DRAFT

Economic Impact Analysis and Evaluation of Property Insurance Rate Impacts Resulting from Potential Changes to the Florida Building Code from the ICC Base Code Provisions

RINKER-CR-2018-101

Interim Report

1 June 2018

Submitted to

Mo Madani

Department of Business and Professional Regulation
1940 North Monroe Street
Tallahassee, FL 32399

Authors

R. Raymond Issa, PhD Civil Eng., JD, PE*, F ASCE, API (University of Florida)
Luis Nieves-Ruiz, AICP, Econ. Dev. Prog. Manager, East Central Florida Regional Planning Council
John Patterson, AICP, Planner, East Central Florida Regional Planning Council

CACIM
Rinker School
University of Florida
Box 115703
Gainesville, FL 32611-5703
www.bcn.ufl.edu/cacim

DISCLAIMER

Table of Contents

Table of Figures

Executive Summary

The purpose of this report is to document the work done to date in preparing the economic impact report on the recent changes to the Florida Building Code (FBC) and their potential impacts on residential and commercial property insurance rates in the State of Florida.

Research was performed on the actual changes to the Florida Building Code codified under House Bill 1021 (HB 1021), which was passed May 5, 2017 and signed into law by Governor Rick Scott on June 23, 2017. In this report, the bill's changes relative to the FBC will be displayed in parentheses first by the bill number, followed by the FBC subsection amendment (HB 1021, FBC § X(X)). Under HB 1021, the International Code Council 2014 Florida Building Code (2014 FBC) is adopted as the base Florida Building Code (FBC), with updates being readopted every three (3) years (HB 1021 Section 11, FBC § 11(7)(a)) based on recommendations of the Florida Building Commission (Commission). This changes the past precedent of the State adopting the newest International Code Council (ICC) edition released in that same time frame. Amendments meeting stated criteria could be made by the Commission annually as deemed necessary (HB 1021 Section 11, FBC § 553.73(9)(a)).

This creates a situation where Florida's Building Code could differ from the national standards of the latest ICC Building Code used by other states. Some important protections related to health, safety, and welfare standards were added to help protect the interests of Florida's citizens. Amendments to the FBC would be mandatory when needed to maintain funding and discounts from Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP), and the U.S. Department of Housing and Urban Development (HUD) (HB 1021 Section 11, FBC § 553.73(7)(a)}. Additionally, existing FBC standards related to the intrusion of water (flood protection) or wind resistance could not be diminished below the base standards of FBC 2014, but could be strengthened (HB 1021 Section 11, FBC § 553.73).

Overview

Currently the United States has no single national building code for the states to follow. Therefore, it is up to each state to adopt and enforce its own building codes. In 1992, Hurricane Andrew made landfall in southern Florida as a Category 5 hurricane. This storm destroyed over 25,000 dwellings and damaged 100,000 others, causing $26 billion in total damages (as adjusted by inflation). Most of these losses were caused by inferior construction practices which unnecessarily magnified the impact of the hurricane's winds. In the aftermath of this storm, the state of Florida adopted the 2001 Florida Building Code, which is one of the most stringent building codes in the nation. Among its many improvements, the new statewide code emphasized improving the integrity of the building envelope including impact protection for exterior windows and doors.

Since the approval of this code, Florida has been hit by several storms including hurricanes Charley, Ivan, and Jeanne in 2004, hurricanes Dennis and Wilma in 2005, and Hurricane Irma last year. The state is still highly vulnerable to hurricane damages with approximately $1.8 trillion of residential property exposure. This susceptibility increases the need for the state to keep its strict building codes. In 2018, the Florida Building Commission hired the University of Florida's Rinker School (RS) to analyze the impacts that potential changes to the technical provisions of the Florida Building Code could have on the state's property insurance rates. The RS subcontracted with the ECFRPC to assist with this project.

As part of this project, the ECFRPC used the REMI PI+ model to estimate the impacts that the potential code changes could have on Florida's economy. The REMI model contains year-by-year demographic and economic information, which is forecasted to 2060. Since 2005, the East Central Florida Regional Planning Council (ECFRPC) has used the REMI to estimate the economic impact of a wide range of events and initiatives including new infrastructure investments, business expansions, incentive packages, and public health interventions. Figure 1 shows the research plan.

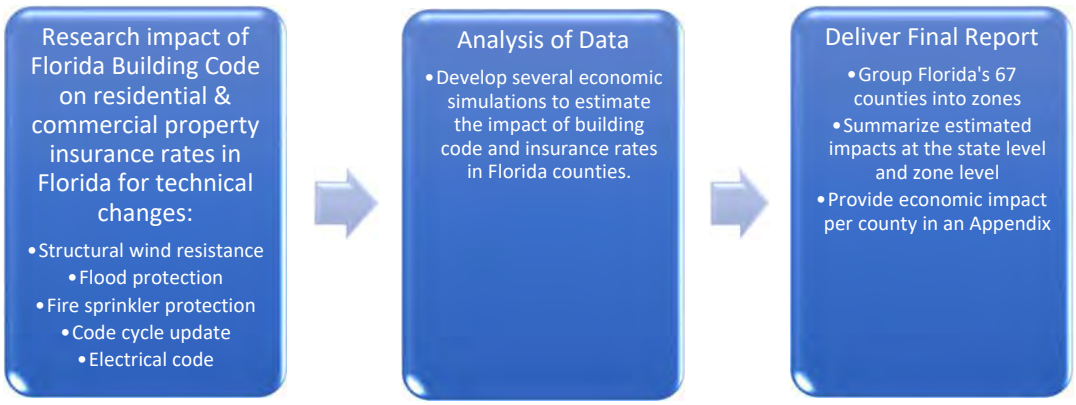


Figure 1: Research Plan

Scope of Work

1. Literature Review: Research the impact that potential changes to the Florida Building Code would have on residential and commercial property insurance rates in the state of Florida for various technical changes including:
    a. Reducing or increasing the model code provisions with respect to structural design to resist wind;
    b. Reducing or increasing the model code provisions with respect to flood protection;
    c. Reducing or increasing the model code provisions with respect to fire sprinkler protection and fire separation distance between buildings;
    d. Changing from a 3-year update code cycle to a 4-year, 5-year or 6-year update cycle;
    e. Adopting ISO-BCEGS electrical code;
    f. Identifying the impact of electrical code adoption on property insurance damage and repair claims.

2. Use the REMI PI+ model to develop several economic simulations that estimate the economic impact of building code and insurance rate changes in Florida and its counties.
    a. Develop a methodology and set of assumptions about cost estimates and insurance rate changes based on the best available data;
    b. Group Florida's 67 counties into zones using the best available data (wind zones or flood risk zone);
    c. Prepare a report that summarizes the estimated impacts at the state level and for the different zones. The economic impact indicators discussed will be employment, output (sales), personal income, and gross domestic product;
    d. Provide information economic impact information by county in an Appendix.

Value of Residential Properties in Florida

In order to examine the potential impacts of the changes to the FBC on residential and commercial property insurance premiums, it is necessary to have a base value for them in Florida for 2017. For the research questions being addressed in this study, both premium values for residential and non-residential (commercial) properties are required. It is also necessary to examine separately insurance premiums ("flood policies") in the 100-year flood plain (1% floodplain). Such flood policies for residential and commercial properties are made available through and backed by FEMA and the NFIP. Data gathered regarding these premium totals discussed in this Introduction will be described below

Comprehensive Florida Residential Property Premiums

Data for residential premium values in Florida is available from the web site of the Florida Office of Insurance Regulation (OIR). A good source of data was found under the office's data reporting site, the Quarterly and Supplemental Reporting System (QUASRng), found at the web link https://apps.fldfs.com/QSRNG/Reports/ReportCriteriaWizard.aspx (Figure 2).

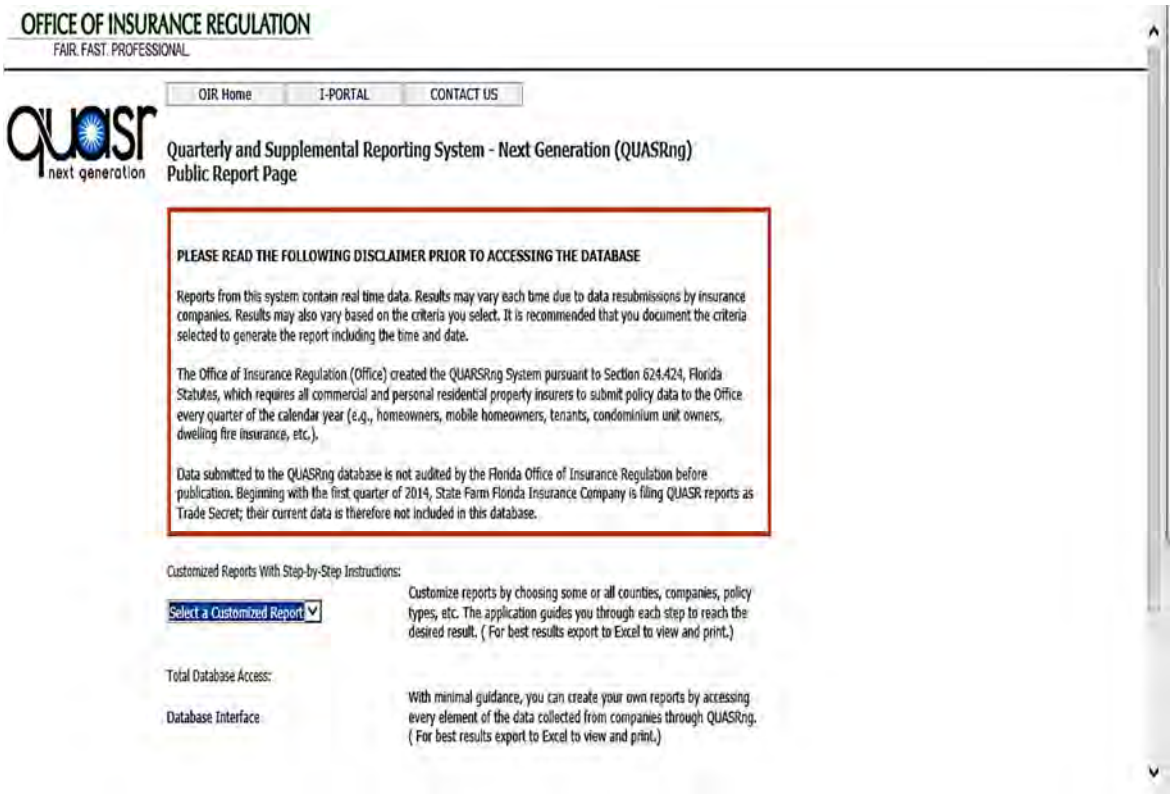


Figure 2: QUASRnx Home Page

From the drop-down menu titled Select a Customized Report, residential insurance premiums can be brought up by quarter for a given year through QUARTRnx, the agency's data search engine. As of the first quarter of 2014, State Farm Insurance data has not been included due to their filing being classified as trade secret data. It is therefore recommended that premium values for 2013 be used, so that State Farm data is captured. Either the mean or last quarter residential premium values could be used. Due to the comprehensive nature of the data provided, decisions would need to be made over many categories of premium values to be excluded. The inflation calculator discussed later in this report could be used to find the present value of these policies.

Florida Residential Flood Policies

For data on flood policies, numbers found from the FEMA web site are recommended to be used. Particularly, data from the NFIPs BureauNet web site, https://bsa.nfipstat.fema.gov/ could be very useful for this project (Figure 3). By selecting the Reports link on the left side of the screen,

Figure 3: BureauNet Home Page

the Policy Information by State report can be chosen. The report shows NFIP policies by state (Figure 4), or by clicking on the state's name highlighted in blue, policy premium totals at the county and municipal level can be provided (Figure 5).

Policy Statistics

in effect on report "AS OF" date below

Policy Statistics
Country-Wide
AS OF 12/31/2017

State Name	Policies In-force	Insurance In-force whole $	Written Premium in-force
Alaska	2,457	661,890,500	2,214,675
Alabama	55,138	12,843,786,400	36,821,042
Arkansas	16,677	3,036,720,300	13,641,433
Arizona	32,245	8,048,529,100	21,340,782
California	239,912	68,792,457,600	189,720,955
N Mariana Islands	9	630,300	23,155
Colorado	21,059	5,416,569,400	17,977,259
Connecticut	38,492	9,798,490,400	52,908,199
District Columbia	2,036	490,874,500	1,445,625
Delaware	26,763	7,026,942,200	19,576,740
Florida	1,759,229	434,492,887,000	960,007,933
Georgia	88,806	23,346,259,100	67,853,678

Figure 4: NFIP Premiums by State

Policy Statistics
Florida
AS OF 12/31/2017

County Name	Community Name	Policies In-force	Insurance In-force whole $	Written Premium In-force
		8	1,465,500	2,310
ALACHUA COUNTY	ALACHUA COUNTY*	1,455	386,882,900	895,260
	ALACHUA, CITY OF	115	30,985,800	83,400
	ARCHER, CITY OF	6	1,231,200	3,049
	GAINESVILLE, CITY OF	1,246	286,704,900	757,060
	HAWTHORNE, CITY OF	6	1,211,300	4,013
	HIGH SPRINGS, CITY OF	31	7,388,600	14,694
	LA CROSSE, TOWN OF	1	350,000	373
	MICANOPY, TOWN OF	10	2,497,000	6,585
	NEWBERRY, CITY OF	29	7,483,000	9,415
	WALDO, CITY OF	1	350,000	373
BAKER COUNTY	BAKER COUNTY *	143	26,803,700	92,492
	MACCLENNY,CITY OF	23	6,166,000	8,970
BAY COUNTY	BAY COUNTY*	14,394	3,538,574,800	6,170,760
	CALLAWAY, CITY OF	862	231,578,400	515,679
	CEDAR GROVE, TOWN OF	6	1,303,600	2,220
	LYNN HAVEN, CITY OF	1,847	557,275,800	1,086,925
	MEXICO BEACH, CITY OF	949	245,863,100	518,369
	PANAMA CITY BEACH, CITY OF	12,536	2,582,328,900	3,478,031
	PANAMA CITY, CITY OF	2,522	700,702,300	1,610,002
	PARKER, CITY OF	262	66,575,200	125,015
	SPRINGFIELD, CITY OF	197	42,894,300	125,432
BRADFORD COUNTY	BRADFORD COUNTY *	394	74,460,200	262,671
	HAMPTON, CITY OF	2	153,500	718
	LAWTEY, CITY OF	6	1,090,500	5,459
	STARKE, CITY OF	71	15,360,300	83,425
BREVARD COUNTY	BREVARD COUNTY *	22,693	6,383,475,300	9,436,567
	CAPE CANAVERAL PORT AUTHORITY	18	9,266,700	32,112
	CAPE CANAVERAL, CITY OF	3,225	608,161,900	945,591
	COCOA BEACH, CITY OF	6,503	1,322,314,600	2,415,884
	COCOA, CITY OF	459	112,517,700	184,119
	GRANT-VALKARIA, TOWN OF	327	99,784,600	190,955
	INDIALANTIC, TOWN OF	793	218,744,200	350,160
	INDIAN HARBOR BEACH, CITY OF	1,877	494,019,400	652,717

Figure 5: NFIP Premiums by County or City

The value of this data is that it will allow the value of floodplain premiums in 2017 to be looked at either at the macro (state) or micro (county/city) data levels, or a combination thereof as required by the research.

Comprehensive Value of Commercial Building Premiums in Florida

In speaking with the OIR, it was stated that it does not keep records on insurance premiums for non-residential commercial structures. However, the web site of the National Association of Insurance Commissioners (NAIC) does provide this data under its annual reports titled *Statistical Compilation of Annual Statement Information for Property/Casualty Insurance Companies.* These reports are available through the web site *http://www.naic.org/prod_serv_publications.htm*.

The latest data for the total value of state premiums collected in for 2015. However, this data can be extrapolated using the inflation calculator from the Bureau of Labor Statistics found on the web at https://www.bls.gov/data/inflation_calculator.htm (Figure 6)

Figure 6: Bureau of Labor Statistics Inflation Calculator

Modeling Impacts of Building Code Changes on Insurance Premiums

As was mentioned under Limitations of Project in the Contract for Services, one difficulty of the project will be access to proprietary information used by insurance companies in establishing rates based on construction code standards. Not only is this information proprietary, but it is very esoteric knowledge for a researcher not as familiar with the field. Also, the development of a modeling system for a project like this would be cost-prohibitive. As a result, the OIR recommends the best way to examine the potential impacts of the changes to the FBC on residential and commercial insurance premiums would be by contracting to have construction scenarios run through the Florida Public Hurricane Loss Model, developed through Florida International University (FIU) for OIR. Used by experts in diverse fields such as meteorology, wind/structural engineering, computer science, GIS, as well as actuarial and mathematicians, this model uses various hurricane models to look at construction and insurance impacts of the storms. More information on the Florida Public Hurricane Loss Model can be found on the web at https://www4.cis.fiu.edu/hurricaneloss/.

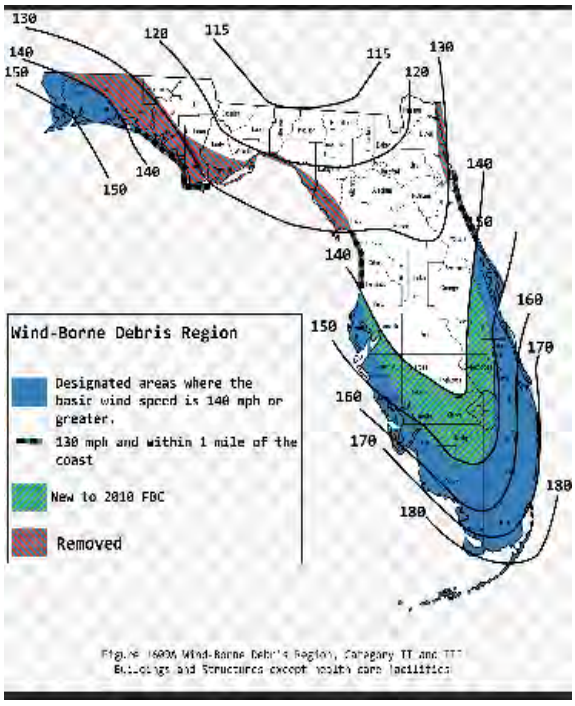


Figure 7: Florida Wind-Bourne Debris Region Map

Task 1.a. Reducing or Increasing the Model Code Provisions for Structural Wind Resistance

As mentioned earlier, HB 1021 restricts changes to the building code related to wind resistance so the standards cannot be decreased from those at the time of the bill's adoption. The scenario applicable here would be examining the impact on residential and commercial property

insurance premiums should ICC raised its code standards in other states, but the Florida code remain unchanged at its originally adopted standard. ICC changes to the wind load standards for garage and rolling doors is recommended as a good wind resistance standard to use for this research project. The 2017 Florida Wind-Bourne Debris Region map (Figure 7) would be used in the calculations of the wind resistance code change's impacts on these insurance premiums. Different scenarios would then be run through the Florida Public Hurricane Loss Model.

Task 1.b. Reducing or Increasing Model Code Provisions for Flood Protection

As with Task 1.a. above, HB 1021 does not allow flood protection standards to be reduced below the level of the 2014 FBC. Additionally, the bill does not allow the standards below those that would jeopardize Florida's funding of federal flood insurance under the NFIP. Thus, the only scenario that would be applicable here would be the ICC Building Code's flood protection provisions being strengthened, but those of the NFIP and the FBC being left at their current standards. One potential code change scenario to examine would be the NFIP standard that areas below base flood elevation (BFE) have flood vents to help resistance of hydrostatic and hydrodynamic forces at a ratio of one (1) spare inch of flood venting for every one (1) square foot of enclosed space. Different scenarios for venting standards could be run under various storm conditions utilizing the Florida Public Hurricane Loss Model.

Task 1.c. Reducing or Increasing Model Code Provisions for Fire Sprinkler Protection and Fire Separation Protection Between Buildings

This research will examine the impacts of changing the standard under National Fire Protection Association (NFPA) 1 §13.3.2.15.2 and §13.3.2.17.2 for new hotels and dormitories (commercial) and new apartment buildings (residential) as to when a sprinkler system meeting the standards of NFPA 13R can be used. The current standard is that new hotels and dormitories and new apartment buildings of up to and including four (4) stories in height and not exceeding 60 feet in height above plane grade being able to use systems meeting the standards of NFPA13R. This study will analyze the economic impact of changing the height threshold for utilizing NFPA 13R systems to buildings up to and including five (5) stories in height and up to 75 feet in height.

Regarding changes to the standards for building separation, the governing document for this standard, NFPA 80A, does not make a distinction between residential and commercial buildings. This study will examine the impact of changing the severity of fire load standards of light, moderate, and severe, which are used in calculating the required separation distance between residential and commercial buildings. Under the current standard of NFPA 80A Table 4.3.5.2(a), the fire loading of floor areas between 0 and seven (7) pounds per square foot is considered light severity, between eight (8) and 15 pounds per square foot is considered moderate severity, and above 216 pounds per square foot is considered severe for building separation calculations. This study examines the economic impacts of raising light severity from 0 to 12 pounds per square foot, the medium severity to between 12 and 20 pounds per square foot, and the severe standard to 221 pounds per square foot and above.

Task 1.d. Changing from a Three (3) Year Code Update to a Four (4) Year, Five (5) Year, or Six (6) Year Update Cycle

Through a review of the final adopted version of HB 1021 it has been determined that the traditional three (3) update cycle of the ICC Building Code has been maintained with the FBC. This study will examine the economic impacts of four (4), five (5), or six (6) year update cycles being used in the future.

Task 1.e. Adopting the ISO-BCEGS Electrical Code

The Insurance Service Office (ISO), which manages the Building Code Effectiveness Grading Schedule (BCEGS), is a leading source of information about risk. The BCEGS assesses the building codes in effect in communities and how the community enforces its building codes, with a special emphasis on mitigation of losses from natural hazards. In other words, participating municipalities with well-enforced, up-to-date codes demonstrate lower loss experience, and have lower insured losses.

The BCEGS program assigns each participating municipality a BCEGS grade of 1 to 10 (one being exemplary). A grade of 98 is given to communities that refuse to participate. Based on the above grading system, the ISO gives insurers BCEGS classifications, BCEGS advisory credits, and related underwriting information.

A community's classification is based on the administration of codes, the review process of building plans, and field inspections. There is not a separate electrical code. Rather, the ISO-BCEGS program examines the electrical code as one component of the overall efficiency of a municipality's building code process. Figure 8 shows the distribution of class numbers among the participating municipalities in Florida and separates the classification further into residential and commercial buildings.

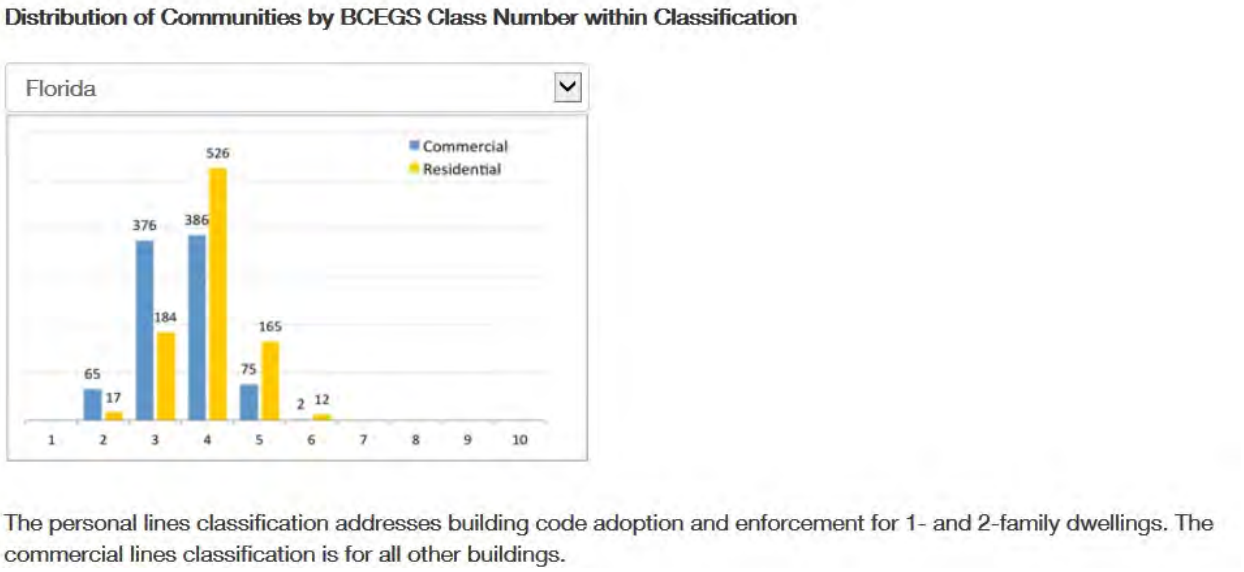


Figure 8: Florida Communities BCEGS Class Number

Task 1.f. Identifying the Impact of Electrical Code Adoption on Property Insurance Damage and Repair Claims

Since there is no separate electrical code standard, this study will examine the economic impacts of making participation by municipalities in the ISO-BCEGS program mandatory. Currently, a municipality's participation in the ISO-BCEGS program is voluntary. As of February 2007, there were 13 municipalities in the State of Florida not participating. As of the last audit of municipalities in 2006, there are 410 of them in Florida.

Methodology, Inputs, and Assumptions

One of the most important parts of creating a good economic simulation is identifying and developing the data that will be entered into the model. As part of this project, the ECFRPC performed an extensive literature review and contacted several state agencies to identify good data inputs that could be used to develop a comprehensive economic impact simulation. Despite

staff's best efforts, the ECFRPC was unable to find any data that could be entered into the REMI PI+ model. While the absence of data can be a hindrance to developing good estimates, it is not integral to creating a valid economic model.

Figure 9: Florida Communities with Highest Grades and Non-Participants (February 2007)

Community and BCEGS™ Information			
Community Name	County Name	BCEGS™ PL Class	survey year
CORAL GABLES	MIAMI-DADE	01	2000
ALTAMONTE SPRINGS	SEMINOLE	02	2004
APOPKA	ORANGE	02	2001
ASTATULA	LAKE	02	2002
BAY HARBOR ISLANDS	MIAMI-DADE	02	2003
CLERMONT	LAKE	02	2002
COOPER CITY	BROWARD	02	2003
EUSTIS	LAKE	02	2001
GOMEZ	MARTIN	02	2001
HOBE SOUND	MARTIN	02	2001
HUTCHINSON ISLAND	MARTIN	02	2001
INDIAN SHORES	PINELLAS	02	2005
INDIANTOWN	MARTIN	02	2001
JENSEN BEACH	MARTIN	02	2001
JUPITER	PALM BEACH	02	2003
KEY BISCAYNE	MIAMI-DADE	02	2006
LAKE CO	LAKE	02	2002
MARTIN CO	MARTIN	02	2001
MIAMI BEACH	MIAMI-DADE	02	2005
MIAMI DADE CO	MIAMI-DADE	02	2002
MONTVERDE	LAKE	02	2002
NORTH BAY VILLAGE	MIAMI-DADE	02	2006
OCALA	MARION	02	2001
PALM CITY	MARTIN	02	2001
PORT SALERNO	MARTIN	02	2001
PORT SEWALL	MARTIN	02	2001
RIO	MARTIN	02	2001
SALERNO	MARTIN	02	2001
SANIBEL	LEE	02	2002
SOUTH MIAMI	MIAMI-DADE	02	2005
SUNRISE	BROWARD	02	2004
TREASURE ISLAND	PINELLAS	02	2005
UMATILLA	LAKE	02	2001
WEST MIAMI	MIAMI-DADE	02	2002
WINTER GARDEN	ORANGE	02	2001
WINTER PARK	ORANGE	02	2005
BOCA RATON	PALM BEACH	98	2005
BRINY BREEZES	PALM BEACH	98	1997
DUNDEE	POLK	98	2002
GOLFVIEW	PALM BEACH	98	1997
HIALEAH GARDENS**	MIAMI-DADE	98	2002
LAKE BUTLER	UNION	98	1997
MIDWAY	GADSDEN	98	2003
OCEAN BREEZE PARK	MARTIN	98	1997
RAIFORD	UNION	98	1997
SEA RANCH LAKES	BROWARD	98	1996
SEMINOLE TRIBE	BROWARD	98	1996
UNION CO	UNION	98	1997
WORTHINGTON SPRINGS	UNION	98	1997

** Community has contacted ISO to particiate in the program. ISO will evaluate community ASAP.

ECFRPC staff had to make several assumptions when developing this economic impact analysis simulation. First, the ECFRPC assumed that there is a strong relationship between the strength of building codes and insurance rates based on Florida's experience after Hurricane Andrew and the 2004 Hurricane season. During the aftermath of these hurricanes, several national insurance carriers stopped writing or renewing property insurance policies in the state. The remaining companies raised premiums and deductibles across the board and limited the number of high risk policies they wrote. Based on these past experiences, it will be safe to assume that any changes to Florida's building code would be interpreted as a source of risk for insurance carriers. Since there was no actuarial information available, the ECFRPC had to estimate rising insurance costs for both households and businesses (Figure 10). REMI already has some of these costs built into the model, so the ECFRPC assumed that they will go up by several percentage points from 2022 to 2040. The net household insurance cost was progressively increased between five and seven percent for this time period for all households in all Florida counties (Figure 11). For businesses, the ECFRPC increased production costs between one and three percent. This lower number assumes that insurance is not the largest cost for Florida businesses when compared to labor or rent. On the other hand, household budgets would be bearing the larger brunt if insurance rates were to increase.

Finally, it is safe to assume that the underlying reasoning behind the code changes is to reduce costs in the construction industry. However, based on staff's experience in the planning and building industry, the largest costs incurred by these companies are land, equipment, and labor. Changing the building codes will not decrease any of these expenses. The ECFRPC assumed that starting in 2019, there will be slight decrease in the construction industry's production costs starting at three percent and progressively increasing to five percent by 2040.

Variables	Industry	Definition
Production Costs	Construction	Change the relative production costs of doing business for a specific industry without directly changing the relative costs of factor inputs (labor, capital, and/or fuel)
	Insurance	
Consumer Price	Net Household Insurance	Change the commodity price within the specified consumption category

Figure 10: Insurance Rate Simulation Inputs

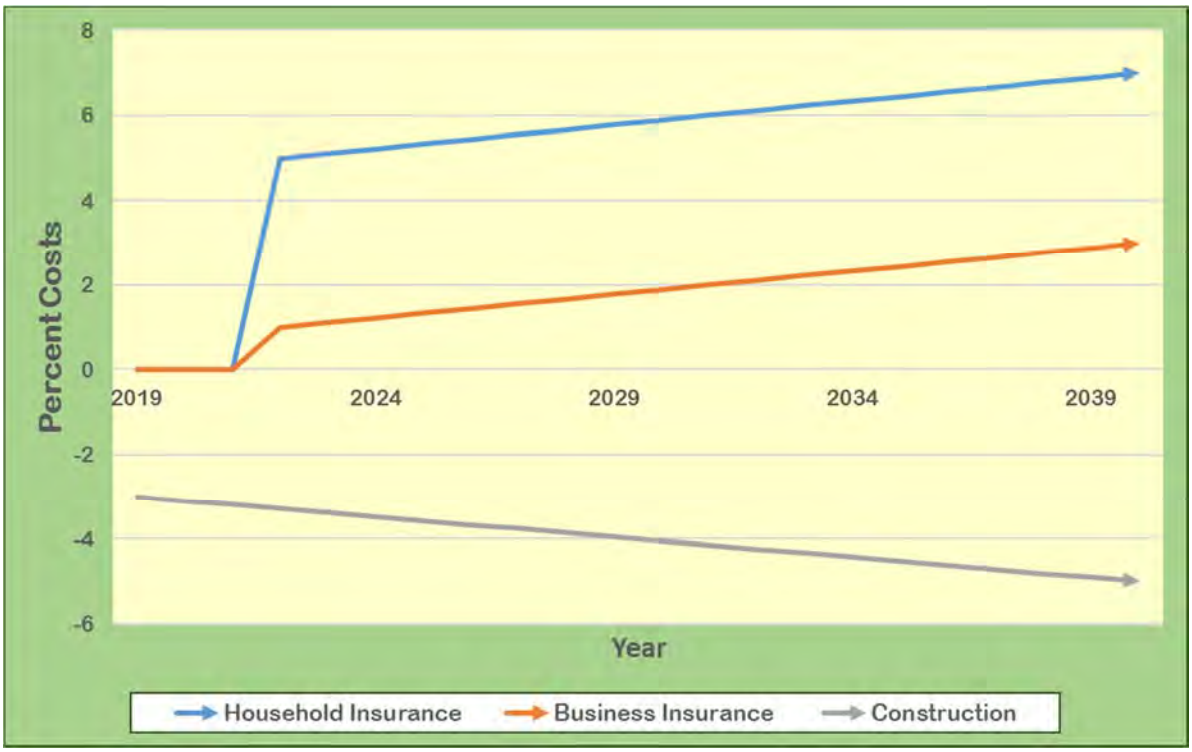


Figure 11: Changes in Percentage Costs as Entered into the Economic Simulation

This information was entered into the REMI model to calculate the economic impact that these changes would have on Florida's economy. Economic impact simulations estimate the direct, indirect and induced effects generated by changes in public policy. The direct effect is defined as the benefits created by the original economic adjustments. In turn, these changes will also affect the regional demand for goods and services. This is considered an indirect economic impact.

Finally, the local consumption or induced economic effect is the money that households spend on such things as rent, food, and entertainment. These indirect and induced impacts are often referred to as the economic ripple effect (See Figure 12).

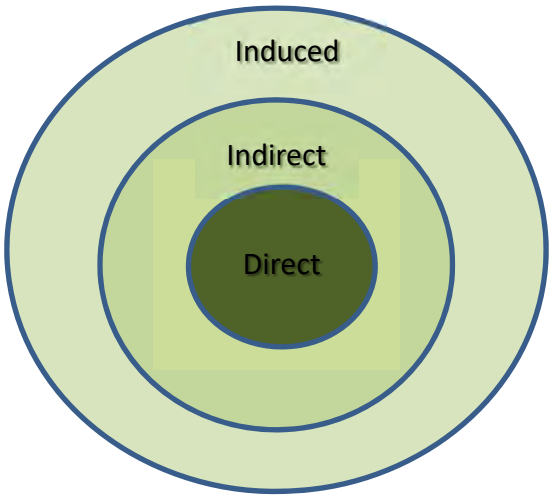


Figure 12: Economic Impact Ripple Effect

Summary of Economic Simulation Results

According to REMI, the changes in the costs of insurance and construction production costs will result on an average loss of just over 412,000 jobs when compared to the REMI's baseline. It will also decrease the state's output by more than $71 billion and reduce personal income by $52 billion. The project will also decrease the state's gross regional product by $41.4 billion (Figure 13). It is important to note that these changes are below what the model forecasted for the State of Florida during this time period. All Florida counties lost economic activity due to these changes. To isolate the main cause for the drop in economic activity, the ECFRPC recreated the simulation with and without the different variables. While the reduction in construction production costs generates positive economic numbers, it is not enough to ameliorate the losses created by the increases in property insurance costs. This is especially true for the increase in business insurance costs, which takes money that could be used to pay for other services. The next sections of the report explain the simulation's results in more detail. A complete list of the economic impacts by County is provided in the Appendix.

Economic Indicator	Average Losses
Total Employment	(412,194)
Output (Sales)	($71,144,636,364)
Personal Income	($52,072,181,818)
Gross Regional Product	($41,469,363,636)

SOURCE: REMI PI+ Florida Counties v. 2.1.0

Figure 13: State of Florida Economic Impact Summary

Employment

The employment estimate includes full-time, part-time, and temporary positions, which the model gives equal weight. According to REMI, the changes to the Florida Building Code could decrease employment by an average of 412,194 positions during this time period (based on the forecast). This includes 382,527 direct, 84,854 indirect, and 55,187 induced jobs (Figure 14). Job losses will be distributed across all industries. The three most affected industries would be Retail, Health Care and Social Assistance, and Construction (Figure 15).

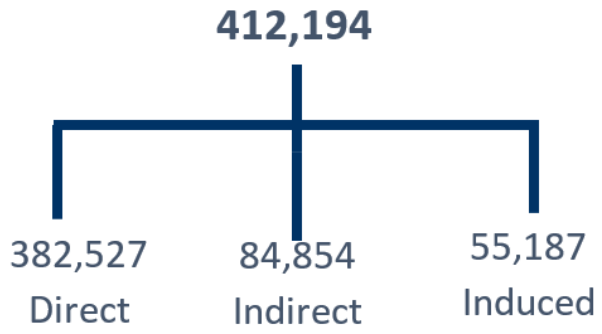


Figure 14: Jobs Losses by Type

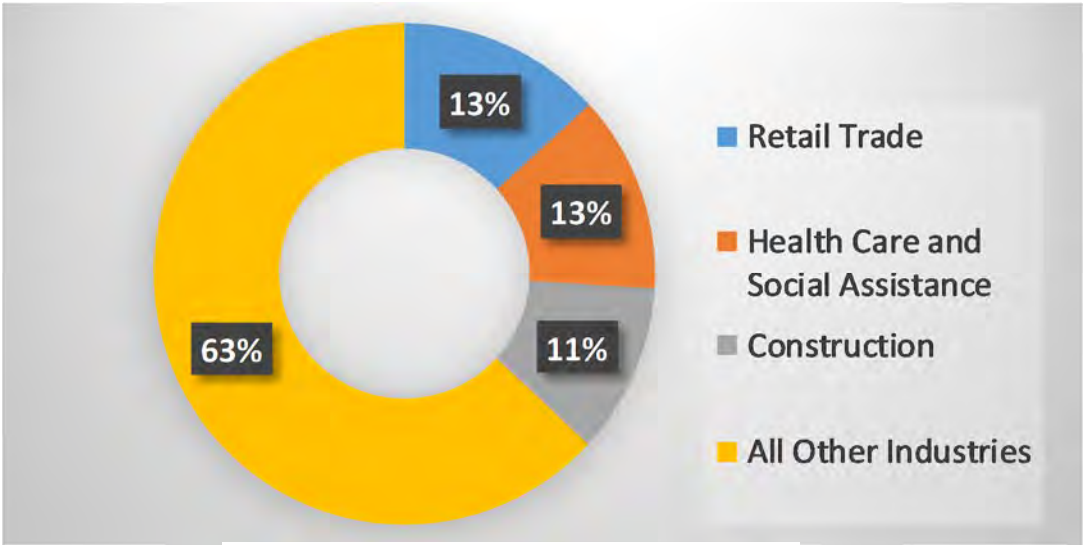


Figure 15: Jobs Losses by Industry Type

Output (Sales)

Often referred to as total sales volume, output measures the gross level of business revenue which includes both the costs of labor and materials (intermediate inputs) and value-added activities (compensation and profits). Since business output is the broadest measure of economic activity, it tends to generate the largest numbers. According to the REMI model, the State of Florida would lose about $71 billion in total output during this period. Again, the losses would occur across all industries. The average largest reductions in output would be in the Manufacturing ($9.8 billion), Real Estate and Rental and Leasing ($7.6 billion), Retail ($6.7 billion), and Health Care and Social Assistance ($6.5 billion) industries.

Personal Income

Personal income refers to total earnings from employee compensation, wage supplements, rents, transfer payments, and other business ventures. According to REMI, these changes would cause personal incomes to shrink an average of $52 billion below the baseline forecast.

Gross Regional Product (GRP)

Finally, another important economic indicator is gross regional product (GRP). Sometimes referred to as gross domestic product (GDP), this figure represents the market value of all goods and services produced by labor and property, regardless of nationality. Based on the results of his simulation and the baseline forecast, the State of Florida would suffer a GDP loss $41.4 billion.

Economic Impact by Region

Because of the unavailability of valid data linking building productions and property insurance costs, the ECFRPC decided to enter the percentage cost changes uniformly across all Florida regions rather than differentiating between coastal and inland counties. This avoided having to make additional assumptions that could generate dubious results. To better summarize the results of this simulation, the ECFRPC aggregated Florida's 67 counties into ten different regions using the geographic boundaries of the regional planning councils (RPCs) (Figure 16). Using these borders is the best grouping method as the counties within each RPC share similar urbanization and socioeconomic characteristics. Not surprisingly, the biggest economic losses occurred in the largest regions: South (Miami), Tampa Bay (Tampa), and East Central (Orlando). On the other

hand, more rural regions such as Apalachee, North Central, West, and Central suffered smaller losses.

Figure 16: Economic Losses by Florida Region

Region	Total Employment	Output	Personal Income	Gross Domestic Product
Apalachee	(6,105)	($865,250,000)	($852,812,500)	($511,531,250)
Central	(11,768)	($2,106,812,500)	($1,967,500,000)	($1,143,031,250)
East Central	(66,732)	($12,258,031,250)	($9,696,593,750)	($7,003,593,750)
North Central	(7,067)	($1,168,437,500)	($1,123,343,750)	($647,375,000)
Northeast	(27,152)	($5,111,843,750)	($4,594,906,250)	($2,898,000,000)
South	(91,990)	($16,577,343,750)	($14,818,187,500)	($9,749,406,250)
Southwest	(26,893)	($4,074,437,500)	($4,563,718,750)	($2,404,687,500)
Tampa Bay	(62,417)	($12,268,156,250)	($9,898,562,500)	($7,030,750,000)
Treasure Coast	(34,247)	($5,882,187,500)	($7,062,184,648)	($3,467,312,500)
West	(9,402)	($1,472,562,500)	($1,502,156,250)	($839,906,250)

SOURCE: REMI PI+ Florida Counties v. 2.1.0

Conclusion

For the potential impacts of building code changes on insurance premiums, negative results can be demonstrated through the Florida Public Hurricane Loss Model for construction costs and storm impacts.

According to HB 1021, both structural wind resistance and flood protection provisions cannot be reduced lower than the ICC minimum standards. Strengthening both provisions, however, will not have a direct impact on insurance premiums until a significant wind or flood event happens (respectively) and therefore cannot be predicted. Using the Florida Public Hurricane Loss Model, however, can demonstrate a potential impact for future planning. In addition, Florida has one of the highest structural wind resistance provisions in the United States.

Increasing the fire sprinkler protection as described in Section 1.c is recommended. The additional construction cost is negligible compared to the potential insurance impact from a loss.

Continuing with the three-year cycle is recommended because a four, five, or six-year cycle will put additional strain on the building codes adoption provisions and cause Florida to be behind in new and updated provisions.

Currently, the ISO-BCEGS is not mandatory. It is recommended to make this provision mandatory for municipalities to participate, which will have positive impacts on electrical code and other construction categories used to grading/scoring.

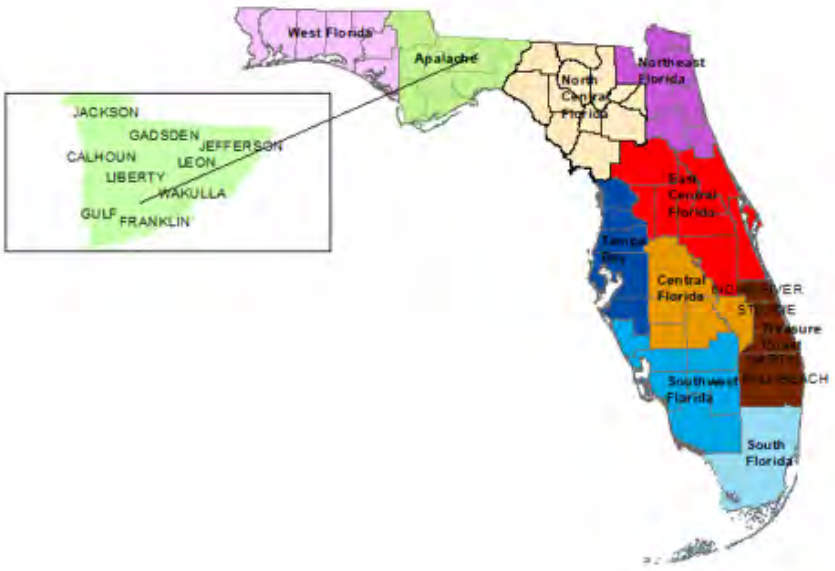
According to the REMI modeling used to calculate and predict economic activity impacts in the State of Florida, every county could suffer a loss of employment, sales output, personal income, and gross regional product due to changes in the cost of insurance premiums and construction production costs.

As seen throughout this study, changes in building codes could have a significant impact on both commercial and residential insurance premiums while generating higher construction costs, loss of employment, revenue, household incomes, and gross regional product.

APPENDIX A

Economic Impact Results by Florida Regions

Economic Impact of Building Code Changes for Apalachee Region



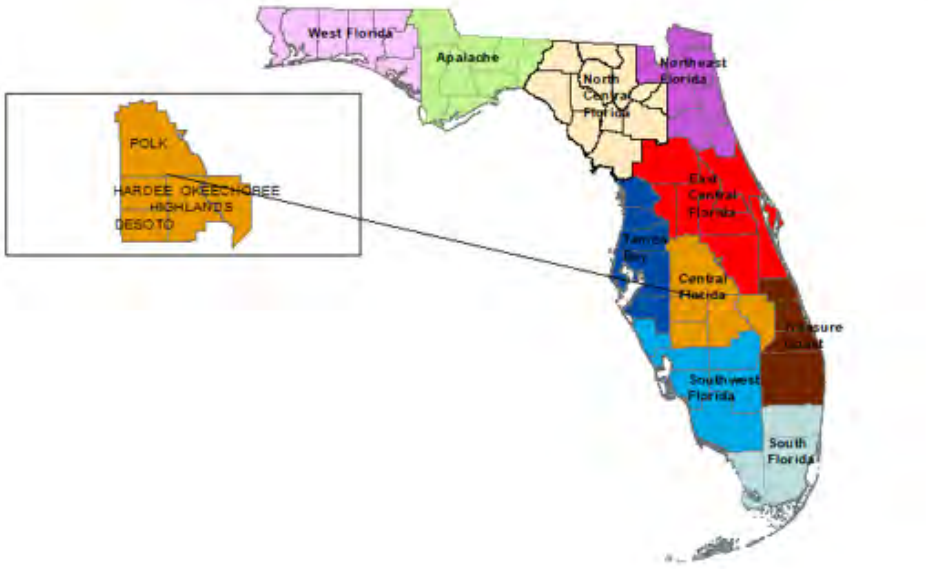
Total Economic Impact in Apalachee Region

Economic Indicator	Average Economic Impact
Employment	(6,105)
Output (Sales)	$ (865,250,000)
Personal Income	$ (852,812,500)
Gross Domestic Product	$ (511,531,250)

Economic Impact in Apalachee Region

Economic Indicator	Calhoun	Franklin	Gadsen	Gulf	Jackson	Jefferson	Leon	Liberty	Wakulla
Employment	$ (78)	$ (93)	$ (338)	$ (94)	$ (336)	$ (78)	$ (4,808)	$ (61)	$ (219)
Output (Sales)	$ (7,147,466)	$ (11,549,621)	$ (45,529,526)	$ (12,000,647)	$ (42,897,229)	$ (7,762,932)	$ (695,118,336)	$ (10,522,198)	$ (32,753,896)
Personal Income	$ (15,814,711)	$ (11,943,795)	$ (55,195,168)	$ (11,611,639)	$ (52,541,016)	$ (20,180,363)	$ (596,813,174)	$ (11,946,432)	$ (76,763,393)
Gross Domestic Product	$ (4,268,074)	$ (6,657,768)	$ (24,987,038)	$ (7,276,254)	$ (24,187,181)	$ (4,706,941)	$ (418,193,009)	$ (4,920,014)	$ (16,472,509)

Economic Impact of Building Code Changes for Central Florida Region



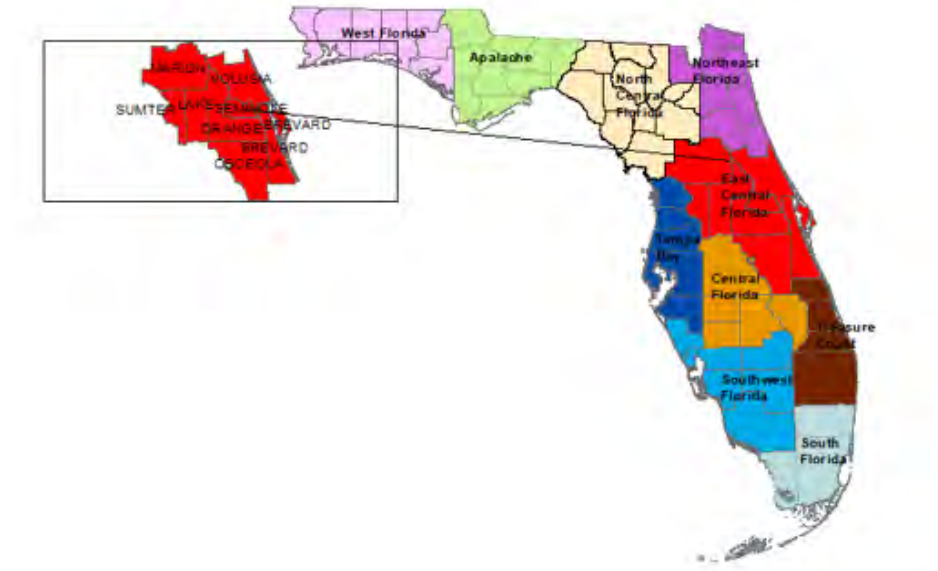
Total Economic Impact in Central Florida Region

Economic Indicator	Average Economic Impact
Employment	(66,732)
Output (Sales)	$ (12,258,031,250)
Personal Income	$ (9,696,593,750)
Gross Domestic Product	$ (7,003,593,750)

Economic Impact by County in Central Florida Region

Economic Indicator	Brevard	Lake	Marion	Orange	Osceola	Seminole	Sumter	Volusia
Employment	(8,799)	(4,322)	(4,251)	(29,257)	(3,560)	(8,774)	(813)	(6,955)
Output (Sales)	$ (1,629,767,755)	$ (585,242,800)	$(631,748,185)	$ (6,095,363,290)	$ (538,443,216)	$(1,539,668,643)	$ (128,328,612)	$ (1,109,472,388)
Personal Income	$ (1,364,950,910)	$ (880,030,590)	$(657,795,462)	$ (2,597,936,164)	$ (921,363,000)	$(1,755,894,618)	$ (159,209,132)	$ (1,359,445,801)
Gross Domestic Product	$ (861,582,482)	$ (336,348,850)	$(344,093,566)	$ (3,531,443,713)	$ (327,452,889)	$ (905,601,303)	$ (72,283,653)	$ (624,812,223)

Economic Impact of Building Code Changes for East Central Florida Region



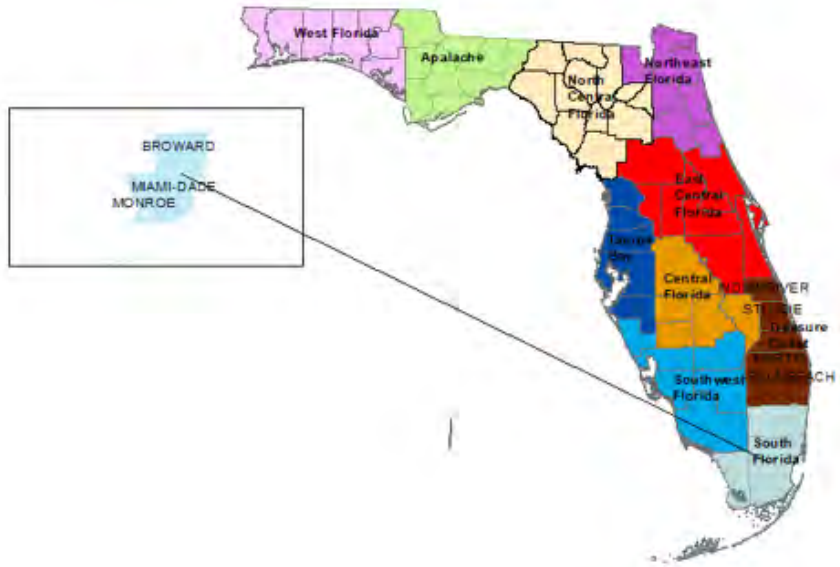
Total Economic Impact in East Central Florida Region

Economic Indicator	Average Economic Impact
Employment	(66,732)
Output (Sales)	$ (12,258,031,250)
Personal Income	$ (9,696,593,750)
Gross Domestic Product	$ (7,003,593,750)

Economic Impact by County in East Central Florida Region

Economic Indicator	Brevard	Lake	Marion	Orange	Osceola	Seminole	Sumter	Volusia
Employment	(8,799)	(4,322)	(4,251)	(29,257)	(3,560)	(8,774)	(813)	(6,955)
Output (Sales)	$ (1,629,767,755)	$ (585,242,800)	$(631,748,185)	$ (6,095,363,290)	$ (538,443,216)	$(1,539,668,643)	$ (128,328,612)	$ (1,109,472,388)
Personal Income	$ (1,364,950,910)	$ (880,030,590)	$(657,795,462)	$ (2,597,936,164)	$ (921,363,000)	$(1,755,894,618)	$ (159,209,132)	$ (1,359,445,801)
Gross Domestic Product	$ (861,582,482)	$ (336,348,850)	$(344,093,566)	$ (3,531,443,713)	$ (327,452,889)	$ (905,601,303)	$ (72,283,653)	$ (624,812,223)

Economic Impact of Building Code Changes for South Florida Region



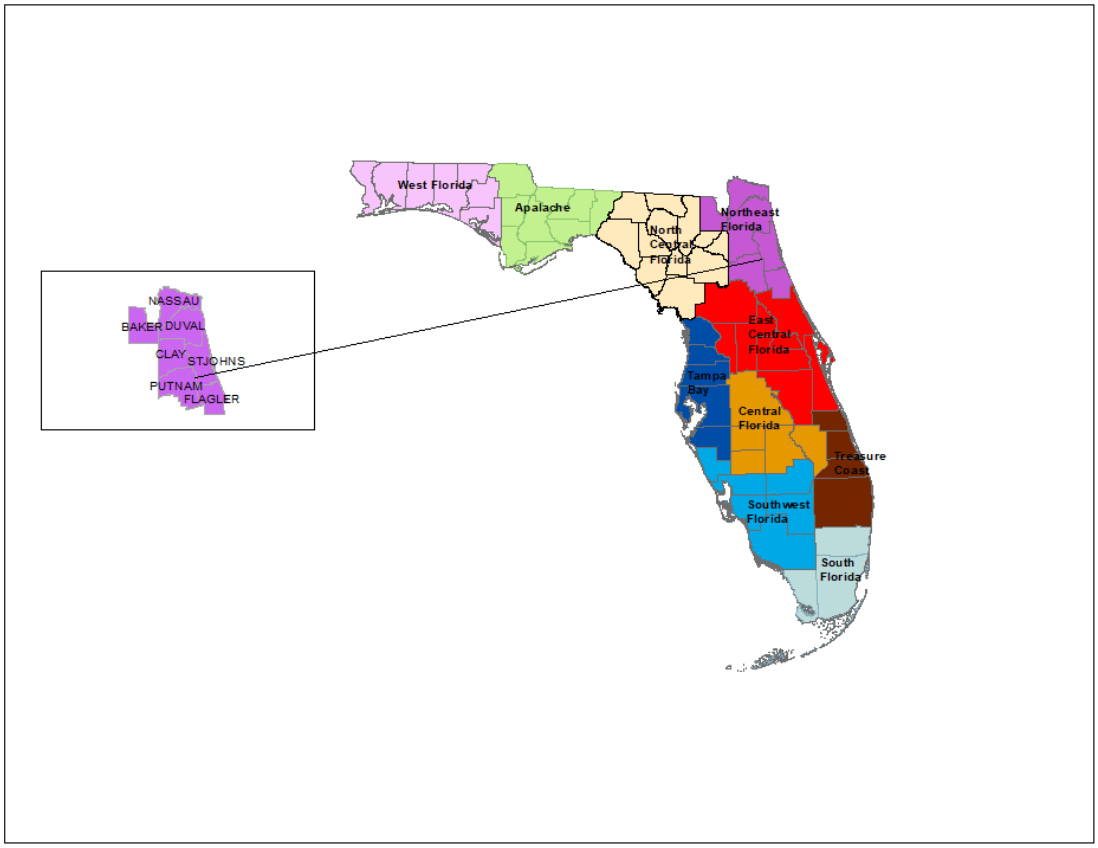
Total Economic Impact in South Florida Region

Economic Indicator	Average Economic Impact
Employment	(91,990)
Output (Sales)	$ (16,577,343,750)
Personal Income	$ (14,818,187,500)
Gross Domestic Product	$ (9,749,406,250)

Total Economic Impact by County in South Florida Region

Economic Indicator	Broward	Miami-Dade	Monroe
Employment	(34,603)	(56,119)	(1,268)
Output (Sales)	$ (6,232,921,089)	$ (10,180,012,079)	$ (164,328,027)
Personal Income	$ (4,152,755,518)	$ (10,456,716,166)	$ (208,751,059)
Gross Domestic Product	$ (3,662,825,840)	$ (5,988,978,009)	$ (97,569,533)

Economic Impact of Building Code Changes for Northeast Florida Region



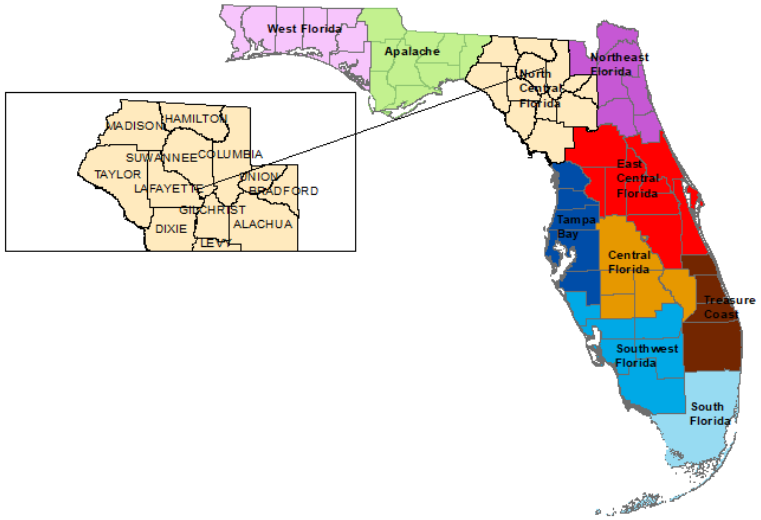
Total Economic Impact in Northeast Region

Economic Indicator	Average Economic Impact
Employment	(27,152)
Output (Sales)	$ (5,111,843,750)
Personal Income	$ (4,594,906,250)
Gross Domestic Product	$ (2,898,000,000)

Total Economic Impact by County in Northeast Region

Economic Indicator	Baker	Clay	Duval	Flagler	Nassau	Putnam	St. Johns
Employment	(219)	(2,410)	(18,939)	(729)	(746)	(567)	(3,542)
Output (Sales)	$ (25,859,694)	$ (319,640,915)	$ (3,912,425,763)	$ (107,477,024)	$ (107,740,694)	$ (99,939,264)	$ (538,790,643)
Personal Income	$ (39,169,701)	$ (708,703,928)	$ (1,659,033,865)	$ (238,540,679)	$ (227,192,907)	$ (128,515,677)	$ (1,593,788,418)
Gross Domestic Product	$ (14,796,154)	$ (188,033,768)	$ (2,207,242,783)	$ (60,834,323)	$ (60,110,874)	$ (54,833,045)	$ (312,145,959)

Economic Impact of Building Code Changes for North Central Florida Region



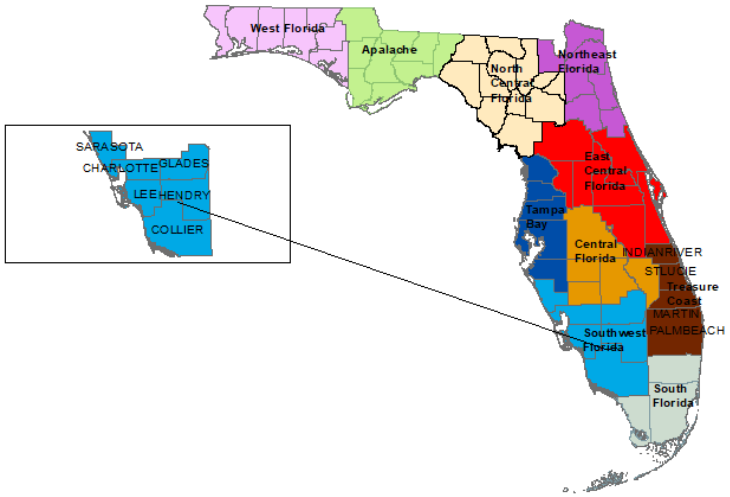
Total Economic Impact in North Central Florida Region

Economic Indicator	Average Economic Impact
Employment	(7,067)
Output (Sales)	$ (1,168,437,500)
Personal Income	$ (1,123,343,750)
Gross Domestic	$ (647,375,000)

Total Economic Impact by County in North Central Florida Region

Economic Indicator	Alachua	Bradford	Columbia	Dixie	Gilchrist	Hamilton	Lafayette	Levy	Madison	Taylor	Union
Employment	(4,667)	(270)	(654)	(105)	(112)	(77)	(43)	(322)	(119)	(193)	(112)
Output (Sales)	$ (771,172,429)	$ (34,213,982)	$(130,115,205)	$ (13,723,255)	$ (10,701,740)	$ (26,684,493)	$ (4,620,040)	$ (38,863,468)	$(18,551,184)	$ (43,919,367)	$(13,795,230)
Personal Income	$ (714,724,410)	$ (53,383,821)	$ (97,770,568)	$ (21,207,946)	$ (19,914,847)	$ (8,013,618)	$ (6,990,593)	$ (58,006,176)	$(17,700,794)	$ (35,669,724)	$(15,679,409)
Gross Domestic	$ (445,755,063)	$ (19,329,237)	$ (65,184,794)	$ (6,994,204)	$ (6,336,924)	$ (11,176,288)	$ (2,534,931)	$ (20,710,651)	$ (9,663,745)	$ (20,621,651)	$ (7,479,498)

Economic Impact of Building Code Changes for Southwest Florida Region



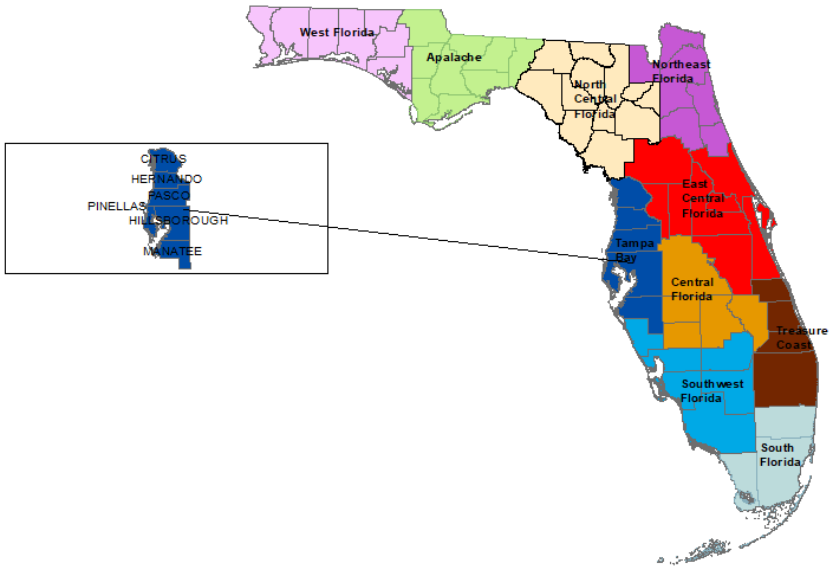
Total Economic Impact in Southwest Region

Economic Indicator	Average Economic Impact
Employment	(26,893)
Output (Sales)	$ (4,074,437,500)
Personal Income	$ (4,563,718,750)
Gross Domestic Product	$ (2,404,687,500)

Total Economic Impact by County in Southwest Region

Economic Indicator	Charlotte	Collier	Glades	Hendry	Lee	Sarasota
Employment	(1,910)	(5,205)	(104)	(431)	(11,738)	(7,506)
Output (Sales)	$ (223,327,861)	$ (808,344,816)	$ (9,939,020)	$ (48,710,562)	$(1,845,426,523)	$(1,138,616,838)
Personal Income	$ (237,985,008)	$ (975,050,225)	$ (12,584,319)	$ (56,843,094)	$(2,161,812,279)	$(1,119,475,376)
Gross Domestic Product	$ (134,164,333)	$ (481,576,119)	$ (5,616,809)	$ (27,421,128)	$(1,090,455,373)	$ (665,554,733)

Economic Impact of Building Code Changes for Tampa Bay Region



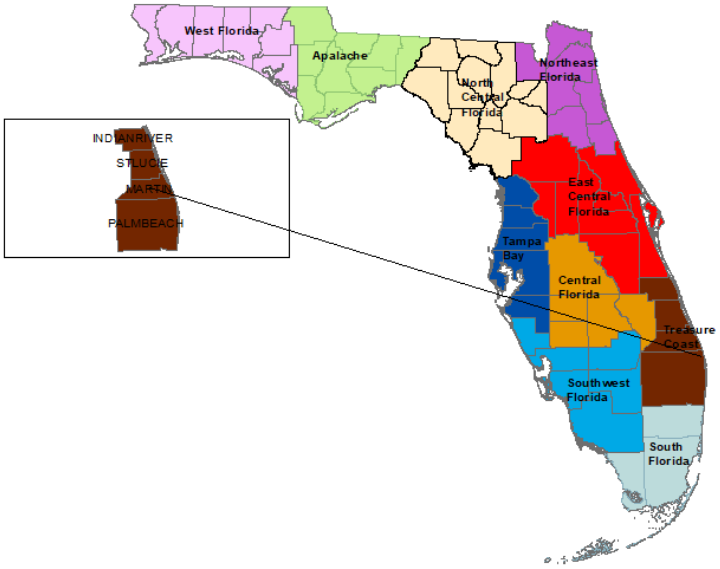
Total Economic Activity in Tampa Bay Region

Economic Indicator	Average Economic Impact
Employment	(62,417)
Output (Sales)	$ (12,268,218,667)
Personal Income	$ (9,898,562,500)
Gross Domestic Product	$ (7,030,750,000)

Total Economic Activity by County in Tampa Bay Region

Economic Indicator	Citrus	Hernando	Hillsborough	Manatee	Pasco	Pinellas
Employment	(1,300)	(2,002)	(27,053)	(5,740)	(5,911)	(20,411)
Output (Sales)	$ (170,933,745)	$ (249,487,700)	$ (6,168,101,340)	$ (943,335,860)	$ (847,456,117)	$(3,888,823,912)
Personal Income	$ (209,182,416)	$ (402,939,455)	$ (3,402,997,181)	$ (938,595,790)	$(1,913,969,530)	$(3,030,904,361)
Gross Domestic Product	$ (105,046,340)	$ (141,220,895)	$ (3,562,871,575)	$ (526,384,258)	$ (497,088,736)	$(2,198,135,534)

Economic Impact of Building Code Changes for Treasure Coast Region



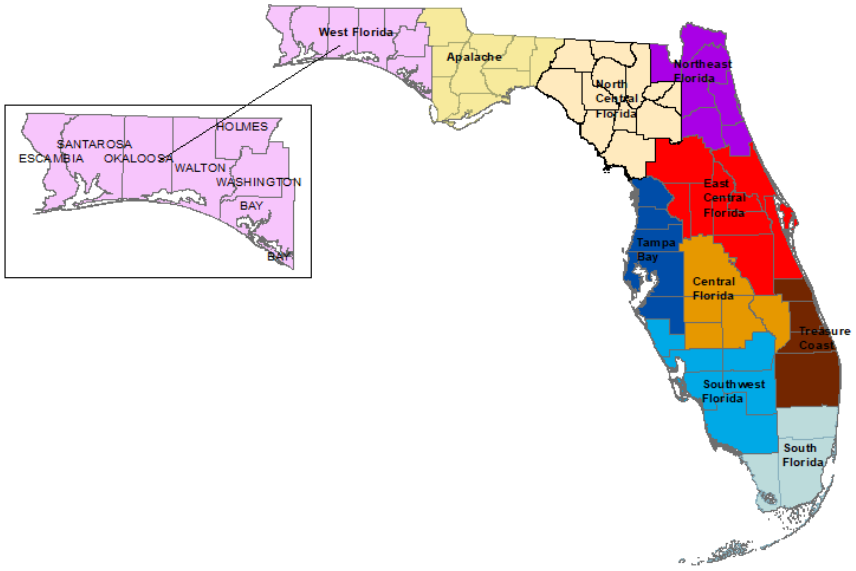
Total Economic Impact in Treasure Coast Region

Economic Indicator	Average Economic Impact
Employment	(34,247)
Output (Sales)	$ (5,882,187,500)
Personal Income	$ (7,062,184,648)
Gross Domestic Product	$ (3,467,312,500)

Total Economic Impact by County in Treasure Coast Region

Economic Indicator	Indian River	Martin	Palm Beach	St. Lucie
Employment	(2,144)	(3,120)	(25,309)	(3,674)
Output (Sales)	$ (342,712,590)	$ (468,512,053)	$ (4,568,363,711)	$ (502,429,855)
Personal Income	$ (528,492,210)	$ (642,237,973)	$ (5,075,713,790)	$ (815,740,675)
Gross Domestic Product	$ (199,238,029)	$ (267,004,458)	$ (2,708,369,843)	$ (292,759,371)

Economic Impact of Building Code Changes for West Florida Region



Total Economic Impact in West Region

Economic Indicator	Average Economic Impact
Employment	(9,402)
Output (Sales)	$ (1,472,562,500)
Personal Income	$ (1,502,156,250)
Gross Domestic Product	$ (839,906,250)

Total Economic Impact by County in West Region

Economic Indicator	Bay	Escambia	Holmes	Okaloosa	Santa Rosa	Walton	Washington
Employment	(2,168)	(3,520)	(110)	(1,702)	(1,199)	(571)	(132)
Output (Sales)	$ (355,689,275)	$ (601,468,976)	$ (11,223,858)	$(268,409,720)	$(144,146,027)	$ (75,550,102)	$ (16,044,927)
Personal Income	$ (337,296,848)	$ (450,752,525)	$ (19,960,633)	$(199,940,346)	$(366,765,995)	$ (108,154,126)	$ (19,335,364)
Gross Domestic Product	$ (201,104,964)	$ (339,511,922)	$ (6,116,655)	$(153,536,697)	$ (85,395,453)	$ (45,174,947)	$ (9,077,886)