subdivision for additional receptacles.		X			
SR-5408	551.71(F)	New subdivision for GFCI requirements. Revision to exempt RV site electrical equipment from the tamper- or weather-resistant requirements.		X			
FR-5412	551.72	Revision to create subdivisions for clarity.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-5412	551.72(A)	New subdivision that includes requirements for single phase systems. Revised to include 120/208 volt systems and relocate the requirements in 551.73(D).		X			
FR-5412	551.72(B)	New subdivision that includes requirements for three phase systems.		X			
SCR-018	551.72(C)	New subdivision that includes requirements for receptacles.		X			
SCR-018	551.72(D)	New subdivision that includes requirements for neutral conductors and relocates the informational note from 551.73(D) to Informational Note No. 1, and new Informational Note No. 2 clarifies RV site supply circuits are not continuous loads.		X			
FR-5413	551.73(A)	Revision to increase the "9600" to "12,000" volt-amperes for sites equipped with 50-ampere supply facilities.		X			
FR-5414	551.75	Revision to create subdivisions.		X			
FR-5414	551.75(B)	New subdivision specifies that a grounding electrode is only required for recreational vehicle site supply equipment used as service equipment.		X			
	Article 552	**Park Trailers**					
FR-5415	552.5	New section that provides requirements for labels.		X			
FR-5418	552.41(B)(1) and (3)	Revision to require a minimum depth for a countertop.		X			
FR-5419	552.41(F)(2)	Revision to include other similar horizontal surface.		X			
FR-5420	552.42	New section addressing overcurrent protection requirements for branch circuits.		X			
FR-5421	552.43(C)(2)	Revision to clarify liquidtight flexible conduit permissions and remove language already covered elsewhere in the Code.		X			
FR-5416	552.44(D)	Revision to simplify the label requirements and add additional warning information.		X			
FR-5422	552.44(E)	Revision to simplify the location of the power supply assembly.		X			
FR-5423	552.45(B) Exception	Revision to prevent storage of material in front of the panelboard.		X			
FR-5424	552.46(A)	Revision to include 120/240 volt system.		X			
FR-5424	552.46(A) Exception No. 2	New exception permits a sixth circuit without employing an emergency management system provided the load calculation doesn't exceed the load of the original five circuits.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-5425	552.48(H)	Revision to require cables be secured in addition to supported.		X			
FR-5426	552.48(I)	Revision to require cables be secured in addition to supported and to relocate the exception into the positive Code rule.		X			
SR-5404	552.48(O)(1)	Revision to create a new subdivision with list items for cord-and-plug connected expandable units and editorial revision.		X			
SR-5404	552.48(O)(2)	New subdivision with list items for direct wire connected expandable units.		X			
FR-5427	552.48(P)(3)	Revision to simplify the label requirements and add additional warning information.		X			
FR-5428	552.48(Q)	New section addresses pre-wiring installed for other appliances or devices.		X			
FR-5430	552.52(C)	New subdivision prohibiting switches to be installed in tub or shower spaces unless part of a listed assembly.		X			
FR-5431	552.54(A)	Revision to add ceiling suspended paddle fans to the requirement.		X			
FR-5431	552.54(B)	Revision to relocate the prohibition of switches to be installed in tub or shower spaces to new 552.52(C).		X			
FR-5417	552.59(B)	Revision to simplify the label requirements and add additional warning information.		X			
FR-5432	552.60(A)	Editorial		X			
	Article 553	**Floating Buildings**					
FR-5434	553.8(C)	Editorial		X			
	Article 555	**Marinas, Boatyards, and Commercial and Noncommercial Docking Facilities**					
SR-5412	555 Title	Revision to add commercial and noncommercial docking facilities.		X			
FR-5435	555.1	Revision to add one-family dwellings, two-family dwellings, multifamily dwellings.		X			
FR-5436							
SR-5413	555.3	Revision to add boatyards and commercial and noncommercial docking facilities and lowering the ground-fault protection threshold to a maximum 30 mA.		X			Safety
FR-5437	555.15(B)	Editorial		X			
FR-5439	555.19(A)(4)	Revision to include higher rated pin and sleeve devices.		X			
FR-5440	555.15(B)(1)	Revision to delete "where portable electrical hand tools, electrical diagnostic equipment, or portable lighting equipment are to be used."		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SCR-020	555.24	New section requiring permanent safety signs to be installed to give notice of electrical shock hazard risks to persons using or swimming near a boat dock or marina.			X	$ 75 / sign	
	Article 590	**Temporary Installations**					
FR-0615	590.4(B)	Revision to a list format for clarity and add Type SE cable as a permitted wiring method to be installed in a raceway underground.		X			
SR-0606	590.4(G)	Revision to a list format for clarity.		X			
SR-0607	590.4(J)	Revision to permit multiconductor cord or cable of a type identified in Table 400.4 for hard usage or extra-hard usage to be installed on the floor or ground.		X			
FR-0617	590.5	Revision to require listed decorative lighting to be labeled on the product.		X			
FR-0618	590.6(A)(1)	Revision to prohibit listed cord sets or devices incorporating listed GFCI from being used in lieu of GFCI-protected receptacle outlets.		X			OSHA Compliance
SR-0608	590.6(B)(2)	New list item permitting special purpose ground-fault circuit-interrupter protection for personnel.		X			
	Chapter 6	**Special Equipment**					
	Article 600	**Electric Signs and Outline Lighting**					
SR-5119	600.1	Revision to include retrofit kits with the other types of equipment covered by the requirements of Article 600.		X			
FR-5133	600.2	New definition of photovoltaic powered sign.		X			
FR-5134	600.3	Revision to include “photovoltaic powered signs” with the other types of equipment required to be listed.		X			
SR-5120	600.4(B)	Revision to include requirements for marking signs with a retrofitted illumination system or with retrofitted lamps that are powered through existing sign sockets.			X	$ 15 / retrofit	
FR-5137	600.6(A)	Revision to clarify that the location of the sign disconnecting means can be as specified in (A)(1), (A)(2), or (A)(3).		X			
SCR-046	600.6(A)(1)	Revision to include "sign body" as an enclosure that supply conductors enter.		X			
SCR-046	600.6(A)(1) Exception No. 1	Revision to add metal-jacketed cables identified for the location as a wiring method to protect and isolate branch circuit and feeder conductors installed within the interior of a sign.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SCR-046	600.6(A)(1) Exception No. 2	New exception for branch circuit or feeder conductors installed within a sign body or enclosure to supply a panelboard located within the interior of a sign enclosure or sign body.		X			
FR-5137	600.6(A)(2)	Revision to require signs be provided with field-applied marking to indicate location of supply circuit disconnecting means.		X			
FR-5137	600.6(A)(3)	New exception requiring marking of sign controllers to indicate location of supply circuit disconnecting means where it is not installed within sight of the controller.		X			
FR-5138	600.12	Revision to also apply to photovoltaic (PV) powered signs.		X			
SR-5125	600.12(C)(2)	Revision to reference new Tables 600.33(A)(1) and (A)(2).		X			
FR-5142	600.24	Revision clarifying that requirements apply to the power supplies rather than the equipment/systems supplied.		X			
FR-5142	600.24(B)	Revision clarifying that metal parts of Class 2 power supplies/sources are to be connected to the EGC of the supply (line side) branch circuit.		X			
FR-5142	600.24(D)	Revision clarifying that the requirement applies to the conductors on the load (secondary) side of the Class 2 power source.		X			
FR-5139	600.33	Revision of title clarifying that requirements apply to any type of lighting system supplied by Class 2 circuits.		X			
SR-5124	600.33(A)(1) and (A)(2)	Revisions to increase minimum Class 2 circuit conductor size and to add new tables prescribing permitted types of Class 2 cables and acceptable substitutions based on location of installation.		X			
FR-5139	600.33(A)(3)	Revision to require cables installed in wet locations be listed and marked for the application.		X			
FR-5139	600.33(A)(4)	New requirement for cables installed outdoors and exposed to sunlight be listed and marked for the application.		X			
SR-5123	600.33(B)	Revision to provide maximum interval for cable support and securement.		X			
FR-5145	600.34(A) through (F)	New requirements covering the installation and field wiring of photovoltaic (PV) powered signs.		X			
	Article 604	**Manufactured Wiring Systems**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-5449	604.6	New section requiring listing.		X			
FR-5447	604.10	Relocation from 604.4 for uses permitted.		X			
FR-5448	604.12	Relocation from 604.5 for uses not permitted.		X			
FR-5449	604.100	Relocation from 604.6 for construction requirements.		X			
	Article 605	**Office Furnishings**					
FR-5130	605.6	Revision to require lighting equipment be "labeled."		X			
FR-5131	605.9	Revision to apply the limitation to receptacles rather than receptacle outlets.		X			
	Article 610	**Cranes and Hoists**					
SR-3301	610.1 Informational Note	Revision to title of referenced standard.		X			
FR-3301	610.2	Deletion of informational note containing description and temperature and voltage ratings of festoon cables.		X			
FR-3302	610.32	Revision to require means to disconnect crane or hoist motor power from operating station.		X			
FR-3303	610.42(A)(3)	Deletion of condition permitting tap conductors without separate overload protection for brake coil operation.		X			
FR-3304	610.43(A)(3)	Revision of requirements on the use of thermal sensing elements for crane branch circuit and motor overload protection.		X			
FR-3305	610.55	Deletion of requirement on crane operation/functionality that is more appropriately covered in other industry standards.		X			
	Article 620	**Elevators, Dumbwaiters, Escalators, Moving Walks, Platform Lifts, and Stairway Chairlifts**					
SR-3327	620.1 Informational Notes	Revisions to update titles and edition dates of referenced standards.		X			
SCR-080	620.5(B)	Revision to establish ac and dc voltage levels at which guarding of live parts is required for equipment that will be worked on while energized.		X			
FR-3329	620.11 Informational Note	Revision to clarify material contained in the informational note.		X			
SR-3329	620.11(A)	Revision allowing conductors to be protected by using either flame-retardant cable/conductors or an approved method of		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		physical protection that affords flame retardancy for the cable/conductors.					
SR-3330	620.16(A)	New requirement for elevator control panels to be marked with their short-circuit current rating.		X			Enforcement
SR-3330	620.16(B)	New requirement ensuring elevator control panels are not installed where available short-circuit current exceeds its marked rating.		X			
FR-3385	620.21(A)(1)(a)	Revision expanding permitted applications for Class 2 circuit cables in hoistways and pits.		X			
FR-3385	620.21(A)(1), (2), and (3)	Revision removing 6-ft limitation on flexible cords and cables in hoistways and pits, on cars, and in machinery/control rooms and spaces.		X			
SR-3331	620.23(A)	Revision clarifying the minimum number of circuits required for lighting and receptacles in machinery/control rooms and spaces.		X			
SCR-072	620.24(A)	Revision clarifying the minimum number of circuits required for lighting and receptacles in the hoistway pit.		X			
FR-3388, SCR-072	620.24(C) Informational Notes	New informational note referencing 620.85 for GFCI protection requirements and update of the edition date and title of the referenced standard in Information Note No. 1.		X			
FR-3389	620.37(B)	Revision to correlate with terminology on lightning protection "down conductors" used in NFPA 780, Standard for the Installation of Lightning Protection Systems.		X			
FR-3390	620.42	Revision to provide correct Chapter 5 references.		X			
FR-3391	620.51	Revision to clarify the types of equipment subject to the disconnecting means requirement.		X			
SR-3333	620.51(A)	Revision to update the edition date and title of referenced standard.		X			
FR-3392	620.51(C)(1)	Revision to the requirements covering access to and location of disconnecting means for motor controllers located in hoistways.		X			
SR-3334	620.51(D)(2)	New requirement to mark elevator control panels with maximum available fault current and for updating the marking to reflect changes in the electrical system that impact the available fault current level at the control panel location.			X	$ 25 / sign	Enforcement

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3395	620.51(E)	New requirement for surge protection of equipment designated as an emergency load.			X		
FR-3394	620.85	Revision to provide more comprehensive coverage of the areas associated with elevators that require GFCI protection of 125-volt, 15- and 20-ampere receptacles.		X			
SR-3335	620.91	Revision to update the edition date and title of referenced standard.		X			
	Article 625	**Electric Vehicle Charging System**					
SCR-073	625.1	Revision to include wireless charging technology to the equipment types covered in Article 625.		X			
FR-3363	625.2 Cable Management System	Revision to include cables supplying wireless power transfer equipment.		X			
FR-3361	625.2 Charger Power Converter	New definition associated with wireless power transfer systems.		X			
FR-3360	625.2 Fastened in Place	New definition related to certain types of EVSE.		X			
FR-3360	625.2 Fixed in Place	New definition related to certain types of EVSE.		X			
FR-3411	625.2 Output Cable to Primary Pad	New definition associated with wireless power transfer systems.		X			
SR-3339	625.2 Portable (as applied to EVSE)	New definition related to certain types of EVSE.		X			
FR-3412	625.2 Primary Pad	New definition of a wireless power transfer system component.		X			
FR-3413	625.2 Wireless Power Transfer	New definition of electric vehicle charging methodology.		X			
SR-3340	625.2 Wireless Power Transfer Equipment	New definition describing two types of power transfer equipment associated with a wireless power transfer system.		X			
FR-3364	625.4	Revision to increase the maximum ac and dc system voltages to 1000 volts.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-3341 and Global SCR-119	625.5	Revision to require that wireless power transfer equipment be listed.		X			
FR-3366	625.10	Revision to delete requirements that are a function of product construction/safety standards and do not lend themselves to practical enforcement in the field.		X			
FR-3367	625.15(A) through (C)	Revision to expand applicability to wireless power transfer equipment.		X			
FR-3368	625.16	Revision to expand applicability to wireless power transfer equipment.		X			
FR-3369	625.17(B)	Revisions to expand applicability to wireless power transfer equipment and to specify how output cable ampacities are determined.		X			
FR-3380	625.19	Revision based on inclusion of new definition for portable equipment in 625.2 and the corresponding changes made to equipment rating requirements in 625.44(A).		X			
SR-3343	625.22	Revision excluding equipment rated less than 60 volts dc.		X			
FR-3371	625.40	New requirement specifying that outlets for electric vehicle charging be supplied by an “individual branch circuit.”		X			
FR-3372	625.41	Relocation of requirements on overcurrent protection and revision to expand applicability to wireless power transfer equipment.		X			
FR-3373	625.42	Relocation of requirements on charging equipment ratings and revision to expand applicability to wireless power transfer equipment.		X			
FR-3374	625.43	Relocation of requirements on disconnecting means and revision to expand applicability to wireless power transfer equipment.		X			
FR-3379	625.44	Revision to expand applicability to wireless power transfer equipment.		X			
SR-3345	625.44(A)	Revisions to correlate with new definition of portable, to provide dc receptacle configuration and ampere ratings, to increase voltage rating of dc receptacles supplying EVSE, and to provide a requirement on supply cord length.		X			
SR-3344	625.44(B)	Revisions to correlate with new definition of stationary, to add a three-phase receptacle		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		configuration, and to provide a requirement on supply cord length.					
SR-3346	625.44(C)	Revisions to correlate with new definition of fixed.		X			
SR-3347	625.47	New requirement covering charging equipment supplied by multiple circuits.		X			
FR-3376	625.48	Revisions to update requirement for compatibility with current technology for delivery of energy to and from an EV and to add a new informational note.		X			
FR-3381	625.50	Revision to exclude portable EVSE from mounting location requirements.		X			
FR-3377	625.52(A) and (B)	Revisions to expand applicability to wireless power transfer equipment.		X			
SCR-075	Article 625 Part IV	**New requirements covering the installation and field wiring of wireless power transfer equipment.**		X			
	Article 626	**Electrified Truck Parking Spaces**					
SR-3318	626.24(B) Informational Note	Revision to update edition date and title of referenced standard.		X			
FR-3382	626.31(C)	Revision to include 1000-volt-rated receptacle configuration.		X			
FR-3383	626.32(A)	Revision to include 1000-volt-rated power supply cable assemblies.		X			
FR-3384	626.32(C)	Revision to include 1000-volt-rated attachment plug and cord connector.		X			
	Article 630	**Electric Welders**					
SR-3302	630.6	New requirement for listing of equipment covered by Article 630.		X			
FR-3332	630.31	Revision to relocate text related to circuit performance to new informational note.		X			
	Article 640	**Audio Signal Processing, Amplification, and Reproduction Equipment**					
FR-3306	640.2 Audio Amplifier or Pre-Amplifier	Editorial		X			
FR-3307	640.2 Audio Signal Process Equipment Informational Note	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-3303	640.2 Equipment Rack	Editorial and revision to informational note to update title of referenced standard.		X			
FR-3308	640.2 Technical Power System	Revision for technical accuracy.		X			
SR-3304	640.3(B)	Revisions to distinguish between ducts and other spaces used for environmental air and to add two exceptions referencing requirements in Article 725. Informational note revised to update edition date of referenced standard.		X			
SR-3310	640.3(C)	Revisions to correlate with equipment covered by the scope of Article 392 and to update references in the informational note.		X			
FR-3327	640.3(M)	Revision to correlate cross-reference with revisions made in Article 650.		X			
FR-3311	640.6(A) (2014)	Deletion of requirement redundant to 110.12.		X			
FR-3312	640.21(C)	Addition of new informational note.		X			
FR-3313	640.22	Revisions to include requirement for bonding of metal equipment racks and enclosures and to delete text redundant to 110.12.		X			
SR-3305	640.25	Revisions to required marking of speaker assemblies for use in fire resistance-rated assemblies and to remove reference to withdrawn standard in the informational note.		X			
FR-3315,FR-3316	640.42(B) and (C)	Revisions to correct terminology associated with optical fiber cables.		X			
SR-3306	640.42(B) and (C)	Editorial revisions for clarity and MOS compliance.		X			
FR-3317	640.43	Revisions to include requirement for bonding of metal equipment racks and to delete text redundant to 110.12.		X			
	Article 645	**Information Technology Equipment**					
FR-3414	Article 645 Informational Note	**Revision to update title of referenced standard.**		X			
FR-3338	645.1	Revision to update title of referenced standard.		X			
FR-3340	645.2 Informational	Relocation of definition used in more than one article to Article 100.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Technology Equipment						
SR-3308	645.3	Revision to correct reference.		X			
SR-3309	645.3(B)	Revisions to improve usability and to correct cross-references.		X			
SR-3310	645.3(C)	Revision to expand requirement to include bonding of equipment.		X			
FR-3343	645.3(D)	Revision to correct cross-reference.		X			
FR-3344	645.3(E)	Revision to require use of only listed cables and equipment.		X			
FR-3345	645.3(F)	Revision to require use of only listed cable routing assemblies and equipment.		X			
FR-3346	645.3(G)	Revision to require use of only listed cables and equipment.		X			
FR-3347	645.3(H)	New requirement on use of optical fiber cables in ITE rooms.		X			
FR-3350	645.3(I)	Relocation of requirement from 645.6.		X			
SR-3311	645.4	Revisions to clarify intended application of Article 645 and to update title of referenced standard.		X			
SR-3312	645.5(E)	Revisions to improve usability, to correlate with the requirements in 645.3 for fire alarm and coaxial cables, and to update title of referenced standard in informational note.		X			
SCR-081	645.5(F)	Revisions limiting unsupported cables to underfloor installation only and to add new informational note.		X			
FR-3350	645.6 (2014)	Relocation to 645.3(I).		X			
SR-3314	645.10(A)(4) Informational Note	Update title and edition date of referenced standard.		X			
SR-3315	645.10(B)	Revisions on how information can be conveyed to first responders, to create table of cross-references for underfloor wiring, to update referenced requirements, and to update edition date of standard referenced in informational note.		X			
FR-3356	645.18	New requirement for surge protection of equipment supplying power to critical operations data systems that correlates with surge protection requirements in Article 708 for critical operations power systems.			X	$ 260 / circuit	
	Article 646	**Modular Data Centers**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-3320	646.1 Informational Note No. 2	Update edition date of referenced standard.		X			
FR-3398	646.2 Modular Data Center	Revision to upper voltage rating of MDCs and to clarify applicability of referenced product standards and update edition date of one of the referenced standards in Informational Note. No. 2.		X			
SR-3321	646.3(B)	Revisions to improve usability and to correct cross-references.		X			
FR-3399	646.3(D)	Revision to correct cross-reference.		X			
FR-3400	646.3(E)	Revision clarifying that only listed cable and equipment can be used in an MDC.		X			
SR-3322	646.3(F)	Revision clarifying that all equipment, cables, raceways, and cable routing assemblies are required to be listed.		X			
FR-3402	646.3(G)	Revision clarifying that only listed cable and equipment can be used in an MDC.		X			
FR-3404	646.3(L)	Revisions to add reference to 645.4 in (L)(3) and to delete text in (L)(6) and (7) (2014) because it is covered elsewhere in 646.3.		X			
FR-3405	646.4 Informational Note	Editorial		X			
SR-3324	646.7(B) Exception and Informational Note No. 1	Revision to create new exception based on statement from Informational Note No. 2 (2014) and to update edition date of referenced standard in Informational Note No. 1.		X			
SR-3325	646.7(C) Informational Note	Revision to update edition date of referenced standard.		X			
SR-3326	646.13	Revision to include “information technology equipment” to the types of equipment enumerated.		X			
FR-3407	646.19(A) and (B)	Editorial: MOS		X			
FR-3408	646.20(B) Informational Notes	Revisions for MOS compliance and for consistency with the 1000-volt threshold used elsewhere in the Code.		X			
FR-3409	646.21	Revisions for consistency with similar requirement in Article 480 and to add other types of battery supports.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Article 647	**Sensitive Electronic Equipment**					
FR-3352	647.30	Revision of terminology associated with conductors supplying sensitive electronic equipment.		X			
	Article 650	**Pipe Organs**					
FR-3318	650.1	Revision of scope to clarify types of circuits covered in Article 650 and addition of new informational note.		X			
FR-3319	650.2	New section with definitions for electronic organ, pipe organ, and sounding apparatus.		X			
FR-3320	650.3	Revision to clarify relationship between Article 650 and Chapters 1 through 7.		X			
FR-3321	650.4	Revision to specify the dc power supply be listed and inclusion of new informational note on typical characteristic of organ power supplies.		X			
FR-3322	650.5	Revisions requiring double insulation of power supplies and bonding of metal enclosures containing power supplies.		X			
FR-3323	650.6	Editorial		X			
FR-3324	650.7	Revisions to methods for conductor splicing, support of internal wiring, and tags for abandoned internal wiring.		X			
FR-3325	650.8	Revision to maximum overcurrent protection for conductor sizes 20 AWG through 28 AWG.		X			
FR-3326	650.9	New requirement and associated informational note on isolating conductive parts to preclude accidental contact.		X			
	Article 660	**X-Ray Equipment**					
FR-3333	660.5	Revision on location of and access to disconnecting means with new exceptions permitting alternative approaches.		X			
	Article 665	**No changes**					
	Article 668	**Electrolytic Cells**					
SR-3317	668.1	Editorial and update of referenced standard edition date in Informational Note No. 2.		X			
FR-3334	668.11(B)	Editorial: MOS		X			
	Article 669	**Electroplating**					
SR-3319	669.6 A) and (B)	Revision to dc voltage that triggers requirements for insulated supports and protection against accidental contact.		X			
	Article 670	**Industrial Machinery**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3335	670.1	Revision to correlate with upper voltage rating for insulated conductors covered in Tables 310.15(B)(16) through 310.15(B)(20).		X			
SR-3336	670.5	Revisions to amend "fault current" to "short-circuit current" and add short-circuit current field marking requirement.		X			
FR-3357	670.6	New requirement for surge protection of equipment having safety interlock circuits.			X	$ 260 / circuit	
	Article 675	**Electrically Driven or Controlled Irrigation Machines**					
FR-5546	675.16	Editorial: MOS		X			
	Article 680	**Swimming Pools, Fountains, and Similar Installations**					
FR-4860	680.2 Electrically Powered Pool Lift	New definition to correlate with requirements for this type of equipment in new Part VIII of Article 680.		X			
FR-4873	680.2 Storable Swimming, Wading, or Immersion Pools; or Storable/Portable Spas and Hot Tubs	Revision to clarify location of pools, spas, or hot tubs with nonmetallic polymeric or inflatable walls covered by this definition.		X			
FR-4850	680.3	Deletion of cross-reference requirement covered by 90.3.		X			
SR-4815	680.4	Revision to require listing of products and equipment associated with swimming pool installations.		X			
SR-4816	680.7	New requirement on environmental exposure certification and materials for grounding and bonding termination and connection hardware.		X			
FR-3883	680.7 through 680.12 (2014)	Revision to renumber sections as 680.8 through 680.13.		X			
FR-4853	680.11	Revision to wiring methods, cover requirements, and allowable function for underground wiring installed near or under swimming pools.		X			

Table 11. 2017 National Electric Code Change Summary								
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4854	680.12	Revision and new informational note related to corrosive environments typical to most equipment rooms and pits containing equipment associated with pools, spas, hot tubs, and similar bodies of water.		X			
SCR-043	680.14(A) and (B)	New requirement specifying conditions under which an area is considered to be a corrosive environment and for certification/identification of the wiring methods used in such locations.		X			
SR-4818	680.21(A)(1)	Revision to establish requirements for installations in corrosive and in noncorrosive environments.		X			
SR-4818	680.21(A)(2) (2014)	Deletion of requirement because it does not address a condition unique to the locations covered by Article 680 and is covered by general rules of Chapter 3.		X			
SR-4818	680.21(A)(2)	Revision requiring listed fittings.		X			
SR-4818	680.21(A)(3) (2014)	Deletion of requirement because it does not address a condition unique to the locations covered by Article 680 and is covered by general rules of Chapter 3.		X			
FR-4856	680.22(A)(2)	Revision to distance and device type requirements for receptacles supplying circulating pumps and other similar function equipment.		X			
SR-4819	680.22(B)(7)	New requirement covering gas-fired equipment with low-voltage ignition systems.		X			
SR-4820	680.23(A)(2)	Revision requiring equipment to be “labeled” and “identified” in addition to “listed.”		X			
FR-4858	680.23(A)(3)	Revision requiring GFCI protection for personnel performing any maintenance/service activity associated with underwater luminaires operating above the “low-voltage contact limit.”		X			
FR-4862 SCR- 41	680.23(F)(1)	Revisions to separate requirements for installations in corrosive environments from those in noncorrosive environments and to add "power supplies" for pool lights in the exception.		X			Clarity
FR-4861	680.23(F)(3)(2)	Revisions to use correct term for the conductor used to ground equipment and to include bonding jumpers required in nonmetallic raceways connected to underwater luminaires.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-4821	680.24(A)(1)	Revision requiring equipment to be "labeled" and "identified" in addition to "listed."		X			
SR-4829	680.25(A)	Revisions to separate requirements for installations in corrosive environments from those in noncorrosive environments and to incorporate grounding requirements unique to Article 680 installations formerly located in 680.25(B).		X			
FR-4864	680.25(B) (2014)	Revisions to relocate grounding requirement unique to Article 680 installations and to delete requirements covered elsewhere in the Code.		X			
FR-4865	680.26(B)(2)	Revision clarifying extent of perimeter surface area covered by bonding requirement.		X			
FR-4866	680.27(A)(2)	Revision eliminating restriction on installing only one type of LFNC.		X			
FR-4877	680.27(B)(1) and (2)	Revisions to add exceptions recognizing availability of listed pool cover systems operating at or below the "low-voltage contact limit" and to delete informational notes referencing basic requirements on equipment installed in wet or damp environments.		X			
FR-4869	680.28	New requirement covering protection of circuits supplying electrical components operating above the low-voltage contact limit that are associated with gas-fired water heaters for pools, spas, and similar bodies of water. Now requires GFCI protection.			X	$ 25 / circuit	
FR-4867	680.41	Revision to align with term defined in Article 100.		X			
SR-4823	680.42(B)(1)	Revision requiring equipment to be "labeled" and "identified" in addition to "listed."		X			
FR-4868	680.42(C)	Revisions limiting application of requirement to interior branch circuits only and to include new informational note referencing 680.25 for feeder requirements.		X			
SR-4825	680.43(D)(2)	Revision requiring equipment to be "labeled" and "identified" in addition to "listed."		X			
SR-4826	680.44(A)	Revision requiring equipment to be "labeled" and "identified" in addition to "listed."		X			
SR-4827	680.62(A)(1)	Revision requiring equipment to be "labeled" and "identified" in addition to "listed."		X			
FR-4870	680.74	Revisions to restructure requirement to improve usability, to clarify those items not required to be bonded, and to include blower		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		motors that are part of a hydromassage bathtub assembly.					
FR-4859 SR-4830	Part VIII, 680.81 through 680.85	New series of requirements covering the certification, marking, protection, and field installation of "electrically powered pool lifts."		X			
	Article 682	**Natural and Artificially Made Bodies of Water**					
FR-4871	682.2	Revision to expand GFCI protection for personnel to all receptacles of the specified rating and configuration installed within the datum plane.		X			
	Article 685	**Integrated Electrical Systems**					
FR-3337	Table 685.3	Revisions to update Article 430 reference and to expand 705.12 reference to include entire section.		X			
	Article 690	**Solar Photovoltaic (PV) Systems**					
FR-0949 SR-0928	690.1	Revisions to correlate with new Article 691 and to clarify that energy storage systems and loads supplied by the PV system output are not within the scope of Article 690. The associated figures have been revised accordingly.		X			
FR-0950	690.2 Array	Revision to include arrays producing alternating current.		X			
FR-0958	690.2 Bipolar Photovoltaic Array	Revision to clarify this type of array produces only direct current.		X			
FR-0951	690.2 Blocking Diode	Deletion of definition because it is no longer used in Article 690.		X			
FR-0951	690.2 Building Integrated Photovoltaics	Deletion of definition because it is no longer used in Article 690.		X			
FR-0952	690.2 DC-to-DC Converter Output Circuit	New definition for term introduced into 2017 Article 690 requirements.		X			
FR-0952	690.2 DC-to-DC Converter	New definition for term introduced into 2017 Article 690 requirements.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Source Circuit						
SR-0932	690.2 Functional Grounded PV System	New definition to distinguish PV systems having a reference potential to ground from those that are solidly grounded.		X			
FR-1002	690.2 Generating Capacity	New definition for term introduced into 2017 Article 690 requirements.		X			
FR-0959	690.2 Interactive System	Revisions to delete redundant term and to remove language describing energy storage systems based on inclusion of new Article 706.		X			
FR-0953	690.2 Interactive Inverter Output Circuit	New definition to distinguish interactive inverter output conductors from feeder and service conductors.		X			
FR-0960	690.2 Inverter Input Circuit	Revision to remove detail that could unnecessarily constrain connection configurations.		X			
FR-0960	690.2 Inverter Output Circuit	Revision to remove detail that could unnecessarily constrain connection configurations.		X			
FR-0961	690.2 Multimode Inverter	Revision to recognize that interactive connections are not made exclusively to utility sources.		X			
FR-0952	690.2 Photovoltaic System DC Circuit	New definition used in general requirements covering all dc conductors of a PV system.		X			
SR-0931	690.2 Photovoltaic System Voltage	Deletion of definition to correlate with other revisions that specify applicability to dc systems, ac systems, or both.		X			
FR-0956	690.3	Deletion of requirement deemed unnecessary based on proper use of code structure per 90.3.		X			
FR-0957 SR-0933	690.4(B)	Revision to include field labeling as an equipment certification option.		X			
FR-0963	690.4(D)	Revisions permitting multiple PV systems to be installed in or on a building or structure and the requisite directory at each system		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		disconnecting means where the systems are located remotely from each other.					
FR-0962	690.4(E)	New requirement on prohibited location (bathroom) of PV equipment and PV system disconnecting means.		X			
FR-0991	690.5 (2014)	Relocation to 690.41.		X			
FR-0964	690.6(C)	Deletion of requirement because rules for ac and dc circuit disconnecting means are adequately covered in Part III of Article 690.		X			
FR-0964	690.6(D)	Deletion of outdated text that did not establish requirement unique to ac modules.		X			
FR-1020 SCR-062	690.7	Revision of first paragraph provides description of maximum PV system dc circuit voltage, establishes maximum dc circuit voltages based on occupancy type, and exempts PV dc equipment rated 1500 volts or less from Parts II and III of Article 490.		X			
FR-1020 SCR-063	690.7(A)	Revision simplifies existing requirements for calculating maximum system voltage of dc PV source and output circuits and adds new option with associated informational note for calculating maximum system voltages where generating capacity is 100 kW or more.		X			
FR-1020 SCR-063	690.7(B) (2014)	Deletion of requirement referencing Article 210 per 90.3.		X			
FR-1020 SCR-064	690.7(B)	New requirement on calculating maximum voltages for dc-to-dc converter source and output circuits.		X			
FR-1020	690.7(C) (2014)	Relocation to first paragraph of 690.7.		X			
FR-1020, SR-0938	690.7(C)	Relocation from 690.7(E) in 2014 NEC. Revisions to conditions under which maximum bipolar source and output circuit voltage is determined. The condition on circuit conductor grounding has been revised to specify other than solidly grounded connections and now includes the text formerly expressed as an exception.		X			
FR-1020	690.7(D) (2014)	Deletion of requirement that is not unique to PV systems and is adequately covered by 110.27.		X			
FR-1020	690.7(E) (2014)	Relocation with revisions to 690.7(C).		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-0966 SCR-065	690.8(A)(1)	Revision to provide alternative method and associated informational note covering engineering supervision of source circuit current calculations for systems having a generating capacity of 100 kW or more.	X			Possible 30% reduction in conductor size	
FR-0968	690.8(A)(5)	Revision amending applicability from dc-to-dc converter output circuits to dc-to-dc converter source circuits.		X			
FR-0968	690.8(A)(6)	New requirement for determining dc-to-dc converter output circuit current.		X			
SCR-066	690.8(B)	Revisions to include adjustable electronic overcurrent protective devices and for clarity and MOS compliance.		X			
FR-0972 SCR-100	690.9(A)	Revisions to clarify application of overcurrent protection to PV system conductors and equipment and where overcurrent protection is required for systems that are connected to both inherently power-limited sources and sources with higher current availability. Exception revised to include dc- to-dc converter source circuits.		X			
SR-0942	690.9(B)	Revisions to include requirement for overcurrent protective devices used in the dc portion of a PV system be listed for use in PV systems, to add clarity by arranging requirements and former exception text into a list, and to add adjustable electronic devices as a protection method.		X			
FR-0972	690.9(C) (2014)	Deletion because requirement has been integrated into 690.9(B).		X			
FR-0972 SR-0943	690.9(C)	Revision that adds text from 690.9(D) in the 2014 NEC amended to apply same equipment and conductor OCPD requirement for to grounded and ungrounded PV dc systems.		X			
FR-0972	690.9(D) (2014)	Amended requirement moved to 690.9(C).		X			
FR-0972	690.9(D)	Relocation, without revision, from 690.9(F) in 2014 NEC.		X			
FR-0972 SR-0943	690.9(E) (2014)	Deletion based on revision made to 690.9(C).		X			
FR-0972	690.9(F) (2014)	Relocation to 690.9(D)		X			
FR-0970	690.10			X			

Table 11. 2017 National Electric Code Change Summary								
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SCR-101		Revision to reference 710.15 for requirements covering stand-alone systems.					
SCR-101	690.10(A) through (D)	Relocation to 710.15 in new Article 710, "Stand-Alone Systems."		X			
FR-0971 SR-0945	690.11	Revisions to apply arc-fault protection requirement to all PV system dc circuits, to remove performance requirements more appropriately covered in product standards, and to add exception exempting conductors associated with certain PV installations from the arc-fault requirement.	X				
FR-1008 SR-1002 SCR-102	690.12	Revisions to specify objective of rapid shutdown and to provide exception exempting circuits associated with certain PV installation from the rapid-shutdown requirement. Cross-reference to 690.56(C) deleted because it is expected that designers, installers, and inspectors will review and implement all applicable marking requirements from 690.56, including those covering rapid shutdown.		X			
FR-1008 SR-1002 SCR-102	690.12(A)	Revision to clarify that rapid shutdown applies only to conductors of circuits supplied by the PV system.		X			
FR-1008 SR-1002 SCR-102	690.12(B)	Revisions to establish a boundary creating two areas of rapid shutdown protection, to provide separate requirements for protection inside and outside of the boundary, and to specify performance requirements for the rapid shutdown equipment inside and outside the boundary.		X			
FR-1008 SR-1002 SCR-102	690.12(C)	New requirements covering the operation, indication, location, number of, and type of device(s) used to initiate rapid shutdown.		X			
FR-1008 SR-1002 SCR-102	690.12(D)	Revision specifying equipment used for rapid shutdown protection must be listed specifically for providing that protection.		X			
FR-1014	690.13	Revisions to specify that all PV systems must be provided with a means to disconnect the PV system from all other wiring systems and to clarify the disconnecting means must open all circuit conductors.		X			
SR-0946	690.13(A)	Revisions to correlate with requirements for rapid shutdown specified by 690.12 and to move bathroom prohibition to 690.4(E).		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0947	690.13(B)	Revisions to require marking that indicates the position (on or off) of the disconnecting means and to mark the disconnecting means with a specific warning where line and load terminals are energized when it is in the open position.		X			
FR-1014	690.13(C)	Revision requiring SUSE (suitable for use as service equipment) rated equipment only where PV system is connected on the supply side of the service disconnecting means.		X			
FR-1014	690.13(D)	Revision and new informational note to clarify that more than one PV system can be installed and each PV system can be provided with a maximum of six disconnecting means. New text added to clarify what constitutes the PV system disconnecting means where multiple interactive inverters are interconnected to other power sources through a single ac disconnecting means.		X			
FR-1014	690.13(E) (2014)	Specific text of this requirement deleted because the revision to the general rule for PV disconnects in 690.13 meets the intent of 690.13(E) as stated in the 2014 NEC.		X			
SR-0948	690.13(E)	New requirement establishing the minimum ratings for PV disconnecting means.		X			
SCR-103	690.13(F)	New requirement specifying the requisite conditions for PV system disconnecting means.		X			
FR-1013	690.15	Revisions and addition of new informational note to clearly state purpose of the isolating devices/disconnecting means required by this section, to specify which conductors of the circuit are subject to the requirement, and to establish current level at which isolating devices (connectors) are not permitted to be used.		X			
FR-1013	690.15(A)	Revision to establish proximity of isolating device or equipment disconnecting means to the equipment it serves to isolate.		X			
FR-1013	690.15(B)	New requirement on interrupting rating of equipment disconnecting means used for equipment isolation.		X			
SR-0950	690.15(C)	New requirement covering performance, type, and marking of equipment isolating devices.		X			
FR-1013	690.15(D)	New requirement covering performance, type, and marking of equipment disconnecting means.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-1009	690.16 (2014)	Deletion of section because requirements are now covered by 690.15.		X			
FR-1009	690.17 (2014)	Deletion of section because requirements are now covered by 690.13 and 690.15.		X			
FR-1009	690.18 (2014)	Deletion of requirement that was more oriented toward maintenance and servicing of modules rather than their installation.		X			
SR-0953	690.31(A)	Revisions to include Type MC cable as a wiring method, to relocate and reidentify Table 690.31(E) as Table 690.31(A) for application to all wiring methods, and to remove informational note containing outdated reference to conductors used for module interconnection.		X			
SR-0954	690.31(B)	Revisions to consolidate redundant requirements, to specify identification is required for "accessible" conductors, and to require that only solidly grounded conductors comply with 200.6.		X			
SR-0955	690.31(C)(1)	Revision to reference Articles 334 and 338 for supporting and securing of single-conductor.		X			
SR-0955	690.31(C)(2)	Revision to replace "labeled" with "identified" relative to use of single-conductor PV wire in cable trays.		X			
SR-0956	690.31(D)	Revision to simplify requirement by specifying multiconductor cables be listed and identified for the conditions associated with installations in outdoor locations.		X			
SR-0957	690.31(E)	Revisions to clarify use of flexible cords, flexible cables, and stranded copper PV wire for making connections to moving parts of tracking arrays and to add new table establishing the minimum number of strands for PV wire sizes 18 AWG through 1000 kcmil.		X			
SR-0959	690.31(G)	Revisions to incorporate new term "PV system dc circuits" and to specify the requirement applies only to PV systems in or on buildings.		X			
SR-0961	690.31(G)(3)	Revision to incorporate new term "PV system dc circuits."		X			
SR-0962	690.31(G)(4)	Revision to incorporate new term "PV system dc circuits."		X			
FR-0978	690.31(I)	Revisions to remove the term "photovoltaic system voltage" and to clarify the type of bipolar system requiring a notice warning of		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		the hazard resulting from disconnecting the grounded conductor.					
SR-0963	690.31(J)	Deletion of requirement addressing a hazard that could not occur in a two-wire circuit.		X			
SR-0964	690.33	Revision to exempt connectors associated with certain building integrated photovoltaic (BIPV) products.		X			
SR-0965	690.33(C)	Revision to differentiate between the dc and ac circuit voltage at which a tool is needed to open a connector.		X			
FR-0982	690.35	Deletion of section because its provisions were either covered elsewhere or were not prohibited by Article 690. There is no need to distinguish between ungrounded and reference grounded PV system/circuits in regard to wiring methods.		X			
FR-0983	Article 690 Part V	Revision to add "bonding" to title of Part V.		X			
SR-0966	690.41(A)	Revision to clarify methods of grounding PV systems by distinguishing between functional (reference) and solidly grounded systems for correlation with related changes throughout Article 690.		X			
SR-0966	690.41(B)	Requirements for ground-fault protection have been relocated from 690.5 and revised to correlate with related changes on "functional" grounded systems throughout Article 690. Warning label requirement deleted as a result of new equipment isolation requirements in 690.15.		X			
SR-0967	690.42	Revision to clarify the location of the grounding connection for systems with dc ground-fault protection and dc systems that are solidly grounded. Language from exception in 2014 NEC has been incorporated into the general rule.		X			
FR-0993	690.43	Revisions to consolidate and clarify equipment bonding requirements and to recognize the increased availability of products listed, labeled, and identified for making bonding connections to module frames and metal support structures.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0968	690.45	Revision to clarify basis for sizing equipment grounding conductors for PV source and PV output circuits.		X			
FR-0985	690.46	Revised to follow the general requirement covering the use of solid conductors in raceways.		X			
FR-0995	690.47(A)	Revisions and new informational note to clarify and differentiate grounding electrode connection requirements for reference (functional) grounded systems from those required for solidly grounded systems.		X			
FR-0995	690.47(B)	Revision that changes connection of an array frame or structure from a mandatory to a permissive requirement.		X			
FR-0986	690.48	Deletion of requirement related to maintenance/repair procedure on a completed installation.		X			
FR-0986	690.49	Deletion of requirement related to maintenance/repair procedure on a completed installation.		X			
SR-0970	690.53	Revisions to clarify that the requirement applies to dc PV system disconnecting means and to required dc equipment disconnecting means.		X			
SR-0971	690.55	Revision to specify required marking of PV system output circuit conductors where they are connected to an energy storage system.		X			
FR-0997	690.56(A)	Revisions to remove detail on acceptance of plaque or directory location and to remove reference to marking requirement for wiring methods in 690.31(G)(4).		X			
FR-0998	690.56(B)	Revision to default to marking requirement specified by 705.10.		X			
FR-0989	690.56(D)	Revisions to provide text, symbols, font color, and other details to be used on signs indicating the type of rapid shutdown provided at a building, to include examples of rapid shutdown signs, to establish requirement for providing a directory where different types of rapid shutdown or systems without rapid shutdown are located on the same building, and to set requirements for identifying the rapid shutdown switch.		X			
SCR-108	Article 690 Part VII	**Revision to Part VII to include only 690.59 referencing Parts I and II of Article 705.**		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-1012	Article 690 Part VIII	**Revision to Part VIII to include only 690.71 containing a reference to new Article 706, "Energy Storage Systems" and 690.72 covering self-regulated PV charge control for systems interconnected with an energy storage system.**		X			
FR-1010	Article 690 Part IX	**Deletion of Part IX because it did not contain requirements unique to PV systems operating over 1000 volts.**		X			
FR-1011	Article 690 Part X	**Deletion of Part X because it did not contain requirements unique to electric vehicle supply equipment supplied by a PV system. EVSE may be supplied by, but is not part of a PV system.**		X			
FR-7511 SCR-110 SCR-111 SCR-112 SR-976 SR-977 SR-978 SR-979 SR-981 SR-982 SR-983 SR-984 SR-985	**Article 691**	**New article with requirements on applicability, installation, equipment approval, engineered design, disconnection, and arc-fault mitigation unique to large-scale photovoltaic electric supply stations. These facilities are no less than 5,000 kW, and not under exclusive utility control.**			X	Undeter-mined	
	Article 692	**Fuel Cell Systems**					
SCR-113	692.1	Revision to create simplified comprehensive scope statement with new informational note describing several modes of fuel cell operation.		X			
FR-0946	692.3 (2014)	Deletion of requirement deemed unnecessary based on proper use of code structure per 90.3.		X			
FR-0946	692.6	Revision to include field labeling as a certification option and edits to provide text consistent with parallel requirements in Articles 690 and 694.		X			
FR-0912, FR-0913	Part VIII	Deletion of Part VIII because the general requirements for installations rated over 1000 volts apply to fuel cells.		X			
	Article 694	**Wind Electric Systems**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-7516	Entire article	Revisions throughout to remove "small" prior to "wind" for correlation with scope of article.		X			
SR-0922	694.1	Revisions to make text similar to that contained in the scopes and associated informational notes of Articles 690 and 692 and to Informational Note Figure 694.1(a) to illustrate that wind power systems may be interconnected with other than utility electric power production sources.		X			
SR-0923	694.2 Guy	Deletion of term that is not unique in application to Article 694.		X			
SR-0924	694.2 Tower	Revision to make term unique in application to Article 694.		X			
FR-0914	694.3	Deletion of requirement deemed unnecessary based on proper use of code structure per 90.3.		X			
SR-0925	694.7(B)	Revisions to include field labeling as a certification option and to include text and associated informational note related to the process involved in the certification and listing of wind electric systems.		X			
FR-0944	694.7(D)	Revision to the term used to describe the location at which Type 3 SPDs are permitted to be installed.		X			
FR-0915	694.7(F)	Revisions to include field labeling as a certification option and to delete unnecessary description of pole or tower material.		X			
SR-0921	694.7(G)	New requirement providing working space clearances unique to Article 694.		X			
FR-0917	694.10(A)	Revision removing cross-reference to requirements that have been deleted from Article 694.		X			
FR-0916	694.18	Deletion of requirements covering stand-alone systems based on inclusion of new Article 710.		X			
FR-1024	694.40	Revisions to use terminology that correlates with Article 250, to remove unnecessary cross-references, and to provide additional guidance in the informational note.		X			
FR-0999	694.60	Revision requiring that equipment be “labeled” in addition to being “listed” and “identified.”		X			
FR-0918	Part VIII	Deletion of Part VIII because the general requirements for installations rated over 1000 volts apply to wind electric systems.		X			
	Article 695	**Fire Pumps**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3651	695.3 Informational Note	New informational note containing NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, references covering power supply reliability.		X			
FR-3652	695.3(C)(1) and (2)	Revisions to provide more specific cross-references.		X			
FR-3653	695.4(B)(1)(3)(b)	Deletion of text to correlate with change made in 695.4(B)(2)(a)(1) on sizing feeder overcurrent protective devices at multibuilding campus-style complexes.		X			
FR-3653	695.4(B)(2)(a)(1)	Revision to clarify requirement for sizing feeder overcurrent protective devices at multibuilding campus-style complexes.		X			
SR-3622	695.4(B)(3)a)(1) through (4)	New exception clarifying that a normal source disconnecting means at multibuilding campus-style complexes is only subject to the requirement for lockable disconnecting means.		X			
SR-3623	695.6(A)(2)	Revisions clarifying that certified cable and raceway systems are available to meet the requirement for 2-hour protection from fire and editorial corrections to Informational Note No. 1.		X			
FR-3655	695.6(D)	Revision eliminating restriction on installing only one type of LFNC.		X			
SR-3624	695.6(E)	Revision clarifying that GFPE is not prohibited in power circuits upstream of the fire pump power circuit to align with NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection.		X			
SR-3625	695.14(E)	Revisions eliminating restriction on installing only one type of LFNC and to include EMT as a permitted wiring method.	X			Varies	EMT allowed
SR-3626	695.14(F)	Revisions to add control circuit supervision and failure mode requirement, to add new informational note with referencing NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, and to revise and relocate existing informational note on electrical circuit protective systems.		X			
FR-3658	695.15	New requirement covering surge protection of fire pump controllers.			X	$ 260 / pump	Safety
	Chapter 7	**Special Conditions**					
	Article 700	**Emergency Systems**					

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3605	700.1	Revision to update edition date of referenced standard in Informational Notes No. 2 and No. 3.		X			
FR-3607	700.2 Branch Circuit Emergency Lighting Transfer Switch	New definition and associated Informational Note for equipment listed to transfer power at the branch circuit level.		X			
SR-3601	700.2 Luminaire, Directly Controlled	New definition and associated informational note for dimmable luminaires that are automatically restored to full illumination when power is transferred from normal to emergency source.		X			
FR-3608	700.3(C)	Revision to expand requirement to other emergency system equipment.		X			
FR-3616	700.3(F)	New requirement to provide means to connect a portable or temporary alternate power source when permanently installed alternate power source is out of service for maintenance or repair.			X	$3,000 - $5,000 / generator	
FR-3617	700.4(B)	Deletion of last sentence to correlate with new requirement in 700.3(F).		X			
FR-3609	700.5(C)	Revision to expand listing requirement to all equipment voltage ratings.		X			
FR-7518	700.5(F)	New requirement for field marking of transfer equipment with short-circuit current rating.		X			
FR-3638	700.6(D)	Revision covering the location of ground-fault sensing equipment where multiple alternate sources are connected in parallel.		X			
FR-3611	700.7(A)	Revision to address premises having multiple on-site alternate sources of emergency power.		X			
FR-3612, SCR-085	700.10(A)	Revision to expand applicability to raceways, cables, and receptacles.		X			
FR-3613	700.10(B)(5)	Revision and new informational note figures to clarify compliant options for supplying common bus from which emergency circuits are supplied.		X			
SR-3612	700.10(D)	Revision to add new occupancy types where emergency feeders are required to be protected from fire.		X			
SR-3604	700.10(D)(1)	Revisions to clarify methods of protecting emergency feeders from fire and to correlate		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		terminology with that used in product certification standards.					
SR-3611	700.10(D)(3)	Revisions to add control circuit supervision and failure mode requirement.			X	$ 500 / circuit	
SR-3613	700.12	Revision to add new occupancy types where the alternate source of emergency power is required to be protected from fire. Now includes health care where persons are not capable of self-preservation and educational occupancies with more than 300 occupants.			X	Varies with scope	Sprinkled or 1-hour fire rating
SR-3606	700.12(A)	Revisions to delete performance and maintenance related inspection requirements that are addressed in NFPA 111.		X			
SR-3607	700.12(F)(2)(1)	Revisions to remove provision that is part of the product certification process and improve readability.		X			
FR-3619	700.16	Editorial.		X			
FR-3620	700.25	New requirement establishing conditions of use for transfer switches installed in branch circuits.		X			
FR-3621	700.31	Revision to improve technical accuracy.		X			
	Article 701	**Legally Required Standby Systems**					
FR-3622	701.1	Revision to update edition date in Informational Note No. 1.		X			
FR-3623	701.3(C)	Revision to expand maintenance requirement to other legally required standby system equipment.		X			
FR-3624	701.5(C)	Revision to expand listing requirement to all equipment voltage ratings.		X			
FR-7519	701.5(D)	New requirement for field marking of transfer equipment with short-circuit current rating.		X			Enforcement
FR-3625	701.6(A)	Revision to clarify condition of alternate power source operation covered by the requirement.		X			
SR-3608	701.6(D)	Revision covering the location of ground-fault sensing equipment where multiple alternate sources are connected in parallel.		X			
FR-3626	701.7(A)	Revision to address premises having multiple on-site alternate sources of legally required standby power.		X			
SR-3609	701.12(A)	Revisions to delete performance and maintenance related inspection requirements that are addressed in NFPA 111.		X			
SR-3610	701.12(G)(4)	Revisions to remove provision that is part of the product certification process and improve readability.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-3629	701.26	Revision to improve technical accuracy.		X			
	Article 702	**Optional Standby Systems**					
FR-7520	702.5	New requirement for field marking of transfer equipment with short-circuit current rating.			X	$ 25 / sign	Enforcement
FR-3630	702.6(A)	Revision to clarify condition of alternate power source operation covered by the requirement.		X			
FR-3631	702.7(A)	Revision to address premises having multiple on-site alternate sources of legally required standby power.		X			
FR-3633	702.12(A)	Revision of title to clarify application of requirement.		X			
FR-3632	702.12(C)	New requirement for connection of portable generators to premises wiring systems using power inlets rated 100 amperes and greater. Requires an integral disconnect so that the generator connected or disconnected under load.			X	$1,500 / generator at 100 Amp	
	Article 705	**Interconnected Electric Power Production Sources**					
FR-1042	705.2 Interactive Inverter Output Circuit	Revisions to recognize that interactive connections are not made exclusively to utility sources.		X			
SR-0989	705.2 Microgrid Interconnect Device (MID)	New definition for equipment used with an onsite generation and distribution system to disconnect from and operate in parallel with a primary power source.		X			
SR-0988	705.2 Microgrid System	New definition for on-site premise power generation, storage, and distribution system that cannot operate independently from or in parallel with a primary power source.		X			
SR-0990	705.2 Multimode Inverter	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
SR-0991	705.2 Stand-Alone System	Relocation of definition used in more than one article to Article 100.		X			
SR-0992	Table 705.3	Addition of references to new related articles.		X			
SR-0993	705.6	Relocation from 705.4 and revisions to identify typical power sources that are interconnected, to include field labeling as an equipment certification option, and to recognize that		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		interactive connections are not made exclusively to utility sources.					
SR-0994	705.8	Relocation from 705.6 and editorial revision.		X			
FR-1043	705.10	Revisions to clarify where plaques or directories are to be located and to require the markings comply with 110.21(B).		X			
SR-0995	705.12(B) and (C) (2014)	Deletion resulting from revisions to 705.12 specifying interconnections are made either on the supply side or on the load side of the service disconnecting means.		X			
SR-0997	705.12(B)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
FR-1025	705.12(B)(1)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
FR-1025	705.12(B)(2)(1)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
FR-1025	705.12(B)(2)(2)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
FR-1025	705.12(B)(2)(3)(a)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
FR-1025	705.12(B)(2)(3)(b)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
SR-0997	705.12(B)(2)(3)(d)	New requirement to accommodate interconnected sources in a center-fed panelboard installed at dwelling units.		X			
SR-0997	705.12(B)(2)(3)(E)	Revision to clarify requirement covering engineered approach to busbar protection.		X			
SR-0997	705.12(B)(5)	Revision to expand applicability to all sources of power that are interconnected with the primary source.		X			
FR-1025	705.12(B)(6) (2014)	Deletion of requirement due to unavailability of equipment to provide required circuit protection.		X			
FR-1026	705.21	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SCR-114	705.22	Revisions for clarity, to correlate requirements for rating of disconnecting means with those contained in Article 690, to provide for warning messages consistent with those contained in Article 690, and to reference 110.25 for locking requirements.		X			
SR-0999	705.23	New requirement for a means to disconnect/isolate interactive systems from other sources and equipment.		X			
FR-1027	705.30(D)	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
FR-1022	705.32	Editorial: MOS		X			
FR-1036	705.40	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
FR-1036	705.42	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
FR-1030	Part II — Interactive Inverters	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
FR-1037	705.60(B)	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
SCR-115	705.60(C)	New requirement for the ampacity of power source output circuit conductors connected to feeder conductors having a higher ampacity than the output conductors.		X			
FR-1038	705.70	Revisions to recognize that interactive inverters are not used exclusively with utility sources and to use acronym for alternating and direct current.		X			
FR-1033	705.82	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
FR-1034	705.95(B)	Revision to recognize that interactive inverters are not used exclusively with utility sources.		X			
FR-1035	705.100(A) and Informational Note	Revisions to recognize that interactive inverters are not used exclusively with utility sources and for MOS compliance on the use of 3-phase.		X			
FR-1045	Part IV — Microgrid Systems	New Part IV containing requirements for power source(s) that can be operated as a microgrid independent of other power sources. - Note: Moved to new Article 710		X			
FR-3662 SR-3643 SR-3639 SR-3640	**Article 706**	**New article covering energy storage systems that includes defined terms and requirements on system classification, equipment certification, disconnecting means,**			X	Undetermined	

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-3641 SR-3642 SR-3644 SR-3647 SR-3645 SR-3646 SR-3648 SR-3649 SR-3650 SR-3651 SR-3652 SR-3653 SR-3654 SR-3655 SR-3656 SR-3657		**connection to other energy sources, location, directories, circuit sizing, overcurrent protection, charge control, electrochemical energy storage systems, flow battery energy storage systems, and other energy storage technologies.**					
	Article 708	**Critical Operations Power Systems (COPS)**					
FR-3634	708.10(A)(2)	Revision to require receptacles supplied from the COPS be equipped with visible means to indicate device is energized.			X	$ 15 / recept	Convenience
FR-3659	708.10(C)(1)	Revision to clarify mandatory intent to use only specified wiring methods.		X			
SR-3605	708.10(D)(2)	Revisions to provide consistency with Article 700 requirements for protecting feeders from fire and to correlate terminology with that used in product certification standards.		X			
FR-3636	708.20(E)	Revision expanding requirement to cover new, in addition to existing, battery technologies.		X			
FR-7521	708.24(E)	New requirement for field marking of transfer equipment with short-circuit current rating.			X	$ 25 / sign	
FR-3660	708.52(B)	Deletion of statement specifying that GFPE is not required for equipment supplied by ungrounded systems.		X			
FR-1045 SR-0987	**Article 710**	**New article covering stand-alone systems that includes requirements on equipment certification, supply capacity, conductor sizing, use of 120-volt circuits to supply 240-volt equipment, energy storage equipment, back-fed circuit breakers, and supply voltage and frequency control.**		X			Enforcement
FR-3663	**Article 712**	**New article covering direct current microgrids that includes defined terms and requirements**			X	Undeter-mined	

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-3627		**on equipment certification, circuit requirements, disconnecting means, wiring methods, ground-fault and arc-fault detection/protection, grounding, marking, overcurrent protection, and systems rated over 1000 volts.**					
	Article 720	**Circuits and Equipment Operating at Less Than 50 Volts**					
	Article 725	**Class 1, Class 2, and Class 3 Remote-Control, Signaling, and Power-Limited Circuits**					
FR-0619	725.1	Revision to replace "appliance" with "utilization equipment."		X			
SR-0609	725.3(C)	Revision to existing exception for permitting cables installed in ducts in accordance with 725.135(B) and new exception permitting cables to be installed in other spaces used for environmental air where installed in accordance with 725.135(C).		X			
FR-0624	725.3	Revision to include new list items (M) for cable routing assemblies and (N) for communications raceways.		X			
FR-0620	725.121(A)(4)	Revision to expand the limited-power circuit equipment permitted as a power source and revision to the informational note referencing additional UL standards.		X			
SCR-025	725.121(C)	New requirement for labeling of limited power circuit output connection points on listed IT equipment and listed industrial control panels and equipment.		X			
SR-0612	725.133	Revision to update the reference to include new section 725.144.		X			
FR-0625	725.135(B)	Editorial		X			
FR-0626	725.135(C)	Revision to permit cables installed in plenum cable routing assemblies and Types CL2P and CL3P cables supported by open metallic cable trays or cable tray systems.		X			
FR-0627	725.135(J)	Revision to permit Type PLTC-ER cable to transition between cable trays and between cable trays and utilization equipment or devices for a distance not to exceed 1.8 m (6 ft) without continuous support.		X			
SR-0620	725.135(K)	Revision to expand permitted installations under modular flooring and planks.		X			
SR-0621	725.135(L)	Revision to expand permitted installations under modular flooring and planks.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-0622	725.135(M)	Revision to expand permitted installations under modular flooring and planks.		X			
SR-0611	725.144	New section to provide requirements for cables that are used for transmission of data and power.		X			
FR-0628	Table 725.154(A)	Revision to include CMUC and permitted use of cable routing assemblies.		X			
SR-0614	725.170	New requirement for listing and marking of equipment for power and data transmission.		X			
SR-0615	725.179	Revision to delete cable routing assemblies and communications raceways to correlate with 725.3(M) and (N).		X			
FR-0630	725.179(A)	Revision to update edition of the referenced standard in the informational note.		X			
FR-0630	725.179(B)-(F) and (H)	Editorial		X			
FR-0630	725.179(G)	Revision to include minimum temperature ratings for Class 2 and 3 cables.		X			
SR-0615	725.179(I)	New requirement for limited power (LP) cables.		X			
	Article 727	**Instrumentation Tray Cable: Type ITC**					
FR-0631	727.4(5)	New exception to permit Type ITC-ER cable to transition between cable trays and between cable trays and utilization equipment or devices for a distance not to exceed 1.8 m (6 ft) without continuous support.		X			
	Article 728	**Fire-Resistive Cable Systems**					
FR-0632	728.4	Revision to delete portion of requirement redundant to 110.2 per NEC arrangement specified in 90.3.		X			
FR-0633	728.5 (C)	Revision to include requirement and associated informational note covering raceway fill for fire- resistive cable systems.		X			
	Article 760	**Fire Alarm Systems**					
SR-0616	760.3(B)	Revision to existing exception for permitting cables installed in ducts and new exception permitting cables to be installed in other spaces used for environmental air where installed in accordance with 760.135(C).		X			
FR-0646	760.3(L)	Revision to include new list item for cable routing assemblies.		X			
FR-0646	760.3(M)	Revision to include new list item for communications raceways.		X			
FR-0635	760.53(B)	Revision to correlate with 300.22 terminology.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-0636	760.133	Revision adds "cable routing assemblies" and correlates with 725.133.		X			
FR-0639	760.135(B)	Revision to correlate with 300.22 terminology.		X			
FR-0640	760.135(C)	Revision to include Type FPLP cables installed in plenum routing assemblies.		X			
FR-0641	Table 760.154	Revision to include permitted use of cable routing assemblies.		X			
SR-0618	760.176	Revision to include minimum temperature ratings for non-power-limited fire alarm cables.		X			
Global FR-0644	760.176(C)	Revision updates edition of the referenced standard in the informational note.		X			
FR-0643	760.176(G)	Revision to require additional marking for conductor size and temperature ratings for cables rated in excess of 60°C (140°F).		X			
SR-0619	760.179(C)	Revision to include minimum temperature ratings for PLFA cables.		X			
Global FR-0644	760.179(D)	Revision updates edition of the referenced standard in the informational note.		X			
FR-0642	760.179(I)	Revision to require additional marking for conductor size and temperature ratings for cables rated in excess of 60°C (140°F).		X			
	Article 770	**Optical Fiber Cables**					
FR-7503	770, Informational Note	Revision deletes the explanatory material that identified changes in terminology from previous editions of the NEC.		X			
FR-4510	770.1	Scope clarification		X			
FR-4511 FR-4513 FR-4514 FR-4515	770.2	Deletion of definitions because defined terms have been relocated to Article 100.		X			
SR-0450	770.2, Exposed (to Accidental Contact)	New informational note referencing additional definitions of exposed in Article 100.		X			
FR-4516	770.3	Editorial		X			
FR-4517	770.12	Relocated to section 770.110.		X			
PI-563, PC-073	770.24	New Informational Note recognizing contaminants may impact optical fiber cable properties.		X			
FR-4519	770.44	New section that provides requirements for overhead outside plant optical fiber cables.		X			
FR-4520	770.47(B)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-4511	770.48(A)	Revision to permit RMC and IMC to extend the point of entry.		X			
FR-4521	770.48(B)	Revision to clarify restrictions for unlisted outside plant cable installed in rigid polyvinyl chloride conduit and electrical metallic tubing.		X			
FR-4522	770.49	Editorial		X			
FR-4523	770.93	Revision deletes the informational note.		X			
FR-4524	770.100(B)(1)	Revision deletes the informational note.		X			
SR-0026	770.100(B)(2)	Revision to include a reference to 250.94(A) for intersystem bonding terminations.		X			
FR-4526	770.100(B)(3)	Revision to clarify that lightning protection system conductors, not just air terminals, are not be used as a part of the grounding electrode conductor or as a grounding electrode		X			
FR-4527	770.100(D), Informational Note No. 1	Revision to clarify that no lightning protection system component may be used to provide the required bonding jumper.		X			
SR-4513	770.110(A)(2)	Revision to include the applications requirements of Table 800.154(b), the listing requirements of 800.182, and for correlation with 770.110(C), cable routing assemblies.		X			
FR-4517	770.110(A)(3)	Relocated from section 770.12.		X			
FR-4529	770.110(C)	Revision to include the reference to listing requirements of 800.182 and the installation requirements of 800.110(C).		X			
FR-4530	770.113	Revision to include cable routing assemblies.		X			
SR-4514	770.113(A)	Revision to include a reference to 770.179.		X			
FR-4532	770.113(B)	Editorial Revisions and updates the edition of the referenced standard in the informational note.		X			
FR-4533	770.113(C)	Revision to include a reference to 800.182 listing requirements for communications raceways and cable routing assemblies, deletes Informational Note No. 2 and updates the edition of the referenced standard.		X			
FR-4534	770.113(D)	Revisions deletes raceways and cable routing assemblies as their requirements are covered in 770.110.		X			
FR-4535	770.113(E)	Revision to include innerduct.		X			
FR-4536	770.113(F)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4537	770.113(G)	Editorial		X			
FR-4537	770.113(H)	Editorial		X			
FR-4538	770.113(I)	Editorial		X			
FR-4539	770.113(J)	Editorial		X			
FR-4540	770.133(B)	Revision combines requirements for "with communication cables" and "with other circuits" under one subdivision.		X			
FR-4541	770.133(C)	Revision adds "Optical Fiber" to the title.		X			
FR-4542	Table 770.154(a)	Revision to correlate with 770.113 and permitted use of cable routing assemblies. Revision to terminology to correlate with 300.22 and deletes Informational Note No. 3		X			
FR-4543	770.179	Revision to require additional marking for conductor temperature ratings for cables rated in excess of 60°C (140°F).		X			
FR-4543	770.179(A), Informational Note	Revision updates edition of the referenced standard in the informational note.		X			
	Chapter 8	**Communications Systems**					
	Article 800	**Communications Circuits**					
FR-7504	800 Communications Circuits, Informational Note	Revision deletes the explanatory material that identified changes in terminology from previous editions of the NEC.		X			
FR-4502, SR- 4504	800.2	Deletion of definitions because defined terms have been relocated to Article 100.		X			
SR-4562	800.2, Exposed (to Accidental Contact)	New informational note referencing additional definitions of Exposed in Article 100.		X			
SR-4519	800.2, Point of Entrance	Revision to delete "from rigid metal conduit (RMC), or from intermediate metal conduit (IMC)" to correlate with 800.48.		X			
SR-4566	800.3(H)	New item to address temperature limitation of conductors.		X			
FR-4888	800.12	Revision to delete section and relocate to 800.110(A).		X			
SR-4522	800.24	Revision to add a reference to 800.170(C) for additional listing requirements. Revision to information notes to update the edition year and titles of referenced standards. New informational note provides possible		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		contamination of optical fiber cables during the construction process.					
FR-4652, SR- 4523	800.44(B)	Editorial: MOS and revision to update the edition year and title of the referenced standard in the informational note.		X			
FR-4653	800.47(A)	Revision to title to correlate with section content and titles in Articles 770 and 820.		X			
SR-4524	800.48	Revision to permit RMC and IMC to extend the point of entry.		X			
FR-4655	800.49	Editorial		X			
FR-4656	800.53	New informational note referencing NFPA 780-2014, Standard for the Installation of Lightning Protection Systems, for separation distances.		X			
FR-4657	800.90(A)(3)	New informational note referencing NFPA 780-2014, Standard for the Installation of Lightning Protection Systems.		X			
SR-4525	800.90(A)(1)	Revision to update edition year and title of the referenced standard in the informational note.		X			
FR-4659	800.93	Revision to title to clarify that it is the non-current-carrying members that are to be grounded.		X			
SCR-027	800.100(B)(2)	Revision to include a reference to 250.94(A) for intersystem bonding terminations.		X			
FR-4662	800.100(B)(3)	Revision to clarify that lightning protection system conductors, not just air terminals, are not be used as a part of the grounding electrode conductor or as a grounding electrode.		X			
FR-4663	800.100(D)	Revision to clarify that no lightning protection system component may be used to provide the required bonding jumper.		X			
FR-4664	800.110(A)(2)	Revision to include the applications requirements of Table 800.154(b) and the listing requirements of 800.182 and for correlation with 800.110(C), cable routing assemblies.		X			
FR-4688	800.110(A)(3)	Relocation from 770.12.		X			
FR-4665	800.110(C)	Revision to include the reference to listing requirements of 800.182 and the installation requirements of 800.110(C).		X			
FR-4666	800.113(A)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4667	800.113(B)	Editorial revisions and updates the edition of the referenced standard in the informational note.		X			
FR-4668	800.113(C)	Revision to include a cable routing assemblies and to update the edition year of the referenced standard in the informational note.		X			
FR-4669	800.113(D)	Editorial		X			
FR-4670	800.113(E)	Revision to include innerduct.		X			
FR-4671	800.113(J)	Revision to expand permitted installations under modular flooring and planks.		X			
FR-4672	800.113(K)	Revision to expand permitted installations under modular flooring and planks.		X			
FR-4673	800.113(L)	Revision to expand permitted installations under modular flooring and planks.		X			
SR-4535	800.133(A)(1)	Revision to combine requirements for "optical fiber and communication cables" and "other circuits" under one subdivision.		X			
FR-4675	800.133(A)2), Exception No. 1 and 2	Editorial: MOS		X			
FR-4676, SR- 4535	Table 800.154(a)	Revision to correlate with 800.113 and permitted use of cable routing assemblies. Revision to terminology to correlate with 300.22 and Informational Note No. 1 referring to 800.2 for definition of Point of Entrance. Deletion of Informational Note No. 3.		X			
FR-4676	800.154(B)	Revision to terminology to correlate with 300.22 and expansion of permitted installations under modular flooring and planks and to add “communication raceway” to the table note.		X			
SR-4536	800.170	Revision to update edition year and title of the referenced standard in the informational note.		X			
SR-4536	800.170(A), (B) and (C)	Revision to update edition year and title of the referenced standard in the informational note.		X			
FR-4678	800.179	Revision to require additional marking for conductor temperature ratings for cables rated in excess of 60°C (140°F).		X			
FR-4680	800.179(C), (D), (H) and (I)	Revision to update the referenced standard section in the informational note.		X			
FR-4680	800.179(G)	Revision to delete the reference to 800.179(E) because there are currently no CMX-CI cables and no “fire-resistive” CMX cables.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4684	800.182	Revision to clarify that "communications" does not modify "cable routing assemblies," to add a reference to new Tables 800.182(a) and (b), and to update the edition year and title of the referenced standard in the informational note.		X			
FR-4684	Table 800.182(a)	New table that includes marking requirements for cable routing assemblies.		X			
FR-4684	Table 800.182(b)	New table that includes marking requirements for communications raceway.		X			
SR-4537	800.182(A)	Revision to clarify that "communications" does not modify "cable routing assemblies." Two new informational notes to provide guidance on fire-resistant and low-smoke producing characteristics and new informational note referencing NFPA 90A-2015, Standard for the Installation of Air- Conditioning and Ventilating Systems.		X			
FR-4686	800.182(B)	Revision to clarify that "communications" does not modify "cable routing assemblies" and new informational note to reference standards that define fire-resistant characteristics.		X			
FR-4687	800.182(C)	Revision to clarify that "communications" does not modify "cable routing assemblies" and new informational note referencing standards that define fire-resistant characteristics.		X			
	Article 810	**Radio and Television Equipment**					
FR-7505	810 Radio and Television Equipment, Informational Note	Revision to delete the explanatory material that identified changes in terminology from previous editions of the NEC and new reference to Figures 800(a) and 800(b).		X			
SCR-030	810.6, Informational Note	Revision to update the title of the referenced standard.		X			
FR-4546	810.15	Revision to define a zone where grounding is not required and new informational note referencing NFPA 780-2014, Standard for the Installation of Lightning Protection Systems.		X			
FR-4547	810.18, Informational Note No. 1 and 2	Revision to Informational Note No. 1 to include a reference for sideflash calculations in NFPA 780, Standard for the Installation of Lightning Protection Systems. Revision to Informational Note No. 2 to update the edition year in the reference standard.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Article 820	**Community Antenna Television and Radio Distribution Systems**					
FR-7506	820 Community Antenna Television and Radio Distribution Systems, Informational Note	Revision to deletes the explanatory material that identified changes in terminology from previous editions of the NEC and new reference to Figures 800(a) and 800(b).		X			
FR-4501	820.2, Coaxial Cable	Deletion of definition because defined term has been relocated to Article 100.		X			
SR-4556	820.2, Exposed (to Accidental Contact)	New informational note referencing additional definitions of Exposed in Article 100.		X			
SR-4541	820.2, Point of Entrance	Revision to delete “from rigid metal conduit (RMC), or from intermediate metal conduit (IMC)” to correlate with 820.48.		X			
FR-4551	820.3(J)	Revision to delete section and relocate to 820.110.		X			
SR-4503	820.24	Revision to add a reference to 800.170(C) for additional listing requirements. Revision to informational notes to update the edition year and titles of referenced standards. New informational note to provide possible contamination of optical fiber cables during the construction process.		X			
FR-4553	820.44(B), Exception No. 1	Editorial: MOS		X			
FR-4554	820.44(E)(3)	Revision to update edition year of the referenced standard in Informational Note No. 1 and to add a new informational note referencing NFPA 780-2014, Standard for the Installation of Lightning Protection Systems, for sideflash calculations.		X			
FR-4555	820.47(B)	Revision to add non–power-limited fire alarm cables and editorial MOS revisions to exceptions.		X			
SR-4542	820.48	Revision to permit RMC and IMC to extend the point of entry.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4557	820.49	Revision to include all metallic entrance conduit for grounding.		X			
FR-4559	820.100, Exception	Revision to permit alternative grounding where entirely inside of a building or within a defined zone and new informational note referencing NFPA 780-2014, Standard for the Installation of Lightning Protection Systems.		X			
SCR-031	820.100(B)(2)	Revision to include a reference to 250.94(A) for intersystem bonding terminations.		X			
FR-4562	820.100(B)(3)	Revision to clarify that lightning protection system conductors, not just air terminals, are not be used as a part of the grounding electrode conductor or as a grounding electrode.		X			
FR-4563	820.100(D), Informational Note No. 1	Revision to clarify that no lightning protection system component may be used to provide the required bonding jumper.		X			
FR-4564	820.110(A)(2)	Revision to include references to Table 800.154(b) for application requirements, 800.182 for listing requirements, and 362.24 through 362.56 for electrical nonmetallic tubing.		X			
SR-4544	820.110(A)(3)	New subsection to include requirements for innerduct for coaxial cable.		X			
FR-4565	820.110(C)	Revision to include references to Table 800.154(c) for application requirements and 800.182 for listing requirements and to delete the installation requirements covered in the reference to 800.113.		X			
FR-4566	820.113	Revision to add cable routing assemblies.		X			
FR-4567	820.113(A)	Editorial		X			
FR-4568	820.113(B)	Revision to correlate with 300.22 terminology and to update the edition year of the referenced standard in the informational note.		X			
FR-4569	820.113(C)	Revision to clarify specific types of communications raceways and cable routing assemblies and to update the edition year of the reference standard in the informational note.		X			
FR-4570	820.113(D)	Editorial		X			
FR-4571	820.113(E)	Revision to include innerduct.		X			
FR-4572	820.113(F)	Editorial		X			
FR-4573	820.113(G)	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4574	820.113(H)	Editorial		X			
FR-4575	820.113(I)	Editorial		X			
FR-4576	820.113(J)	Editorial		X			
FR-4577	820.113(K)	Editorial		X			
FR-4578	820.133(A)(1)	Revision to combines requirements for "optical fiber and communication cables" and "other circuits" under one subdivision and editorial revisions to Exception No. 1 and No. 2.					
FR-4579	820.113(A)(2)	Editorial: MOS		X			
FR-4580	Table 820.154a	Revision to correlate with 800.113 and permitted use of cable routing assemblies. Revision to terminology to correlate with 300.22 and Informational Note No. 1 referring to 800.2 for definition of Point of Entrance. Deletion of Informational Note No. 3.		X			
FR-4581	820.179	Revision to require additional marking for conductor temperature ratings for cables rated in excess of 60°C (140°F).		X			
FR-4581	820.179(A)	Revision to update edition of the referenced standard in the informational note.		X			
	Article 830	**Network-Powered Broadband Communications Systems**					
FR-7507	830, Network-Powered Broadband Communications Systems, Informational Note	Revision to delete the explanatory material that identified changes in terminology from previous editions of the NEC.		X			
FR-4588	830.1, Informational Note No. 1	Revision to add twisted pair broadband communications media type.		X			
SR-4547	830.2, Exposed (to Accidental Contact)	New informational note referencing additional definitions of Exposed in Article 100.		X			
FR-4591	830.2, Network-Powered Broadband	Revision to replace "single-family" with "one-family dwelling" to correlate with the definition in Article 100.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
	Communications Circuit						
FR-4592	830.3(E)	Revision to replace “optical network terminal” with “network interface unit” and editorial revision to the exception.		X			
FR-4593	830.3(G)	Revision to delete section as requirements are covered in 830.110(C).		X			
SR-4503	830.24	Revision to add 300.4(A), (D), (E), and (F) to provide physical protection methods and 800.170(C) for low smoke and heat release properties. Revision to information notes to update the edition year and titles of referenced standards. New informational note to provide possible contamination of optical fiber cables during the construction process.		X			
FR-4595	830.44(B), Exception No. 1	Editorial: MOS		X			
SR-4548	830.44(C), Informational Note	Revision to update edition year and title of the referenced standard in the informational note.		X			
FR-4597	830.44(G)(3), Informational Note	New informational note referencing NFPA 780-2014, Standard for the Installation of Lightning Protection Systems, for sideflash calculations.		X			
FR-4598	830.44(G)(4), Exception	Revision to clarify protection pertains to physical protection.		X			
FR-4599	830.47(A)	Revision to title correlates with section content and titles in Articles 770 and 820.		X			
SR-4549	830.47(B)	Editorial		X			
FR-4601	830.49	Revision to include all metallic entrance conduit for grounding.		X			
FR-4602	830.90(A)	New informational note to reference NFPA 780-2014, Standard for the Installation of Lightning Protection Systems, and editorial MOS revisions to the exception.		X			
FR-4603	830.93(A)	Revision to delete the informational note.		X			
FR-4604	830.100(B)(1)	Revision to delete the informational note.		X			
SR-0032	830.100(B)(2)	Revision to include a reference to 250.94(A) for intersystem bonding terminations.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4607	830.100(D), Informational Note No. 1	Revision to clarify that no lightning protection system component may be used to provide the required bonding jumper.		X			
FR-4608	830.110(A)(2)	Revision to include references to Table 800.154(b) for application requirements, 800.182 for listing requirements, and 362.24 through 362.56 for electrical nonmetallic tubing.		X			
FR-4609	830.110(A)(3)	New subsection to include requirements for innerduct.		X			
FR-4610	830.110(C)	Revision to include references to Table 800.154(c) for application requirements and 800.182 for listing requirements and to delete the installation requirements covered in the reference to 800.113.		X			
FR-4611	830.113	Revision to add a reference to 830.110 for installation requirements for raceways and cable routing assemblies.		X			
FR-4612	830.113(B)	Revision to correlate with 300.22 terminology and to update the edition year of the referenced standard in the informational note.		X			
FR-4613	830.113(C)	Revision to clarify specific types of communications raceways and cable routing assemblies and to update the edition year of the reference standard in the informational note.		X			
FR-4614	830.113(D)	Editorial		X			
FR-4615	830.113(E)	Revision to include innerduct.		X			
FR-4616	830.113(F)	Editorial		X			
FR-4617	830.113(G)	Editorial		X			
FR-4618	830.113(H)	New section to address requirements for cable trays.		X			
SR-4553	830.113(I)	Editorial		X			
FR-4645	830.133(A)(1)	Revision to combine requirements for “low-power network-powered broadband communications circuit cables with optical fiber cables and low-power network-powered broadband communications circuit cables with other circuits” under one subdivision.		X			
SR-4570	830.133(A)(2), Exceptions	Editorial		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-4555	Table 830.154(a)	Revision to correlate with 800.113 and permitted use of cable routing assemblies. Revision to terminology to correlate with 300.22 and Informational Note No. 1 referring to 800.2 for definition of Point of Entrance. Deletion of Informational Note No. 3.		X			
FR-4621	830.179	Revision to require minimum temperature rating and additional marking for conductor temperature ratings for cables rated in excess of 60°C (140°F).		X			
	Article 840	**Premises-Powered Broadband Communications Systems**					
FR-4582	840.1	Revision to expand the scope to include other types of broadband communications systems and revisions to the informational note to provide information on the expanded scope and types of equipment employed.		X			
FR-4583	840.2	Revision to include a reference to 645.2.		X			
FR-4585	840.2, Fiber-to-the-Premises (FTTP)	Deletion of definition because the term is not used in the article.		X			
FR-4586	840.2, Network Terminal	Revision to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4622	840.2, Premises Communications Circuit	Revision to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4623	840.2, Premises Community Antenna Television (CATV) Circuit	Revision to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4624	840.3(B)	Revision to include references to 770.3(B), 800.3(B), and 820.3(B) to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4625	840.3(E)(4), Informational Note	New informational note to reference 725.121.		X			
FR-4626	840.3(F)	New section to reference other Chapter 8 article requirements.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4627	840.3(G)	New section to reference 725.139(D)(1) and 800.133(A)(1)(c) for additional installation requirements.		X			
FR-4629	840.44	Revision to add “aerial” to correlate with Articles 800, 820, and 830.		X			
SR-4558	830.44(B)	Editorial MOS and revision to update the edition year and title of the referenced standard in the informational note.		X			
FR-4631	840.45	New section to address requirements for overhead (aerial) communications wires and cables.		X			
FR-4631	840.46	New section to address requirements for overhead (aerial) coaxial cables.		X			
FR-4632	840.47	Revision to replace “optical fiber” with “wires” to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4632	840.47(A)	Revision to provide separate requirements for optical fiber installations to correlate with the expanded scope for other types broadband communications systems.		X			
SR-4559	840.47(A)(2), Exception No. 1 and 2	Editorial: MOS		X			
FR-4632	840.47(B)	New section for communications wire and cable to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4632	840.47(C)	New section for coaxial cable to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4633	840.48	Revision to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4633	840.48(A)	New section for optical fiber cable to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4633	840.48(B)	New section for communications wire and cable to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4633	840.48(C)	New section for coaxial cable to correlate with the expanded scope for other types broadband communications systems.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
FR-4634	840.49	Revision to add references to 800.49 and 820.49 to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4635	840.93(C)	Revision to replace “ONT (optical network terminal)” with “network terminal” to correlate with the expanded scope for other types broadband communications systems.		X			
SR-4560	840.100	Revision to replace “ONT (optical network terminal)” with “network terminal” to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4637	840.101	Revision to replaces “ONT (optical network terminal)” with “network terminal” to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4638	840.106	Revision to replaces “ONT (optical network terminal)” with “network terminal” to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4639	840.110	Revision to add cable routing assemblies to the section title.		X			
FR-4639	840.110(A)	New section for optical fiber cable to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4639	840.110(B)	New section for multipair communications cables to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4639	840.110(C)	New section for coaxial cable to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4640	840.113	Revision to add twisted pair-based and coaxial cable-based systems and to replace “ONT (optical network terminal)” with “network terminal” to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4642	840.154	Revision to remove raceways in the title to correlate with 770.154 only addressing the applications of listed optical fiber cables.		X			
FR-4643	Part VI	New Part VI to add requirements for power over Ethernet (PoE) and other powering systems that provide power over data communications cables.		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
SR-4564	840.160	New section to include a reference to 725.144 for power delivery circuits that exceed 60 watts on communications cables.		X			
FR-4644	840.170(A)	Revision to replace ONT (optical network terminal) with network terminal to correlate with the expanded scope for other types of broadband communications systems and to update the edition year and title of the referenced standard in the informational note.		X			
SR-4565	840.170(C)	Revision to replace the title of "Premises Communications Circuits" with "Communications Equipment," to replace ONT (optical network terminal) with network terminal, and to add a requirement for listing in accordance with 800.170.		X			
FR-4644	840.170(D)	New section requiring cable routing assemblies and communications raceways to be listed in accordance with 800.182.		X			
FR-4644	840.170(E)	New section requiring communications wires and cable to be listed and marked in accordance with 800.179.		X			
FR-4644	840.170(F)	Revision to replace ONT (optical network terminal) with network terminal to correlate with the expanded scope for other types broadband communications systems.		X			
FR-4644	840.170(G)	New section to provide listing requirements for circuits intended to provide power over communications cables.		X			
	Chapter 9	**Tables**					
FR-2126	Table 1, Note 9	Revision to clarify application conduit or tubing fill where single conductors are installed as an assembly.		X			
FR-2127	Table 4 Article 356 LFNC-A, B, and C	New tables added for Type liquidtight flexible nonmetallic conduit (LFNC-A, B, and C) and note to each table referencing 356.2.		X			
FR-0114	**Annex A**	Revision to update references to numerous UL and other product standards.		X			
	Annex B						
SR-1501	B.310.15(B)(2)	Revision to update edition year and title of the referenced standard in the informational note.		X			
FR-1512	B.310.15(B)(7)	Revision to notes to correlate with notes in 310.15 tables.		X			
FR-2128	**Annex C**	Revision to add new Table C.7 and Table C.7(A) to identify fills for LFNC-C for both		X			

Table 11. 2017 National Electric Code Change Summary							
CODE CHANGE #	2017 National Electric Code Change Summary		NEC COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
			Decrease	None	Increase		
		concentrically stranded conductors and compact conductors.					
	Annex D						
FR-0341	Example D3	Revision to correct the calculated load to reflect only the requirements of Article 220.		X			
FR-1513, SCR- 037	Example D7	Revisions to include a comparison of the minimum conductor ampacity when corrected for elevated ambient temperature and to add a table with minimum permitted conductor sizes without ampacity correction or adjustment for service and feeder ratings of 100 through 400 amperes.		X			
SR-3007	Example D8	Revision to add examples for nontime-delay fuse and inverse time circuit breaker.		X			
	Annex E	No changes					
	Annex F	No changes					
FR-7526	**Annex F, Part I**	Corrected equation		X			
	Annex G	No changes					
	Annex H	No changes					
	Annex I	No changes					
	Annex J	No changes					

*For prescriptive Code changes only.

APPENDIX L

Table 12. 2018 IBC Structural Changes Cost Impact[1]

CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S1-15	Section 1505 included in BF1505.10 to clarify the intent of the code as applied to roof gardens and landscaped roofs.		X			Clarification
S2-15	Modifies testing requirements for rooftop rack-mounted photovoltaic systems for fire classification.		X			Improves PV panel fire testing
S3-15	Removes redundancy in information related to wood fiberboard roof insulation between Section 1508.1.1 and Chapter 23.		X			Clarification
S4-15	Updates the type designations listed for the ASTM standard currently referenced in the code for composite board roof insulation (Replace Type VI by Type VII in ASTM C1289-13E1).		X			Clarifies the code, and updates ASTM C1289
S6-15	Adds Type II, Class 4 to ASTM C1289 to address high density polyisocyanurate board roof insulation.		X			Add a listing for high-density polyisocyanurate board roof insulation
S7-15	Reorganizes the provisions for penthouses. Penthouses are commonly used to shelter rooftop elevator equipment and shouldn't be prohibited by Section 1510.		X			Reorganizes and clarifies the existing code sections
S9-15	Deletes Section 1510.7.3 (related to rooftop photovoltaic panels and modules) since it is redundant with Section 1510.7.4.		X			Deletes redundant text
S1-16	Updates provisions regarding ventilation for balconies, and adds that balconies that has weather protection and supports loads most closely resembles a roof to Chapter 15.		X			Clarification
S2-16	Corrects grammatical errors, and changes the term “moisture” (which could include water vapor) to “liquid water”.		X			Corrects grammatical errors
S7-16	Requires ventilation beneath balconies or elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation.			X	Some vent openings may need to be modified to accommodate inspection of framing material.	Clarification, and adds new provisions
S8-16 Part I	Aligns the labeling requirement for the wind standards for asphalt shingles to provide consistent labeling requirements between the IRC and IBC (Section 1504.1.1).		X			Clarification
S8-16 Part II	Aligns the labeling requirement for the wind standards for asphalt shingles to provide consistent labeling requirements between the IRC and IBC (Table R905.2.4.1).		X			Clarification
S9-16	Adds an alternative referenced standard for determining the overturning resistance of clay and concrete roof tiles (Chapter 15 and either SBCCI SSTD 11 or ASTM C 1568).		X			Adds and alternative referenced standard

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S11-16	Allows the load on the roof covering to be determined using allowable stress design.		X			Clarifies how to calculate wind loads on roof coverings
S14-16	Updates the referenced standards in Section 1504.1.1 to include metal roof shingles.		X			Allows an alternate testing method
S18-16 Part I	Removes Canadian standards in Sections 1504.7, 1507.11.2, 1507.12.2, and1507.13.2.		X			Updates referenced standards
S18-16 Part II	Removes Canadian standards in Sections R905.11.2, R905.12.2, and R905.13.2.		X			Updates referenced standards
S21-16	Specifies materials which should not be used on the roof in hurricane-prone regions.		X			Clarifies current requirements of the code
S27-16	Relocates the underlayment requirements for each roof covering to a single section at the beginning of Section 1507, and clarifies the use of ASTM D 1970 as an underlayment.			X	The wind speed trigger for the enhanced underlayment has been slightly lowered resulting in it applying to more areas.	Reorganizes the provisions for underlayment, making them more user-friendly
S28-16 Parts I and II	Adds a requirement that self-adhering underlayments bear a label to demonstrate compliance to the code. The change also adds photovoltaic shingles to the list of roof covering materials requiring labeled underlayment materials in the IRC.			X	Will require products to bear a label, which will add product approval costs.	Adjusts current requirements of the code
S30-16	Updates a reference to an ASTM standard (related to asphalt shingles) that has been removed.		X			Updates the code
S31-16	Expands fastener alternatives to include cap staples based on testing which indicates the underlayment tears before the proposed cap staples fail.		X			Updates the code based on commercially available cap staples
S32-16	Allows the use of ring shank cap nails and provides specificity on how they are to be used.		X			Adds new references to the code
S39-16	Labels need to be on the bundles of shakes and shingles so that building inspectors, contractors, architects, and owners can determine if the code compliant products are being installed.		X			Adds requirements to the code
S40-16	Updates existing text related to wood shake material requirement.		X			Clarifies and updates the code

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S43-16 Parts I and II	Includes a change to terminology for modified bitumen roofing materials for consistency with referenced standards and industry terminology.		X			Clarification
S44-16	Adds in an alternate referenced standard applicable to spray-applied polyurethane foam insulation in roofing.		X			Adds new references to the code
S47-16	Revises the minimum roof deck slope for the installation of photovoltaic shingles.		X			Clarification
S49-16	Removes a code provision that is in conflict with the referenced load standard, ASCE 7.		X			Coordinate the code with the references
S51-16 Parts I and II	Updates reroofing requirements for consistency with industry practice for commonly used materials.		X			Updates the code based on industry concerns
S53-16	Coordinates the Notation in Chapter 16 of the IBC with the 2016 edition of the referenced loading standard *Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16).*		X			Coordinates the IBC with the referenced loading standard
S55-16	Gives designers and plan checkers guidance on how to comply with requirements for fire walls.		X			Clarification
S56-16	Lowers the basic design wind speeds at most locations on the new maps	X			Basic design wind speeds have been lowered results in lower construction cost	Updates the IBC wind load provisions
S57-16	Adds rain load data to the information required on construction documents. The change only requires that the rain intensity be indicated.		X			Coordinates the IBC with the referenced loading standard ASCE 7 *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*
S58-16	Adds a list of information to be displayed on construction documents for use with the conventional light-frame construction provisions of Section 2308.		X			Updates the requirements of construction drawings
S62-16	Clarifies the communication of the designs between the builders and installers of machinery, equipment, planters, and art structures		X			Clarification
S63-16	Harmonizes the provision in the code with the 2016 edition of the referenced loading standard *ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16).		X			Coordinates the IBC with the referenced loading standard

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S64-16	Provides an appropriate option for determining the wind load for checking deflections by allowing use of the ten year mean return interval wind speed.		X			Clarifies the use of the proper wind criteria
S65-16	Adds an appropriate nomenclature definition to the deflection limits table.		X			Clarification
S66-16	Makes the deflection limits easier to apply to steel members, thus eliminating questions.		X			Clarification
S67-16	Recognizes different creep behavior of specific wood products in accordance with the NDS, and updates the long term deflection estimation tools for wood products.		X			Correlates structural provisions with a new product in the applicable standard.
S69-16	Clarifies the allowable deflection of framing members supporting the glass on the basis of the framing member spans, and fixes serviceability issues with respect to deflection limits.		X			Clarification
S70-16	Adopts the newly completed 2015 edition (44th Edition) of the combined SJI-100, *Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and for Joist Girders*, in the applicable code sections.			X	Difficult to anticipate	Adopts the latest industry standard for steel joists
S72-16	Addresses the need for tsunami-resistant design of critical infrastructure and essential facilities that provide vital services necessary for post-disaster response and recovery, and enable the continued functioning of the community.			X	Depends on the tsunami inundation depth at the structure. Cost studies have shown this increase to be very small.	Addresses tsunami loads
S75-16	Clarifies the level of risk that pertains to various risk category Group I-2 facilities.		X			Updates the language to reflect current terminology
S76-16	Assigns higher risk categories, and hence higher design criteria, to buildings or structures that, if they experience a failure, would inhibit the availability of essential community services necessary to cope with an emergency situation.		X			Clarification
S77-16	Bring the 2018 IBC up to date with the provisions of the 2016 edition of *ASCE 7*		X			Coordinates the IBC with the referenced loading standard ASCE 7.
S85-16	Provides a necessary update to the live load table in order to coordinate with the latest edition of ASCE 7 which was updated in ADM94-16			X		Coordinates the IBC with the referenced loading standard ASCE 7

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S87-16	Provides editorial changes to the live load table to clarify when and where the live load reductions apply.		X			Clarification
S88-16	Brings the language into compliance with the language approved for ASCE 7-16 (concentrated live loads, and elements supporting hoists for façade access equipment).		X			Coordinates the IBC with the referenced loading standard ASCE 7
S89-16	Adjusts language in section 1607.8 related to Loads on handrails, guards, grab bars, and seats		X			Clarification
S93-16	Provides a direct reference to the ASCE 7 load provision for landscaped and vegetative roofs, and clarifies which components are considered dead load versus rain load for vegetative roof areas.		X			Coordinates the IBC with the referenced loading standard ASCE 7
S95-16	Clarifies the language related to roof assemblies and supporting structures in section 1607.12.5.1.		X			Clarification
S98-16	Adds roof load requirements for photovoltaic panels that are taken from the latest edition of the referenced standard, ASCE 7, and corrects a mistaken section reference.		X			Coordinates the IBC with the referenced loading standard ASCE 7
S104-16	Adds a reference to ICC 500 for determination of loads on storm shelters, and clarifies that all loads on storm shelter may be determined using the referenced standard.		X			Clarification
S108-16	Deletes the alternate all-heights method from the code since it no longer provides similar levels of structural performance as the procedures contained in ASCE 7.		X			Removes old references and add new references contained in ASCE 7
S109-16	Updates the IBC alternative all heights provisions for coordination with the latest edition of the referenced standard, ASCE 7. Updates values in Table 1609.6.2 to match the ASCE 7-16 values.			X	Initial roof construction and roofing costs will increase but overall repair costs following major wind events will be decreased.	Updates the IBC code to match ASCE 7
S114-16	Updates the IBC seismic load provisions for consistency with the latest edition of the referenced standard, ASCE 7, and retains the IBC requirements for ballasted photovoltaic panel.		X			Coordinates the IBC with the referenced loading standard ASCE 7
S119-16	Updates the IBC earthquake ground motion maps to provide consistency with the latest edition of the referenced standard, ASCE 7.			X	Modest increases or decreases in overall construction cost depending on the	Coordinates the IBC with the referenced loading standard ASCE 7

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
					geographic location.	
S124-16	Allows more flexibility in choosing a method of analysis for justifying ballasted, unattached rooftop PV systems.		X			Adds more analysis methods
S126-16	Clarifies the applicability of provisions 1615.3 and 1615.4 to frame structures and bearing wall structures.		X			Clarification
S131-16	Streamlines and focuses the provisions for fabricator approval.		X			Adds editorial changes
S133-16	Modifies structural observation thresholds for structures, seismic resistance, and wind resistance.		X		There may be a small increase to design fees if engineers request fee to cover this added service.	Adds more provisions to structural observations
S135-16	Changes the exception of special inspections and non-destructive testing of steel construction to focus on a full "project" rather than on individual "structural steel elements".			X	Increases the cost of construction where the exception was improperly implemented previously.	Adds editorial changes
S145-16	Helps determine where special inspection of the main windforce-resisting system is required. The modification substitutes more suitable wording to accomplish the intent of the code change.		X		The additional cost would be the cost of special inspection.	Clarification
S146-16	Clarifies the special inspection of steel elements that resist seismic forces.		X			Clarifies the provisions of the code
S147-16	Provides periodic special inspection to verify that adequate clearance is provided between sprinkler drops and sprigs and adjacent structural and nonstructural components.			X	Very minor impact on the cost of installation of electrical, mechanical and plumbing installations and their inspection.	Adjusts the requirements for periodic special inspections of MEP components.

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S149-16	Brings editorial tune-up to the in-situ load tests.		X			Makes the load test requirements more concise.
S150-16	Clarifies that the use of allowable stress design wind pressures is permitted.		X			Clarification.
S166-16	Updates the Chapter 18 provisions (1803.5.12, 1809.13, 1810.3.11.2, 1810.3.12, 1810.3.6.1, 1810.3.9.4) for consistency with the latest edition of the standard, ASCE 7.		X			Coordinates the IBC with the referenced loading standard ASCE 7
S167-16	Makes it clear that excavations must not reduce vertical support as well as lateral support.		X			Clarification
S174-16	Provides clarification on site grading requirement versus maximum slopes permitted for accessibility.		X			Clarifies the language of the code
S186-16	Specifies that retaining wall design must consider seismic loads in locations where the risk of seismic activity is high.		X			Adds current practices to the code
S205-16	Identifies combined pile raft as another commonly-used type of deep foundation along with drilled shafts, helical piles, and micropiles.		X			Defines combined pile raft
S213-16	Changes the wording to the most commonly used terms of "shaft" rather than "frictional" resistance and "end-bearing" rather than "bearing" resistance.		X			Clarification
S215-16	Changes the wording related to the design of grouped deep foundation elements, replacing the word "capacity" with "load".		X			Clarification
S221-16	Coordinates the text of 1810.3.5.2.1 with Section 1810.3.5.2		X			Editorial changes
S222-16	Changes the wording for consistency with the title and definition of main section 1810.3.5.2 to which subsection 1810.3.5.2.1 belongs.		X			Editorial changes
S223-16	Clarifies the code relative to the upper-end of conventionally available diameters of pipe used for micropiles and correct terminology		X			Clarification
S227-16	Provides more rational and accurate limits of reinforcement for precast prestressed piles and limits the axial loads on these elements.			X	Cost Increase because of the increased confinement requirements	Changes the design requirements of precast prestressed concrete
S233-16	Clarifies that either sudden increases or decreases in the rate of penetration of a pile may signal pile damage.		X			Clarification
S237-16	Clarifies that driven, screwed-in, vibrated-in, or pushed-in piles should be advanced below the pre-excavated depth until the required resistance or penetration is obtained.		X			Clarification
S242-16	Specifies higher design force level in the design procedure of precast concrete diaphragms.			X	Modest cost Increases.	Coordinates the IBC with the referenced loading

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
						standard ASCE 7
S243-16 Part I	Deletes the definition of autoclaved aerated concrete because it is not needed and incorrect.		X			Eliminates errors in the code
S243-16 Part II	Updates the standard for autoclaved aerated concrete by deleting a withdrawn standard and adding two new standards for this product.		X			Eliminates errors in the code
S244-16	Adds new standards for the design, fabrication, and installation of cast stone, which are also consistent with existing industry guidelines.		X			Coordinates the code with industry guidelines
S245-16 Part 1	Establishes minimum physical requirements for manufactured stone veneer units consistent with existing industry practices.		X			Coordinates the code with industry guidelines
S245-16 Part 2	Adds a new section for adhered manufactured stone masonry veneer and brings the current standard for design and installation of the product into the IRC.		X			Updates the IRC
S247-16	Reconciles the maximum lap splice length for allowable stress design with that of strength design.		X			Updates lap splice requirements
S248-16	Removes a requirement that is now covered in the latest edition of the referenced standard (TMS 402) for masonry design.		X			Removes requirements now covered under the reference standard
S249-16	Removes the empirical design of masonry provisions which can still be found in an appendix chapter of TMS 402, and retains the provision for adobe masonry construction.		X			Introduces a simple-to-use empirical method for designing masonry structures.
S251-16	Modifies the language to allow the use of adobe mortars comprised of the same materials as the bricks themselves; and also corrects a section reference.		X			Updates the references in the code
S252-16	Adds the latest versions of AISI cold-formed steel referenced standard, and updates these provisions for consistency with the latest edition of ASCE.			X		Adopts the latest industry standards for cold-formed steel.
S253-16	Removes the exceptions to ASCE 19 for seismic requirements for steel cables.		X			Updates the code with the provisions of the 2016 edition of ASCE 19 *Structural Applications for Steel Cables in Buildings*
S255-16	Coordinates the definition of cantilevered storage racks with the 2015 IBC definition of steel storage racks as well as the ASCE 7 Standard.		X			Coordinates the IBC with the referenced loading standard ASCE 7
S258-16	References various CPA standards in a consistent manner and also clarifies that hardboard siding must conform to the requirements of A135.6 in 2303.1.7.		X			Clarification
S262-16	Adds a necessary clarification to the use of surface treatments for wood.		X			Clarification

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S265-16	Provides a clarification of the labeling of fire-retardant-treated wood that aides verification in the field.		X			Clarification
S266-16	Clarifies the requirements of the truss design drawings.		X			Enhances IBC coordination with the IRC
S270-16	Adds the test methodology for achieving the already code-prescribed strength requirement of nails.			X	If staples are manufactured to a lesser standard then there may be a slight cost increase.	Adds requirements for nails and staples strength
S271-16	Removes the redundant language contained within the footnotes of Section 2304.8.1 (roof sheathing) and Section 2304.8.2 (floor sheathing).		X			Clarification
S272-16	Brings consistency with the IRC for minimum nail size for roof sheathing attachment which is an 8d common nail, and adds a new standardized Roof Sheathing Ring Shank (RSRS) nail for roof sheathing applications.		X			Provides consistency with the roof sheathing attachments in the IRC
S273-16	Fixes editorial errors related to nail sizes, and removes redundancy in Section 2304.10.1.		X			Editorial changes
S274-16	Adds the appropriate minimum quality standards for stainless steel nails, providing coordination with the IRC.			X	Cost increase when switching to 300 series stainless steel nails from lesser quality ones.	Adds provisions related to stainless steel nails
S275-16 Part I	Adds an option for fasteners in corrosive environments by adding stainless steel staples.			X	Cost increase when current staples in treated wood are not stainless.	Adds provisions to stainless steel staples
S275-16 Part II	Adds an option for fasteners in corrosive environments by adding stainless steel staples.			X	Cost increase when current staples are not stainless in treated wood.	Provides consistency with other practices used for treated material

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S276-16	Adds a necessary pointer to decking requirements that are part of Heavy Tiber construction.		X			Correlates existing section to assist users of the code
S278-16	Allows the use of non-treated or non-naturally durable wood where it is protected from moisture by a covering above to prevent moisture or water accumulation and is supported by a 1" pedestal.		X			Clarification
S279-16	Creates a requirement for impervious moisture barrier systems protecting the structure supporting a floor to provide a mechanism for the water to drain out.			X	Cost increase in cases where no method to provide positive drainage is currently provided.	Updates the requirements of impervious moisture barrier systems installed under a permeable floor system
S280-16	Makes the code provisions, related to structural floor sheathing and structural roof sheathing, clearer by removing redundant language and coordinating wording with other code sections.		X			Clarification
S281-16	Clarifies circumstances surrounding power-driven fasteners when used in lieu of the code-specified nailing and provides an additional option for laminated decking.		X			Provides equivalent alternative options for construction of mechanically laminated decking.
S282-16	Updates the diaphragm deflection formula by incorporating revisions made in the AWC SDPWS.		X			Editorial changes
S283-16	Clarifies the application of table 2305.2 to various wood structural panels.		X			Editorial changes
S284-16	Provides updates for shear wall deflection, and brings parity between the language of SDPWS and the IBC.		X			Editorial changes
S285-16	Clarifies table 2306.3 entries for staple size by indicating that they provide required the length and gage.		X			Clarification
S286-16	Simplifies the shear wall table by eliminating a note and incorporating the staple length into the appropriate table entries.		X			Clarification
S287-16	Allows a higher live load to be used where a concrete slab on grade is used at the ground floor level.		X			Adjusts provisions related to slab on grade
S288-16	Brings adjustments to the design of header and girder spans for interior bearing walls.			X	Increased cost may be associated with reduced spans.	Provides clearer direction on lateral bracing requirements

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S289-16	Updates the header and girder span table for exterior walls in a manner similar to S288-16.			X	Increased cost may be associated with reduced spans.	Provides clearer direction on lateral bracing requirements
S291-16	Clears up inconsistencies in the anchor bolt requirements by reorganizing and rewriting the requirements for Seismic Design Categories D and E.		X			Editorial changes on the anchor bolt placement
S292-16	Adds requirements for headers in exterior bearing walls that coordinate this IBC provision with the IRC.		X			Adds prescriptive framing and connection requirements for single member (single ply) headers
S294-16	Changes the term "guardrail" to "guard" in several code sections		X			Editorial changes
S295-16	Clears up confusion in the current language as far as when a top rail is required on a glass-supported guard.		X			Clarification
S296-16	Returns the code language to well-recognized terms, and eliminates terms that have no meaning to the engineers that will be performing the designs of panels and supports.		X			Clarification
S297-16	Deletes the requirement that the removal of the top rail on glass balusters should be approved by a building official, but adds the requirement that glass balusters be tested to ASTM E2353-14.			X	Additional testing to ASTM E2353-14 may increase the cost of construction	Adds a standard for the use of glass balusters
S298-16	Provides another option for gypsum panel product along with a reference to ASTM C1766 that contains QC requirements.		X			Extends performance requirements for factory-laminated products to meet the intent of the code
S299-16	Updates and substitutes the latest AISI material standards for light-gage steel framing applications for gypsum panel products			X		Coordinates the code with AISI standards
S300-16 Part I	Adds ASTM D6464 to Table 2506.2, and adds a mandatory statement outlining the requirements for adhesives used to attach gypsum board products.		X			Increases product selection options
S300-16 Part II	In addition to part I, it adds a pointer to Table R702.3.5 or requires approved fastening methods for gypsum products using adhesives.		X			Increases product selection options
S302-16	Adds an option to address inward moisture drive issues in various climate zones. It also provides the universal solution of providing a vented air space.		X			Adds more provisions related to water-resistive barriers

Table 12. 2018 IBC Structural Changes Cost Impact[1]						
CODE CHANGE #	2018 IBC STRUCTURAL CHANGE SUMMARY	IBC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
S307-16	Simplifies the language, putting the IBC more in alignment with the National Flood Insurance Program.		X			Administrative change
S309-16	Coordinates the IBC provisions on document retention with the current requirements of the National Flood Insurance Program.		X			Editorial change
S310-16	Clears up a minor inconsistency, related to the placement of recreational vehicles, between the IBC and the National Flood Insurance Program.		X			Editorial change for internal consistency
S311-16	Makes a simple clarification of light transmitting plastics used in signs.		X			Clarification
S312-16	Adds clarifications to sections addressing light transmitting plastics that comply with Section 2606 and the fire properties of Class CC2 in section 2606.4.		X			Clarification
S315-16	Revises the tsunami appendix chapter to coordinate with the tsunami design provisions approved in S72-16.		X			Coordinates the IBC with the referenced loading standard ASCE 7

*For prescriptive Code changes only.

[1]Sections S253-16, S291-16, S242-16, S252-16, S166-16, S186-16, S227-16, S119-16, S124-16 – Seismic provisions – do not apply to Florida and Sections S131-15, S133-15, S135-16, S145-16, S146-16, S147-16 – Sections marked reserved under the current FBC S251 -16 - Empirical design for low wind areas - do not apply to Florida.

APPENDIX M

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB2-16	Clarifies where the provisions are for access for repair, not accessibility for persons with disabilities.		X			Clarifies the terminology.
RB154-16	Clarifies and updates Sections R317.1, R402.1.2, R504.3, and R905.8.5 to current AWPA section numbering.		X			Clarifies the terminology.
RB164-16	Clarifies the applicable requirements for photovoltaic systems.		X			Correlates and organizes the provisions in the code.
RB172-16	Defines collapsible soils to provide guidance to design professionals and building officials on identification and design procedures to address these soils.		X			Clarifies the intent of the code.
RB173-16	Eliminates the word “Gravel fill” from Section R401.2 since it is not used to describe footings for precast concrete foundations, this change will reduce confusion.		X			Clarifies the intent of the code.
RB176-16	Provides clarification by restoring a reference to precast footings that was lost in a previous code change (Section R403.1.1).		X			Provides the proper reference to the correct footing table.
RB177-16	Clarifies the anchorage requirements for cold-formed steel wall assemblies.		X			Editorial change.
RB178-16	Updates the crushed stone footing table to include the width and adds additional soil bearing capacities to match the concrete footing tables.		X			Updates crushed stone footing table.
RB179-16	Updates the IRC to be consistent with the latest published design values for insulation materials used on frost-protected shallow foundations (FPSF), per ASCE 32-01 Design and Construction of Frost-Protected Shallow Foundations; and to be consistent with the current requirements in the IBC.			X	Cost increase based on revision of design values for below-grade EPS and XPS.	Coordinates IRC with IBC and ASCE 32-01.
RB181-16	Clarifies the code by representing a more realistic sill plate connection for a precast foundation and it is adding the thickness (T) dimension, which is currently missing from the figure 403.4(2).		X			Clarifies the intent of the code.
RB184-16	Clarifies the requirement for placing drainage tiles, gravel or crushed stone drains, or perforated pipe.		X			Clarifies the intent of the code.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	These are to be placed at or below the top of the footing or below the bottom of the slab.					
RB187-16	Allows another approach to conditioning crawl spaces that is equal to or less cost compared to providing supply and return air or an exhaust ventilation approach.		X			Adds an option for unvented crawl spaces.
RB189-16	Changes the entity responsible for the maintenance of standards ANSI 117-2015 from the now defunct AITC to APA-The Engineered Wood Association.		X			Updates the reference standard for glulam timbers.
RB192-16	Provides better organization of section R502.6 for current construction techniques. The modification improves the organization and the terminology.		X			Editorial change.
RB195-16	Aligns the cold-formed steel floor framing provisions with the new referenced cold-formed steel structural framing standard (AISI S230-15). Also, the applicable design wind speed is changed to less than 140 mph ultimate.			X	Cost increase in conditions for which the minimum member size will increase.	Coordinates the code and the reference.
RB198-16	Reorganizes Section R507 without any technical changes, based on similar organization in the IRC, namely, starting at the footings and working upward.		X			Clarifies the intent of the code.
RB200-16	Improves the wording in Section R507, and refines the figures to reflect the wording changes and cover more options.		X			Editorial change.
RB202-16	Provides design specifications for deck construction materials frequently found in deck construction.		X			Changes the material requirement for connecting members outdoors.
RB203-16	Moves the deck ledger attachment and lateral resistance details from Section R507. 2 to the end of the section.		X			Clarifies the code as it moves the requirements from R507.2 to the end of the section.
RB205-16	Provides an exception for "freestanding wood patios" from having to comply with the requirement in R403 footings below frost line. It allows a freestanding deck to be totally supported on the ground without any footings.		X			Provides allowance for footing size for decks.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB206-16	Provides the specifications for when a freestanding deck can be constructed on precast concrete pier blocks at grade.		X			Clarifies the intent of the code.
RB207-16	Provides prescriptive language and a table for determining the minimum size and depth of deck footings based on tributary area, live load and soil bearing pressure.		X			Updates the code to address footing size and depth.
RB208-16	Provides prescriptive language for where the minimum size and depth of deck footings can be found, namely in Chapter 4.		X			Includes all deck related information in R507.
RB209-16	Modifies the decking text to permit custom decking materials and custom fasteners.		X			Allows alternative decking material and fastener systems.
RB210-16	Brings changes to the joist text, replaces the figure and amends the table to make the code easier to understand.		X			Provides clarity for freestanding decks.
RB212-16	Relocates the deck post section. Also, it adds 8x8 posts to Table R507.4.		X			Adds more options to the referenced table.
RB213-16	Provides a needed change that prohibits certain soils surrounding the deck post from providing the lateral support at the bottom.		X			Updates the requirement for lateral restraint at the bottom of the footings.
RB214-16	Eliminates the wording that posts have to bear on footings, and provides a better drawing of how posts are to be attached to footings.		X			Allows alternate methods to be used for deck footings.
RB217-16	Reorganizes and clarifies the Structural Insulated Panels (SIPs) section.		X			Reorganizes the existing provisions to provide more clarity to the code.
RB218-16	Introduces a new table for load-bearing studs over 10 feet in height but not exceeding 12 feet in height.		X			Moves confusing requirements from the exception into a table.
RB219-16	Brings editorial changes to Section R602.3 and R602.10.3 related to fastening schedule, and seismic adjustment factors to the required length of wall bearing, respectively		X			Editorial change.
RB220-16	Adds a new standardized roof sheathing ring shank (RSRS) nail for roof sheathing applications.		X			Adds an alternative nail standardized in ASTM F1667.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB221-16	Aligns the roof sheathing nail spacing with the ASCE 7-10 loading and provides an allowable cantilever for the sheathing past the gable end.		X			Clarifies the intent of the code.
RB226-16	Updates Table R602.7 (2) Girder Spans and Header Spans for Interior Bearing Walls to address the use of Southern Pine No. 2 in lieu of Southern Pine No. 1.		X		Increased cost may be associated with reduced spans	Allows the use of No. 2 grade southern pine in Table R602.7 (2).
RB227-16	Updates Table R602.7 (1) Girder Spans and Header Spans for Interior Bearing Walls to address the use of Southern Pine No. 2 in lieu of Southern Pine No. 1.		X		Increased cost may be associated with reduced spans	Allows the use of No. 2 grade southern pine in Table R602.7 (1).
RB228-16	Corrects the illustration detail to clarify requirements for joist hangers in rim board header applications.		X			Editorial change.
RB229-16	Simplifies the full height stud table while also removing conservatism and limited applicability of the 16" maximum stud spacing case.		X			Require less full-height studs than are currently required in some circumstances.
RB230-16	Moves the adjustment factor for the absence of horizontal blocking into the wind and seismic adjustment factor table where it belongs.		X			Editorial change.
RB231-16	Clarifies how to apply the adjustment factor for Exposure Category when there are multiple categories on the site.		X			Clarifies the use of Table R602.10.3 (2).
RB233-16	Adjusts the location of a footnote in Table R602.10.3 (1) and corrects confusion.		X			Clarifies the intent of the code.
RB234-16	Provides consistency with the seismic bracing table and Section R301.3 as regards the story height. The modification reverts the story height and adjustment factor back to the original 12 feet.		X			Clarifies the intent of the code.
RB235-16	Adds important bracing methods into Table R602.10.3 (3) and expands the available options.		X			Clarifies the intent of the code.
RB237-16	Corrects previous code cycle language that was left out of the 2015 IRC, Table R602.10.3 (4)		X			Editorial change.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB239-16	Adds alternatives that allows a minimal amount of masonry veneer to the second story in Seismic Design Categories D0, D1 and D2.		X			Updates the code to include more alternatives.
RB240-16	Removes 8d common nails from Table R602.3. (1) for attachment of structural fiberboard sheathing to match proposal S75-06/07 Part II.		X			Coordinates IRC with IBC.
RB241-16	Reorganizes Table R602.10.5 in order to place portal frames at the bottom since portal height not wall height is used. The modification also corrects the wind speed at ABW to ultimate design wind speed.		X			Makes the code easier to use.
RB243-16	Clarifies that nailing behind the strap is not required.		X			Clarifies the intent of the code.
RB244-16	Updates Figure R602.10.6.4, Method CS-PF Continuously Sheathed Portal Frame Panel Construction to show the correct number of nails.		X			Editorial change.
RB245-16	Clarifies the need that a minimum length panel as proscribed in Table R602.10.5 is required on the side opposite the single portal.		X			Clarifies the intent of the code.
RB248-16	Aligns the cold-formed steel wall framing provisions with the new referenced cold-formed steel structural framing standard (AISI S240).		X			Coordinates the IRC with AISI S240
RB249-16	Brings the current standard for design and installation of architectural cast stone into the IRC.		X			Provides an alternative to the existing IRC provisions based on existing industry best practices.
RB254-16	Clarifies that the use of the 0.6 conversion multiplier is allowed with respect to the determination of design wind pressures in accordance with ASCE 7 and testing of the respective assemblies in accordance with Section R609.3 or R609.5 accordingly.		X			Clarifies the intent of the code
RB259-16	Addresses labeling of critical components of the building envelope. It requires that impact protective systems (hurricane shutters) have a permanent label that provides a way for building owners, homeowners, and others to be able to determine their performance characteristics after the building has been occupied.			X	Water Resistant Self-adhering Permanent Labels approximately $0.15 per label.	Updates the labeling requirements for impact protective systems.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
					Embossed or ink jet labels used on metal and plastic panels would cost approximately $0.05 per label.	
RB260-16	Add new references related to the installation of interior lathing and furring, as well as application of interior gypsum plaster.		X			Updates the referenced standards and adds ASTM C841-03 and ASTM C842-05
RB261-16	Corrects a standard pointer to the installation portion and eliminates erroneous statements about the veneer thickness at the end of Section R702.2.2.		X			Updates the pointer to the reference.
RB264-16	Adds in a product standard that extends performance requirements for factory-laminated products to meet the current intent of the code. The change increases product selection options, but contains no mandatory requirements.		X			Adds an appropriate new standard for a specific gypsum panel product.
RB265-16	Updates the content of the cold-formed steel (CFS) light-framed construction provisions of the IRC. This change also adds reference to AISI S240.		X			Updates the referenced AISI standards.
RB276-16	Recognizes polypropylene siding as another type of vented cladding with respect to vapor barriers.		X			Changes the material requirement for vented cladding.
RB280-16	Improves the wording in Section R703, and eliminates the reference to Section R702.		X			Clarifies the intent of the code.
RB282-16	Improves the durability of soffits in high wind regions while allowing continued use of traditional soffit materials in the low wind regions.			X	Increase in the cost of construction for lower wind regions.	Provides prescriptive requirements and reference to manufacturers' instructions for soffits.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB283-16	Clarifies requirements for No. 15 asphalt felt and distinguishes requirements for other approved water-resistive barriers (WRBs) to improve application and enforceability.		X			Clarifies requirements and may actually help avoid unintended cost impacts or material choice limitations.
RB284-16	Requires a water-resistive barrier by the manufacturers, insuring the products are installed correctly for detached accessory building.		X			Clarifies the intent of the code and eliminates confusion.
RB296-16	Correlates the requirements for exterior lath and plaster (stucco) with the requirements of ASTM C926 and C1063 and ACI 524R-08 Guide to Portland Cement-Based Plaster.		X			Updates and brings information from the referenced standards into the text and tables.
RB303-16	Provides brick-tie attachment recommendations for attachment direct to a minimum 7/16 performance category wood structural panels.			X	Increase in building costs is about $0.07 per square foot.	Eliminates the need to provide extra wall framing just to facilitate the attachment of the brick ties.
RB305-16	Improves and simplifies the installation requirements for vinyl siding with foam plastic sheathing to comply with the latest industry standards.		X			Simplifies the code and compliance while maintaining equivalent performance with no cost impact.
RB307-16	Adds the requirements contained in the 2015 IBC, which have not been altered in the current code cycle.			X	Minor Cost Increase	Adds requirements that are consistent with those in the IBC to ensure safe use of polypropylene siding.
RB308-16	Updates the values in Table R703.15.1 to a consistent rounding approach by rounding the values down to the nearest 0.05" to address actual thicknesses of foam sheathing materials that often vary from nominal dimensions. Also adds an additional option (18 psf cladding weight) to accommodate common application of adhered veneers as requested by the brick industry		X			Clarifies the intent of the code.
RB309-16	Updates the values in Table R703.16.2 to a consistent rounding approach by rounding the values down to		X			Clarifies the intent of the code.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
	the nearest 0.05" to address actual thicknesses of foam sheathing materials that often vary from nominal dimensions. Also adds an additional option (18 psf cladding weight) to accommodate common application of adhered veneers as requested by the brick industry					
RB310-16	Reorganizes the roof and ceiling assembly by separating out the requirements of the components: R802.3 Ridge, R802.4 Rafters, R802.5 Ceiling joists.		X			Provides a pointer for the ridge strap back to the fastener table and adds the requirement for bearing for beams of roofs with slope less than 3:12.
RB314-16	Clarifies that FRTW must have two labels: one for the grading of the wood, the other for the treatment, and also clarifies that each piece must be labeled with both marks. There are also manufacturers making the claim for a lift of lumber or wood structural panel.		X			Clarifies the intent of the code.
RB315-16	Adds prefabricated wood I-joists to the list of wood and wood-based products listed in the IRC for roof framing.		X			Editorial change.
RB321-16	Intends to update the content of the Cold-Formed Steel (CFS) light-framed construction provisions of the IRC.		X			Aligns the cold-formed steel wall framing provisions with the new referenced cold-formed steel structural framing standard.
RB323-16	Brings the IRC ventilation requirements into alignment with the IBC ventilation requirements.		X			Editorial change.
RB324-16	Aligns the IRC minimum vent area requirements with the IBC requirements for the reduction in ventilation area.			X	May increase the cost of construction due to additional requirement to reduce the net free vent area	Clarifies the intent of the code.
RB325-16	Intends to not restrict the use of eave or cornice vents when they are located in the bottom 1/3 of the attic space.		X			Provides flexibility for the placement of the ventilation.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB326-16	Clarifies the requirements for unvented attic and unvented enclosed rafter assemblies through editorial improvements (Section R806.5)		X			Editorial change.
RB327-16	Allows the use of fiberglass batts, blown cellulose and blown fiberglass to construct unvented attic assemblies.		X			Provides more options to the installation of unvented attic assemblies.
RB339-16	Provides the appropriate method for testing photovoltaic panel systems for fire classification, as required by the ANSI standards.		X			Adds a new reference standard for testing of photovoltaic panel systems.
RB341-16	Adds another underlayment system that is an alternative to the self-adhering underlayment. The modification adds another acceptable type of ASTM D4869 that provides another option.		X			Adds an additional method for preventing water penetration when the primary roof covering is lost due to high winds.
RB343-16	Clarifies the lapping requirements for underlayment and brings the underlayment requirements for PV shingles in line with other roof covering types.			X	Cost increase for PV shingles in some areas.	Clarifies the intent of the code.
RB345-16	Adds necessary language so that the application of roof coatings follows manufacturer's approved installation instructions.		X			Editorial change.
RB351-16	Clarifies the underlayment requirements and adds reference to the proper code sections.		X			Adds another type of roof covering, enhancing builder choices.
RB352-16	Adds reference to the appropriate ASTM Standard specification for mineral wool roof insulation and makes Table R906.2 consistent with IBC Table 1508.2. This will help to ensure that roofing systems designed using mineral wool roof insulation will perform as intended by the IRC.		X			Adds a new option for roof insulation.
RB354-16	Places the requirement for PV panel wind design in the same location as the other design load requirements.		X			Clarifies the intent of the code.

Table 13. 2018 IRC Structural Changes Cost Impact						
CODE CHANGE #	2018 IRC STRUCTURAL CHANGE SUMMARY	IRC STRUCTURAL COST IMPACT			ESTIMATED AMOUNT*	BENEFIT OF CHANGE
		Decrease	None	Increase		
Sub Code:						
RB359-16	Requires insulation shields for factory-built chimneys as they also require clearance to insulation and it represents a fire hazard when one is not installed.		X			Clarifies the intent of the code.

*For prescriptive Code changes only.

DRAFT

APPENDIX N
DISCLAIMER
Probable Construction Costs Opinions

Assumptions

This Estimate is not a guarantee of Final Bid Cost or of Final Project Cost.
This is an Opinion of Probable Cost of Mechanical, Electrical, and Piping (M.E.P.) Systems for the proposed buildings.

- The estimate was compiled using documents provided by various sources.
- The estimate is representative of average unit pricing and labor from historical job costs of similar type, cost and labor data from Mechanical Contractors Association of America (MCAA), CostWorks 2015 Qtr. 2 (Change Date and Qtr) by R.S. Means Company Inc, National Electrical Contractors Association (NECA) and Sheet Metal Estimating by Herbert C. Wendes.
- The subcontractor unit rates include the subcontractor's overhead and profit, unless otherwise stated.
- The mark-ups included in the unit prices cover the cost of field overhead, home office overhead and profit, and range from 15% to 25% of the costs of a particular item.

Since we have no control over the cost of labor, material and equipment, or the contractor's method of carrying out the work and determining the price, or over competitive bidding or market conditions, this opinion of probable construction cost provided is made on the basis of experience and qualifications. This opinion represents our best judgment as professional construction consultants with the Construction Industry. However, we cannot and do not guarantee that proposals, bids or the construction cost will not vary from the opinions of probable cost in this estimate.

General Assumptions:

- "Allowances" are considered to be an allotted sum of money for a particular system or scope of work for which sufficient detail is not available to determine a definitive cost.
- These cost allowances are included to project a final cost to include labor, material, equipment and any subcontractor costs.
- The owner receives the savings for any amount under the allowance and is at risk for any amount over the allowance.
- The estimate is in today's dollars, and has been adjusted to the local area.
- This estimate does not include any fees or permits.
- This estimate is intended to reflect construction costs only.
- This estimate is intended to reflect normal construction schedules only.
- Variations in material costs, labor efficiencies, wage rates, union practices, and bid climate will effect final costs.
- Workers will report to the actual job site.
- Materials delivered to the actual job site will need to be scheduled.
- No premium or overtime has been included.
- No General Construction costs have been included.
- All utilities have sufficient capacity for the added loads.