

Office of Energy

Annual Report

2014

Updated February 13, 2015



Florida Department of Agriculture and Consumer Services
Adam H. Putnam, Commissioner



Dear Governor Scott, President Gardiner and Speaker Crisafulli,

I am pleased to provide you with the 2014 Annual Report of the Florida Department of Agriculture and Consumer Services' Office of Energy (FDACS OOE). This report reflects the FDACS OOE activities during 2014 and elaborates on the programs undertaken to help prepare Florida to meet the growing demand for energy in a diverse and sustainable manner.

A few of the highlights for this past year include:

- Florida's Renewable Energy Tax Incentives program provided nearly \$24 million in incentives and produced an estimated economic contribution of more than \$261.9 million with 909 jobs created and raised \$21.7 million in state and local taxes.
- The Natural Gas Fuel Fleet Vehicle Rebate Program provided approximately \$3.8 million in incentives during its first 6 months and produced an investment of \$79.3 million with 382 jobs created or retained as a result of this program.
- Florida's first sales tax holiday weekend on ENERGY STAR and WaterSense products proved a success. This program not only helped customers save an estimated \$1.6 million at the check-out counter, but will also save them energy, water and money on their bills over the long-term. Retailers reported large increases in sales over the previous year and provided positive feedback about the initiative.

I look forward to continue working with you to advance Florida's energy policy and support Florida's businesses, consumers and education infrastructure.

Sincerely,

Adam H. Putnam
Commissioner of Agriculture

**FLORIDA DEPARTMENT OF AGRICULTURE
AND CONSUMER SERVICES**

OFFICE OF ENERGY

2014 ANNUAL REPORT

Adam H. Putnam, Commissioner

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1. Executive Summary

The Florida Department of Agriculture and Consumer Services' Office of Energy (FDACS OOE) is the legislatively designated state energy policy and program development office within Florida. The FDACS OOE evaluates energy related studies, analyses and stakeholder input in order to recommend to the Governor and Legislature energy policies and programs that will move Florida toward a more diversified, stable and reliable energy portfolio. Further, FDACS OOE uses available state and federal funds to develop and manage energy efficiency, renewable energy and energy education programs throughout the state.

This report reflects the FDACS OOE activities during 2014 and elaborates on the programs undertaken to help prepare Florida to meet the growing demand for energy in a diverse and sustainable manner. This report is submitted as required in Section 377.703(2)(f), Florida Statutes.

The FDACS OOE worked with Commissioner of Agriculture Adam H. Putnam to introduce energy proposals for consideration by the Legislature in 2014. Those recommendations were designed to help Florida capitalize on energy opportunities, use energy wisely and create jobs. Proposals included reducing energy tax costs for commercial businesses and using remaining tax revenues to provide a sustainable funding source for Florida's education infrastructure, as well as establishing the first ENERGY STAR and WaterSense Sales Tax Holiday in the state. This legislatively approved program helped Floridians not only save money at the check-out counter, but also save energy, water and money on their utility bills over time.

FDACS OOE continued to administer several renewable and alternative energy programs. Those programs included the Florida Renewable Energy Tax Incentives and the Natural Gas Fuel Fleet Vehicle Rebate Programs, both of which encourage the development and use of alternative fuels and create jobs in Florida.

It is important that Florida continue to evaluate its energy policy and update it to reflect changes in the industry, but also to continue to embrace the goals that are long term in nature and provide for a consistent and predictable energy policy that will improve the lives of all Floridians.

2. Florida's Energy Landscape

This chapter summarizes Florida's energy profile; it includes information on fuel diversity, electric generation, electric rates, infrastructure, transportation fuels, renewable fuels and energy efficiency measures. In addition to providing a summary of Florida's energy landscape, this chapter provides an outlook on potential areas of opportunity for the state.

2.1 Florida's Overall Consumption of Energy (Electricity and Transportation Fuel)

Florida is home to approximately 19 million people, and, as of December 2014, it is the third most populous state, according to the U.S. Census. With a population size of this magnitude, addressing Florida's energy needs are a top priority. As it relates to consumption, the United States Department of Energy's Energy Information Administration (US EIA) considered Florida to be the third largest energy-consuming state; however, in terms of per-capita energy consumption, Florida ranks 44th in the nation, consuming 210 million Btu¹s per person.

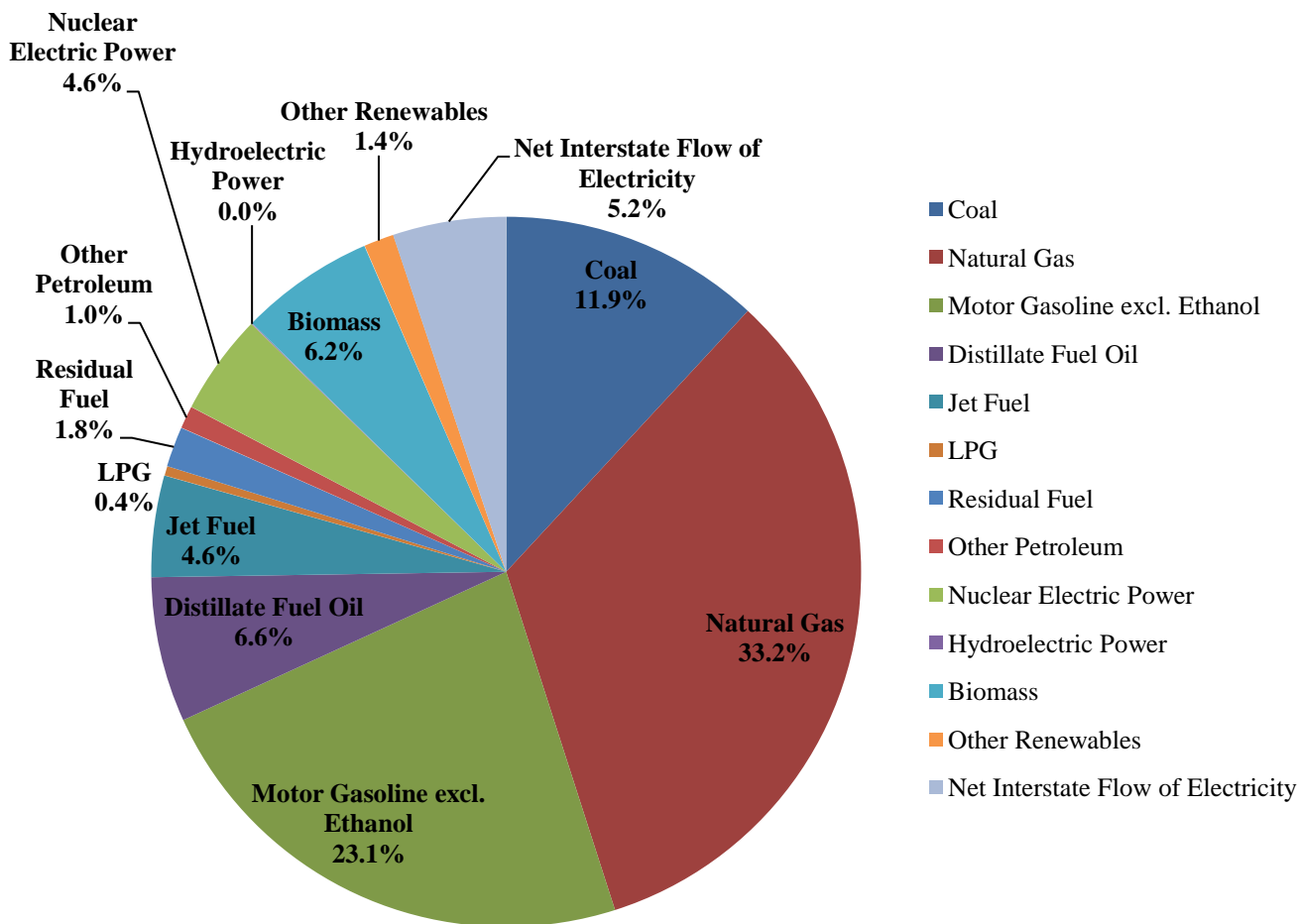
Florida's lower per-capita energy consumption ranking, relative to the national average, is due to below average industrial sector consumption. What drives energy consumption in the state is the transportation and residential sectors. In terms of electric generation and transportation fuel, Florida is heavily reliant on natural gas and petroleum. Florida consumes more energy than it produces, making it a net energy importer of natural gas and petroleum products.

The most recent Florida energy consumption data provided by US EIA is for the year 2012 and is provided in Figure 1. Figure 1 demonstrates the various fuel sources comprising Florida's energy landscape. Natural gas continues to be the dominant fuel source for traditional electricity generation. The figure further demonstrates that Floridians consumed 1,348.4 trillion Btus of natural gas in 2012, or 33.2 percent of its total energy consumption. Floridians also consumed 938.3 trillion Btus of motor gasoline, or 23.1 percent of total energy consumption for all sectors—residential, commercial, industrial, and transportation.

¹ British Thermal Unit (Btu) is a standard unit for measuring a quantity of heat. The unit is used to measure and compare the energy content of fuel.

Figure 1: Florida Energy Consumption Estimates 2012

Source: US EIA



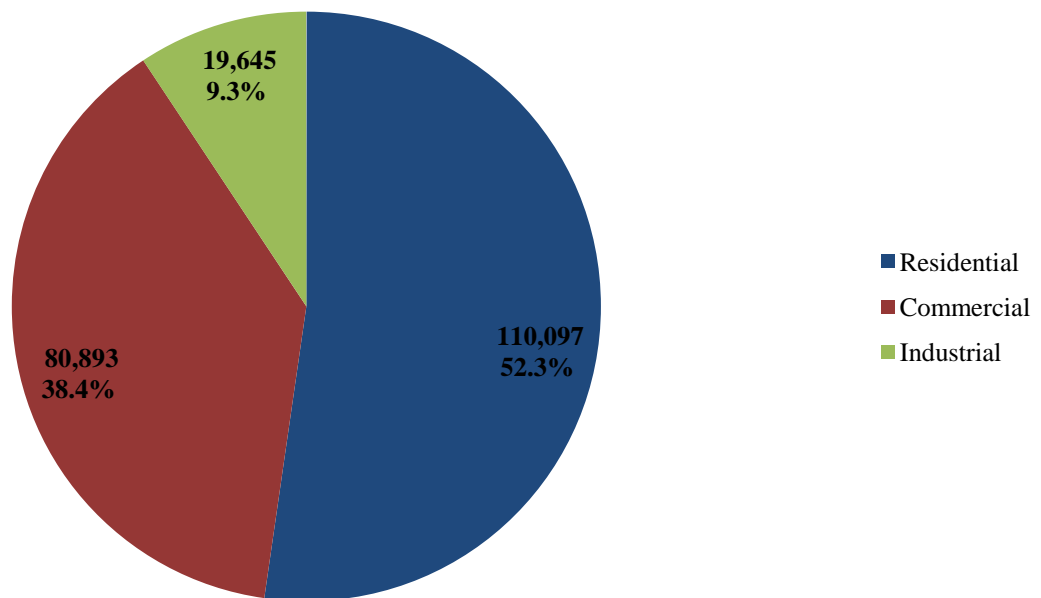
The Florida Public Service Commission (PSC) in its *Review of the 2014 Ten-Year Site Plans of Florida’s Electric Utilities* stated that “natural gas has become the dominant fuel in Florida within the last ten years...and is anticipated to serve future growth until the end of the planning period, when additional nuclear generation comes online.” As of December 31, 2013, the Florida Reliability Coordinating Council (FRCC) reports that Florida’s total electric generating capacity is 62,133 megawatts (MW), and the *Review of the 2014 Ten-Year Site Plans of Florida’s Electric Utilities* discusses the planned addition of approximately 12,570 MW of new utility-owned generation over the next ten years.

Florida receives the majority of its natural gas supplies from the Gulf Coast region, via two interstate pipelines: the Florida Gas Transmission line, and the Gulfstream pipeline. The Florida Gas Transmission line runs from Texas through the Florida Panhandle to Miami, and the Gulfstream pipeline is an underwater link from Mississippi and Alabama to central Florida. The Jacksonville area also receives supplies from the liquefied natural gas (LNG) import terminal at Elba Island, Georgia via the Cypress Pipeline. Florida Power & Light is planning to build a third major pipeline through the center of the state coming from Georgia which would increase natural gas supplies to the state.

Nuclear energy capacity in Florida is projected to increase slightly during the current 2014 ten-year planning period. There are four online nuclear power plants in the state, all of which are owned by Florida Power & Light (FPL). Nuclear energy is capital intensive in nature and requires a significant amount of lead time to construct. FPL is the only Florida electric utility that has a planned addition of two new nuclear units within the next ten years, according to the PSC's *Review of the 2014 Ten-Year Site Plans of Florida's Electric Utilities*. The two new proposed units, Turkey Point units 6 and 7, have in-service dates scheduled for 2022 and 2023, respectively.

Florida's humid and warm climate leads to an increased demand for energy in order to address the state's cooling needs. In terms of electricity usage, Florida's residential sector consumes the majority of energy generated, as compared with the commercial and industrial sectors. In 2013, Florida's residents consumed 110,097 gigawatt hours (GWh), or 52.3 percent of all electric energy consumed in the state, as demonstrated in Figure 2 below. The PSC stated in its *Review of the 2014 Ten-Year Site Plans of Florida's Electric Utilities* that Florida has 8,503,879 residential electric customers; comprising 88.7 percent of all electric customers in the state, with the remaining 11.3% made up of commercial and industrial users.

Figure 2: Energy Usage in 2013 (GWh)
Source: PSC 2014 Ten-Year Site Plan Review

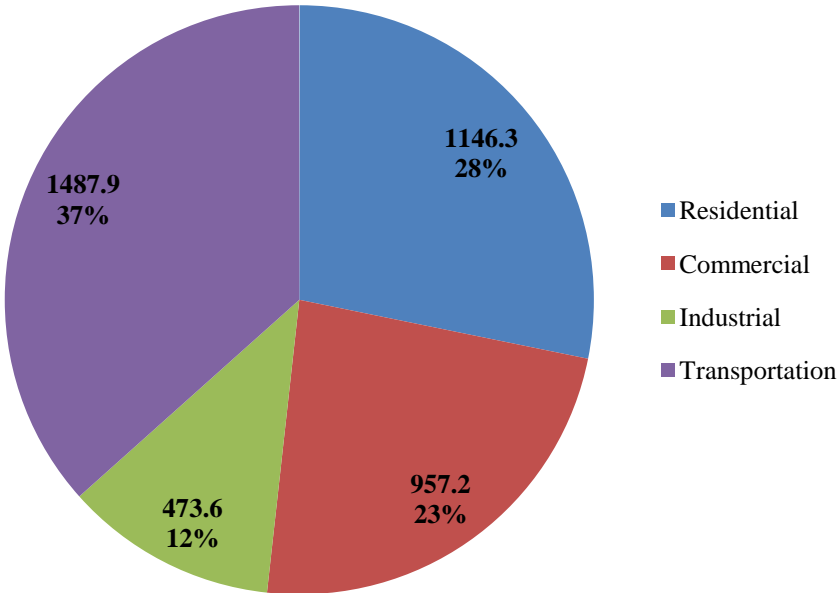


With Florida being the third most populous state, transportation fuel consumption is high relative to the rest of the nation. According to the US EIA, Florida is ranked third in the nation in terms of transportation fuel consumption, using 1,487.9 trillion Btus; this accounts for 5.6 percent of the total United States share of transportation fuel.

Florida has no oil refineries to serve the state's transportation sector and relies on petroleum products delivered by tanker and barge to marine terminals near the state's major coastal cities. Due in part to

Florida’s tourist industry, demand for petroleum-based transportation fuels (motor gasoline and jet fuel) is among the highest in the United States, Figure 3, below, illustrates that the transportation sector accounts for the majority of energy consumed in the state.

Figure 3: Florida 2012 Energy Consumption by End-Use Sector (Trillion Btu)
Source: US EIA

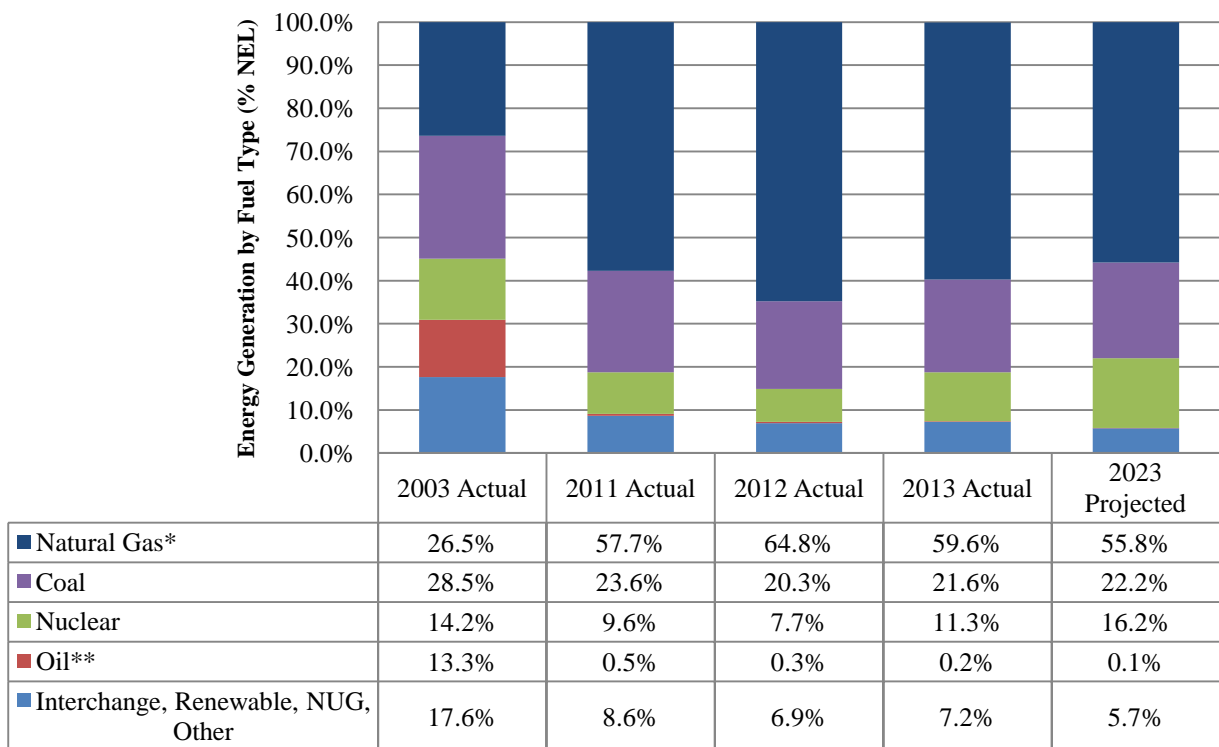


2.2 Florida Sources of Energy in the Power Sector

Florida’s power sector utilizes various fuel sources in order to address the state’s electrical needs. Figure 4 shows the mix of fuel sources Florida uses to generate electricity, including a projection to 2023. Figure 4 also shows Florida’s electric generation in 2003, which highlights a time period when Florida’s electric utilities attempted to maintain a more balanced fuel mix compared with today’s fuel mix. Natural gas is the dominant fuel source for electricity as of 2013, currently comprising approximately 60% of Florida’s electric generation and projected to continue at that percentage through 2023.

Figure 4: Florida Electric Generation Fuel Source Mix

Source: PSC Ten Year Site Plan Review 2012, 2013, 2014



* Includes both utility and non-utility generation

** Includes both residual and distillate oil

In the past, Florida’s utilities adopted more of a balanced approach in terms of its electric generation fuel source mix. By building diverse plants that utilize different fuel sources, it provides a stability mechanism if one fuel source became unavailable or too costly. For example, in 2009, Florida’s coal and nuclear plants provided stability from the highly volatile natural gas prices. Over time, Florida’s utility industry has moved away from this balanced approach. This change is based on a number of factors including:

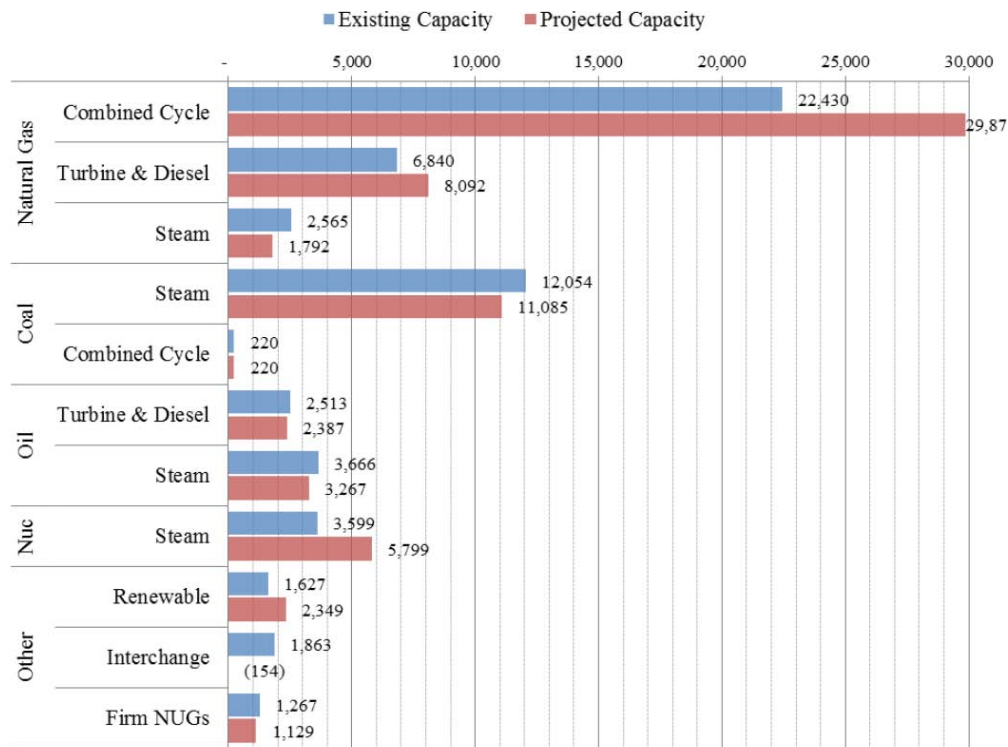
- Cleaner and less expensive natural gas generation facilities
- The high cost, lengthy permitting and construction time of nuclear power facilities
- The high environmental and regulatory cost of coal generation

Future Electric Generation Capacity, Facilities, and Retirements

Florida’s electric utilities plan for future generating capacity in order to meet the growing demand for energy from their constantly increasing customer base. The electric utilities also plan on generation facility retirements or phase outs, and these plans are done on a ten-year rolling basis. Figure 5 below, highlights the current installed capacity and the 2023 projected capacity.

Figure 5: Florida Current and Projected Installed Capacity by Fuel and Technology (MW)

Source: PSC 2014 Ten-Year Site Plan Review, page 39, Figure 17



Electric Rates

The rates for residential customers in Florida vary from utility to utility. They are based on many factors including the number of customers they serve, whether they generate their own electricity (or purchase it from another utility), and what type of fuel source provides their electricity, such as natural gas, nuclear, and coal. The following is a brief synopsis of the PSC’s Comparative Rate Statistics as of December 31, 2013:

| Table 1: Residential Utility Rate Comparison High/Low per 1,000 kWh | | | |
|---|--------------------------|------|----------|
| Investor-Owned Electric Utilities | Average Bill \$115.05 | High | \$131.96 |
| | | Low | \$92.73 |
| Municipal Electric Utilities | Average Bill \$119.40 | High | \$141.15 |
| | | Low | \$100.49 |
| Cooperative Electric Utilities | Average Bill \$128.53 | High | \$146.99 |
| | | Low | \$113.50 |

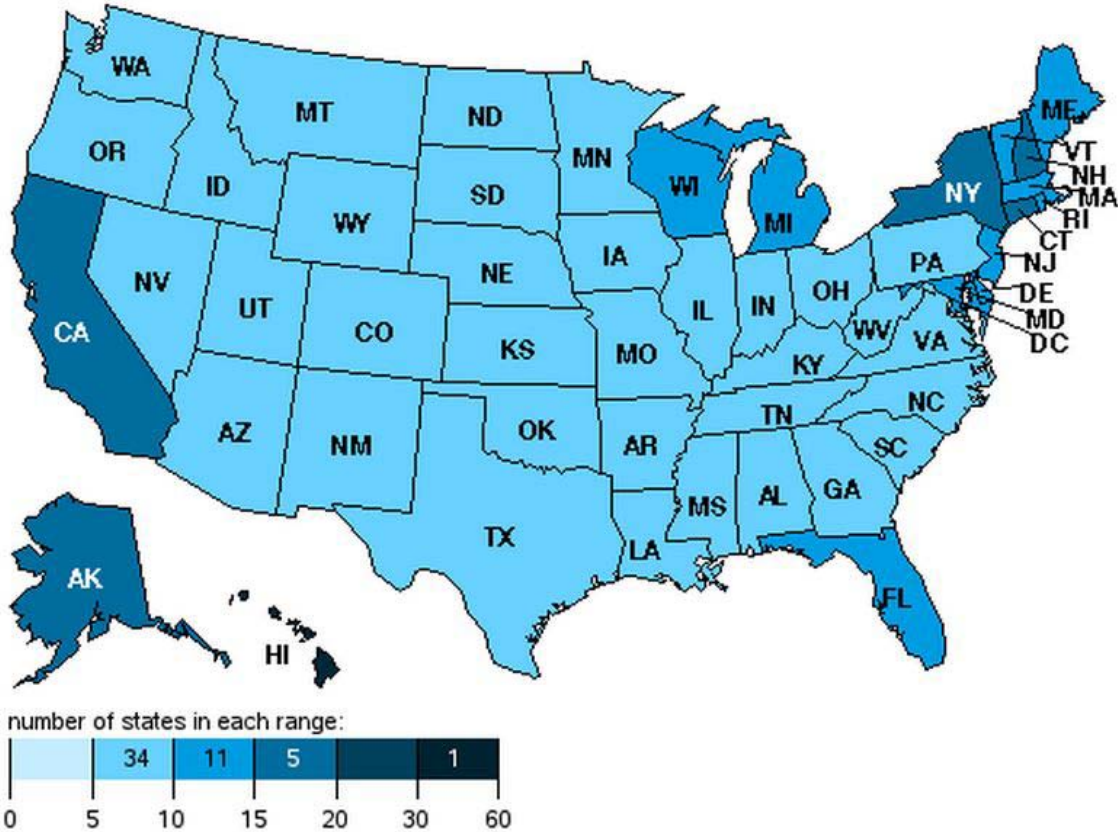
Source: PSC December 2013 Comparative Rate Statistics

| Table 2: Commercial/Industrial Utility Rate Comparison High/Low per 150,000 kWh | | | |
|---|-----------------------------|------|-------------|
| Investor-Owned Electric Utilities | Average Bill \$14,612.67 | High | \$16,128.00 |
| | | Low | \$12,900.00 |
| Municipal Electric Utilities | Average Bill \$17,329.47 | High | \$22,125.00 |
| | | Low | \$13,188.00 |
| Cooperative Electric Utilities | Average Bill \$16,003.25 | High | \$19,899.00 |
| | | Low | \$13,702.00 |

Source: PSC December 2013 Comparative Rate Statistics

In November 2014, the average of all of Florida’s electric rates (residential, commercial and industrial) was 11.00 cents per kilowatt hour (kWh) of electricity, which is slightly higher than the national average of 10.15 cents per kWh (US EIA). Florida’s residential rates, however, are lower than the national average— 12.20 cents per kWh of electricity, as compared with the national average of 12.46 cents per kWh.

Figure 6: U.S. Electric Industry Average Revenue per Kilowatt-hour, November 2014

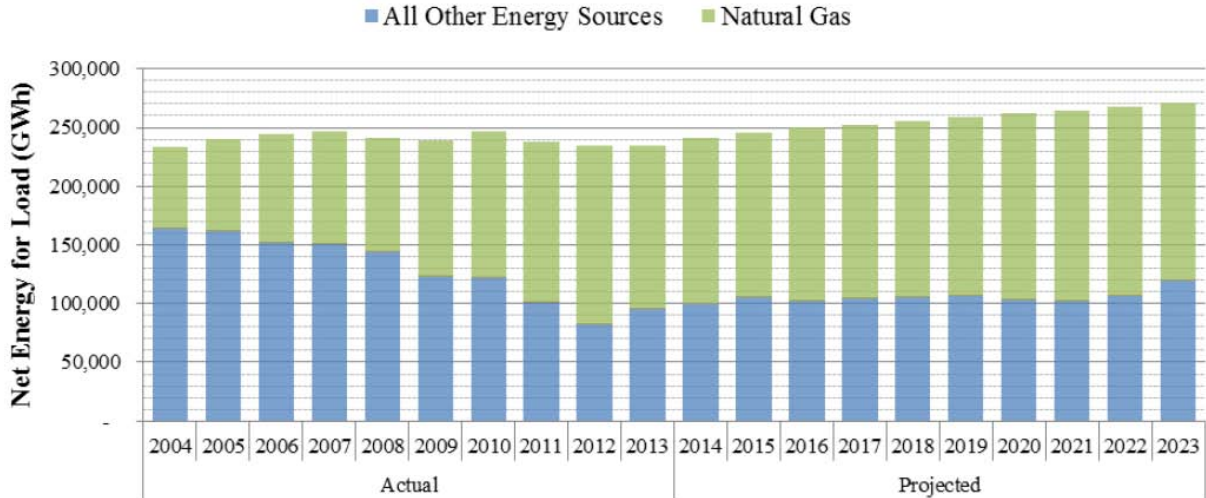


Source: Energy Information Administration http://www.eia.gov/electricity/monthly/update/end_use.cfm#tabs_prices-3

Natural Gas Usage

Natural gas has grown from being one of many sources of energy used in Florida to being the dominant fuel source for electric generation. The price of natural gas has dropped significantly primarily due to increases in technological innovation. Figure 7 shows how natural gas compares to all energy sources used in Florida’s energy consumption; the figure also contains projections to 2023.

Figure 7: Natural Gas Contribution to Florida Energy Consumption



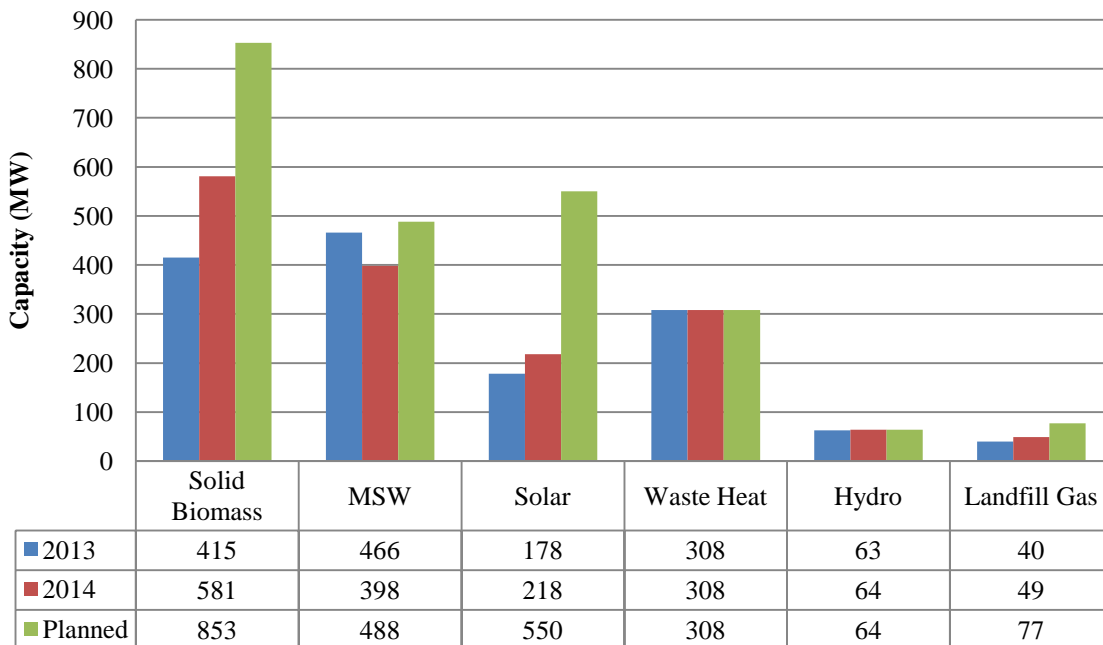
Source: PSC 2014 Ten-Year Site Plan Review, Figure 15, pg. 37

Renewable Energy

According to the PSC’s *Review of the 2014 Ten-Year Site Plans of Florida’s Electric Utilities*, Florida’s renewable energy facilities currently provide approximately 1,617 MW of generating capacity, representing 2.8 percent of Florida’s overall generation capacity; eighty-four percent of this existing generation capacity comes from non-utility generators. As of December 2014, Florida has planned for an additional 722 megawatts of renewable energy by 2023, with the majority anticipated to come from solar and biomass projects.

Figure 8: Renewable Energy Capacity Comparison (MW)

Source: PSC 2014 Ten Year Site Plan Review



As shown in Figure 8, as of 2014, solid biomass is the largest source of renewable energy in Florida, and is expected to remain so through 2023. Due to Florida's year-round growing season, Florida has more biomass resources than any other state. According to the Florida Energy Systems Consortium (FESC), Florida has the potential to account for seven percent of the U.S. total biomass resources. Energy production from biomass processing also has the potential to be a significant economic driver, especially in rural locations. However, in most cases, the bio-energy facility must be located near the intended feedstock to make the process economically viable.

Florida's second largest source of renewable energy comes from municipal solid waste (MSW). MSW uses residential waste as a feedstock and burns the waste to create steam which turns the electricity producing turbine. As of 2014, MSW accounts for 398 megawatts of electrical capacity in Florida, and is expected to grow to 488 megawatts by 2023. MSW facilities are equipped with advanced scrubbers to remove pollutants and reduce emissions. MSW is attractive to major population centers, because it diverts waste from entering the existing overburdened landfills while providing the benefit of a renewable energy source.

Currently, Florida's solar capacity is 218 megawatts which includes approximately 63 MW of customer owned renewable capacity from nearly 6,700 systems. Those 63 MW represents a 60 MW increase of distributed solar generation since 2008. While lagging behind waste heat as a fuel source, solar is expected to be the second largest renewable energy source by 2023 at 550 megawatts. It is generally expected that 550 megawatts is a low estimate considering Florida Power & Light's recently announced their plans to install an additional 225 MW of solar by 2016; the main driver of solar installations is the declining costs of photovoltaic panels. Additionally, there are major initiatives, such as the Sunshot Initiative, that are focusing on reducing the "soft costs" of solar which will increase the economic viability of solar. Soft costs include permitting, labor, and financing.

Waste heat currently provides 308 megawatts of renewable generation capacity, and is expected to remain constant through 2023. Large industries, such as orange juice processors, can create waste heat while manufacturing their products. To capture and utilize that waste heat they must redirect the waste heat or steam from their manufacturing process into a turbine to produce electricity. The process of capturing and redirecting the heat or steam is a large undertaking. Often times the excess heat is used to offset energy usage by heating the building, sterilizing equipment, or heating water instead of direct energy production.

2.3 Florida's Energy Efficiency and Conservation Efforts

In 1980, the Florida Legislature enacted the Florida Energy Efficiency and Conservation Act (FEECA), which made reducing Florida's peak electric demand and energy consumption a statutory objective. FEECA requires utilities reduce the growth rates of electric demand, conserve expensive resources, increase the overall efficiency and cost-effectiveness of electricity and reduce energy consumption. There are seven utilities that are statutorily subject to FEECA. The five investor-owned utilities - Florida Power & Light, Duke Energy of Florida, Tampa Electric Company, Gulf Power Company, and Florida Public Utilities Company, and two large municipally-owned utilities - Orlando Utilities Commission and Jacksonville Electric Authority. FEECA requires the PSC to set appropriate energy efficiency and conservation goals for the utilities and requires a review of those goals at least once every five years with the most recent review during 2014.

In July of 2014, the PSC held an evidentiary hearing on the FEECA dockets. As directed by Statute, FDACS participated in this proceeding as one of the parties. During the hearing, the PSC heard testimony from all parties in the docket on each issue. The parties filed their Post-Hearing Briefs in September. In its post-hearing brief, FDACS stated that the PSC should continue to balance the goals of energy efficiency and conservation with the impact of the associated costs on all customers, thereby ensuring that all customers benefit from utility-sponsored programs. A diverse, least-cost strategy should be employed to ensure that sound principles of energy efficiency and conservation measures are achieved. The major points made in FDACS' brief were:

- The state can encourage the development of energy efficiency and conservation programs separate from implementing utility-sponsored programs;
- Changes to Florida's building codes requiring homes to be more energy efficient have resulted in significant gains in energy efficiency over the last decade;
- Florida should continue to identify ways to educate customers and provide them with the information and resources needed to pursue energy efficiency and conservation;
- In an effort to balance the equity of the costs and benefits, programs may need to be designed and targeted to capture the needs of low-income customers while eliminating free riders from higher income groups; and
- Based on results of the five year solar pilot programs, the solar pilot programs have not been cost-effective and have created a large cross-subsidy from the general body of ratepayers to a small number of wealthy customers who could afford to invest in solar photo voltaic systems.

On November 25, 2014, the PSC voted to establish goals for the FEECA Utilities based upon a cost-effectiveness analysis that allows all ratepayers, participants and non-participants, to benefit from the utilities' demand-side management programs. The PSC set the utilities' annual goals based upon the Rate Impact Measure (RIM) test to be equal to their achievable potential. While the PSC took the Participant Test and the Total Resource Cost test into consideration, they found that the RIM test allows for a larger amount of cost-effective demand-side management with more potential participants while minimizing cross-subsidization.

In addition, the PSC voted to continue the utilities' solar energy programs until December 31, 2015 and to hold a workshop in 2015 to examine the issues related to solar in Florida including the true cost of solar, existing barriers, and appropriately setting the net metering rate.

The 2015 demand-side management goals approved by the PSC are lower than they have been in previous years even though the PSC is using the same determination methodology. This is a direct result of the current market conditions which are outside the control of the utilities. The cost-effectiveness of demand-side management measures has declined due to several factors, including declining customer usage, new federal appliance efficiency standards (i.e., ENERGY STAR), efficiency improvements in state building codes, and a decline in the price of natural gas. Each of these factors is contributing to the goal of FEECA set by the Florida Legislature, which was to reduce Florida's peak electric demand and energy consumption.

Now that the PSC has set the FEECA goals, the utilities will submit for PSC approval, cost-effective demand-side management (DSM) plans designed to meet those goals. The proposal and approval of the plans will occur in subsequent dockets during 2015. All costs incurred by utilities to implement the FEECA required demand-side management plans are recovered from their customers through a line item on the customers' bills.

Attachment A of this report provides the Executive Summary of the PSC's annual FEECA report. The report details the energy efficiency and conservation efforts by Florida's utilities.

2.4 Transportation Energy

Florida's large population, evolving demographics and projected growth, require the state to develop and maintain a reliable and conveniently accessible transportation system. In addition, Florida's tourism industry is one of the largest contributors to the state's economy, and a progressive and diversified transportation system is vital to the tourist industry.

Florida's Transportation Infrastructure

Florida is unique compared to other states in that it consists of a 447-mile long peninsula, which extends from the Georgia border south to the Florida Keys, a northern panhandle that stretches over 360 miles from the Atlantic to Alabama and nearly 1,200 miles of shoreline, totaling 54,157 square land miles. Within Florida is a strategic system of public roads and highways, maintained by Florida's Department of Transportation (FDOT) and the United States Department of Transportation (USDOT). According to the USDOT's Bureau of Transportation Statistics, Florida has 121,829 miles of public roads, 1,495 miles of interstate, 2,902 miles of railroad tracks used for freight transport, 12,070 road bridges, 1,540 miles of inland waterways, and 129 public use airports.

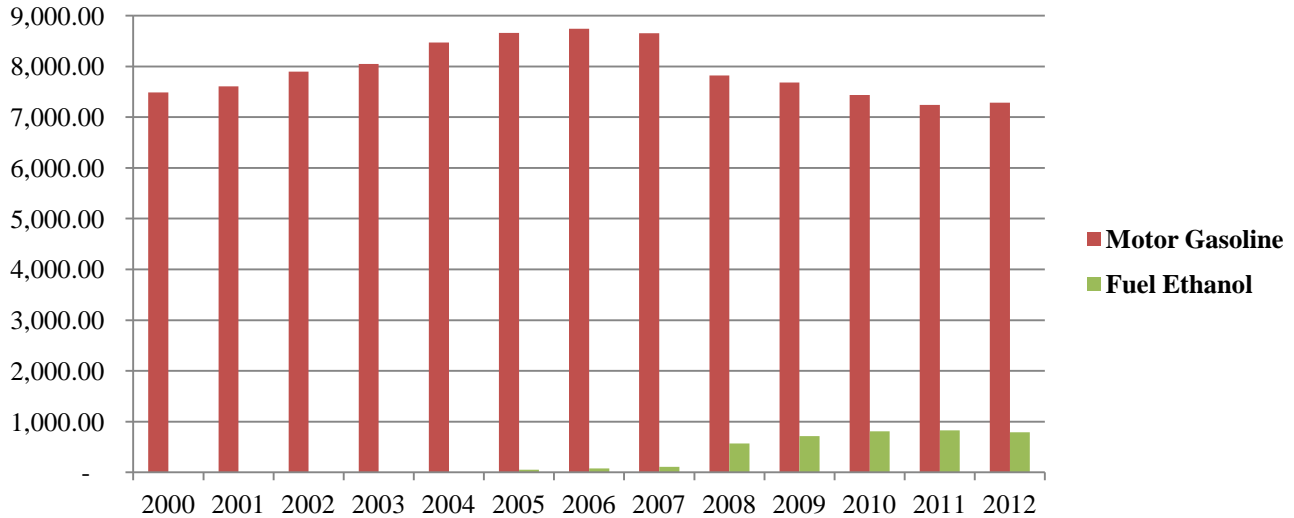
Petroleum Use

Florida's transportation sector accounts for more than one third of the total energy used in the state, with nearly all transportation fuel being imported. The USDOE Office of Energy Efficiency and Renewable Energy (EERE) states that Florida's per capita energy consumption of motor gasoline was 425 gallons in 2011. This is 15 gallons less than the state consumed in 2010. The US EIA's State Energy Data System (SEDS) reports that Florida consumed more than 7.2 billion gallons of motor fuel and more than 790 million gallons of ethanol in 2012, as highlighted in Figure 9.

In the most recent data reported in 2011 by the US EIA, Florida has a total of 5,839 motor gasoline stations, accounting for 5.3 percent of the total U.S. share. While Florida does not have any in-state refineries to process crude oil, the Florida Department of Environmental Protection, Bureau of Mining and Minerals Regulation, states that Florida produced 2,023,454 barrels of crude oil in 2011, with the majority of it coming from Jay Field in Escambia County.

**Figure 9: Annual Motor Gasoline and Fuel Ethanol Consumption
(in million gallons)**

Source: US EIA



Natural Gas

In addition to becoming Florida’s dominant fuel source of choice for electric generation, natural gas is also growing in popularity in the transportation sector. This low-cost transportation fuel has given fleet vehicle owners an alternative fuel choice, resulting in lower fuel and maintenance costs, as compared with diesel fuel. According to the US EIA’s Annual Energy Outlook for 2014, natural gas consumption is expected to grow as a fuel source from 25.6 trillion cubic feet (Tcf) in 2012 to 31.6 Tcf in 2040. Although it is considered a dominant fuel source, Florida’s heavy reliance on natural gas is a concern for policy makers as it places the state in a scenario where it is susceptible to price volatility and fuel availability.

Florida’s Alternative Transportation Use

A number of Florida’s private commercial fleet owners, as well as local governments and school boards, have begun the process of converting their fleets to natural gas in order to realize cost savings. There is a growing interest in using propane, compressed natural gas (CNG), and liquefied natural gas (LNG), for large vehicles, and commercial operators. Also, governments have looked into the economic feasibility and are converting their fleets. According to the USDOE Alternative Fuels Data Center, the state of Florida has 758 total public and private alternative fuel stations, and of that amount, 42 are CNG stations, and 62 are propane stations. The state of Florida also has a rebate program for the purchase, lease or conversion of fleet vehicles to natural gas.

Electric vehicles (EV) are also an emerging alternative transportation energy source, especially as technological advancements increase and range anxiety is reduced. Consumers, as well as private businesses and local governments, have been making the investment in electric vehicles as well as the infrastructure to support the charging of these vehicles. The USDOE Alternative Fuels Data Center also states that there are a total of 572 public and private charging stations installed throughout the state.

Florida also has three USDOE designated Clean Cities Coalitions' (CCCs), Southeast Florida, Central Florida, and the state's newest Tampa Bay. The CCCs are responsible for promoting clean energy and alternative fuels for transportation throughout the state. They are tasked with working with vehicle fleets, fuel providers, community leaders, and other stakeholders to reduce Florida's dependence on petroleum use.

2.5 New Trends

Florida is home to more than 19 million residents, with expectations for this number to increase in the future. Changes to Florida's demographic and population profile will affect Florida's demand for stable and reliable energy sources over the next 10 years. The University of Florida's Bureau of Economic and Business Research predicts that by 2040, Florida's population will grow to 25,603,577 people, which can impact the way energy is consumed in the state. Florida also expects to realize a wave of technological advancements in the coming future; while such advancements are typically correlated with higher energy efficiency, more electronics will be used per-capita. Collectively, these factors are expected to yield an exponential increase in energy consumption in the future.

The following technologies are expected to have a significant effect on Florida's energy sector:

Solar Energy

The USDOE's National Renewable Energy Laboratory (NREL) published an article in October 2014 discussing how the price of distributed solar photovoltaic (PV) system prices dropped by 19-20 percent nationwide in 2013. The USDOE's 2012 Renewable Energy Data Book suggests that "solar electricity generating capacity grew by a factor of over 21 between 2000 and 2012, and currently accounts for 0.3 percent of annual U.S. electricity generation." In addition, "30 MW of new concentrating solar power (CSP) capacity came online in the United States in 2012. Solar power generation is also expected to grow in Florida. Florida expects to see an increase in its solar power generation with 332 MW of solar power generating capacity to be installed by 2023.

Electric Vehicles

As technological advancements are made in the battery industry, adoption of electric vehicles continues to grow. The PSC stated in its *Review of the 2014 Ten-Year Site Plans of Florida's Electric Utilities* that electric vehicles are "anticipated to grow rapidly throughout the planning period resulting in almost a half-million electric vehicles operating within the electric service territories by the end of 2023." The PSC also estimates that Floridians can realize potential gasoline savings of 480 gallons per year by switching to an EV that runs purely on electric power. There are also programs growing in the state to promote the adoption of electric vehicles. The USDOE's Clean Cities Coalitions have been working together to promote the widespread adoption of electric vehicles by means of driver education programs, collaboration with business owners to offer financial incentives for their employees and with customers who drive electric.

Ocean Energy

As noted in past reports, the state of Florida is well positioned to take advantage of the Gulf Stream as a base load renewable energy resource. This resource has an estimated potential to provide 4 to 10 gigawatts of capacity. In 2014, Florida saw a major step forward in harnessing this source of energy as the Florida Atlantic University (FAU) was provided a lease by the Bureau of Ocean Energy Management (BOEM) to begin testing small scale turbines. FAU already has several companies interested in testing turbine at their facility and many of these companies expect commercial viability

before 2020. In addition, the first Florida Renewable Energy Task Force was held by BOEM on December 11, 2014, to begin establishing a regulatory process to deal with these types of issues. The regulatory framework is the major determining factor in regards to the proliferation of these types of technologies.

3. 2014 Accomplishments

The FDACS OOE had an active year administering renewable energy tax incentives, natural gas fleet vehicle conversion rebates, initiating an ENERGY STAR and Water Sense Sales Tax Holiday and working with the Florida Legislature to lower commercial electric taxes to name just a few programs. The following section describes the programs FDACS OOE administered in 2014.

3.1 Florida Renewable Energy Tax Incentives

The Florida Renewable Energy Tax Incentives consists of three available tax incentives and represents a total of \$89 million in potential tax credits or sales tax refunds over the life of the program. The three Florida Renewable Energy Tax Incentives include:

- 1) The *Florida Renewable Energy Technologies Sales Tax Refund*, which provides \$1 million per fiscal year for a refund of previously paid Florida sales tax for eligible expenditures,
- 2) The *Florida Renewable Energy Technologies Investment Tax Credit*, which provides \$10 million per fiscal year for an annual corporate tax credit equal to 75 percent of all eligible costs made in connection with the production, storage and distribution of biodiesel, ethanol and other renewable fuel; and
- 3) The *Florida Renewable Energy Production Credit*, which provided \$5 million for the first fiscal year of the program and \$10 million for subsequent years for an annual corporate tax credit equal to \$0.01/kWh of renewable electricity produced.

The intended goals of the programs are to increase renewable energy production within the state and create new jobs for Floridians.

FDACS estimates that in 2014, a total investment of nearly \$24 million for the Renewable Energy Tax Incentives produced an estimated total economic contribution of more than \$261.9 million. Further, an estimated total of 909 jobs were created or supported statewide as a result of these incentives. These programs were also responsible for raising an estimated \$21.7 million in state and local taxes and generating an estimated \$56 million in labor income.

Full reports on the utilization and economic contribution of the Florida Renewable Energy Tax Incentives are available on the FDACS website: <http://www.freshfromflorida.com/Energy/Reports-Publications>.

3.2 Natural Gas Fuel Fleet Vehicle Rebate Program

Chapter 377.810 Florida Statutes authorized the creation of the Natural Gas Fuel Fleet Vehicle Rebate Program. The FDACS OOE is responsible for administering the program. The program is appropriated \$6 million annually for the next five years for the purpose of incentivizing fleets to purchase, lease or convert to natural gas fueled vehicles.

The program took effect on July 1, 2013, and FDACS OOE began rule development on July 2, 2013. Three public workshops were held during the rule development, two in Tallahassee and one in Orlando. The proposed rule was released on October 21, 2013. On January 7, 2014, the rules implementing the Florida Fuel Fleet Vehicle Rebate became effective and the department began accepting applications.

The first year of the program ran on a six-month timeframe from January 7, through June 30, 2014. Though the first year of the rebate program was abbreviated, the FDACS OOE received 572 applications.

The annual assessment of the program found that, even in a shortened first year, the program incentivized an investment of approximately \$79.3 million. The assessment also estimated that a total of 382 jobs paying an average of \$49,682 a year were created or retained as a result of the program. Additionally, the program's contribution to Florida's Gross Domestic Product was estimated at \$127.9 million.

During the first program year, 272 of the 572 received applications were approved and funded for a total rebate expenditure of \$3,871,603.34.

The full report is available on the FDACS website: <http://www.freshfromflorida.com/Energy/Reports-Publications>.

3.3 Florida Energy Systems Consortium Research Developments

The Florida Energy Systems Consortium (FESC) was created in 2008 and is unique in the United States; no other state has a statewide energy consortium involving all of its public universities. The concept combines all of the state's university resources into one statewide center to advance energy research, technology transfer/commercialization, energy education and outreach in this rapidly changing and critically important field.

FESC has been integral in the success of many energy related initiatives. For example, FESC research into hydrogen fuel cells at Florida State University (FSU) led to the creation of Bing Energy, Inc., in Tallahassee. Nine companies were formed with the University of Florida technology, which was developed, in part, with FESC funds and a total 19 companies were created throughout the FESC university system. Also, the USDOE designated Florida Atlantic University (FAU) as a national center for ocean energy research and development which was recently granted the first lease in the Atlantic Ocean to conduct ocean energy research. FAU's facility already has several out-of-state companies interested in utilizing their facility for testing purposes.

Looking forward, FESC would like to capitalize on past successes by utilizing each university's individual strengths. For example, the University of Central Florida is focusing on electric vehicles and charging infrastructure, wireless charging and Photovoltaic; FSU has hired 11 faculty with research expertise in light harvesting materials, polymer characterization, multi-scale material modeling and thermal transport; the University of South Florida will focus on testing a pilot scale thermal energy storage system in collaboration with an electric utility in Florida and developing a novel catalysts for converting carbon dioxide to fuels using solar energy; and FAU is looking to develop a second facility that will be able to support large-scale testing and include transmission capabilities.

3.4 Commercial Sales Tax Decrease and Public Education Capital Outlay (PECO) Increase

HB 5601 was passed in 2014 by the Florida Legislature, which included a reduction in the electricity consumption tax on commercial businesses by 0.05 percent. Commercial businesses include large stores, restaurants, hotels and small "Mom & Pop shops". Further, it transferred the use of 2.6 percent of the remaining tax revenues to support the Public Education Capital Outlay and Debt Service Trust

Fund (PECO). PECO is the sole funding source for the development of Florida's kindergarten through 12th grade education infrastructure (schools, administrative buildings, education infrastructure improvements, etc.) and prior to this allocation did not have a sustainable source of funding. This reduction of sales and use taxes on commercial electric consumption of electricity will benefit commercial businesses in Florida by reducing their overall utility bill. By shifting a large portion of the remaining commercial electric consumption sales and use tax revenue to PECO, it will provide a sustainable revenue stream for local school boards to use in building new schools or making improvements on existing education facilities.

3.5 ENERGY STAR and WaterSense Sales Tax Holiday

Also within HB 5601, the Florida Legislature initiated the first ever Florida ENERGY STAR and WaterSense Sales Tax Holiday on the purchase of energy saving and water saving appliances and fixtures. The sales tax holiday applied to the first \$1,500 of specified ENERGY STAR and WaterSense products for the three day period beginning Friday September 19, 2014, through Sunday September 21, 2014. Customers were limited to one purchase of each specific type of ENERGY STAR or Water Sense product with a sales price of \$500 or more. ENERGY STAR certified products designated for the purposes of the tax exemption are products approved by the United States Environmental Protection Agency (USEPA) that are affixed with an ENERGY STAR label, including air conditioners, air purifiers, ceiling fans, clothes washers, clothes dryers, dehumidifiers, dishwashers, freezers, refrigerators, water heaters and packages of light bulbs. WaterSense certified products for purposes of the tax exemption are products approved by USEPA that are affixed with a WaterSense label, including bathroom sink faucets, faucet accessories, high-efficiency toilets, showerheads and weather or sensor-based irrigation controllers.

The ENERGY STAR and WaterSense sales tax holiday provided a financial incentive to consumers to invest in ENERGY STAR and Water Sense products. Through the purchase of these products, consumers realized a reduction in the appliance or product price and once home they will save energy, water, and money each month on their utility bills. Florida's first sales tax holiday weekend on ENERGY STAR and WaterSense products proved a success. This program not only helped customers save an estimated \$1.6 million at the check-out counter, but will also save them energy, water and money on their bills over the long-term. Retailers reported large increases in sales over the previous year and provided positive feedback about the initiative. Through the Florida Retail Federation, several retailers provided high level sales information indicating the sales tax holiday was a success. One major retailer, for example, reported \$1 million in increased sales, and indicated that many customers took advantage of the sales tax holiday to purchase whole ENERGY STAR appliance packages. Another major retailer reported huge increases year over year (comparing sales during the sales tax holiday weekend to the same weekend the previous year) in sales for dishwashers (456%), laundry appliances (423%) and refrigerators (373%). The retailer also stated that WaterSense products showed a significant increase year over year of 25% increase for faucets, 36% increase for high efficiency toilets and 22% increase for showerheads.

3.6 Grant Activities

One of the functions of the FDACS OOE has been to develop, award and manage various state and federal grant programs. From February 2009 to July 2012, the primary focus of the FDACS OOE was the disbursement of American Recovery and Reinvestment Act (ARRA) funds. The state of Florida received approximately \$176 million in federal stimulus funds, which were distributed to 150

individual sub-grantees for energy efficiency and renewable energy projects. As of December 31, 2014, the grant is closed.

The ARRA grant provided the seed money to fund the Florida Multi-family Energy Retrofits program in perpetuity. The FDACS OOE will continue to manage that grant, with the Florida Housing Finance Corporation, for the operation of the \$8.3 million Multi-family Energy Retrofit Program (MERP) revolving loan fund. This program provides low-interest loans to multi-family housing owners for energy efficiency improvements.

The FDACS OOE is also responsible for administering the state funded Farm to Fuel and Renewable Energy and Energy Efficient Technologies (REET) grant programs. The Farm to Fuel program currently funds six grants with Florida universities for bio-fuel research and development. The REET matching grant program is currently accepting applications for research, development and commercialization projects for renewable energy and energy efficient technologies.

Under a federal cooperative agreement with the US EIA, the FDACS OOE collects propane price information on a weekly basis, based on a sample provided by US EIA. Data for the State Heating Oil and Propane Program (SHOPP) is collected from October through March and assists the US EIA in tracking residential propane prices (<http://www.eia.gov/petroleum/heatingoilpropane/>). Prices are aggregated for the state, so price data for individual propane dealers remains confidential.

FDACS OOE allocated \$1.1 million from the USDOE and created the Energy Efficient Retrofits for Public Facilities grant program, under Title III, Energy Policy and Conservation Act. The program provides funds to local governments and nonprofit organizations to implement energy efficiency projects in public buildings. The competitive grant opportunity was announced in October 2014 and closed in November 2014. FDACS OOE received 25 applications, and those that will be funded must complete work on their projects by July 31, 2015.

3.7 Energy Clearinghouse of Information

FDACS OOE continues to host and expand the Florida Energy Clearinghouse in accordance with Section 570.0741, Florida Statutes. The Florida Energy Clearinghouse provides Floridians the information they need to be knowledgeable energy consumers and make more informed decisions about the energy choices they make every day. Through the online platform, users can compare energy saving technologies, learn more about renewable energy technologies, browse research being conducted at Florida's universities and learn more about energy usage and production.

A major component of the clearinghouse is the "My Florida Home Energy" tool that identifies energy efficient products, services and potential energy and monetary savings for a Florida homeowner based on information provided by the homeowner, as well as publicly accessible data. By educating Floridians on wise energy use, this tool has the potential to improve the quality of their life, both financially and environmentally. The Florida Energy Clearinghouse can be found at: <http://www.freshfromflorida.com/Energy/Florida-Energy-Clearinghouse>.

3.8 Multifamily Energy and Water Efficiency Study

Multifamily housing accounts for a significant share of energy and water consumption and represents an important segment of the market for efficiency retrofits, yet this market is difficult to penetrate and capture at scale. While the costs of investment in multifamily buildings' energy efficiency typically fall on the shoulders of the property owners/landlords, the stream of benefits from such improvements (primarily in the form of reduced utility bills) typically accrue to the tenants, resulting in a pervasive "split incentive" challenge.

In light of recent reports projecting vast energy and water savings potential and financial returns from multifamily retrofits, the FDACS OOE initiated a study to identify multifamily housing incentives specific to Florida. The multifamily efficiency study is expected to be completed in January 2015. The project team conducting the study includes personnel from the University of Florida (UF) Public Utility Research Center (PURC), who will focus on policy analysis, the UF Program for Resource Efficient Communities (PREC), who will focus on program analysis, and the University of Central Florida's (UCF) Florida Solar Energy Center (FSEC), who will focus on analysis of codes and modeled savings potential.

The goal of this study is to collect and synthesize information from existing literature, industry stakeholders and thought leaders to identify the most promising options for Florida to provide incentives to landlords to retrofit their multifamily properties, saving energy and water and reducing the utility cost burdens on tenants.

3.9 Response to Environmental Protection Agency's Clean Power Plan

In addition to the programs administered on the state level, the FDACS OOE has been following various federal actions and evaluating their potential impacts on Florida. On June 2, 2014, the U.S. Environmental Protection Agency (EPA) proposed updates to 111(d) of the Clean Air Act, also known as the Clean Power Plan (CPP). After a thorough evaluation of the CPP and its potential impacts on Florida, Commissioner Putnam submitted comments expressing his concerns, which include: 1) the EPA's overreach far beyond its jurisdiction in proposing this rule and 2) the failure to fully estimate the economic hardship that will result should these requirements be implemented.

In his letter, Commissioner Putnam urged the EPA to consider the following recommendations before advancing its proposed plan:

- Give states flexibility to determine goals and plans that are in the best interest of their constituents.
- Acknowledge each state's definition for renewable energy is unique to them based on the resources available to them within their borders and include these generation sources for compliance.
- Recognize each state's existing initiatives and programs that can count toward their offsets, such as electric vehicle incentives and energy efficiency requirements.
- Allow additional time required to create and implement plans to avoid disruption to supply and limit the exorbitant costs imposed on consumers.

4. On the Horizon

In 2015, FDACS OOE will continue to work with the Legislature and Governor to advance policies and programs with the objective to secure a stable, reliable and diverse supply of energy for Florida. FDACS OOE is currently developing two new programs to help Florida's farmers adopt practices to increase energy and water efficiency. Those programs are:

Farm Renewable and Efficiency Demonstrations (FRED) Program

In September 2014, the FDACS OOE received a \$1 million Conservation Innovation Grant from the United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). Matched by \$2 million from the Farm to Fuel program, these funds will be used to establish the Farm Renewable and Efficiency Demonstrations (FRED) program, an innovative program to promote the adoption of technologies and practices that increase energy efficiency and renewable energy use in Florida agriculture.

Direct energy use represents approximately \$375 million annually, or 6.5% of Floridian farm production expenses. Each objective and phase of FRED has been designed to address one or more market barriers identified by the FDACS OOE as hindering adoption of energy efficiency and renewable energy technologies in the agriculture industry.

Farm Energy & Water Efficiency Realization (FEWER) Program

Over the past year, Farm to Fuel funds that have been returned to the FDACS OOE are being re-obligated to assist farmers in implementing energy and water efficiencies. The objective of the program is to conduct on-site evaluations of the potential for energy efficiency, renewable energy upgrades and water saving measures and practices on individual farms and help protect water resources and reduce energy consumption. In order to achieve this objective, FDACS will contract with the Suwannee County Conservation District (Contractor) to contract with one or more of the USDA-NRCS Technical Service Providers to conduct on-site evaluations. In addition, they will contract with one or more procured entities to engineer, design, and implement the energy efficiency measures identified in the on-site evaluation report. The Contractor will provide administrative services for this project, including project-funding administration.

Executive Summary of the Florida Public Service Commission's Energy Efficiency and Conservation Act (FEECA) Report

The entire report as prepared by the Florida Public Service Commission, Annual Report on Activities Pursuant to the Florida Energy Efficiency and Conservation Act, can be found at: <http://www.floridapsc.com/publications/pdf/electricgas/FEECA2015.pdf>

Reducing Florida's peak electric demand and energy consumption became a statutory objective in 1980, when the Florida Energy Efficiency and Conservation Act (FEECA) was enacted. Codified in Sections 366.80 through 366.85 and Section 403.519, Florida Statutes (F.S.), FEECA emphasizes reducing the growth rates of weather-sensitive peak demand, reducing and controlling the growth rates of electricity consumption, and reducing the consumption of scarce resources, such as petroleum fuels. Section 366.82(2), F.S., requires the Public Service Commission (Commission or PSC) to set appropriate goals for the seven electric utilities subject to FEECA at least every five years. Commission rules have defined goals with respect to annual electric peak demand and energy savings over a ten-year period, with a review every five years. The seven utilities currently subject to FEECA are Florida Power & Light Company (FPL), Duke Energy Florida, Inc. (DEF), Tampa Electric Company (TECO), Gulf Power Company (Gulf), Florida Public Utilities Company (FPUC), Orlando Utilities Commission (OUC), and JEA. Once goals are established, the utilities must submit for Commission approval, cost-effective demand-side management (DSM) plans, which contain the DSM programs designed to meet these goals.

This report fulfills two Commission statutory obligations. The Commission is required by Section 366.82(10), F.S., to provide an annual report to the Legislature and the Governor summarizing the adopted goals and progress achieved toward those goals. Section 377.703(2)(f), F.S., requires the Commission to file information on electricity and natural gas energy conservation programs with the Department of Agriculture and Consumer Services.

Section 1 of this report provides a history of FEECA, highlights savings produced by utility programs since 1980, and provides a description of existing tools for increasing conservation throughout the state. Section 2 discusses current goals and achievements of the FEECA utilities. For context, Section 3 provides an overview of Florida's electricity market. Section 4 discusses methods the Commission has used to educate consumers about conservation and provides a list of related web sites. Finally, Appendix 1 provides a description of the conservation programs currently offered by the FEECA utilities.

Conservation Achievements

Over the last thirty-three years, the FEECA utilities' DSM programs in total have reduced winter peak demand by an estimated 6,506 megawatts (MW) and summer peak demand by an estimated 6,871 MW. The demand savings from these programs have resulted in the deferral or avoidance of a substantial fleet of power plants. These programs have also reduced total electric energy consumption by an estimated 9,330 gigawatt-hours (GWh).

Since 1981, Florida's investor-owned electric utilities have recovered over \$6 billion of conservation expenditures for DSM programs through the Energy Conservation Cost Recovery (ECCR) clause. Over \$3 billion of the total conservation program expenditures recovered have occurred in the last ten years. In 2013, Florida's investor-owned electric utilities recovered over \$435 million in conservation program expenditures, performed more than 197,000 residential audits, and offered over 100 conservation programs for residential and commercial customers.

Consumer choice plays an important role in reducing the growth rates of electrical demand and energy in Florida. Consumers support electric energy conservation through a variety of actions including constructing smaller, more efficient homes, buying energy-efficient appliances, installing energy-efficiency upgrades to existing homes and installing demand-side renewable systems. The Commission's consumer education program offers several tools to promote consumer awareness of conservation and energy efficiency opportunities. Florida's utilities also play an active role in educating Florida's consumers on energy efficiency options.

Conversely, prescriptive mandates play a major role in conservation. The Florida Building Code is adopted and updated with new editions triennially by the Florida Building Commission. In addition, the Florida Building Code is amended annually to incorporate interpretations, clarifications and update standards. The 2014 draft of the building code emphasizes the thermal envelope of buildings. Specifically, the energy efficiency section of the code focuses on insulation and ventilation measures for air conditioning units, turn-on/turn-off switches for water heaters and pool heaters, and automatic temperature controls for hot water systems. The U.S. Environmental Protection Agency (EPA) is taking steps to boost clothes dryer efficiency. The EPA announced that beginning in 2015, the manufacturers will be able to use the Energy Star label on clothes dryers that use 20 percent less energy than the minimum efficiency standard. The EPA stated that if all residential clothes dryers in the U.S. meet the requirements, the utility cost savings will grow to more than \$1.5 billion per year. In addition, more than 22 billion pounds of greenhouse gas emissions would be prevented.

In 2013, the U.S. Department of Energy (DOE) issued an update for the energy conservation standards for residential microwave ovens which could reduce energy consumption by up to 75 percent in standby mode and revised energy conservation standards for residential room air conditioners. The DOE also initiated rulemaking to amend testing procedures for residential refrigerators and freezers to account for ice-making energy use and to update energy use for other features. Once finalized, the new standards for Energy Star certified refrigerators and freezers would use approximately 10 percent less energy than models meeting the current 2014 standards. Lighting standards have changed as well, with various watts of incandescent bulbs being phased out and becoming no longer available for purchase. Seventy-five watt incandescent bulbs were phased out as of January 1, 2013, and as of January 1, 2014, 60 watt and 40 watt incandescent bulbs are no longer available.

Section 2 of this report compares the FEECA utilities' demand and energy savings to the goals set by the Commission during the last goal-setting proceeding. The results of the 2013 achievements towards the 2009 goals illustrated that TECO, Gulf, JEA, and OUC surpassed all demand and energy savings goals in every category. FPL, DEF, and FPUC did not meet goals in every category in 2013. Of the utilities that did not achieve their annual Commission approved goals, most noted that while they failed to meet the goal requirements on an annual level, they were able to meet the requirements on a cumulative level when compared to the 2004 and 2009 goal proceeding requirements.

Section 2 also provides a summary of the Commission's most recent goal-setting proceeding. On November 25, 2014, the Commission voted to approve staff's recommendation regarding the FEECA utilities' proposed goals for the 2015 through 2024 period. The Commission voted to approve goals based on the Ratepayer Impact Measure (RIM) Test, noting that FPL's approved goals would be based on the unconstrained RIM test.² The RIM test is a cost-effectiveness analysis that ensures that all ratepayers, both participants and non-participants, benefit from utility-sponsored conservation programs and minimizes cross subsidies between customers. Utilities were also directed to show how all customers, including low-income customers will be made aware of conservation opportunities. The near term impact will lower the dollars for conservation currently being recovered from customers. In addition, the Commission voted to discontinue the investor-owned utilities' (IOU) solar pilot programs by the end of 2015. The Commission based its decision on evidence in the record that the existing solar pilot programs have not proven to be cost-effective and represented a subsidy between the general body of ratepayers and the few that participated in the program. The Commission also directed its staff to hold a workshop to explore more cost-effective ways to encourage solar adoption in Florida.

Conclusion

The potential demand and energy savings from utility-sponsored conservation programs are affected by consumer education and behavior, building codes, and appliance efficiency standards. Consumer actions to implement energy efficiency measures outside of utility programs as well as codes and efficiency standards, create a baseline for a new program's cost-effectiveness and reduce the amount of incremental energy savings available from utility programs. Utility programs are designed to encourage actions to conserve energy that exceeds the level of conservation resulting from current building codes and minimum efficiency standards. It should be noted that the level of savings from these programs are somewhat uncertain because they depend on voluntary participation from customers. However, the expense is shared by all customers. As such, customer participation, as well as customer education regarding utility-offered DSM and energy conservation programs, along with individual efforts to use electrical energy wisely, remain fundamental elements for reducing the demand for energy.

Conservation and renewable energy are expected to continue to play an important role in Florida's energy future. The Commission will continue its efforts to encourage cost-effective conservation and renewable energy to reduce the use of fossil fuels and defer the need for new generating capacity to ensure a balanced mix of resources that reliably and cost-effectively meet the needs of Florida's ratepayers.

² See Order No. PSC-14-0696-FOF-GU, issued December 16, 2014, in Docket Nos. 130199 through 130205, In re: Commission review of numeric goals (Florida Power & Light Company, Duke Energy Florida, Inc., Tampa Electric Company, Gulf Power Company, JEA, Orlando Utilities Commission, Florida Public Utilities Company).