

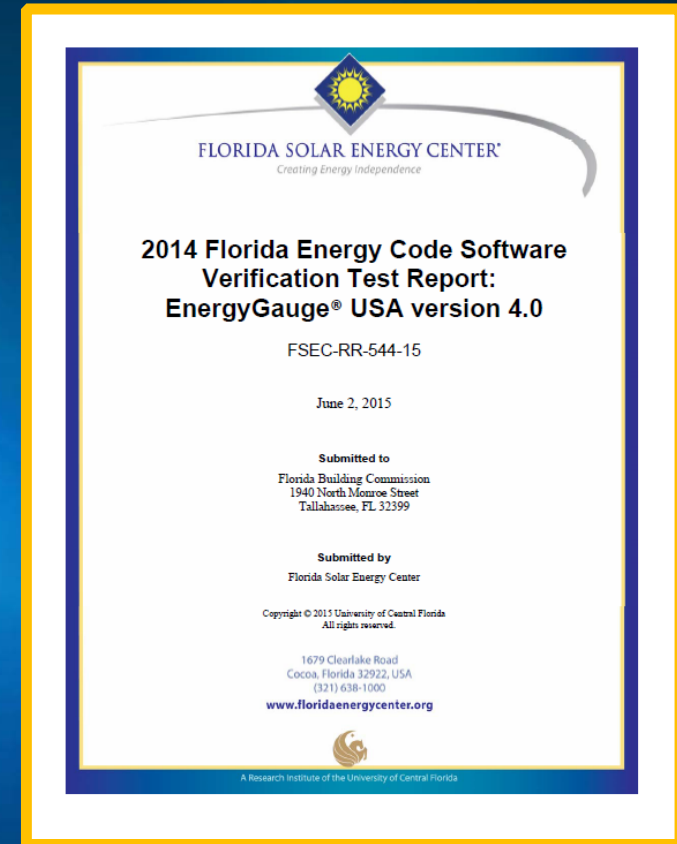
Approval Request for EnergyGauge USA

June 11, 2015



Overview

- Presents key findings
 - Methods handled by software
 - Compliance results
- Test report is in two volumes
 - 1st volume has overall descriptions and performance method results
 - 2nd volume has prescriptive method results
- Other files required by the FBC Technical Assistance Manual were provided
 - Input files
 - Spreadsheet results



Methods of Code Compliance

- Cover sheet for request for approval by the Florida Building Commission as a Compliance Software tool
- **EnergyGauge USA**
 - Version Number: 4.0
- **This software calculate Residential Energy Efficiency Code Compliance:**
 - ☒ Prescriptive R-value Method
 - ☒ Prescriptive Total UA Alternative Method
 - ☒ Performance Method
 - Prescriptive U-factor Alternative Method not part of EnergyGaugeUSA



Performance Method Testing

- The performance tests consist of:
 - FL e-Ratio algorithms
 - Two suites of building load tests, referred to as ASHRAE Standard 140 and Florida HERS BESTEST developed by the National Renewable Energy Laboratory
 - A Standard Reference Design Auto-generation test suite developed by the State of Florida
 - Three test suites developed by RESNET to test
 - Heating, Ventilating and Air Conditioning (HVAC) equipment algorithms,
 - Distribution System Efficiency (DSE) algorithms,
 - Domestic Hot Water (DHW) algorithms.



Performance Method Testing (cont'd)

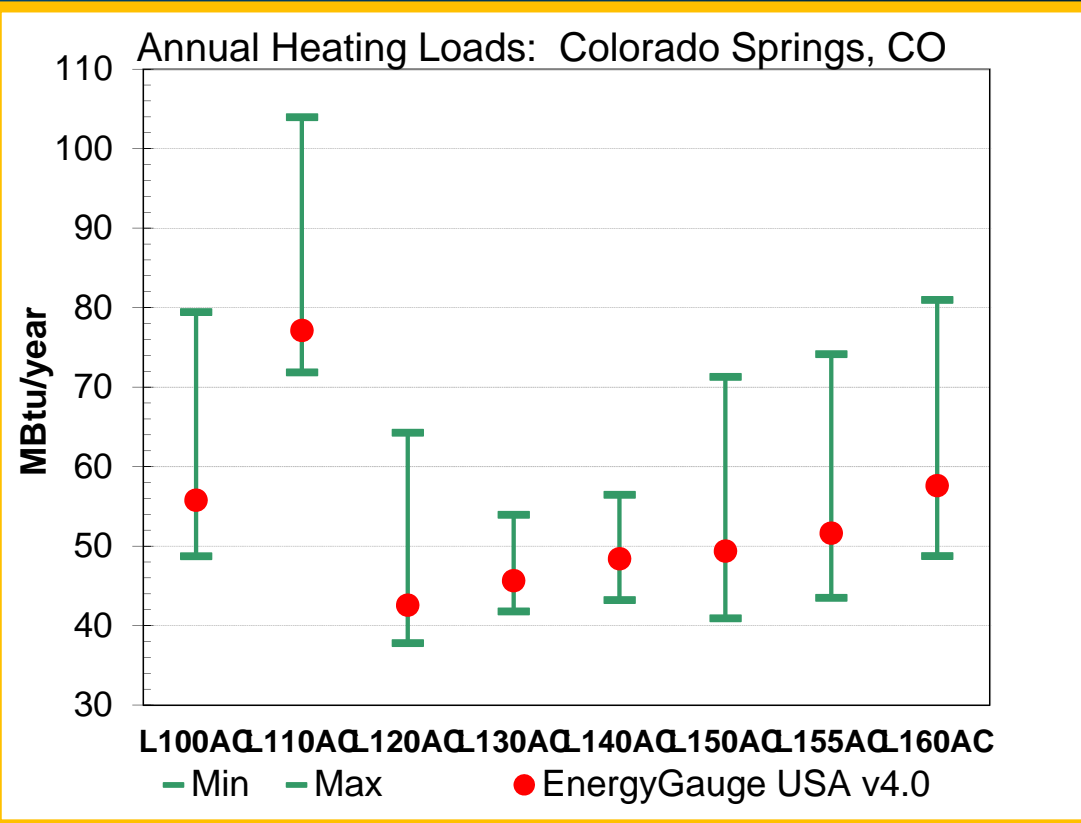
- Each of the performance Method Tests was passed.
- Directions for anyone wanting to test the software for themselves are included in the report.
- Submission includes a series of subdirectories, which include all of the specific information for the given series of verification tests, as follows:
 - Input – contains the EnergyGauge input files for each test
 - Output – contains PDF copies of the output files generated by EnergyGauge for each test
 - Procedures – contains the written procedures for each test suite
 - Results – completed spreadsheets provided by the Florida Building Commission for reporting results.



ASHRAE 140 Test Heating

Annual Heating Loads: Colorado Springs, CO

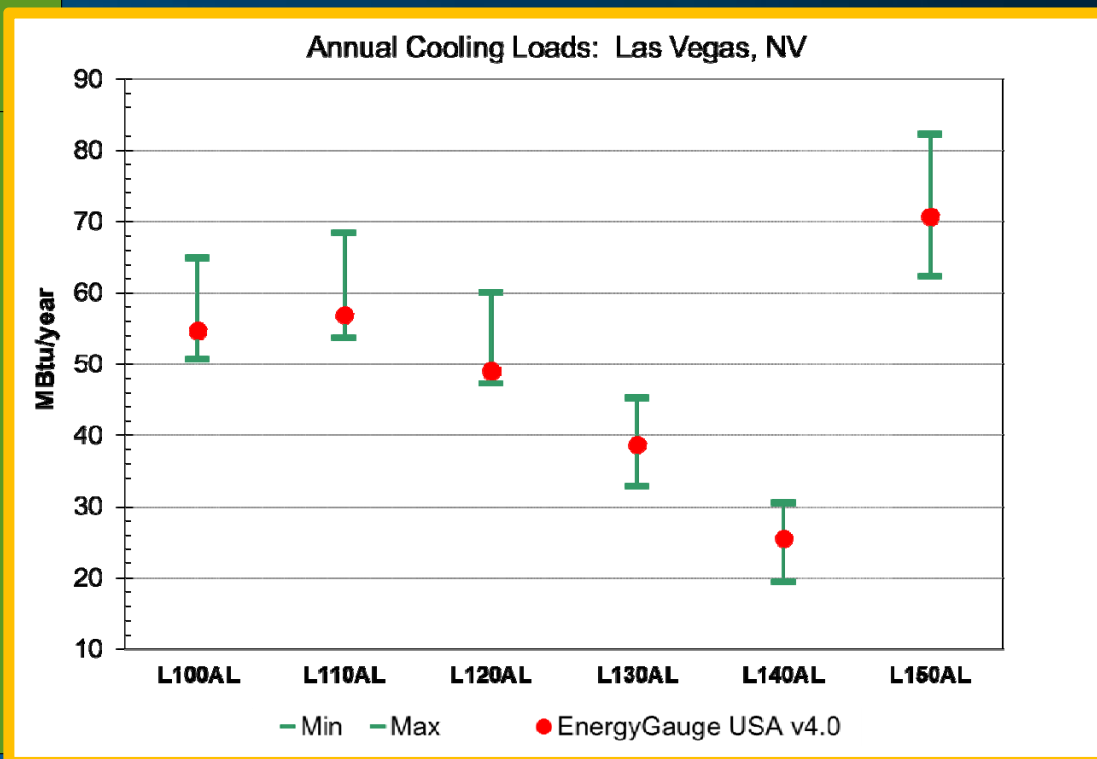
Heating	range max	range min	Result	pass/fail
L100AC	79.48	48.75	55.79	pass
L110AC	103.99	71.88	77.14	pass
L120AC	64.30	37.82	42.57	pass
L130AC	53.98	41.82	45.65	pass
L140AC	56.48	43.24	48.41	pass
L150AC	71.33	40.95	49.38	pass
L155AC	74.18	43.53	51.63	pass
L160AC	81.00	48.78	57.62	pass
L170AC	92.40	61.03	69.31	pass
L200AC	185.87	106.41	131.51	pass
L202AC	190.05	111.32	139.95	pass
L302XC	90.52	52.66	55.62	pass
L304XC	75.32	43.91	47.15	pass
L322XC	118.20	68.35	73.93	pass
L324XC	80.04	44.01	48.97	pass



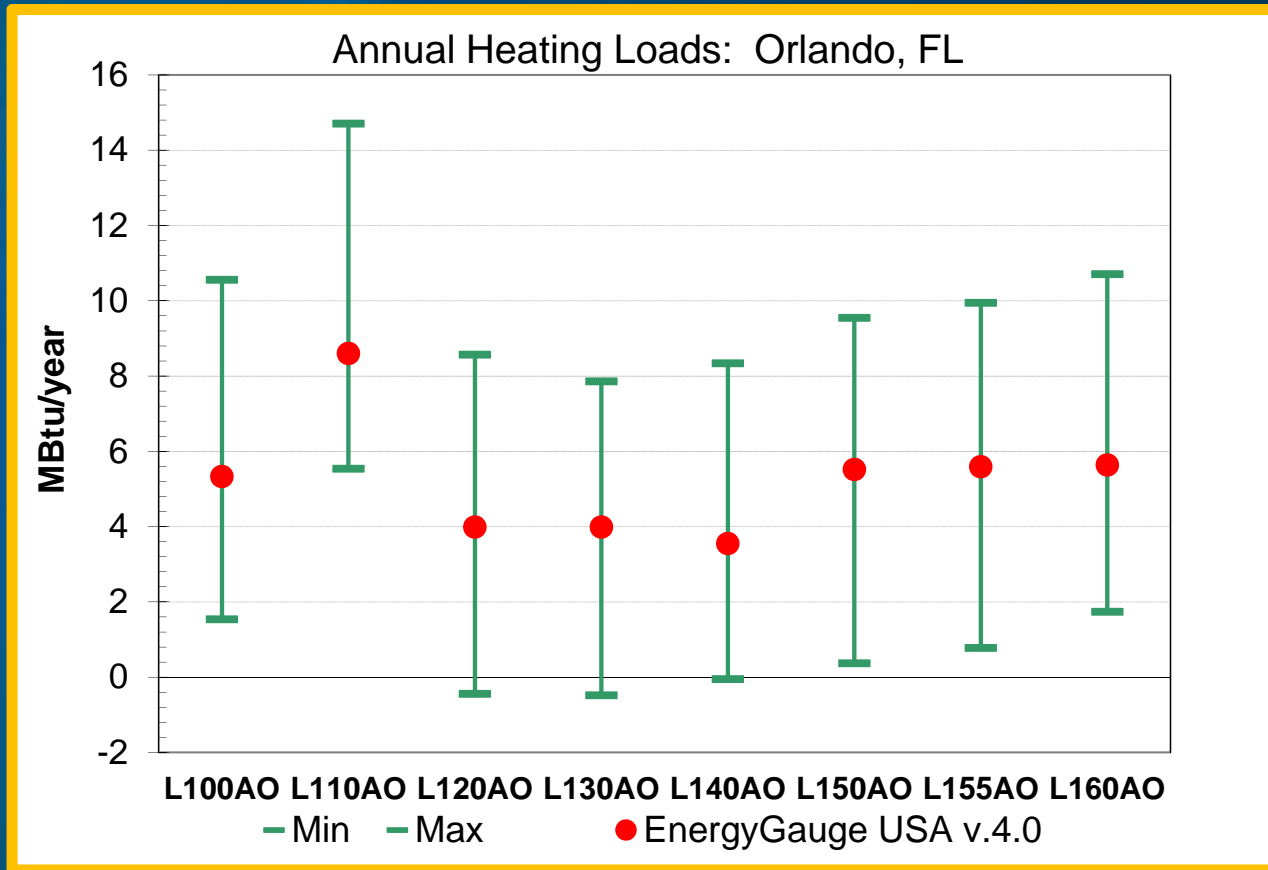
ASHRAE 140 Test Cooling

Annual Cooling Loads: Las Vegas, NV

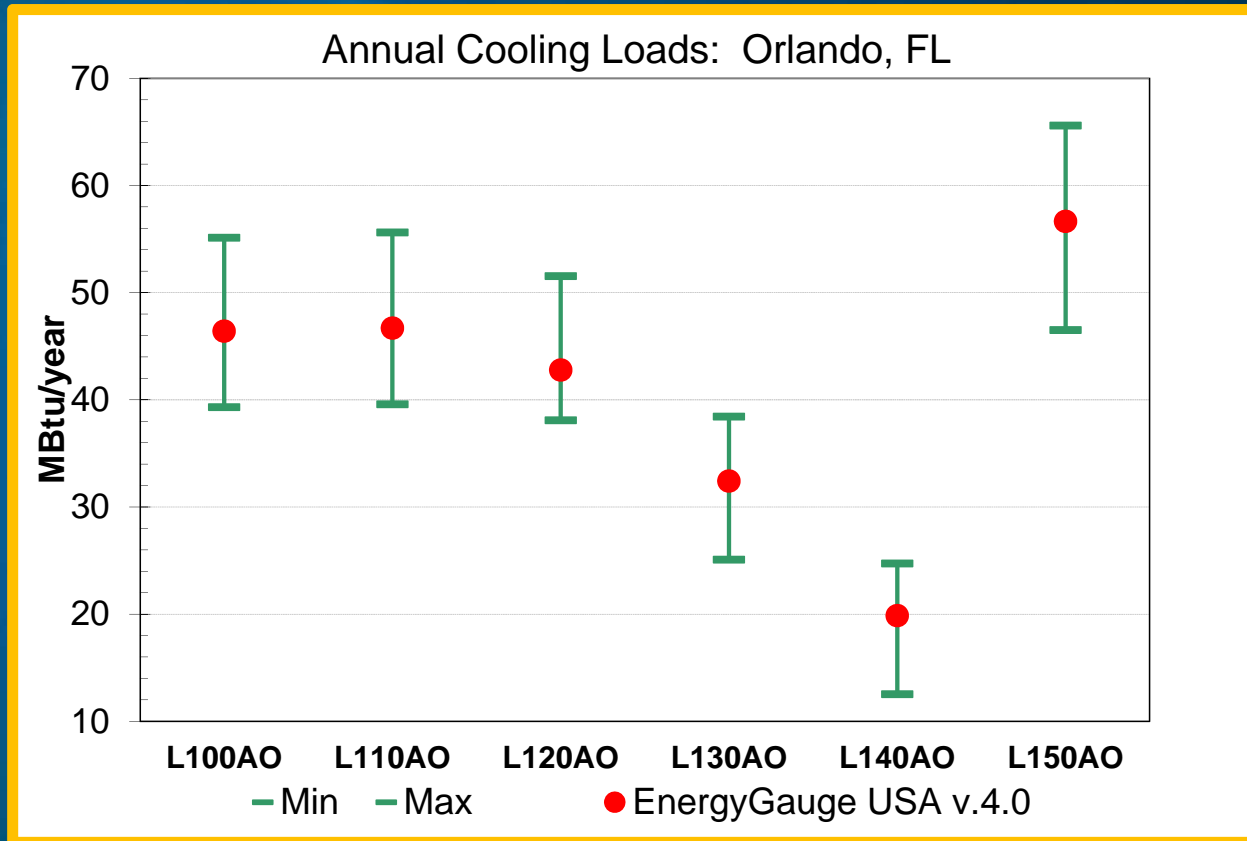
Cooling	range max	range min	Result	pass/fail
L100AL	64.88	50.66	54.71	pass
L110AL	68.50	53.70	56.82	pass
L120AL	60.14	47.34	49.07	pass
L130AL	45.26	32.95	38.63	pass
L140AL	30.54	19.52	25.62	pass
L150AL	82.33	62.41	70.78	pass
L155AL	63.06	50.08	56.55	pass
L160AL	72.99	58.61	64.42	pass
L170AL	53.31	41.83	43.29	pass
L200AL	83.43	60.25	67.10	pass
L202AL	75.96	52.32	54.98	pass



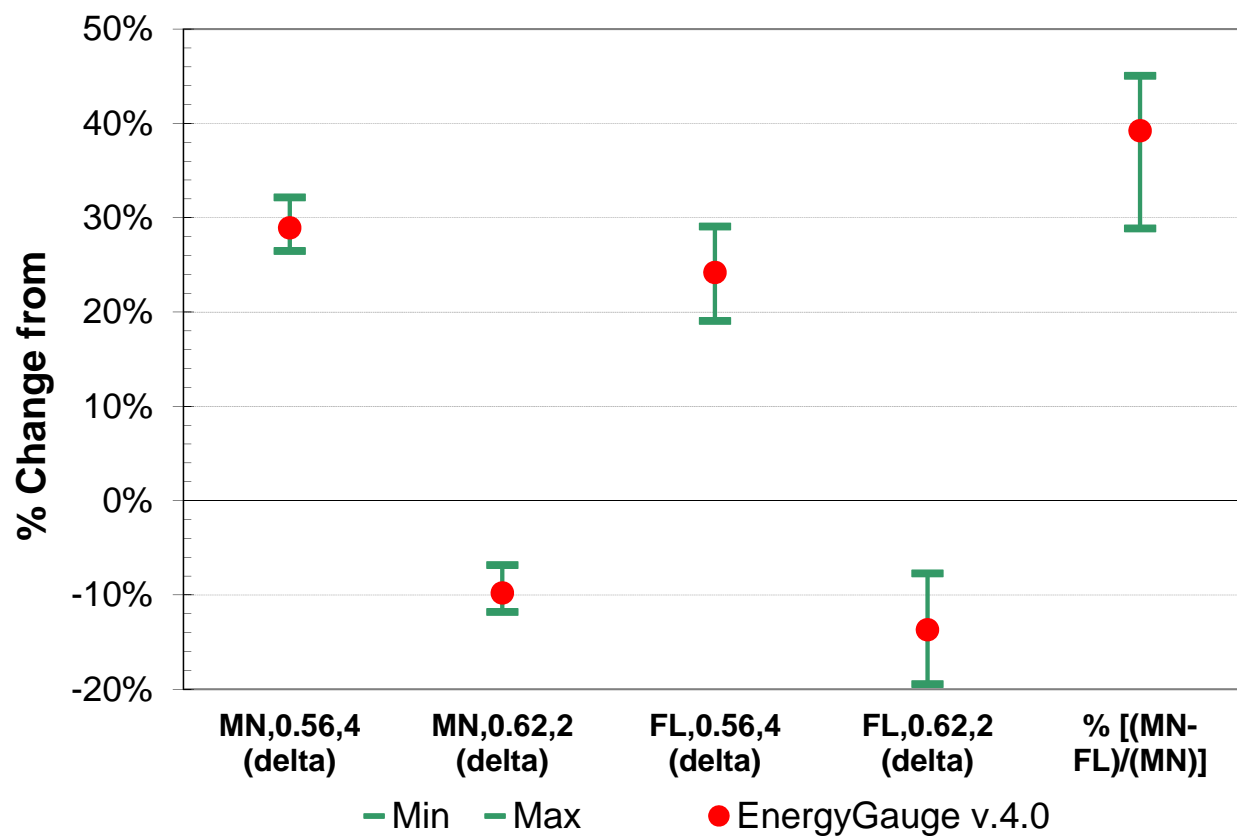
Florida BESTEST Heating Results



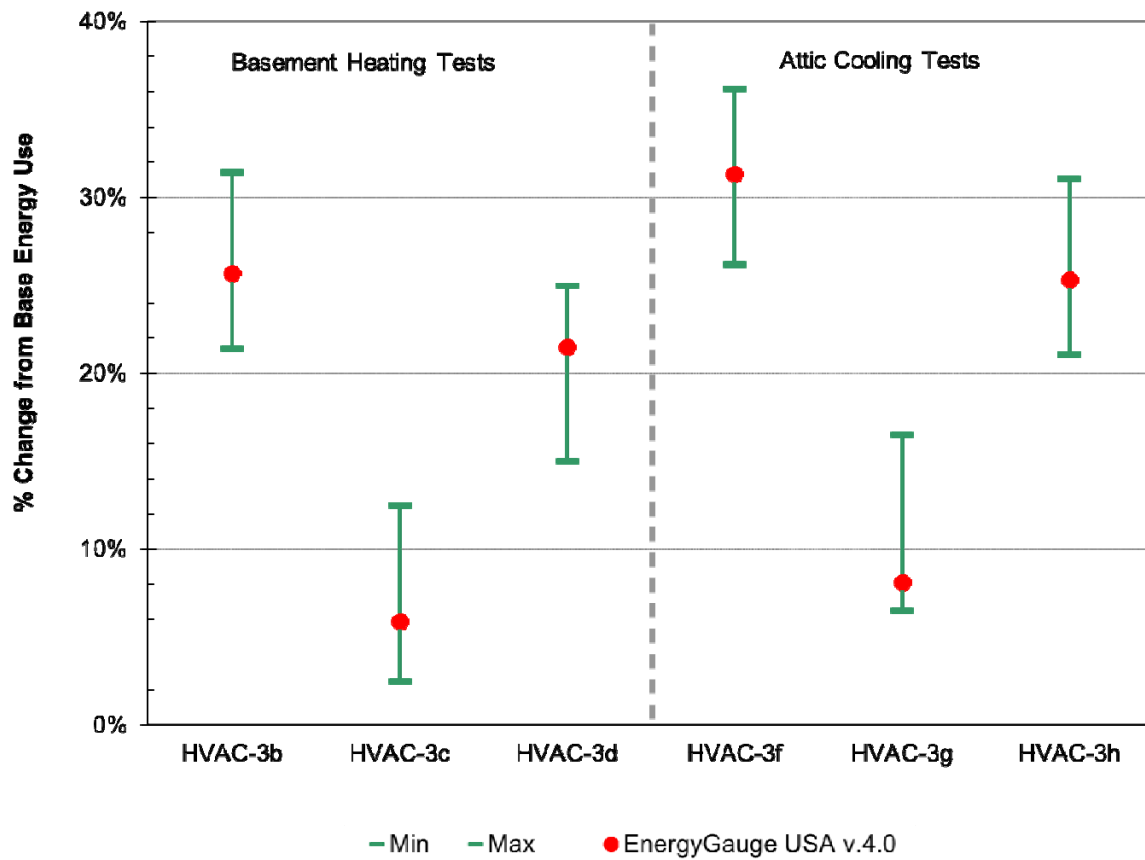
Florida BESTEST Cooling Results



DHW Test



DSE Test



E-Ratio Tests

Test result fields indicated by green					eRatio Tests
Test Case	eRatio	Baseline Home End Use Loads (REUL)			
		Winter (MBtu)	Summer (MBtu)	Hot Water (MBtu)	
L130AO-01	152.37	6.18	29.83	3.88	PASS
L130AO-02	142.14	6.18	29.83	3.88	PASS
L130AO-03	151.52	6.18	29.83	3.88	PASS
L130AO-04	118.53	6.18	29.83	3.88	PASS
L130AO-05	145.88	6.18	29.83	3.88	PASS
REUL Tests:		PASS	PASS	PASS	

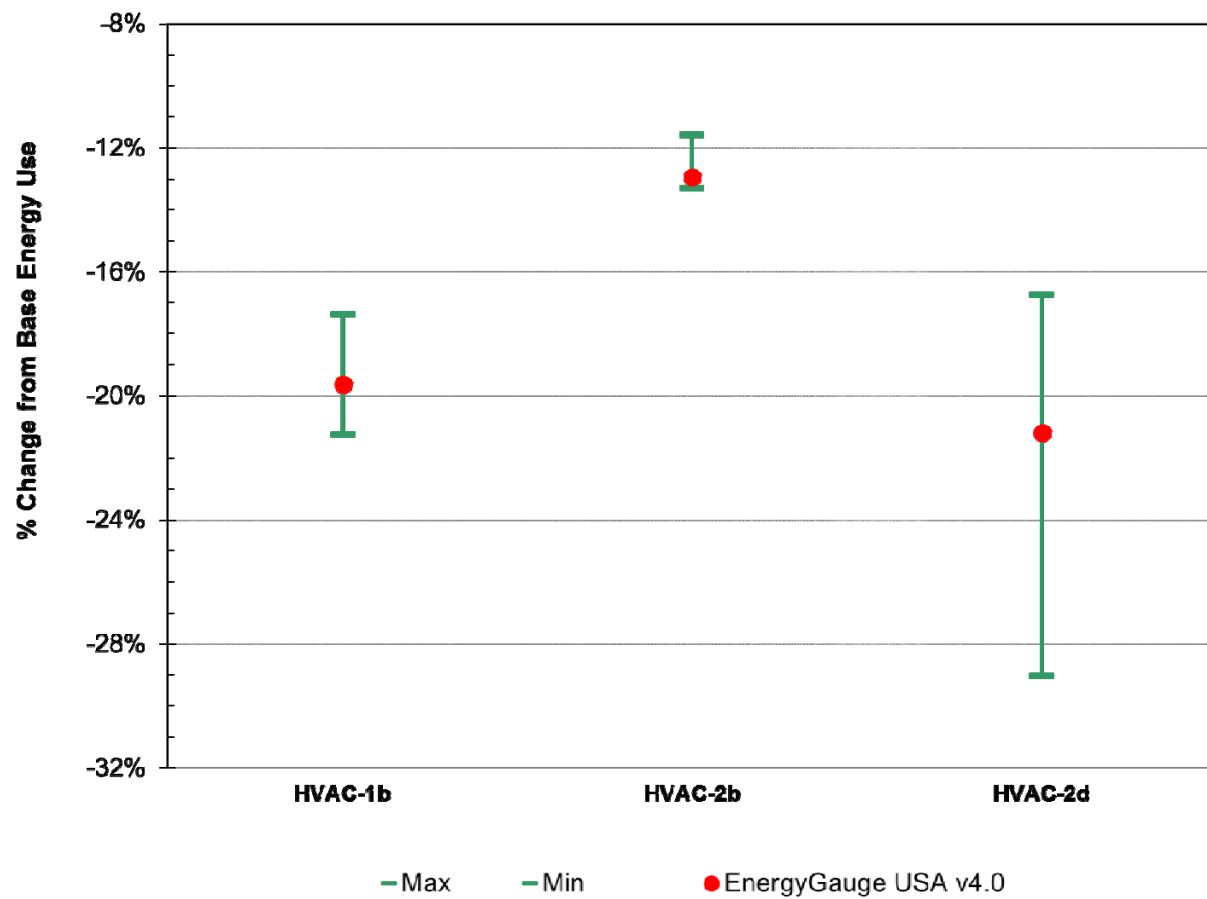


FL Auto-Gen Tests

- All 4 Standard Reference homes were generated accurately
- All 4 tests generated e-ratios of 1.0 (PASS)



HVAC Tests



Prescriptive Compliance

Test House	R-Value Method	Notes	Total UA Alternative Method	Notes
Tampa01	PASS		PASS	
Tampa02	PASS		PASS	
Tampa03	PASS		PASS	
Miami-1	PASS		PASS	
Miami02	PASS	Steel Frame Walls not allowed	PASS	
Miami03	PASS		PASS	



Conclusions

- All requested tests have been completed and passed
- Vendor has submitted documentation requested in Technical Assistance Manual
- EnergyGauge USA 4.0 complies with the 5th Edition (2014) Florida Building Code Energy Conservation

