



SEEA
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

**Florida Energy Codes
Circuit Rider | April 2019**

About SEEA's Energy Codes Program

SEEA's Energy Codes Program is a unique regional resource that serves as a "one-stop-shop" for code adoption, implementation and compliance efforts. Throughout the code adoption process, SEEA works closely with state energy offices, municipalities, industry groups, utilities and other key stakeholders to provide technical assistance, ensure best practices are followed, and to foster increased coordination between involved parties.

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Disclaimer

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I. Introduction

In 2014, the Southeast Energy Efficiency Alliance (SEEA) began work with Arlene Stewart, president of AZS Consulting, Inc. (AZS), to better understand the issues associated with energy code compliance across Florida and to offer technical assistance where needed. Stewart serves as SEEA's Florida Energy Codes Circuit Rider, or the "in-field expert," who meets with targeted groups and actors, like code officials and building inspectors, to address specific code compliance and enforcement needs.

The Circuit Rider model for increasing energy code compliance can be found across the United States, specifically in Massachusetts, Idaho, and Kentucky. Unlike traditional training that is designed to deliver a specific knowledge set, which may or may not address the needs of the audience, circuit rider programs like SEEA's are audience-focused, tailoring technical assistance to the unique concerns and issues faced by each individual or group that meets with the circuit rider. Since 2014, in the role of SEEA's circuit rider, Stewart has held numerous quarterly group and one-on-one trainings, attended Florida Building Commission meetings, worked with building departments and the construction community on the ground, and developed educational resources to improve compliance with Florida energy codes.

The work to ensure high levels of energy code compliance is the third stage of the energy codes cycle; the first two stages are new model code development and new code adoption, respectively. The Department of Energy's (DOE) Building Energy Codes Program (BECP) asserts in its 2016 *Impacts of Model Energy Code*¹ analysis provided by Pacific Northwest National Labs (PNNL) that the potential savings associated with a model energy code "are realized in the field when new buildings (or additions and alterations) are constructed to comply with new code."

This analysis shows that when there is incomplete compliance with requirements, potential savings decrease. It also estimates that striving towards 100 percent compliance in Florida will lead to an average of \$170 million per year back into the pockets of Florida home-dwellers through efficiency savings. On- the-ground technical assistance provided by SEEA's circuit rider in Florida, including educational trainings and resources, increases the probability of code compliance and hence, financial savings for home-dwellers resulting from adopted state energy codes.

This report provides an overview of the Florida Energy Codes Circuit Rider Program from its inception in 2014 to its planned areas of growth in 2019. Specifically, it describes the technical assistance attributes of the circuit rider program, the impact of partnerships, and the importance of funding and resource development to the ongoing success of the program. This report also serves as a review of the program through 2018 and looks toward the possibility of future increases in energy codes compliance in Florida.

¹ https://www.energycodes.gov/sites/default/files/documents/Impacts_Of_Model_Energy_Codes.pdf

II. 2014 Pilot: Establishing Florida's Baseline

The Florida Energy Code Circuit Rider Program's pilot year, 2014, was a time for relationship building and general data collection. This differs from many state energy code circuit rider programs, both past and present, as SEEA's circuit rider, AZS, spent its first year listening to and learning about the challenges faced by participating building departments, all of which volunteered to participate.

The program's year-one goal was to gain an understanding of the perception of code compliance throughout Florida and to create a plan to provide technical assistance to better enforce the Florida Energy Code. The Florida Energy Codes Circuit Rider Program was designed to give tailored technical assistance and training to inspectors, contractors, building officials, and jurisdiction departments based on findings from the pilot year. SEEA's circuit rider, Arlene Stewart, president of AZS Consulting, was able to identify key issues that appeared in each of the ten initial sites and to serve as an in-field expert for these communities.

Though each jurisdiction faced unique challenges and barriers, across Florida, all faced the problems of lack of awareness of and demand for energy code compliance, deficiency of funding, nonexistent or overly expensive training opportunities, and an absence of informational resources. Often, building departments did not have trained and experienced personnel available to carry out energy code enforcement activities.

The goals for the future of the program that were developed following the landscape assessment during the pilot year are detailed in SEEA's 2015 *Florida Circuit Rider Commercial Compliance Needs Assessment*² and are defined as the following:

Short-Term

- To provide on-the-ground technical assistance and education on new energy codes, similar to an energy code commentary or publishing a Florida-specific code commentary;
- To provide technical assistance on energy code plan reviews (e.g. Energy Gauge documentation); and
- To connect code officials and building departments with each other to share best practices through existing forums, such as the Building Operators Association of Florida (BOAF).

Long-Term

- To work with the industry to emphasize existing buildings in education and resources provided; and
- To work with building departments to better define authority and responsibility around energy code enforcement.

During the pilot year, strong relationships evolved which helped to build trust among Florida's jurisdictions and SEEA's Florida Energy Codes Circuit Rider Program. It also created a foundation for the program to continue to operate with the capacity and respect it established in 2014.

² <https://mk0seealliancev81xi4.kinstacdn.com/wp-content/uploads/Florida-Circuit-Rider-Report-FINAL.pdf>

III. Technical Assistance

The Florida Energy Codes Circuit Rider Program completes an average of twenty-five hours of direct technical assistance each quarter, totaling approximately 400 hours since 2015. AZS provides technical assistance through trainings, calls, emails, online forums, and question-and-answer sessions. Requests for technical assistance increase when there is a new version of the Florida Energy Code or when there is legislation that changes the standards that builders must meet. The largest spikes in technical assistance have been: 1) in 2015 with the adoption of the 2014 Florida Building Code based on the 2012 International Energy Conservation Code (IECC); and 2) in 2016 with the passage of HB535. The Florida HB535 legislation mandated that all residential construction required additional testing for leakages and introduced a new pathway for compliance, and therefore had a significant impact on residential construction.

The most frequent requests and questions focus primarily on these topics:

- Blower Door forms, tests, and qualifications;
- Differences between energy codes and building codes;
- Fenestration;
- HB535 and the impact on residential construction;
- Humidity reduction in residential buildings;
- Master lighting control requirements in commercial buildings;
- Window labels in commercial buildings;
- Standalone systems; and
- Efficiency standards for residential water heaters.

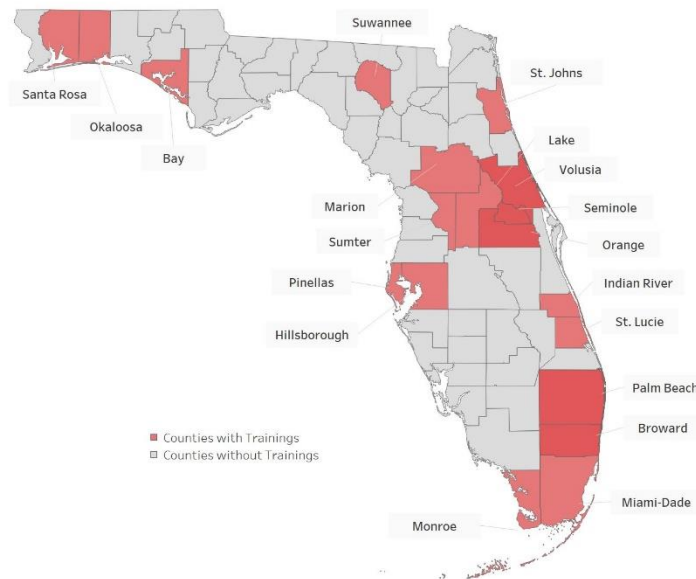
In its early months and years, the Florida Energy Codes Circuit Rider Program received mostly basic questions about general building science and the application of code provisions. While these types of requests still appear, the overall complexity of the requests for technical assistance has increased. For example, in 2016, a member of the building department in DeBary, Florida called because they knew that something was wrong with a Manual J calculation, which is a code-required process for determining how much heating and cooling is needed in a residential building. The caller was unsure what the problem was. They knew from previous interactions that the circuit rider could help, and in this instance, Stewart was able to offer upgraded and more detailed trainings on Manual J calculations, as well as increased contact with the city.

Trainings

The Florida Energy Codes Circuit Rider Program's primary approach is based on in-person training sessions and answering specific questions from inspectors, contractors, building officials, jurisdiction departments, and others. Training modules are designed by AZS, under SEEA's oversight, and cover a spectrum of topics, at various levels of complexity. These are detailed in Appendix A of this report.

The process for determining the need for a new or updated module, creating new course content, submitting for and receiving authorization by the Florida Department of Business & Professional Regulations (DBPR), and setting up the training dates is time consuming and requires expertise. Since the beginning of 2016, forty-seven in-person trainings have been held in different regions of the state and have included over 2,100 attendees with a range of experience. The map below depicts the Florida counties that have been impacted by the Florida Energy Codes Circuit Rider Program trainings, and Appendix B details the locations and groups that had completed training by the end of 2018.

Florida Counties with Circuit Rider Trainings since 2015



Attendance at trainings has shown strong correlation with the participants' proximity to the training site, the potential to earn continuing education credits (CECs), and the length of the training. Average training attendance varies based on these qualifiers and ranges from nine to 119 participants per class. Highest attendance is achieved when the training provides CECs, is completed in less than two hours, and is located close to a group of participants' homes or workplaces. Many potential attendees are not able or willing to travel more than 1.5 hours to attend a training even if CECs are offered. This is a frequent challenge in smaller jurisdictions that often have few staff and limited funding, and where staff members need to gain expertise in several different areas of construction.

IV. Representation and Partnership

Through her role as the Florida Energy Codes Circuit Rider, Arlene Stewart serves as a SEEA representative for the departments and municipalities with whom she interacts on a daily basis. Stewart submits official comments to the Florida Building Commission based on her findings in the field and informs SEEA's Built Environment team of large plans, issues, and events coming up in Florida. This helps SEEA's efforts to determine its direction and initiatives within the State of Florida.

In several cases, Stewart was also able to collaborate, through SEEA, with the U.S. Department of Energy's (DOE) Building Energy Code Program (BECP) to clarify code language for additions to structures in Florida and to assess similar situations in other states. Throughout this process, the Florida Energy Codes Circuit Rider Program has been able to determine that while a Florida-specific energy code question may not show up in another state, several questions around additions to building structures have arisen and other states have been better able to understand and comply with code as a result of guidance and commentary from SEEA and DOE. This guidance has also assisted Stewart in commenting on Florida's 2019 code updates.

The Florida Energy Circuit Rider Program currently funds work solely through AZS Consulting, Inc. However, Stewart has found need for additional partnerships to make sure that funding is leveraged to train and assist as many individuals and departments as possible. One example of Stewart's collaboration outside of SEEA: AZS began collaborating with Owens Corning in 2016 to bring blower door training to parts of the state that were more than 1.5 hours from existing training centers.

This partnership was formed to specifically combat the low attendance rates from individuals from outside of the 1.5-hour radius mentioned in the trainings section of this report. The Owens Corning partnership remains active as of the first quarter of 2019 and is believed to have produced at least one business focused on building performance testing in Chiefland, Florida. That business is believed to be a result of this training partnership as well as AZS' efforts to encourage more testers for Panhandle rebuilding after Hurricane Michael in 2018.

AZS also worked closely with the Institute of Market Transformation (IMT) in a study to evaluate the efficiency of commercial buildings. Stewart's strong relationships across the state have allowed for greater research and understanding of these commercial building types at a national level.

V. Resources and Reporting

The Florida Energy Codes Circuit Rider Program has resulted in the development of resources, both directly created by AZS, or found and disseminated through AZS. Because the development of the existing resources has been funded, it also is possible to modify, update, and share them in other states across the region. A notable example occurred in 2016 when Stewart received multiple requests for assistance clarifying commercial fenestration ratings for curtainwall and storefront windows.

The National Fenestration Rating Council (NFRC) does not develop material for specific stakeholders, so Stewart developed tools to assist building operators by using materials provided by the NFRC chair. This process, which took eighteen months, resulted in a resource that cleared all questions from the Central Florida Building Operators Association of Florida (BOAF) and received favorable responses from its members.

The Florida Energy Codes Circuit Rider Program has also resulted in two articles published by Stewart in *Building Savvy*, a Panhandle magazine for the building industry. Her September 2018 article “Where Codes Don’t Go...” outlines advances in digital, energy-efficient “smart” technologies. Her 2019 article focuses on reduced costs for efficient construction from unvented attic expansion.

VI. Funding

SEEA has invested \$104,050 in the Florida Energy Codes Circuit Rider Program from 2014 to 2018 by funding AZS. This funding has been leveraged to provide direct technical assistance, create course content, make comments through the Florida Energy Code adoption and compliance process, and create resources for building departments and officials.

The State of Florida also provides funding for AZS trainings, which in tandem with SEEA’s funding, makes it possible to host trainings for populations that would be otherwise not be reached. AZS estimates that without funding through SEEA, approximately 50 percent of building departments and 25 percent of the attendees who have received circuit rider training to date would not have received assistance. This is mostly due to the limited funding available from the state, and to Florida’s model for technical assistance funding that requires trainers to prioritize classes of larger sizes in order to cover costs. The circuit rider trainings and technical assistance can be provided to smaller classes and departments, making it possible to train entire staffs, resulting in increased knowledge and skill across a whole building department.

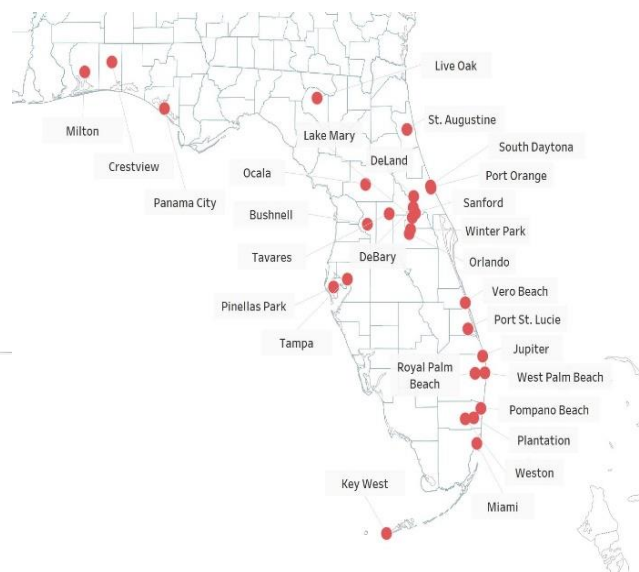
VII. Successes and Challenges

Overall, the qualitative value of the Florida Energy Code Circuit Rider Program can be assessed as beneficial, specifically in identifying gaps and needs for building department staff and the construction industry. This program has provided 975+ hours of assistance to building professionals in Florida since the beginning of 2015. Beyond individual and group trainings, it is reasonable to assert that this program has also created a large impact at the state level for code education, information dissemination, and awareness of energy efficiency across Florida. The maps below show the expansions from the 2014 pilot locations to all the locations that have been impacted by the program.

2014 Circuit Rider Pilot Locations



2018 Circuit Rider Locations Reached



By providing frequent opportunities to attend detailed trainings and offering a variety of training modules, the Florida Energy Codes Circuit Rider Program has helped to increase energy code compliance across the State of Florida. The overall compliance rate of residential buildings remains unknown; however, it is expected to be less than 100 percent, based on results from nine states that participated in the DOE Residential Energy Field Code Study.³

SEEA recommends a state-wide study be undertaken to assess the current levels of code compliance in new residential construction. According to DOE code compliance studies in Kentucky and Georgia, conducted by SEEA and the Midwest Energy Efficiency Alliance (MEEA), energy code circuit rider programs can be instrumental in increasing compliance with energy codes through offering in-person trainings and technical assistance. It is SEEA's belief that the Florida Energy Codes Circuit Rider has had a much greater impact than those in the Kentucky and Georgia studies due to the length and

³ <https://www.energycodes.gov/compliance/energy-code-field-studies>

depth of the Florida program. In Florida, investing smaller dollars over a longer period appears to have had a greater impact on code compliance than investing larger dollars for shorter periods of time.

Circuit rider trainings include post-training surveys, which assess participant satisfaction with the instructor, course materials, and the overall value of the course. These surveys have shown overwhelming satisfaction from attendees; however, they have not gathered the extent of feedback needed to further advance trainings and resources. AZS has been diligent in delivering technical assistance and has not yet had the capacity to implement advanced feedback tools. It is difficult to assess the full impact of the trainings and other technical assistance without a better feedback mechanism, which means it is not possible at this time to quantify the circuit rider's impact.

Funding the Florida Energy Codes Circuit Rider Program is another a challenge. As detailed previously, the State of Florida offers funding in combination with funding from DOE and SEEA for the program. While there is an increasing amount of time and effort put into ensuring energy code adoption and compliance in Florida, financial support for code enforcement has either plateau-ed or decreased. An increase financial support from in-state groups to fund the program would be very helpful to advance code compliance and enforcement in Florida.

VIII. Looking Forward

Stewart's long-term aspiration for the Florida Energy Codes Circuit Rider Program is to develop education resources to reach more department staff more consistently with the ability to have flexible trainings on the staff's schedules around the state. This will require, in part, robust webinars and other online training modules to supplement in-person trainings, or to offer to those who are not able to attend the in-person trainings. The first trial webinar was completed in early 2019 with the Weston County building department and involved successful interaction with staff when deciphering Manual J calculations. The AZS website⁴ offers details about the types of training bundles available to groups for both residential and commercial courses but does not currently house any webinars.

It would be advantageous for AZS to put some of their educational materials into these modes of flexible learning to overcome distance, schedule, and possible affordability challenges. The current challenge is there is often not enough funding for AZS to cover the development of training and education resources. Technical assistance work and the development of educational resources will need to receive more funding in order to realize the full potential of this energy codes work.

SEEA anticipates that the bulk of the future funding coming into the State of Florida for building and energy codes will focus on changing and improving code; therefore, it will likely require diverting funding for enforcement efforts to ensure the code is adopted. As DOE asserts in the *Impacts of Model Energy Code* analysis, compliance with the code is vital to realize energy savings. It is imperative that dedicated funding for code training and technical assistance is made available as energy codes are improved and adopted. This funding will aid in increasing compliance with the Florida Energy Code.

SEEA recommends a Residential Energy Code Field Study be completed in Florida that would allow the SEEA Circuit Rider to understand and meet more technical assistance needs, and to target and grow new areas of the state. The ongoing IMT and AZS study will help to identify challenges to commercial compliance, however no such study has been developed or funded for residential buildings.

AZS's work as SEEA's circuit rider has had a positive impact on energy codes, construction communities, and home dwellers. Code compliance through this type of technical assistance model can be valuable for Florida's cities and counties to prioritize as they consider their larger climate goals. Energy codes are an existing pathway to address climate challenges, and the continued efforts of enforcing this policy mechanism is an essential building block to success.

As of 2017, there were seventy Florida cities and counties actively involved in at least one way in sustainability, clean energy, or climate goals.⁵ While the impact of the Florida Energy Codes Circuit Rider Program has been significant, there is more work to be done. as been able to leverage dollars to increase confidence and understanding of energy codes across Florida.

SEEA's believes the Florida Energy Codes Circuit Rider Program will continue to grow and evolve as additional funding becomes available to tap into new and needed assistance areas.

⁴ <https://www.azstraining.com/>

⁵ *Florida Communities and Clean Energy*. 2017. Southeast Energy Efficiency Alliance.

IX. Appendices

Appendix A – Trainings

Stewart instructs and maintains the following approved courses:

Residential Trainings

- New & Noteworthy for New Residential Construction
- 2016 Energy Rating Index for Residential Energy Code Compliance
- Residential energy Code Form Update
- History of the Florida Building Commission
- Understanding Basic Energy Definitions
- Air Leakage Field Tests
- What Do I Need to Know to Pass the Blower Door Test?
- Mechanical Ventilation Requirements
- Insulation and Installation
- Window Basics for Energy Code Compliance
- Designing Effective Spaces
- What's New & Noteworthy for Residential Remodeling & Replacement
- Window Applications for Remodeling
- When Houses Go Bad

Commercial Trainings

- Commercial Compliance Paths for Energy Conservation 5th Edition (2014)
- Commercial Mandatory Requirements Advanced
- Understanding Commercial Energy Code Submittals from Energy Gauge Summit
- Understanding Basic Energy Definitions in FBC 2014
- Site Energy Versus Source Energy
- Introduction to C407 Total Building Performance
- Electrical Safety and the Florida Building Code
- Energy from Gas and Respiratory Safety
- What's New & Noteworthy for Commercial Construction
- Windows and Day Lighting for Commercial Applications
- Above Code Intro
- Deciphering Manual J

General Trainings

- Top Three Energy Code Must Do's for Every Enforcement Discipline (Residential and Commercial Applications)
- Water Related Provisions in the FBC 5th Edition (2014) Residential and Commercial

Appendix B – Training Locations

The following list shows all trained groups or entities where a one-on-one training took place and the number of times each group was trained. This list is inclusive of trainings reported after the 2014 SEEA Circuit Rider Report and does not include the site visits detailed in those findings.

- Bay County Building Department
- Broward County Board of Rules & Appeals (BORA) Commercial
- Broward County BORA Residential
- Broward County Building Officials
- Building Official Association of Florida (BOAF)
 - BOAF Conference – 4 sessions
- Central Florida BOAF – 3 trainings
- City of Pompano Beach – 2 trainings
- City of West Palm
- City of Weston
- City of Winter Park
- DeBary Building Department
- Flagler/Volusia BOAI
- Florida Association of Plumbing-Gas-Mechanical Inspectors
- Hillsborough County
- IAEI
- Indian River Building Department
- Key West Building Department
- Lake County Building Officials
- Miami Dade College – 4 trainings annually
- North Central Florida BOAF
- North Florida BOAF
- Okaloosa County – 3 trainings in partnership with Owens Corning
- Orange County Building Department
- Palm Beach BOAF
- Palm Beach County
- Port Orange Building Department
- Roof Coating Manufacturer Association
- Seminole County – 2 trainings
- St. Johns Housing Partnership
- Sumter County
- Suncoast BOAF – 2 trainings
- Suwannee River BOAF
- Treasure Coast BOAF
- Volusia County BOAF