

Florida Energy Code Commercial Compliance Needs Assessment: Launching an Energy Codes Circuit Rider Program in the Sunshine State

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ABSTRACT

Energy code circuit riders are in-field experts that meet with targeted groups of market actors to address specific code compliance and enforcement needs. The circuit rider model has met with great success improving compliance rates in other states like Massachusetts and Idaho, and efforts are currently underway to bring a circuit rider to Ohio. Prior to the launch of SEEA's program, no southeastern state utilized an energy codes circuit rider. SEEA's Circuit Rider Program was launched in Florida in 2014, with the intent of developing a snapshot of code enforcement and subsequently developing a work scope to provide targeted technical assistance to Florida's construction industry. For the first year of the Florida Circuit Rider Program, SEEA focused on observing Florida building departments and identifying specific needs and capacity gaps to be addressed in subsequent years of the program. Over the course of 12 months, the Circuit Rider conducted ten site visits, which uncovered a number of defined needs, many of them consistent across jurisdictions. This paper will provide an overview of these findings, and detail how they are being used to tailor the Florida Circuit Rider priorities and activities moving forward.

Introduction

Building energy codes establish minimum requirements for the construction of new and renovated buildings. Building codes are typically set at the state and local levels, guided by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1 and the International Energy Conservation Code (IECC), which are widely recognized standards for design and construction of residential and commercial buildings. Once a code has been adopted at the state or jurisdictional level, it becomes the legal standard to which homes and buildings are constructed. However, national experience has suggested that the adoption of a code does not guarantee compliance (Halverson 2015).

Upon accepting funding under the American Recovery and Reinvestment Act (ARRA), states committed to adopting the 2009 IECC by 2015 and demonstrating 90 percent compliance by 2017. Driven by this commitment, the Southeast has made significant progress in advancing energy code adoption, with many states moving toward stronger codes and others adopting statewide codes for the first time. Recent advancements have opened the door to energy and cost savings, quality-of-life benefits and new employment opportunities, of particular importance in a region that is marked by higher than average poverty rates. Despite progress, experience suggests that there are still substantial opportunities for capturing the full value of the energy savings available through robust, strategic energy code compliance efforts (Halverson 2015).

There are several regionally-specific factors that serve as barriers to compliance with the energy code. Much of the Southeast is characterized by a lack of awareness and demand for energy code compliance, along with a lack of funding, training opportunities and real-world

informational resources available to the construction industry and code inspectors. Much of the region is rural, and in many cases, trained and experienced personnel are simply not available to carry out enforcement activities. In general, the Southeast lacks empirical data on current levels of energy code compliance, although it is generally assumed that compliance across the region falls short of 100 percent.¹

The Southeast Energy Efficiency Alliance’s (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. Beginning early on in the 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 foster increased coordination between involved parties.

Following the adoption of new code standards, SEEA coordinates trainings and related compliance efforts for builders, code officials, architects and other affected parties. As an extension of these efforts, SEEA also provides technical assistance to states and localities assessing benchmarking and disclosure mandates, building energy rating and labeling, and other related policies.

Energy Code Circuit Riders

Energy code circuit riders are in-field experts that meet with targeted groups of market actors to address specific code compliance and enforcement needs. Circuit riders travel around a state and visit different jurisdictions to provide resources and support energy code compliance. 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 are audience-focused, tailoring technical assistance to the unique concerns and issues faced by each individual or group that meets with the circuit rider.

The circuit rider model has met with great success improving compliance rates in other states like Massachusetts and Idaho, and efforts are currently underway to bring a circuit rider to Ohio. Prior to the launch of SEEA’s program, no state in the Southeast had utilized an energy codes circuit rider.

SEEA’s Circuit Rider Program was launched in Florida in 2014, with the intent of developing a snapshot of code enforcement in the field, and subsequently building a work scope to provide targeted technical assistance to more effective enforcement of Florida’s commercial code. Florida’s construction environment and characteristics are unique within the Southeast, as described below, and as a result, generic or national code resources tend to have more of a limited use, and finding effective solutions for supporting code compliance can be particularly challenging. These factors led to SEEA’s determination to launch the Circuit Rider Program in Florida.

In all of its states, SEEA is focused on delivering local solutions and leveraging local technical resources and expertise. SEEA contracted with Arlene Stewart of AZS Consulting, based in Gainesville, to initiate the Circuit Rider Program.

¹ Notable exceptions include Georgia, where the Department of Community Affairs conducted a commercial compliance analysis and Florida, where the Florida Solar Energy Center (FSEC) conducted both residential and commercial compliance analyses through funding received under the American Recovery and Reinvestment Act.

Florida's Energy Code Environment

Of the 11 states in SEEA's footprint, Florida has the most commercial construction starts, underscoring the energy-saving opportunity available through building codes and the importance of targeted resources like circuit riders in facilitating compliance.

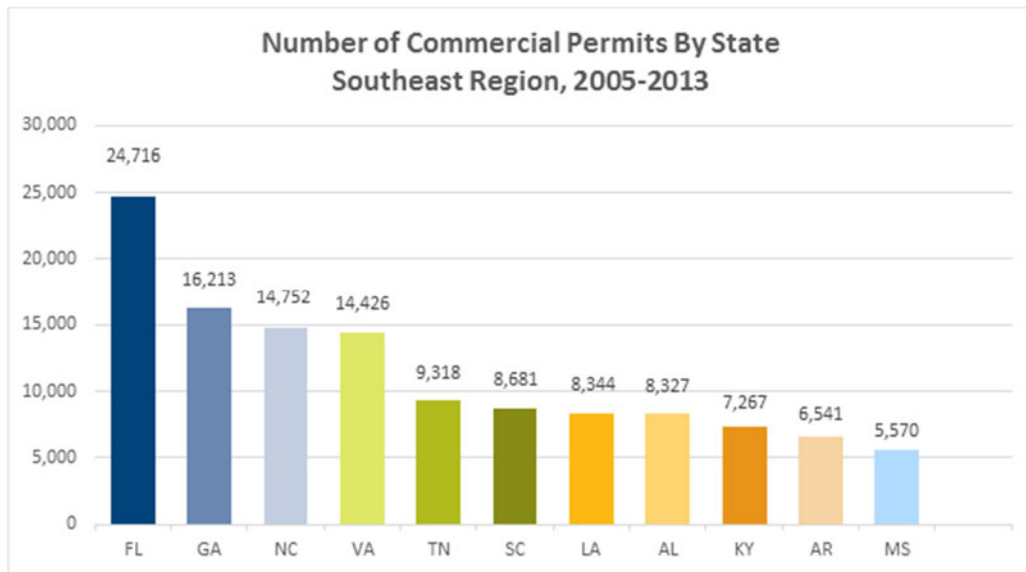


Figure 1. Commercial Permits by SEEA state. *Source:* Westmoreland and Knight 2015.

The construction in Florida sets it apart somewhat from the rest of the Southeast. Like many other areas in the Southeast, most structures are built on slabs; however, masonry construction is utilized across all building types, including residential. In addition, Florida is subject to high winds, especially during hurricane season. The state's code reflects these unique features.

During a recent site visit to Florida, SEEA observed the code enforcement operations of a building department, and noted several questions and comments from building department staff that indicated a less than 100 percent confidence in enforcing the current energy code.

On June 30, 2015, Florida's new energy code, based on the 2012 IECC, became effective. The code in Florida is based on the ICC model code, but has been amended and repackaged as the Florida Building Code. Florida currently and previously has introduced amendments which limit the use of the prescriptive path.² In turn, nearly all of Florida's contractors are using the performance pathway to demonstrate energy code compliance, which has Florida-specific amendments as well (Withers 2014).

² Examples of current amendments include Florida Building Code 5th Edition (2014) Energy Conservation, R403.2.2. Examples of past amendments include Section 402.1.2 and Table 402.1.1 of the 2010 Florida Building Code Energy Conservation.

Florida Circuit Rider Assessment Methodology

The first year of SEEA’s Florida Circuit Rider Program specifically focused on commercial energy code implementation and enforcement, although some of the findings from the Circuit Rider visits may be applicable to both residential and commercial codes. In the Southeast, not all jurisdictions review residential projects, and focusing on commercial projects allowed the findings of the Circuit Rider Program to be more widely applicable within the region. In addition, commercial projects tend to be more complex, so standard (or “out of the box”) training tools and resources, such as the U.S. DOE Building Energy Code Program (BECPP) free online resources, may not be as universal and effective.³

In its communication with other national Circuit Rider programs, SEEA learned that Circuit Riders can be under-utilized in the first year. As with any new resource, it takes time to create awareness and build trust among stakeholders, and with this in mind, SEEA prioritized a different approach.

For the first year of the program, SEEA decided not to focus on the Circuit Rider providing targeted technical assistance, but rather to focus on program awareness. In addition, SEEA also concluded it was more appropriate to observe Florida building departments and learn about their specific needs, rather than to begin providing resources immediately that may not have responded to stakeholder needs. Subsequent years of the program will focus on meeting the needs established during this initial observation and feedback period.

Initially, SEEA anticipated the Circuit Rider visiting jurisdictions in counties with the most commercial construction starts, based on purchased Construction Market Data (CMD) Group data. In Florida, these top 10 counties would represent 63 percent of construction starts in 2013. However, not all counties had jurisdictions interested in participating; in addition, jurisdictions outside of the counties listed showed interest. Although the initial targeted list changed, the participating jurisdictions represented all major metro areas of Florida, with the exception of Jacksonville. Ultimately, the participants varied, regarding population and area served. This variety allowed for a better understanding of successes and challenges experienced across the state, rather than only at high-volume building departments.

³ Other SEEA code compliance efforts in the state of Florida are more directly focused on residential construction, including the development of technical resources and collateral, training with the Florida Home Builders Association (FHBA) and the Building Officials Association of Florida (BOAF), and coordination among raters

Table 1. Jurisdictions visited by SEEA Circuit Rider.

City	Population	Area
Altamonte Springs	42,150	9.5 sq. mi.
Bay County	73,376	1,033 sq. mi.*
Boca Raton	84,652	29.1 sq. mi.
Hallandale Beach	37,229	4.55 sq. mi.
Oviedo	33,815	15.4 sq. mi.
Tampa	337,368	170.6 sq. mi.
Pinellas County	270,559	274 sq. mi.*
Riviera Beach	32,535	9.8 sq. mi.
West Palm Beach	100,801	58.2 sq. mi.
Winter Park	27,727	8.7 sq. mi.

* The county jurisdiction serves all unincorporated areas of the county; therefore, the area the building department must cover is less than the total square miles of the county. *Source:* Westmoreland et al. 2015.

As noted previously, these visits focused on developing a clear snapshot of jurisdictional enforcement practices and processes, and collecting feedback on building department needs. They were not intended to assess or measure energy code compliance, or to deliver technical assistance support.

Prior to the site visit, the building department received a pre-site visit questionnaire to complete. The Circuit Rider then met with the building official, plan review and inspection staff; the site visit was conducted both in the office and out in the field. All jurisdiction assessments consisted of the Circuit Rider shadowing staff for at least one plan review; initially the assumption was that shadowing would occur for three to four on-site inspections. In reality, shadowed on-site inspections varied greatly. In one jurisdiction, the Circuit Rider shadowed eight on-site inspections, in another only one on-site inspection, and in that case, the inspector discovered that the call was premature and the building not yet ready.

Findings from Site Visits

As noted previously, SEEA’s Circuit Rider Program has initially focused on developing a “snapshot” of Florida’s code enforcement environment. The following section provides an overview of key themes and findings that were seen in multiple jurisdictions, many of which have also been observed in other parts of the Southeast and on a national level. It includes challenges, best practices and neutral factors that varied from jurisdiction to jurisdiction, but did not appear to either compromise or improve their ability to enforce the code.

The pre-site visit questionnaire, completed by seven out of the ten building departments visited, included a section focused on general perceptions of energy code compliance. When asked whether or not their building department achieves 90 percent compliance—the benchmark established through ARRA and frequently referenced in the context of code compliance—three building departments responded yes, and four did not respond. None of the departments surveyed selected no.

Despite this lack of negative response regarding compliance, results from other survey questions revealed that building departments generally find a limited understanding of plans examiners and inspectors on energy codes, as seen below. These seemingly contradictory responses point to the disconnect between department goals and the reality of staff resources and capacity on the ground. These and other related challenges are described in the section that follows.

Table 2. Jurisdiction survey responses (out of 5).

	Fluency of plans examiners in details	Fluency of inspectors in details	Understanding of plans examiners	Understanding of inspectors
Average	3.3	3.1	3.6	3.6

Source: Westmoreland et al. 2015.

Respondents were also asked to identify the state of compliance of various building systems, including building envelope; plumbing; mechanical; and electrical. Building envelope provisions were perceived as the most compliant, while responses regarding the least compliant measures frequently cited mechanical and building envelope. Mechanical provisions were viewed as the most difficult to check measures.

Staff Capacity

Across the board, staff capacity proved a major barrier to effective compliance enforcement. Some jurisdictions faced challenges in the turn-around time of plan reviews and inspections. Still others cited a heavy workload—a handful driving 100-plus miles per day, and conducting upwards of 15 to 20 inspections. In some cases, despite the limited amount of time available for each inspection, inspectors spent up to one-third of their time driving to sites that were not ready for inspection.

Inside the office, fielding calls was often problematic; one jurisdiction referenced 100 calls and 15 walk-in visits per day. This has been particularly challenging for building departments, given that many jurisdictions have not yet fully staffed up to keep pace with the recent increase in construction starts, after staffing down during the recent recession.

Legitimacy and Authority Concerns

As the energy code is newer than other codes, several areas of the Southeast have not accepted the legitimacy of energy efficiency being part of the code and do not see it as a health and safety issue, or understand the connection of energy codes to matters of health and safety. This attitude is often difficult and costly to overcome, and, luckily, has largely eased out of existence among Florida building department employees.

While other disciplines may be licensed, there is a lack of credentialing for energy codes on the state level, which reduces the perception of authority in the eyes of the building department staff. Once a set of calculations, for example, has been stamped by an engineer, enforcement officials may not feel that they have a comparable level of authority in reviewing it.

In addition, code officials do not feel adequately familiar with the code to be empowered to push back when code requirements have not been met. “Because the code says so” is the only response some code officials and inspectors feel that they have when questions arise regarding certain code requirements. The perceived authority of inspectors in the field may also be complicated by the perception observed in some of the jurisdictions visited that plan reviewers have a better grasp on the energy code than inspectors.

Finally, the Circuit Rider observed the general perception of a lack of control of codes at the state level; in other words, there was a definitive perception that lobbying organizations are responsible for developing the code. If code officials and inspectors do not feel the process includes representatives from their sector, it may contribute to a lack of ownership and enforcement of the energy code.

Licensing, Education and Credentials

Across the jurisdictions visited, the Circuit Rider observed that none of the intake technicians were licensed—likely, to extend the usage of licensed professionals for other tasks. Only two jurisdictions reported that they had professional engineers (PEs) and registered architects (RAs) on staff.

Educational opportunities were also limited or not aligned with conditions in the field. For example, statewide training series tend to focus on new construction, but many jurisdictions don’t see a lot of new construction. With the exception of one jurisdiction where approximately 60 of percent permits are issued for new construction, respondents surveyed estimated an average of 21 percent. This misalignment of training resources represents both a missed educational opportunity and a misdirection of resources.

Familiarity with EnergyGauge Software

To utilize the Performance Path for commercial energy code compliance, design professionals must use Florida Building Council-approved energy modeling software to determine that the proposed building uses no more energy than a typical code-built structure of the same size and construction type. Currently, the only approved software is the Florida Solar

Energy Center's (FSEC) EnergyGauge.⁴ Through this report and other information collected, SEEA has determined that majority (approximately 90 percent) of the commercial permits issued in Florida utilize EnergyGauge to demonstrate compliance with the code. Energy models may be viewed through direct viewing of the EnergyGauge file or through a series of reports provided by the software.

The Circuit Rider found that none of the jurisdictions visited have subscriptions to the EnergyGauge software. This does not preclude building department staff from reviewing the files; the typical submittal to a building departments includes the previously mentioned reports. The plans examiner can then review the reports submitted and verify that the information, such as square footage and construction type, matches the plans and specifications.

However, several plans examiners from separate jurisdictions expressed interest in having a better understanding of the energy model calculations and software, as well as having the software itself. With this knowledge, many believed they would be able to review the details of the submitted reports in more detail.

Energy Code Commentary

When states or jurisdictions adopt the model ICC codes, many building departments purchase books that combine the code language and commentary. This commentary provides the construction industry with supplemental language intended to better define the code requirements in easier to understand language. In many cases, building departments use this commentary to explain code requirements to the construction industry or as justification for interpretation.

Codes are updated and adopted on a cyclical basis in Florida, approximately every three years. While Florida does utilize the model ICC codes as a base (specifically, the 2012 IECC for the upcoming 2014 Florida Building Code, Energy Conservation), it heavily amends the codes to account for Florida-specific needs and considerations. Therefore, the model IECC code commentary often does not align with the Florida code and is not used. In addition, no Florida-specific code commentary has been developed to date.

Building departments are often faced with new technology and new installation practices in between these update cycles and need to determine which do and do not meet the intent of the code. Some building department staff have highlighted the lack of code commentary as a barrier to fully understanding and interpreting the energy code. In one specific case, an inspector was having difficulty determining if an electrical install was meeting the intent of the code, despite not meeting the exact code requirement, and did not feel he had access to resources to gain clarity on the issue.

Ambiguous Jurisdiction and Authority

Most codes fall clearly under the responsibility of specific inspectors; for example, all electrical code requirements are the responsibility of a building department's electrical inspector. In the case of energy code enforcement, there is no clear delineation of which requirements are

⁴ EnergyGauge is a publicly available software, purchasable directly from its website, <http://www.energygauge.com/>. EnergyGauge can be purchased on a yearly (\$199) or triennial basis (\$537).

the responsibility of each type of inspector. In the jurisdictions visited, the Circuit Rider found that many building and structural inspectors see the energy code falling under the responsibility of the mechanical inspector.

Perception of Energy Code

In many cases, the Circuit Rider found that employees wanted to enforce the energy code as much as any other code required, and that their knowledge of the energy code was more extensive than they realized. Despite this, most suffered from a lack of confidence regarding their ability to interpret or enforce the energy code, which may have further constrained or limited their effectiveness.

Permitting Software

Some departments have electronic submittal capabilities in place, while others do not. A range of permitting software is used in the jurisdictions visited. Because electronic permitting is so new to the majority of the jurisdictions visited, it is difficult to draw conclusions regarding its impacts on department efficiency and effectiveness. Some jurisdictions have experienced difficulty transitioning or short-term issues with the software in the past; however, the long-term impacts remain to be seen.

Cross-Functional Coordination and Collaboration

The division of labor and coordination between plan reviewers and inspectors was also found to vary by jurisdiction, as well as the scope of which codes each was responsible for reviewing or enforcing. How this is structured in a given jurisdiction reflects local needs and conditions. In some jurisdictions, staff both review plans and complete site inspections, while in others, plan reviewers don't typically complete inspections. In some cases, both positions are specific to each code, with no crossover, while in others, they review multiple codes.

Given the constant change in construction levels from year to year and season to season, this kind of flexibility can provide a helpful degree of efficiency to smaller building departments. In addition, it can encourage interaction among all building department staff and more active collaboration.

In some jurisdictions, cross-functional collaboration was seen as a major priority. For example, in Pinellas, the department closes early once a month, in order to allow time for exchange of ideas across the office. In addition, inter-jurisdictional dialogue was apparent; some departments were actively involved in discussion groups facilitated by the Building Officials Association of Florida (BOAF), and others communicated regularly to learn from their neighbors.

Available Reference Resources

In all cases, the jurisdictions visited had energy code books available to officials and inspectors. In addition, one jurisdiction has adapted ICC checklists on hand for inspectors as a quick, in-field reference. Checklists can simplify the inherent complexity of the code, in addition to ensuring accuracy and thoroughness in the inspection process.

In another jurisdiction, there are no dedicated worksheets covering energy code requirements, making it difficult for the plans examiner needs to effectively review all of the energy code measures.

Conclusions and Next Steps

SEEA's Florida Circuit Rider Program is the first of its kind in the Southeast and can serve as a model for other states that are interested in developing a snapshot of compliance and enforcement in the field. Additionally, other states may draw lessons from the findings outlined in this report, although they may not be completely reflective due to differing conditions in Florida.

SEEA will continue to evaluate its experiences with the Circuit Rider Program and use them to inform targeted technical assistance in the state in the years ahead, and will explore the role of additional in-state partners in operating or advising the Circuit Rider Program. Additionally, SEEA will continue to refine the Circuit Rider model, identifying gaps in information that was collected and strategies to further enhance the effectiveness of the program.

The Circuit Rider's visits uncovered a number of defined needs, many of them consistent across jurisdictions. Many of the needs that were articulated or demonstrated may be addressed by targeted technical assistance, while others may be a result of "bigger picture" or systemic issues that may require long-term solutions. The information and perspective gathered through SEEA's Circuit Rider Program may also prove a starting point for energy code opportunities down the road. Among the Florida-specific opportunities suggested by the Circuit Rider's findings are the following:

- **Short Term:** Providing on-the-ground technical assistance for interpreting the new energy code, similar to energy code commentary;
- **Short Term:** Providing technical assistance on energy code plan reviews (e.g., EnergyGauge documentation);
- **Short Term:** Connecting code officials and building departments with each other and sharing best practices through existing forums, such as BOAF;
- **Long Term:** Working with industry to emphasize existing buildings in education and resources provided; and
- **Long Term:** Working with building departments to better define authority and responsibility around energy code enforcement.

Florida benefits from a robust network of stakeholders that can be critical in moving energy code compliance forward, including trade associations, professional organizations and industry groups. SEEA will leverage lessons learned to begin a dialogue with in-state stakeholders on how to more effectively support energy code compliance in Florida.

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