

CONSTRUCTION, CODES, & COMMERCE:

Commercial Construction Data Review (2007-2017)

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SEEA
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About the Southeast Energy Efficiency Alliance (SEEA)

The Southeast Energy Efficiency Alliance (SEEA) is a 501(c)(3) nonprofit organization headquartered in Atlanta, Georgia. Established in 2007, SEEA is a Regional Energy Efficiency Organization (REEO) serving eleven states across the Southeast, including Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

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All data was provided by Construction Market Data (CMD), a subsidiary of ConstructConnect™. CMD compiles and provides data on commercial and civil construction activity across the entire United States and Canada. To learn more about CMD, visit <https://www.cmdgroup.com/>.

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Abstract

This report is based upon SEEA’s analysis of commercial construction data purchased from Construction Market Data (CMD), a leading provider of business information for the North American construction industry. SEEA initiated this analysis to better understand construction trends in the Southeast, and to gauge the impact that updating state-level energy codes has had, and may have in the future, on the commercial building market across the region.

Our hope is that this analysis will be of assistance to state energy offices, planners, and construction industry professionals in the Southeast – providing them with a tool for planning and outreach as well as information for addressing the concerns of industry stakeholders about the impact of updating energy codes. We also hope these findings will spur new conversations among regional stakeholders about how energy codes can best serve the Southeast’s long-term need for affordable energy, construction-sector job growth, and economic development.

Introduction

The following analysis, conducted by the Southeast Energy Efficiency Alliance (SEEA), examines the relationship between implemented energy codes and commercial construction starts by state between 2007 and 2017.

To date, there has been a lack of accurate, data-driven information on commercial construction trends in the Southeast. In 2014 SEEA published the first report on commercial trends across the region, *Construction, Codes, and Commerce: The Economic Impact of Commercial Energy Codes in the Southeast*, which showed that updating state energy codes had no impact on the level of commercial construction activity in that state. The current report updates SEEA's 2014 findings using the latest data available about commercial construction activity in the Southeast. SEEA has also developed a companion analysis of residential construction trends between 2005 and 2017 in our report [*Construction, Codes, and Commerce: Residential Construction Data Review \(2005-2017\)*](#).

Despite evidence showing that new energy codes have no impact on commercial construction levels, inaccurate perceptions about the negative impact of energy codes continue to plague efforts by developers, planners, utilities, and local governments to determine where, and on what kinds of construction projects, they should focus their efforts and resources for maximum impact.

It is our hope that state energy offices, local planning departments, and utilities, among others, find this data-based analysis valuable in their ongoing effort to upgrade the region's building stock and the energy performance of that stock. We also hope that this work will be encouraging to the many hard-working developers in the field, who should know that their efforts to comply with new energy codes are making a positive difference in the region.

A. Why Now? The Impetus for Change

Since 2008, all the states in SEEA's territory except for Mississippi have implemented more stringent commercial energy codes. In order to obtain funding under the 2009 American Recovery and Reinvestment Act (ARRA), southern governors pledged to adopt the 2009 International Energy Conservation Code (IECC) by 2015, at a minimum. In addition, they pledged to attain 90 percent compliance with their new energy codes by 2017. This was an important advancement for the Southeast, one that significantly accelerated the time to energy code adoption and compliance throughout the region.

While the move toward stronger energy codes has been an encouraging trend in the Southeast, concerns have remained in many quarters about the economic impact of these new codes, which many people assume have had negative effects on jobs and local economies. Specifically, a large group of construction industry professionals and much of the general public tend to think that because stronger energy codes increase the initial cost of construction, they cause a decrease in local construction activity and a resulting decline in the local economy. These beliefs have historically made it difficult for states to implement new energy codes, or even to enforce existing codes.

The erroneous idea that commercial construction trends mirror those of residential construction has led some people to use housing data, which is free, as a de facto evaluation tool for all construction, further exacerbating misunderstandings about energy codes. Accurate information on commercial construction trends has been absent from discussions on commercial energy codes, due primarily to the costly and time-consuming nature of purchasing and rigorously analyzing the data. As a result, state energy offices and other planning professionals have been left without a data-supported means to address inaccurate charges that energy codes are detrimental to commercial construction starts, and hence to their local economies.

This report addresses this absence of data by offering a detailed analysis of commercial construction trends between 2007 and 2017 using construction data purchased from Construction Market Data (CMD). SEEA's analysis of this data correlates "permits pulled," also known as commercial construction starts, with changes in the commercial energy code to understand how updated energy codes have affected each state in the Southeast.

B. Methodology

To create this analysis, SEEA reviewed data on commercial "permits pulled" compiled by CMD by correlating permit numbers with energy code implementation. The term "permits pulled" used throughout this report describes construction permits that have been activated, which made it possible for SEEA to accurately measure commercial construction activity.

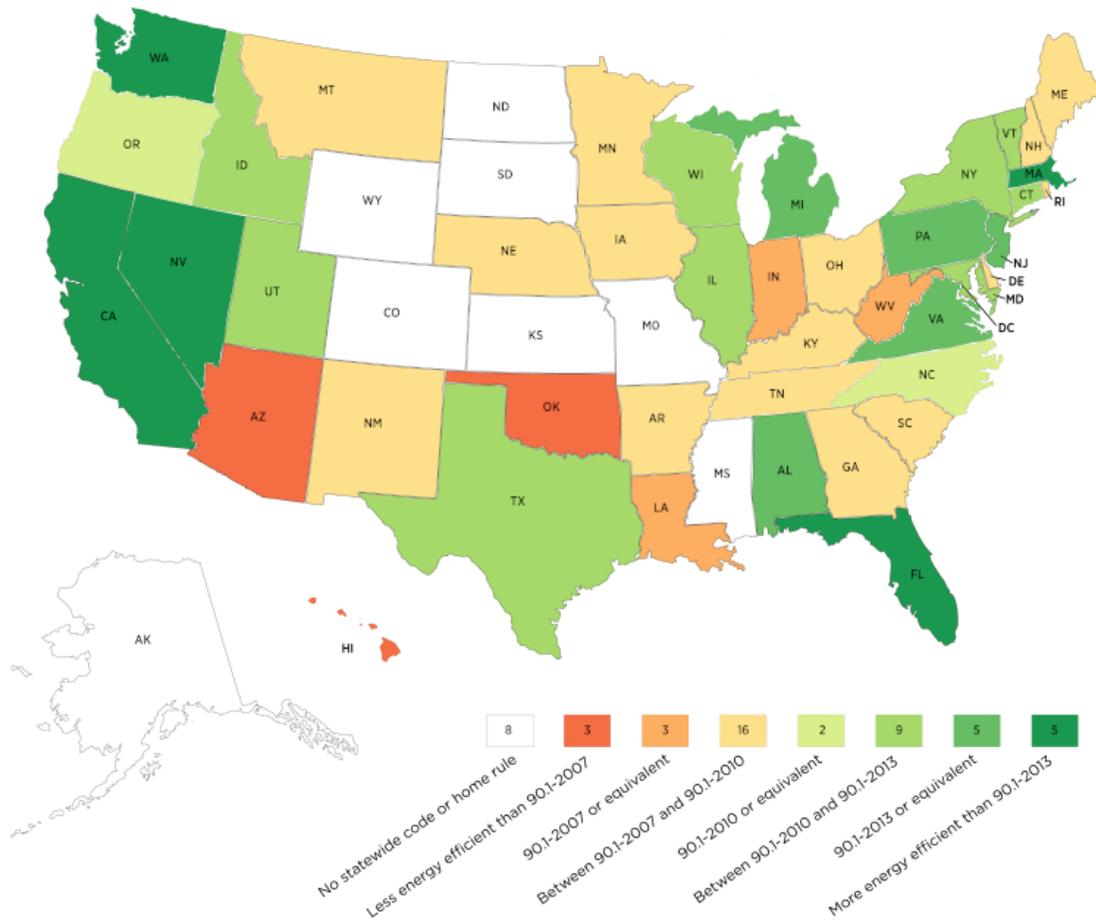
The data provided by CMD is a good indication of what is happening on the ground, but it is not a 1:1 look at commercial construction activity. CMD data only reports projects that have been bid out, and as a result it potentially undercounts commercial construction levels. This is especially true for projects like multifamily residential building and warehouse construction, where there might be no bidding process. Public projects, such as government buildings, are more accurately represented in the data because they are required to go through a bid process before breaking ground.

CMD Data is divided into three categories: civil, nonresidential, and multifamily residential. In first reviewing the raw data, SEEA removed several types of construction in order to capture only the construction starts that are traditionally affected by building energy codes. Our analysis removed all data designated "civil" because this category includes horizontal construction types, such as roadways and bridges. We also removed the following nonresidential building types: airports, all other civil, amusement parks, bridges, dams/canals/marine work, medical miscellaneous, parking garages, power infrastructure, roads, single-family residences, transportation terminals, and water/sewage treatment facilities. Construction activity in these categories does not always represent heated and/or cooled spaces that are significantly affected by energy codes. By filtering the data in this way, we eliminated the possibility of counting non-relevant permits, which would have skewed our results to show higher levels of commercial construction than had occurred.

Current Status of Energy Codes in the Southeast

Other than Mississippi, which has not adopted a commercial code, all the states in SEEA’s territory have adopted at least the 2009 IECC and/or ASHRAE 90.1-2007. A majority of U.S. states have also adopted a code that is greater than ASHRAE 90.1-2007, as shown on the following map, which was created by the U.S. Department of Energy’s Building Energy Codes Program (BECP).

Commercial Building Energy Code Adoption Status



The current commercial codes in place in the Southeast and the date on which they became effective are as follows:

State	Current Commercial Code	Effective Date
Alabama	2015 IECC or ASHRAE 90.1 -2013	1/1/2016
Arkansas	2009 IECC (ASHRAE 90.1-2007 equivalent)	1/1/2013
Florida ¹	Florida Building Code: Energy Conservation, 6th ed. (2015 IECC/ASHRAE 90.1-2013 with amendments)	12/31/2017
Georgia	2009 IECC with Amendments	1/1/2011
Kentucky ²	2018 Kentucky Building Code (2012 IECC or ASHRAE 90.1-2010 equivalent)	1/1/2019
Louisiana	2009 IECC/ASHRAE 90.1 -2007	7/20/2011
Mississippi	No mandatory code	N/A
North Carolina ³	2018 North Carolina Energy Conservation Code (2009 IECC/ASHRAE 90.1 -2007 equivalent)	1/1/2019
South Carolina	2009 IECC or ASHRAE 90.1-2007	7/1/2013
Tennessee	2012 IECC or ASHRAE 90.1-2010	8/4/2016
Virginia ⁴	2012 Virginia Uniform Statewide Building Code (based on the 2015 IECC with amendments)	9/4/2018

¹ Because data past 2017 is unavailable, for this study we will be examining the effects of the previous state code, the fifth edition of the Florida Building Code, which was effective on June 30, 2015.

² Because data past 2017 is unavailable, for this study we will be examining the effects of the previous state code, the 2012 Kentucky Building Code (2012 IECC equivalent), which was effective on 10/1/2014.

³ Because data past 2017 is unavailable, for this study we will be examining the effects of the previous state code, the 2012 North Carolina Energy Conservation Code (based on the 2015 IECC with amendments), which was effective on 1/1/2012.

⁴ Because data past 2017 is unavailable, for this study we will be examining the effects of the previous state code, the 2012 Virginia Statewide Building Code (based on the 2012 IECC with amendments), which was effective on 7/14/2014.

Energy Codes: Good, Bad, or Neutral?

There are many misconceptions about the effects of updating building energy codes. Chief among these is a popular but false belief that strong energy codes limit construction activity because of the greater cost and effort they bring to a project. As a result, many people assume that energy codes depress local commercial construction work.

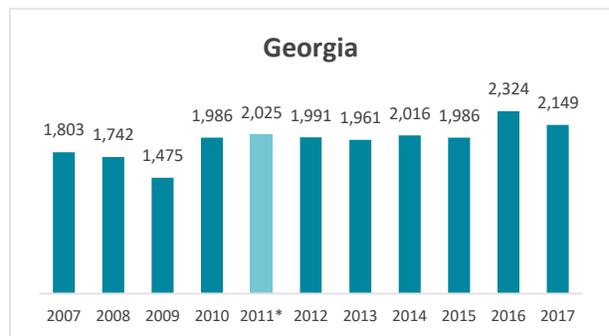
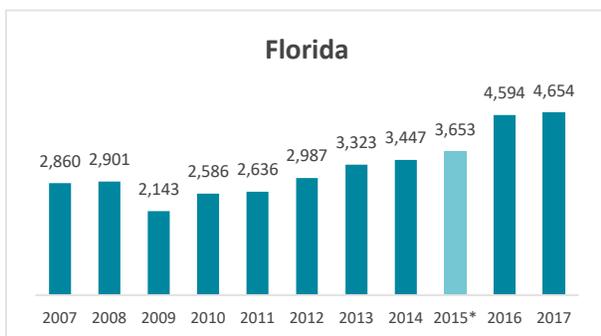
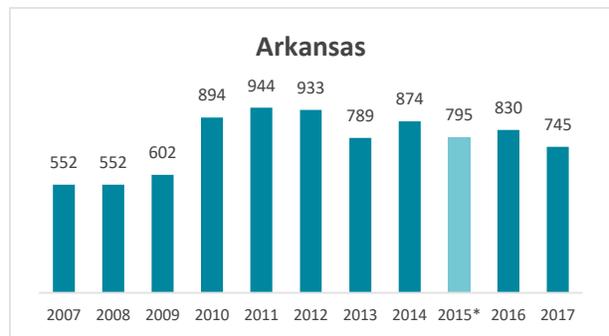
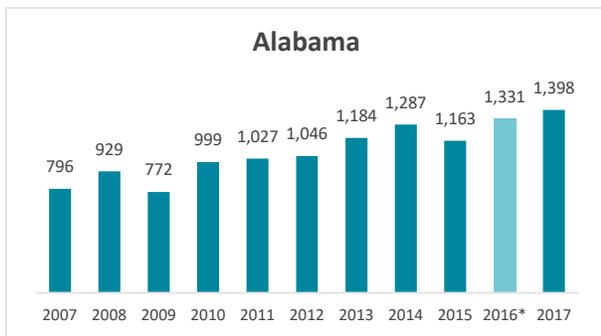
This is an old argument, like the argument that developers won't build where there are high impact fees. Yet it is not validated by data in either the commercial or residential sectors.

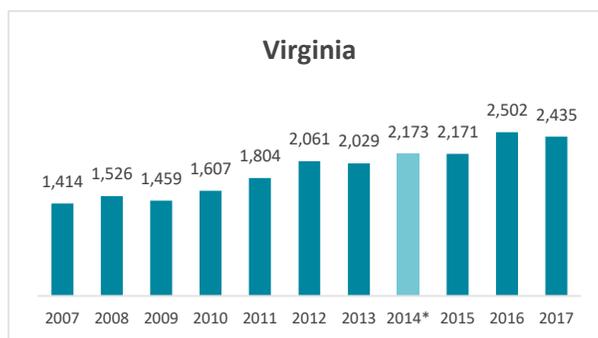
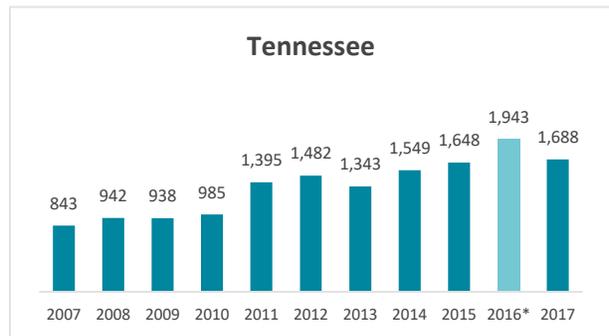
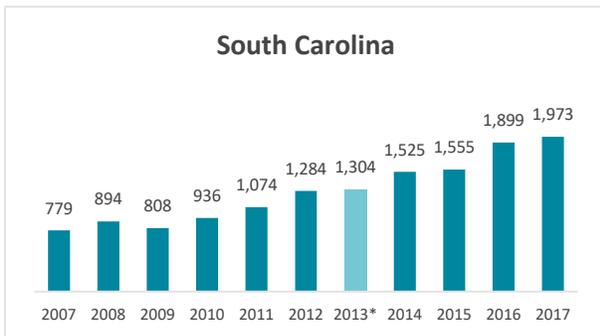
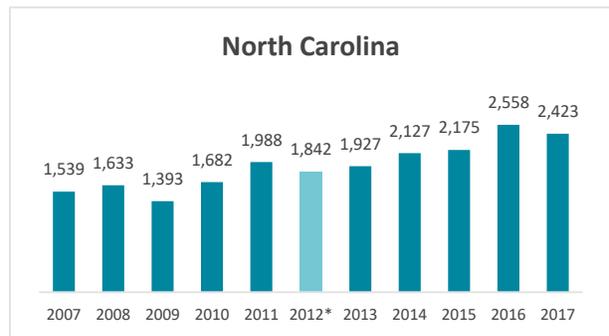
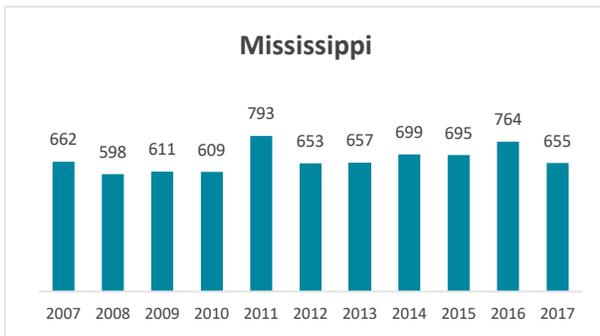
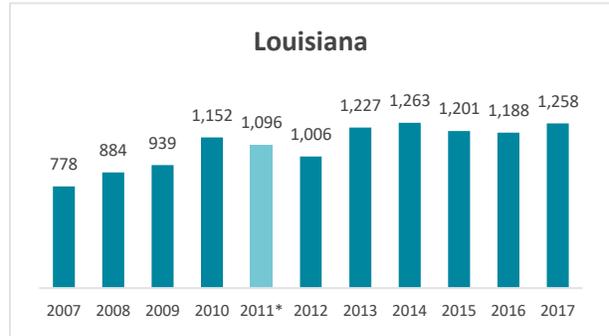
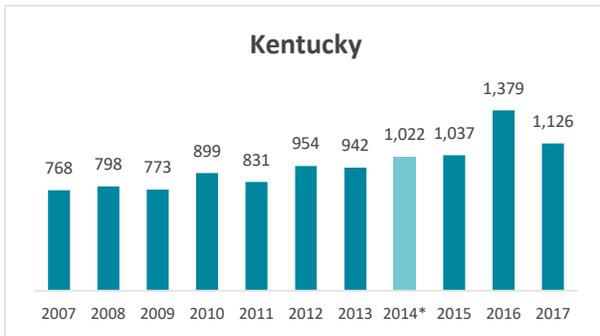
In the residential sector, SEEA's analysis of data from the U.S. Census Bureau demonstrates that states with strong residential energy codes continue to see robust construction growth (for more see SEEA's report: [Construction, Codes, and Commerce: Residential Construction Data Review, 2005-2017](#)).

The graphs below indicate that the same is true in the commercial sector. Ten out of 11 states in the region – except for Mississippi – implemented stronger energy codes at least once during the decade from 2007 to 2017. Yet all these states had a greater number of construction starts in 2017 than in 2008, the peak of pre-recession building.

Number of Commercial Construction Starts from 2007-2017

**All years denoted with an asterisk and light color bar indicate the year that a new code went into effect.*

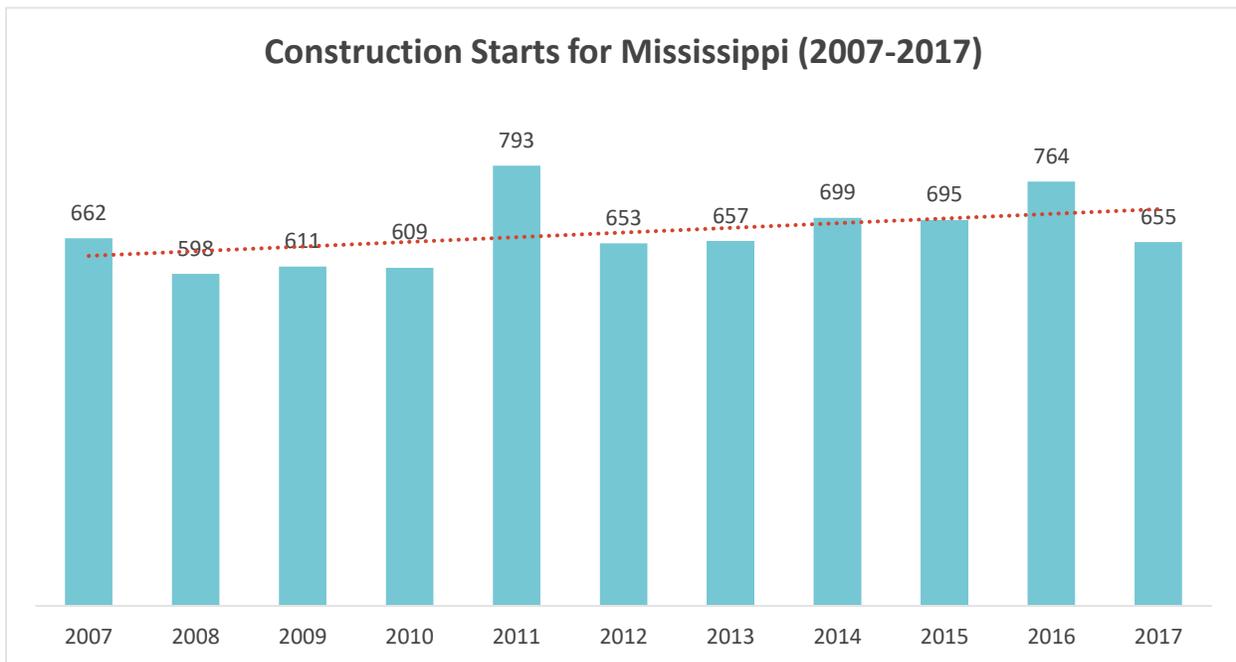




A. Construction Activity Under No Energy Code

The experience of Mississippi also shows that codes have little direct impact on commercial construction activity. Mississippi is the only state in the Southeast without a commercial energy code. Yet levels of commercial construction in Mississippi have remained flat from 2007 to 2017 as commercial construction activity in the states bordering Mississippi has increased significantly.

In Alabama construction starts grew by 76% over the decade despite the adoption of updated commercial energy codes in 2008, 2011, and 2016. Commercial construction starts in Arkansas grew by 35% over the decade despite the adoption of a new code in 2015. In Louisiana construction starts grew by 62% despite the adoption of a new code in 2011. In Tennessee commercial construction starts grew by 100% despite the adoption of an updated commercial code in 2016. Mississippi, however, experienced a 1% decrease in the number of construction starts between 2007 and 2017 despite having no mandatory commercial energy code - a clear indication that adopting more stringent energy codes has little effect on the level of construction.



Looking at the Southeast as a whole, of the nine states that upgraded their codes and have data available for subsequent years, only one state (Arkansas) shows an overall decrease in commercial construction starts in the years following the implementation of a new code.

The following chart shows the change in the number of commercial construction starts as each state has updated its energy code. It compares the number of permits pulled in the year before a new code went into effect to the number of permits pulled in the year following the implementation of a new code.

Commercial Construction Start Trends in the Southeast

State	Year of New Code	% Change: Year After New Code	Trend	% Change Since New Code	Trend
Alabama	2016	20.2%	↗	Same	↗
Arkansas	2015	-5.0%	↘	-6.3%	↘
Florida	2015*	33.3%	↗	35.0%	↗
Georgia	2011	0.3%	→	8.2%	↗
Kentucky	2014*	10.1%	↗	19.5%	↗
Louisiana	2011	-12.7%	↘	9.2%	↗
North Carolina	2012*	-3.1%	→	21.9%	↗
South Carolina	2013	18.8%	↗	53.7%	↗
Tennessee	2016	2.4%	→	Same	→
Virginia	2014*	7.0%	↗	20.0%	↗

For seven out of 10 states with full data (Alabama, Florida, Georgia, Kentucky, South Carolina, Tennessee, Virginia), the number of construction starts was higher during the year after a new code was implemented than during the year preceding the new code. For three states (Arkansas, Louisiana, North Carolina), the number of commercial construction permits pulled declined in the year after a new code went into effect.

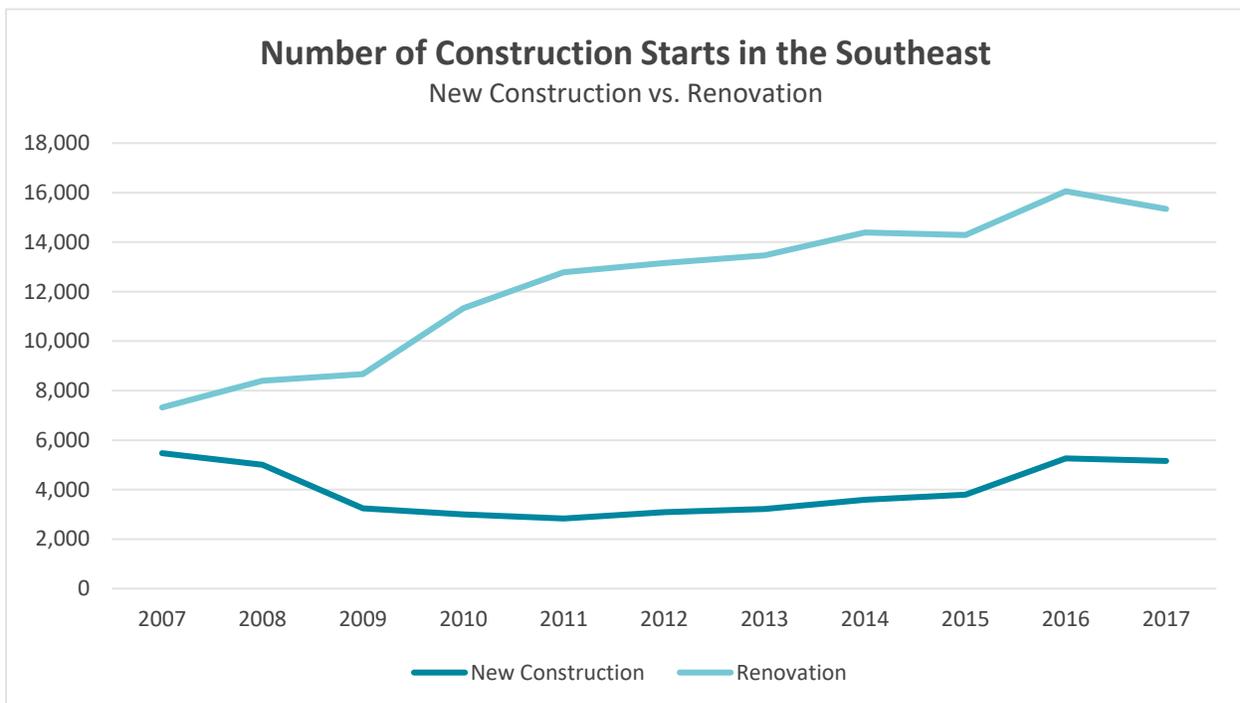
Even these figures do not tell the full story. Of the three states that experienced declines in the year after a new code went into effect, only one state (Arkansas) shows a continued decreased in permit numbers. Commercial construction starts in Arkansas increased in 2016 following the implementation of a new code the year before but declined in 2017 to a level lower than the construction activity prior to the state’s new code. Since our data does not extend beyond 2017, it is too soon to know whether this trend will continue. Although Louisiana and North Carolina also had temporary declines in permit numbers in the year following the implementation of a new code, construction activity in both states has rebounded in the years since to levels that are well above where the states were prior to the new code.

The data therefore shows that the regional trend is toward a growth in commercial construction starts following code adoption – a finding that is consistent with our observation that there is no clear evidence that energy codes depress commercial building activity in the Southeast. While some people may argue

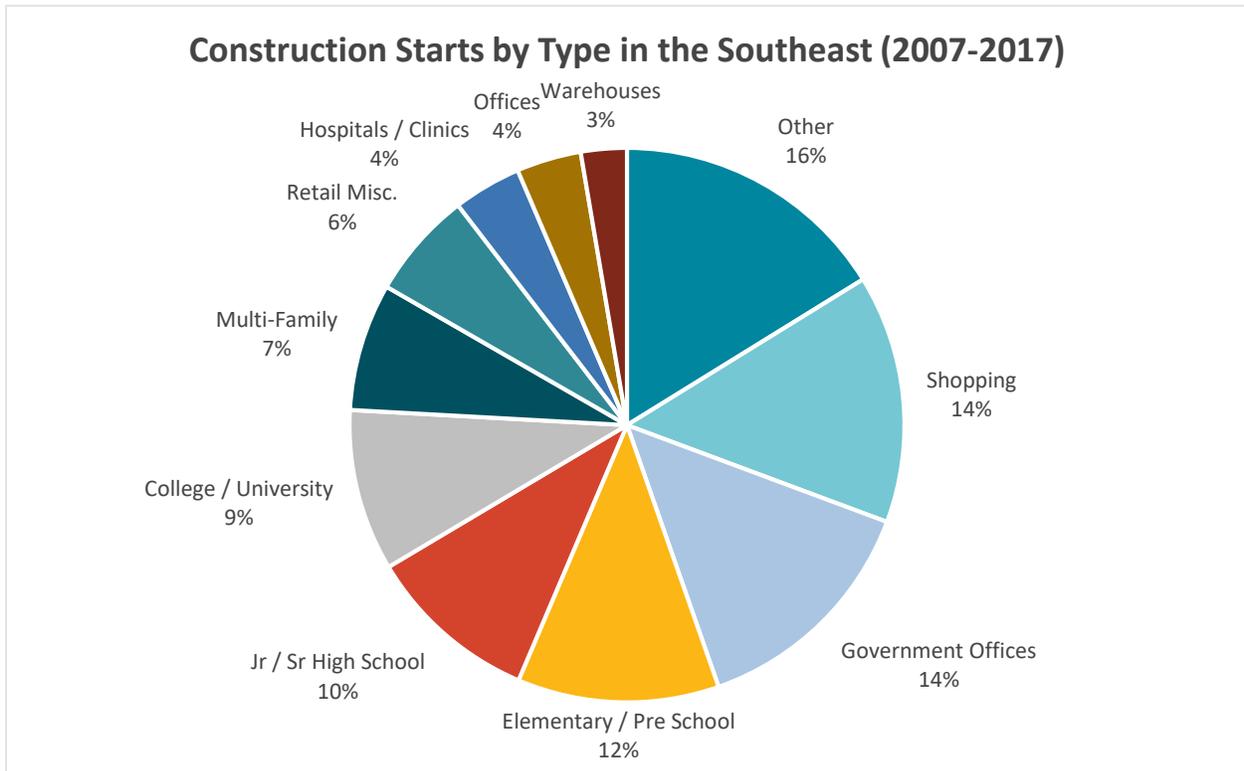
that the states of the region could have experienced even stronger growth in commercial activity had these codes not been adopted, the absence of gains in Mississippi – while no doubt affected by factors that extend beyond the energy code – suggests that this is unlikely.

B. Types of Commercial Construction Activity

Another trend that is evident in the data is the growing proportion of commercial construction starts for renovations as compared with new construction. Between 2007 and 2017 the number of renovation permits have grown by 110%, while the number of permits issued for new construction has remained steady. It is unlikely that this has any relation to the adoption of upgraded energy codes. The divergence in renovation and construction permits begins around 2008 and is most likely a response to the economic downturn that led builders to shift to renovations rather than new construction. This trend continued through 2017, with a slight decrease in the number of renovation permits overall in 2016. Future data will be necessary to see if this decrease in renovation numbers has continued beyond 2017.



Between 2007 and 2017 the largest commercial construction activity also came in sectors that typically generate additional economic activity beyond construction expenditures. The largest proportion of construction activity occurred in a category of commercial buildings that includes hospitals and clinics, hotels, religious buildings, libraries and museums, sport and convention centers, and manufacturing buildings, among others. The next largest proportion was commercial buildings used for shopping. Together these two categories make up 30% of commercial construction activity in the region over the decade. This provides further evidence that energy codes have little effect on economic development, in that the most prevalent types of commercial construction activity in the region have the potential to generate additional profits in their communities for years to come.



**Other includes Hospitals/Clinics, Religious, Police/Fire, Military, Library/ Museum, Prisons, Hotels/Motels, Courthouse, Nursing Homes/Assisted Living, Sport/Convention Center, Manufacturing, and Industrial Labs/Labs/School Labs.*

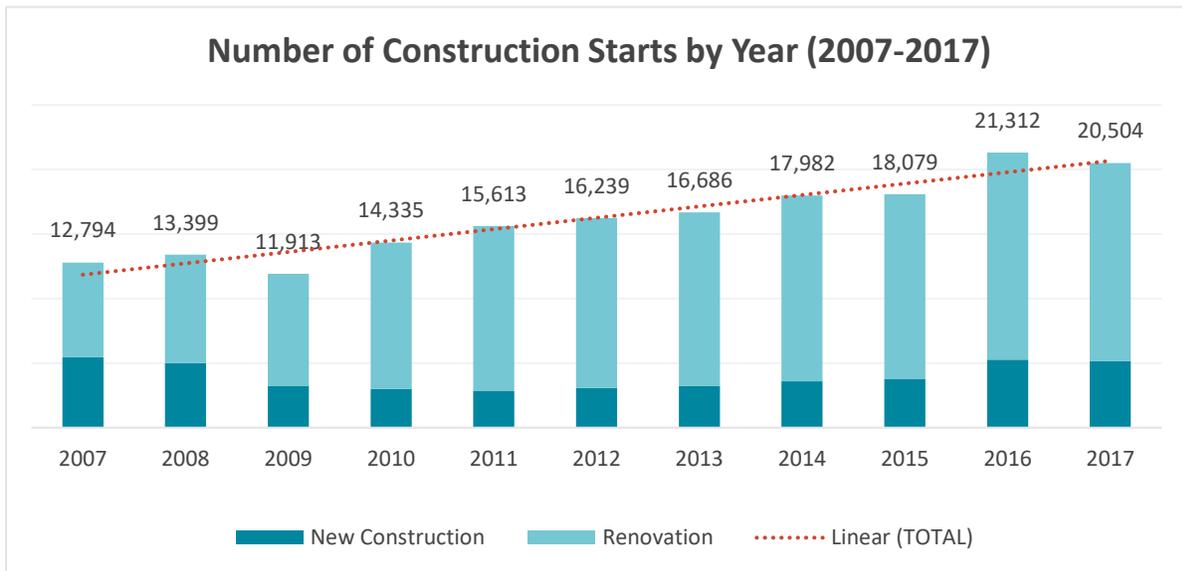
C. The Impact of Energy Codes

By showing no correlation between commercial construction starts and the implementation of a new energy code, SEEA’s analysis suggests that energy codes do not have a direct effect on commercial construction levels in the 11 states of the region. Instead, factors that fall outside of the scope of this report, such as access to transportation and city services, the nature of the surrounding businesses and clientele, the local business climate, and building accessibility for potential employees, likely play a more important role in influencing commercial construction activity than energy codes.

In addition, data suggests that buildings which meet or exceed energy codes often create their own market advantage and tend to be more sought after by knowledgeable buyers and tenants. This is because these buildings are generally more comfortable for occupants and more cost effective to operate. Together, these factors can represent an important competitive advantage that is reflected in the “green premium” that these buildings receive through higher rental and sale pricing.⁵

⁵ The Institute for Market Transformation (IMT) has compiled studies demonstrating that “green” commercial buildings are subject to a rent and sales premium. IMT’s findings are available at: https://www.imt.org/wp-content/uploads/2011/01/IMT_Premiums_Sales_2016.pdf and

D. Regional Review: The Southeast



State	Population	New Construction	Renovation	Total
Florida	21,299,325	10,379	25,405	35,784
Georgia	10,519,475	5,358	16,100	21,458
North Carolina	10,383,620	6,077	15,210	21,287
Virginia	8,517,685	4,364	16,817	21,181
Tennessee	6,770,010	3,292	11,464	14,756
South Carolina	5,084,127	3,228	10,803	14,031
Louisiana	4,659,978	2,345	9,647	11,992
Alabama	4,887,871	2,708	9,224	11,932
Kentucky	4,468,402	2,363	8,166	10,529
Arkansas	3,013,825	1,879	6,631	8,510
Mississippi	2,986,530	1,662	5,734	7,396
Total		43,655	135,201	178,856

https://www.imt.org/wp-content/uploads/2011/01/IMT_Premiums_Rentals_2016.pdf

Conclusions

As a result of this analysis of commercial construction data in the Southeast from 2007 to 2017, SEEA finds the following:

- **Commercial construction permit numbers are on the rise.** Ten out of 11 states in the Southeast have surpassed their pre-recession peak, despite the implementation of more stringent commercial energy codes at least once (and sometimes multiple times) between 2007 and 2017.
- **There is no correlation between states that update their energy code and states that show a decrease in commercial construction.** Only one state in the region shows a decrease in commercial construction activity in the years following the implementation of a new energy code as compared with the year before the new code went into effect. Since our data for this state does not extend beyond 2017, it is too soon to know whether this trend will continue.
- **There is no correlation between states without a mandatory energy code and increased construction activity.** The only state in the region without a mandatory commercial energy code has not seen an increase in commercial construction activity. In fact, this state has had static levels of construction activity while surrounding states have demonstrated robust commercial sector growth.
- **Renovations are on the rise.** Renovation activity grew more rapidly over the decade than new construction projects, which remained stable – likely a response to the 2008 economic downturn that led builders to shift to renovations rather than new construction. Future data is necessary to see if this trend will continue, or if renovation activity will decline relative to new construction.
- **The most prevalent types of commercial construction activity across the region have the potential to generate additional income for their communities.** Buildings used for shopping as well as a host of other economic activities (buildings for manufacturing, convention centers, nursing homes, and hospitals, among others) have been the leading types of activity in the region, making up nearly a third of all commercial construction in the region.

Because permit numbers have continued to grow even in states that have adopted updated energy codes and because these permits are typically for buildings with the potential to generate additional community revenue, SEEA concludes that there is no evidence that energy codes depress commercial construction activity or hold back the economic development of Southeastern states. Rather, factors like access to transportation and city services, the nature of the surrounding businesses and clientele, the local business climate, and building accessibility for potential employees appear to be more influential in determining commercial construction activity levels and types.