THE TIME IS RIGHT TO RETIRE
C.D. MCINTOSH UNIT 3

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Executive Summary

Lakeland Electric and the Orlando Utilities Commission should retire the C.D. McIntosh Unit 3 coal-fired power plant in the near future. Retirement of the plant would benefit the utilities, their customers and the environment.

C.D. McIntosh Unit 3 is a 33-year-old 364 megawatt plant located in the City of Lakeland, Fla. It shares the site with several other generating units, including a newer natural gas-fired combined cycle plant. The plant is 60% owned by the City of Lakeland, (Lakeland Electric) and 40% by the Orlando Utilities Commission.

Since 2009, Unit 3 has become increasingly expensive to operate as its average cost of producing power increased by 33% from 2009 to 2013. In addition, Unit 3's joint owners, Lakeland Electric and the Orlando Utilities Commission, have made more than $70 million in capital investments in the years 2009-2014 to replace or upgrade plant equipment and components. Further capital expenditures can be expected in future years as the unit ages and if it remains online.

The amount of electricity generated by Unit 3 has declined precipitously since 2008, largely as a result of the plant's unreliable operations and competition from less expensive power from existing plants in Florida. Unit 3 is unlikely to regain any of this lost generation because the state has a significant amount of low-cost excess natural gas-fired generation and as the price of installing new solar resources continues to decline.

The retirement of McIntosh Unit 3 at any time in the near future would not reduce regional electric grid reliability. Even without Unit 3, there would be more than enough generating capacity in the state to serve projected system loads while providing the 15% capacity reserve margin that is needed to allow for unexpected power plant outages and unanticipated high system loads.

A reasonable resource strategy for both Lakeland Electric and the Orlando Utilities Commission would be to retire McIntosh Unit 3 and, in the short term, purchase any needed replacement power from excess capacity at existing natural gas-fired combined cycle plants, while aggressively promoting investments in energy conservation and solar photovoltaics resources. This strategy would enable Lakeland Electric and the Orlando Utilities Commission to retire McIntosh Unit 3 without increasing their long-term dependence on natural gas. Development of solar photovoltaic energy in Florida, the U.S. state with the third–highest potential for solar energy, will reap long-term benefits for the municipal utilities and their ratepayers. Energy efficiency also is a very low-cost alternative to continued operation of McIntosh Unit 3 that will reap benefits for the utilities and their ratepayers.

Background

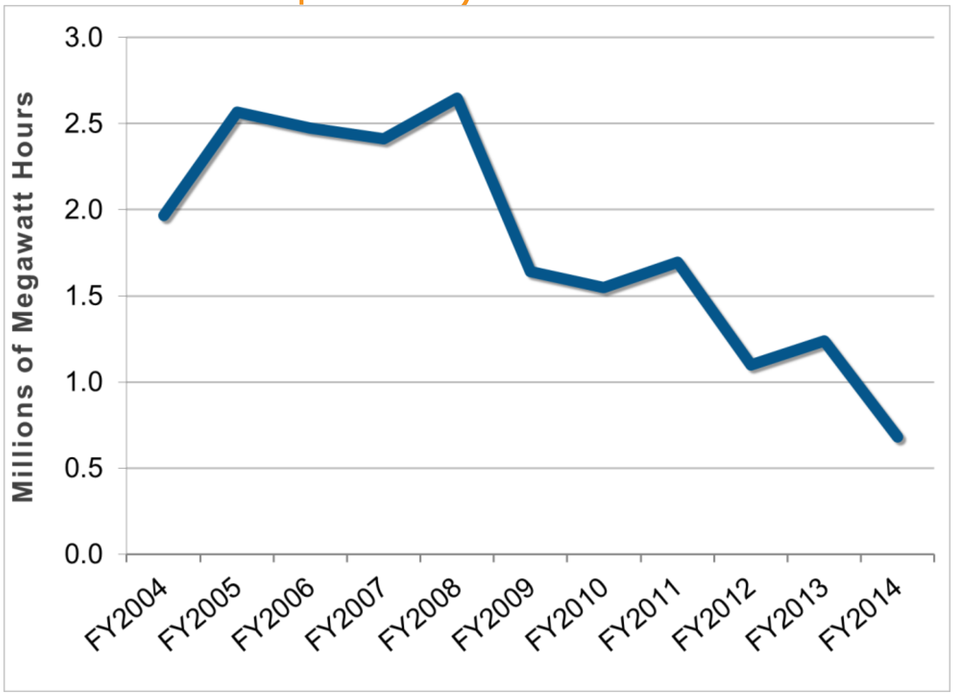
C.D. McIntosh Unit 3 is jointly owned by the City of Lakeland, Fla. (Lakeland Electric) and the Orlando Utilities Commission (OUC). Unit 3 is located within the City of Lakeland, on a lake in Polk County. McIntosh Unit 3 is capable of generating 364 megawatt (MW) gross and 342 MW net of power. The difference between the gross and net outputs represents the power that must be used to run onsite equipment (known as the parasitic load).

The site is shared with several other generating units, including a 356 MW natural gas-fired combined cycle plant.

McIntosh Unit 3's Performance is Declining

McIntosh Unit 3 operated as a baseload unit (meaning that it was meant to generate electricity around the clock) in the years preceding 2008, generating between 2 million and 2.5 million megawatt hours of electricity each year. However, the annual generation at McIntosh Unit 3 began to decline dramatically in Fiscal Year (FY) 2009 as a result of the plant's unreliable operation and competition from lower-cost power produced at existing natural gas fired plants in Florida. This decline is illustrated in Figure 1, below.

Figure 1: McIntosh Unit 3 Annual Generation in Megawatt Hours, 2004-2014 (Fiscal Years October 1- September 30).[1]



[1] The October 1 through September 30 Fiscal Years shown in Figures 1 and 2 are used in the annual utility reports published by Lakeland Electric and OUC.

As can be seen in Figure 1, in the fiscal year ending Sept. 30, 2014, McIntosh Unit 3 produced barely one-quarter of the power (measured in megawatt hours) that it had generated in 2008, which was the year when natural gas prices began to collapse.

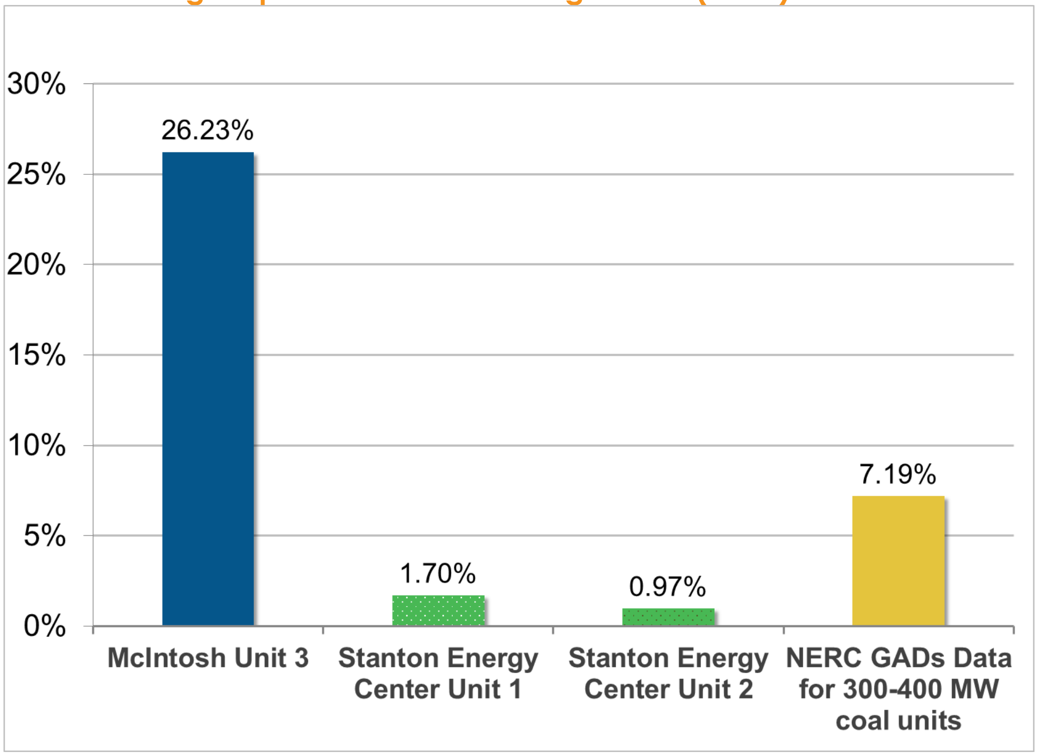
Unit 3 has operated less reliably in recent years, being offline for many hours for planned outages in 2009 and 2011 and for long unplanned outages in 2010 and 2014. The plant produced no net power from March through October 2014.

A power plant's Equivalent Forced Outage Rate (EFOR) compares the number of hours during a year (or a series of years), when the plant was either offline entirely, or operated at less than full power due to unplanned equipment problems, with the total number of hours in the year or years being evaluated.

As can be seen from Figure 2, below, in recent years McIntosh Unit 3's EFOR has been significantly above both the industry-wide EFOR for coal plants of the same relative size as Unit 3 and for the two Stanton Energy Center coal plant units also owned by the Orlando Utilities Commission.

The industry average performance figures shown below were obtained from the North American Electric Reliability Corporation' Generator Availability Data System, known as NERC GADs.[2]

Figure 2: Average Equivalent Forced Outage Rates (EFOR).

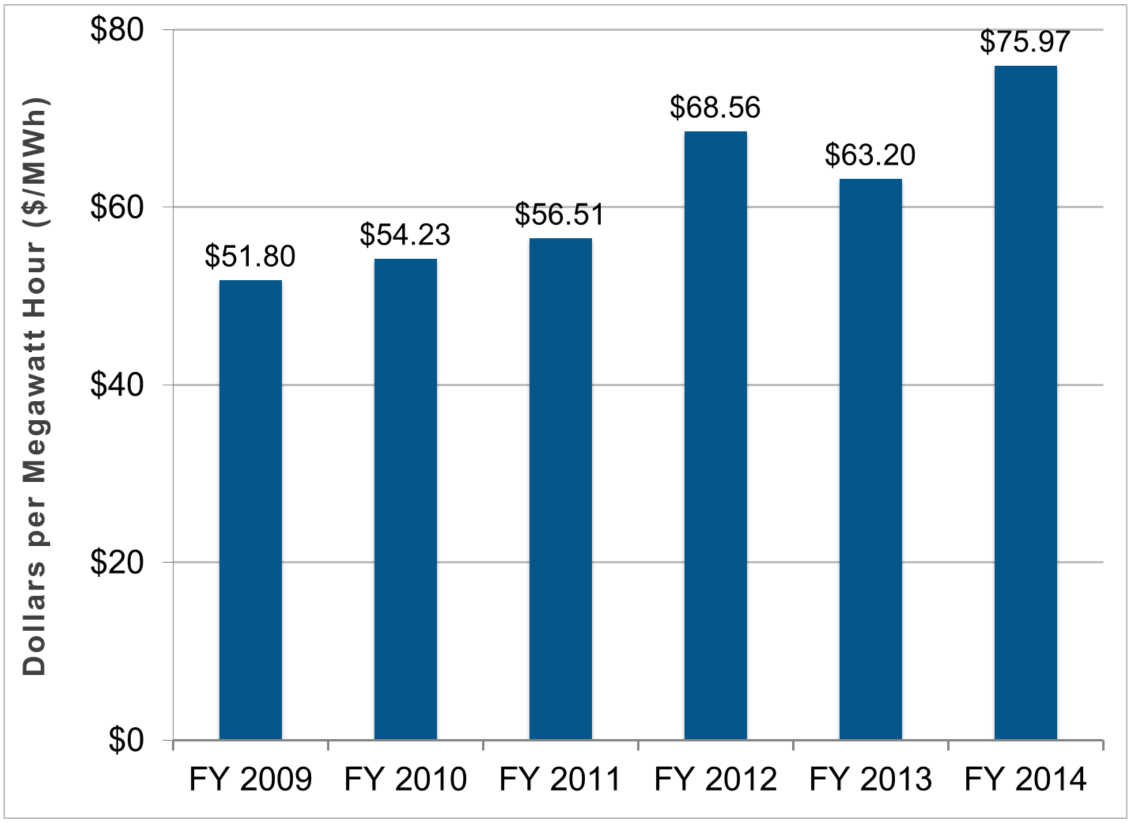


2 The NERC GADs data shown in Figure 4 is for the calendar years 2009-2013, the most recent data publicly available data. However, the EFOR for McIntosh Unit 3 and the two units at the Stanton Energy Center is for a longer period, October 1, 2008 through September 30, 2014. This reflects the fact that Lakeland and Orlando report the plant operating data on a Fiscal Year Ending September 30 basis that includes Unit 3's lower 9.3% EFOR in FY 2014 EFOR. Nevertheless, the conclusion that McIntosh Unit 3 has been unreliable remains the same.

The Cost of Operating C.D. McIntosh Unit 3 Has Been Increasing

The cost of generating power at McIntosh Unit 3 increased by approximately 33% in recent years, from just under $52 per MWh in 2009 to an average of over $69 per MWh in the three most recent Fiscal Years (2012, 2013 and 2014).

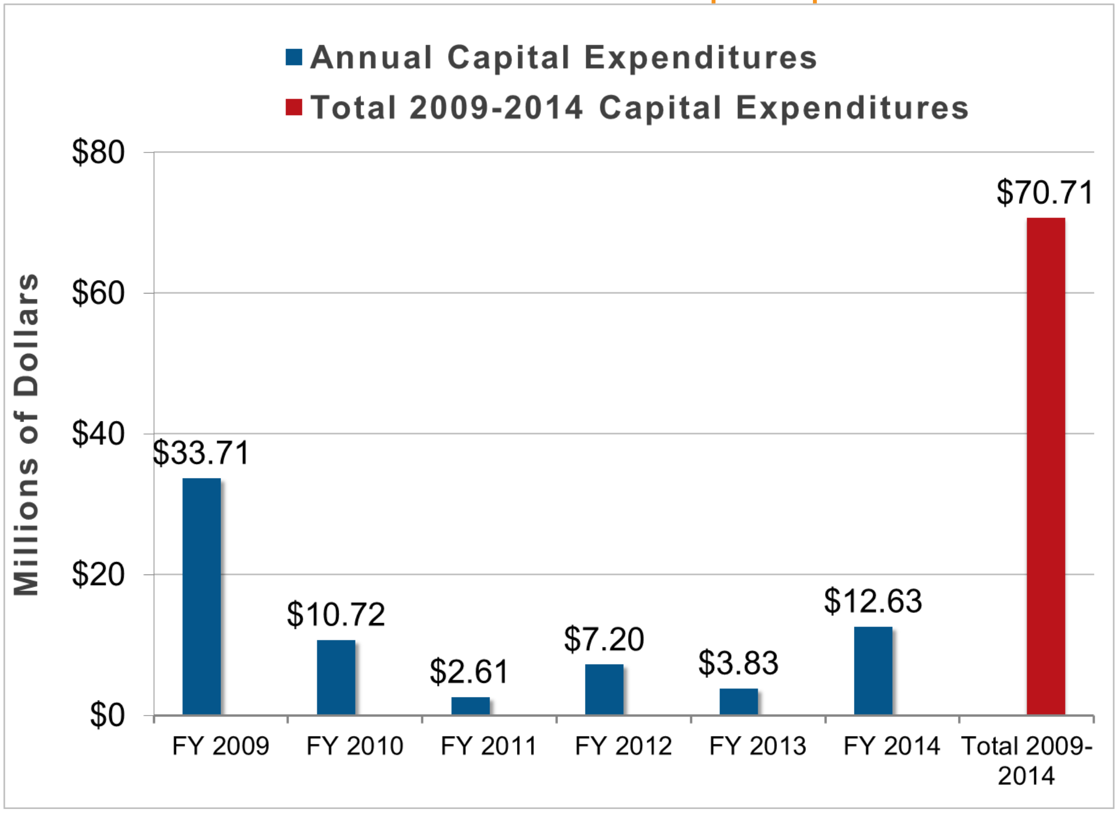
Figure 3: McIntosh Unit 3 Average Annual Production Expenses per Megawatt Hour, 2009-2014.[3]



The annual average production costs presented in Figure 3 reflect the yearly fuel and non-fuel operating & maintenance expenses that Lakeland Electric and OUC must make each year to maintain and generate power at McIntosh Unit 3. In addition to paying these annual operating & maintenance expenses, each plant owner also must make substantial capital investments every year to pay for the replacement and upgrading of plant equipment.

3 Data from Orlando Utilities Commission *2014 Financial & Statistical Report* and Lakeland Electric's *Notes to Financial Statements* for the years 2010-2014.

Figure 4: Annual and Cumulative McIntosh Unit 3 Capital Expenditures.



As shown in Figure 4, these capital investments totaled more than $70 million just between the start of FY 2009 on Oct. 1, 2008, and the end of FY 2014 on Sept. 30, 2014, or an average of nearly $12 million in capital costs per year. These annual capital investments mean that the total costs of generating power at McIntosh Unit 3 (reflecting both the annual O&M expenses and capital investments) are even higher than shown in Figure 3, above.

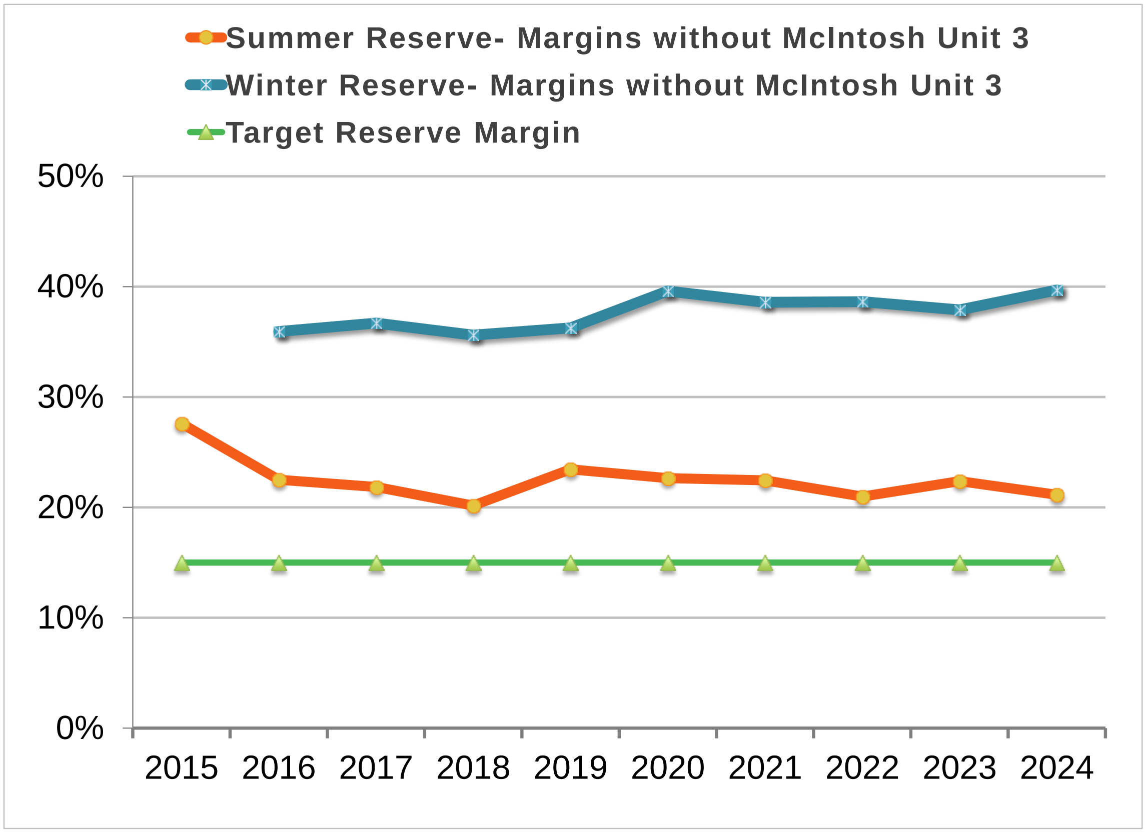
The Power from McIntosh Unit 3 is Not Needed for Grid Reliability

Forecast of future resources and loads published by the Florida Reliability Coordinating Council (FRCC)[4] in 2014 show that the retirement of McIntosh Unit 3 at any time in the near future would not reduce regional electric grid reliability. Even without Unit 3, there would still be more than enough generating capacity on the grid to serve projected system peak loads while providing the 15% capacity reserve margin that is needed to allow for unexpected power plant outages and unanticipated high system loads.

4 The purpose of the Florida Reliability Coordinating Council (FRCC) is to promote and enhance the reliability and adequacy of the bulk electric supply in Florida, now and into the future. The FRCC region includes all of Florida except for the area in the Panhandle served by the Gulf Power Company.

This can be seen in Figure 5, below. The horizontal line in this figure is the targeted 15% reserve margin deemed necessary to assure reliable electric service. The two lines above the 15% Target Reserve Margin line represent what FRCC's summer and winter reserve margins would be without McIntosh Unit 3's 342 MW of net power.

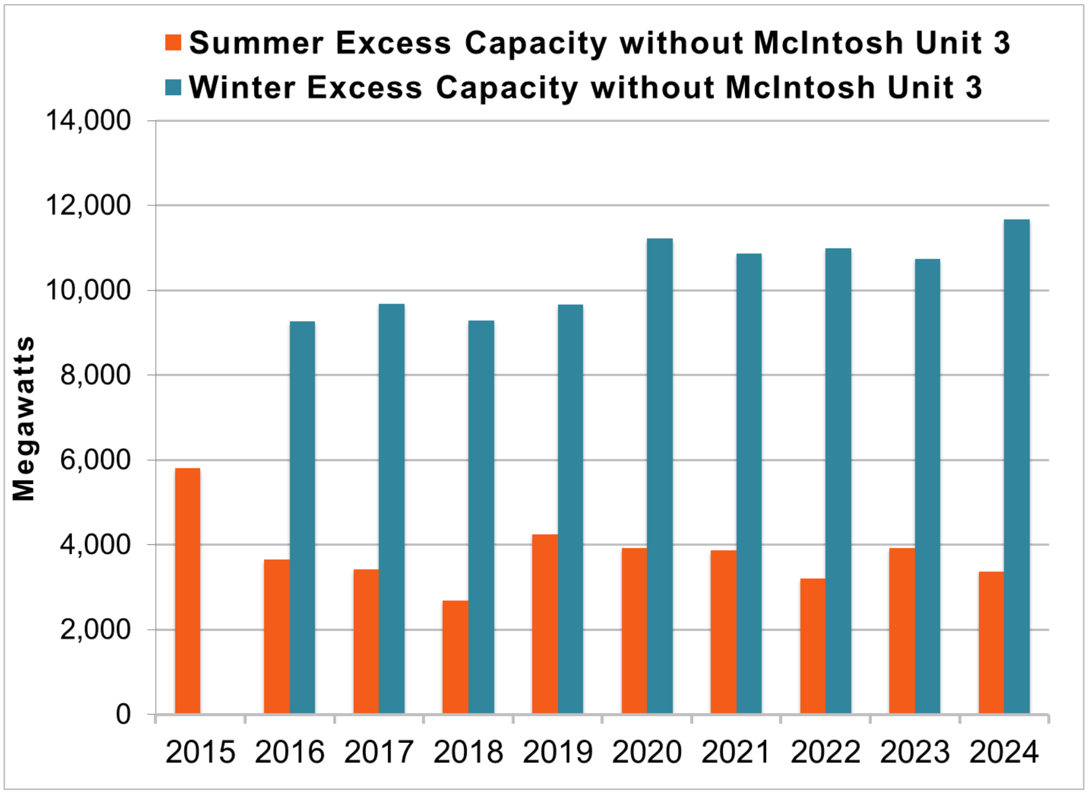
Figure 5: Florida Reliability Coordinating Council Summer and Winter Peak Reserve Margins without McIntosh Unit 3.[5]



This means that there are likely to be thousands of megawatts of excess capacity available in the region during the peak demand periods in future years, even if McIntosh Unit 3 were retired.

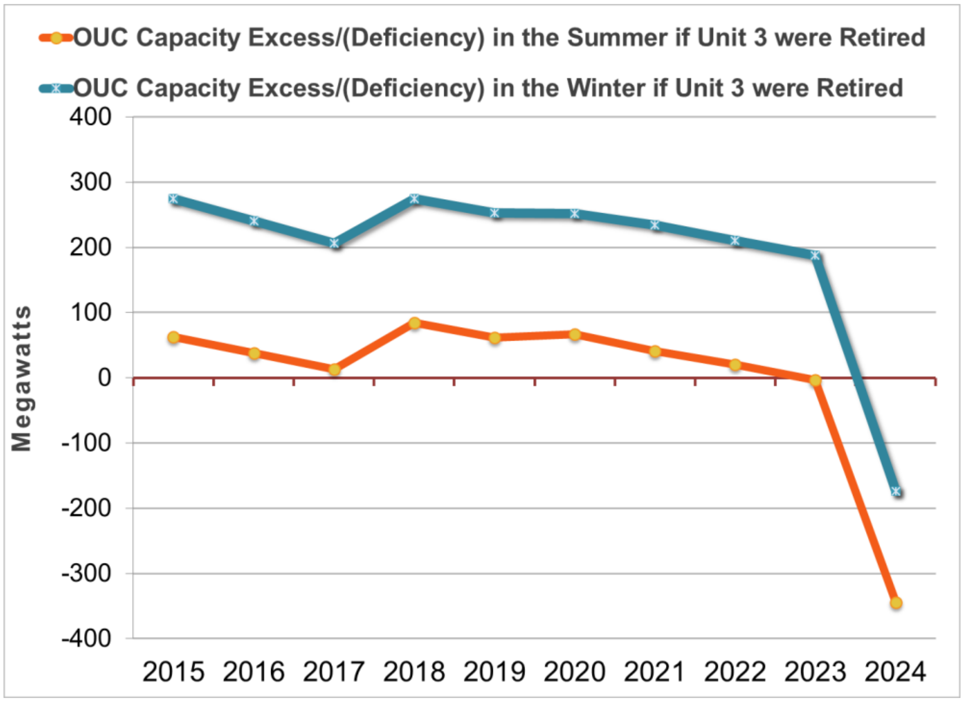
5 Source: Florida Reliability Coordinating Council *2015 Regional Load & Resource* Plan, July 2015.

Figure 6: Florida Reliability Coordinating Council Summer and Winter Excess Capacity without McIntosh Unit 3.



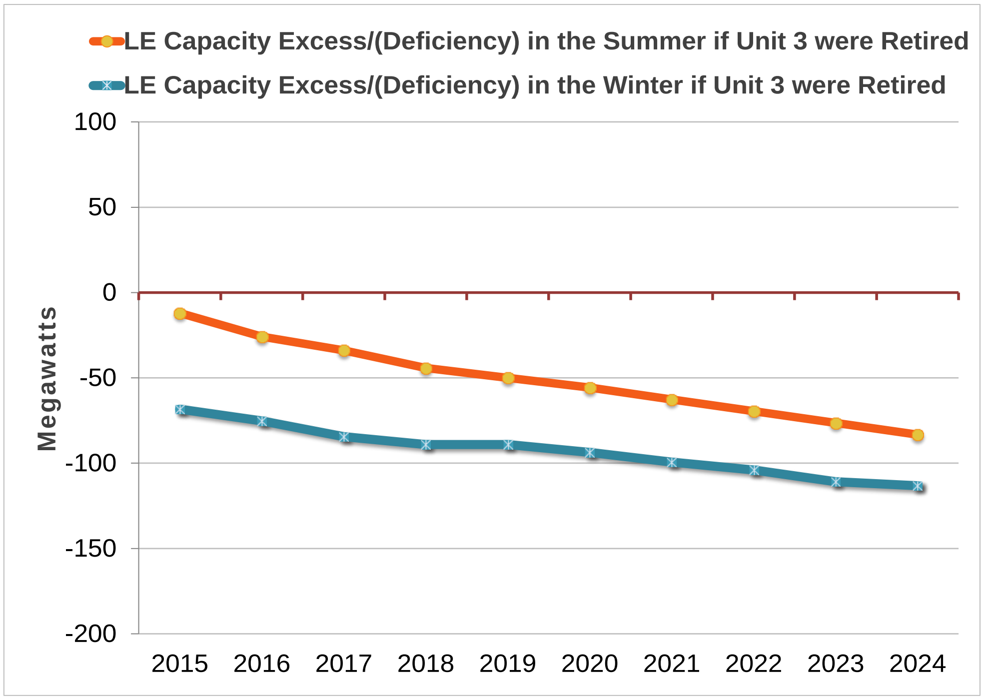
The Orlando Utilities Commission also would continue to have enough capacity through 2022 without its 40% share of McIntosh Unit 3 to meet its projected peak summer and winter system loads, even while allowing for the required 15% reserve margin. And this assumes that OUC's projected loads materialize as they are currently projected, although its past forecasts have proven to be too high.

Figure 7: Orlando Utilities Commission Summer and Winter Capacity Excess/(Deficiency) Without McIntosh Unit 3.



As shown in Figure 8, Lakeland Electric might need to purchase some capacity in the near future each summer if McIntosh Unit 3 were retired but only if the utility's projected loads were to materialize, something that has not happened in recent years.

Figure 8: Lakeland Electric Summer and Winter Capacity Excess/ (Deficiency) Without McIntosh Unit 3.



Lakeland Electric's peak demands and energy sales grew steadily in the late 1990s and the early years of this century. However, LE has not accurately forecast its future loads in recent years. Despite its repeated projections that its peak demands and energy sales would grow significantly in future years, these have remained relatively flat since 2005, except for a large and temporary jump in its peak load during the winter of 2009-10, as shown in Figures 9 and 10, below.

Figure 9: Lakeland Electric Actual Summer and Winter Peak Demands, 1998 through 2014.

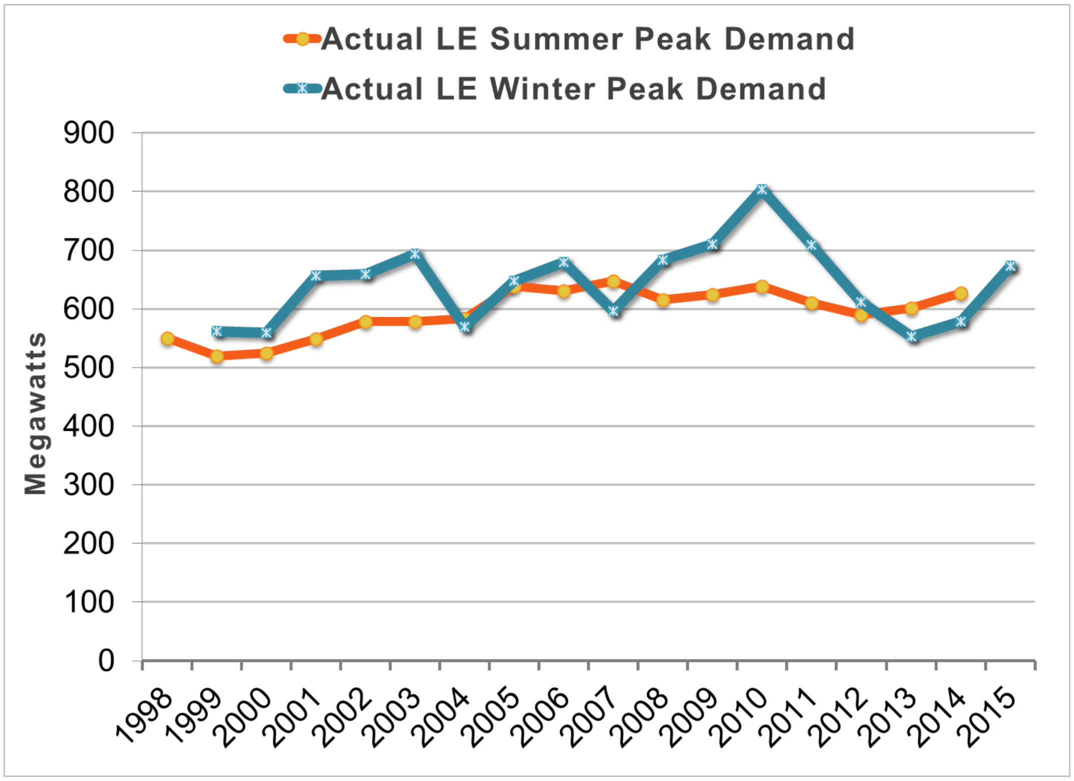
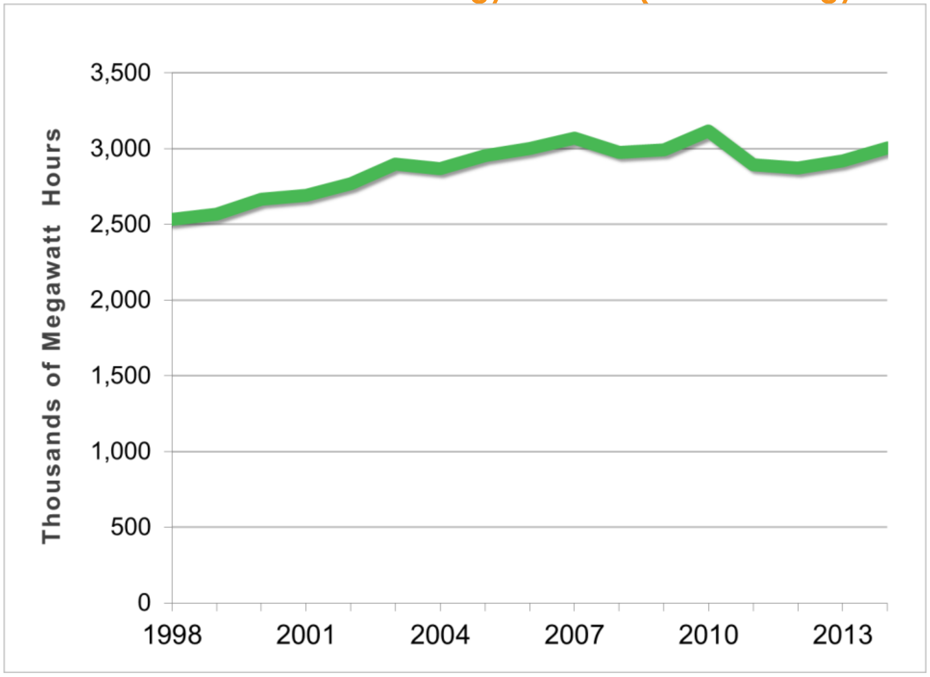


Figure 10. Lakeland Electric Net Energy for Load (Annual Energy Consumption).



The growth in peak demand and energy sales that Lakeland Electric has been forecasting in recent years have failed to materialize.

For example, in 2012 Lakeland Electric projected that its summer 2014 peak load would be 669 MW. Its actual peak load in 2014, however, was 627 MW—about the same as its summer peak load in 2005. Lakeland Electric now forecasts that it won't achieve a 668 MW summer peak load until 2018.

Given this recent history, it is quite possible that Lakeland Electric's current forecasts for future peak loads and energy sales are too high. As a result, depending on how its actual peak loads materialize, Lakeland Electric may not need to purchase any capacity to replace McIntosh Unit 3 if that plant is retired.

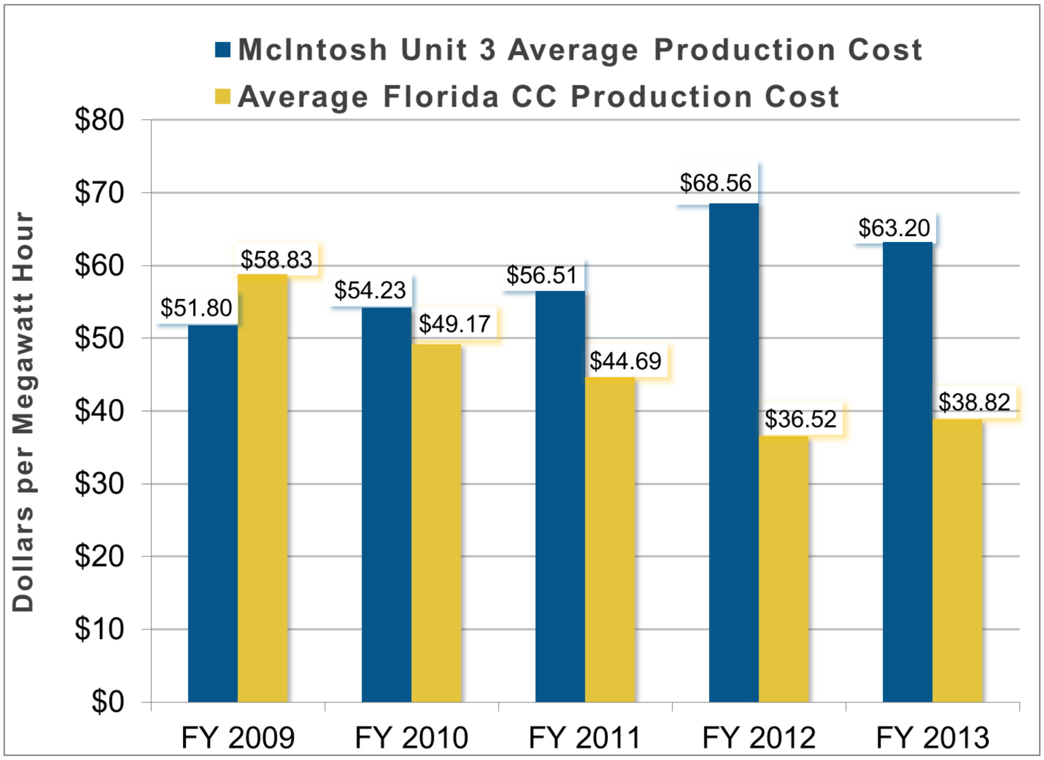
The Plant's Owners Have Many Alternatives to Continuing to Operate McIntosh Unit 3

If the plant's owners decide to retire C.D. McIntosh Unit 3, they have a number of ways to proceed. A reasonable resource strategy for Lakeland Electric and Orlando Utilities Commission would be to purchase power from existing combined cycle gas-fired plants in the short term and to invest in solar capacity and energy efficiency for the long-term.

A. Short-Term Alternative: Purchase Energy and, If Needed, Purchase Capacity from Excess Natural Gas-Fired Combined Cycle Units

At the same time that the costs of generating power at Unit 3 have been rising, as shown in Figure 3, above, the cost of generating power at natural gas-fired combined cycle power plants in Florida has been dropping. As a result, the cost of generating power at McIntosh Unit 3 is now much more expensive than buying power from a gas-fired combined cycle plant, as shown in Figure 11, below. In fact, the average cost of generating power from a combined cycle unit in Florida was $24.50 per megawatt hour, or 39%, less expensive in 2013 than the average cost of generating power at McIntosh Unit 3.

Figure 11: Average Production Costs - McIntosh Unit 3 vs. Natural Gas-Fired Combined Cycle Plants in Florida.[6]



SNL Financial has not yet published the actual 2014 production costs for a significant number of the gas-fired combined cycle power plants in Florida. Therefore, the comparison in Figure 11 is limited to the years 2009-2013. However, given the high cost of generating power at McIntosh Unit 3 in 2014 and the low natural gas prices that year, it is reasonable to expect that generating power at McIntosh Unit 3 continued to be very uneconomic for Lakeland Electric and OUC—and for their ratepayers—in 2014.

6 The average production cost data for McIntosh Unit 3 is for Fiscal Years that end on September 30. The average combined cycle unit production cost data is for the respective calendar years ending on December 31. Thus, the data is slightly out-of-sync. However, this does not significantly change the overall results of the generating cost comparison.

The great disparity between the high cost of power from McIntosh Unit 3 and the cost of power generated at natural gas-fired combined cycle plants shown in Figure 11 is likely to continue as natural gas prices are currently expected to remain low for at least the next five to seven years.

Consequently, buying power to replace the generation from McIntosh Unit 3 in the short term with power from existing natural gas-fired combined cycle plants would be cost-effective.

Moreover, Florida's fleet of existing gas-fired combined cycle plants has the capacity to generate lots of additional power. Capacity factors are measures that compare the amount of power that a plant actually produces in a year with the amount it would have produced if it had operated at full power for all of the hours in that year. The higher the capacity factor, the more power the plant produced in the year.

Figure 12: Henry Hub Forward (Future) Natural Gas Prices as of August 24, 2015.[1]

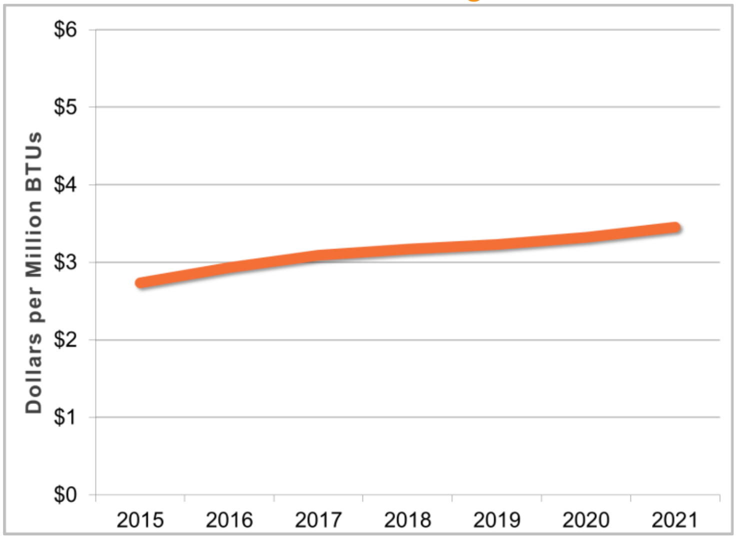
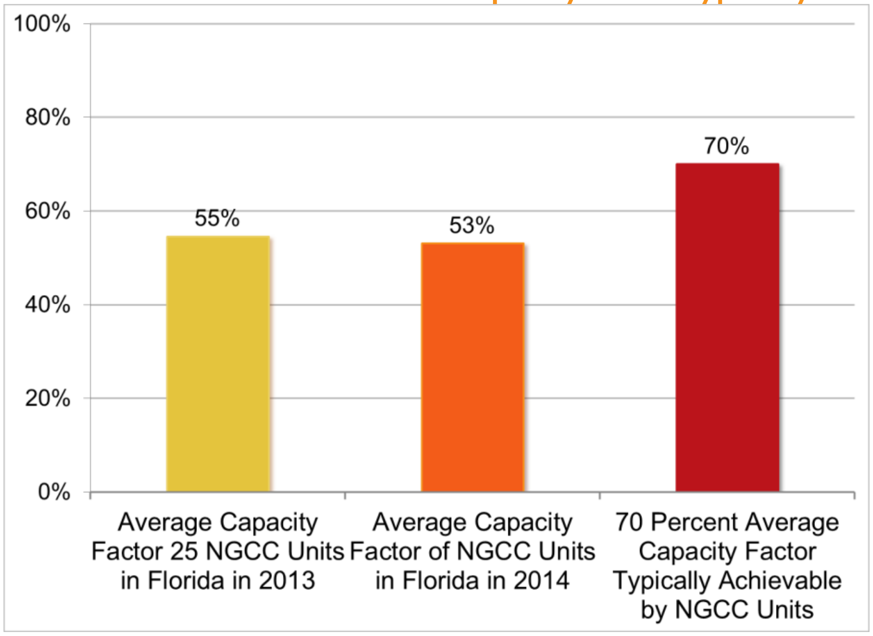


Figure 13, below, compares the average capacity factors achieved by the gas-fired combined cycle plants that were operating in 2013 and 2014 with a 70% annual capacity factor that is typical of what an natural gas-fired combined cycle plant (NGCC) can be expected to achieve on a sustained basis.

Figure 13: Capacity Factors Achieved by Florida NGCC Units Larger than 200 MW in 2013 and 2014 vs. the 70% Annual Capacity Factor Typically Achievable by an NGCC Unit.[7]



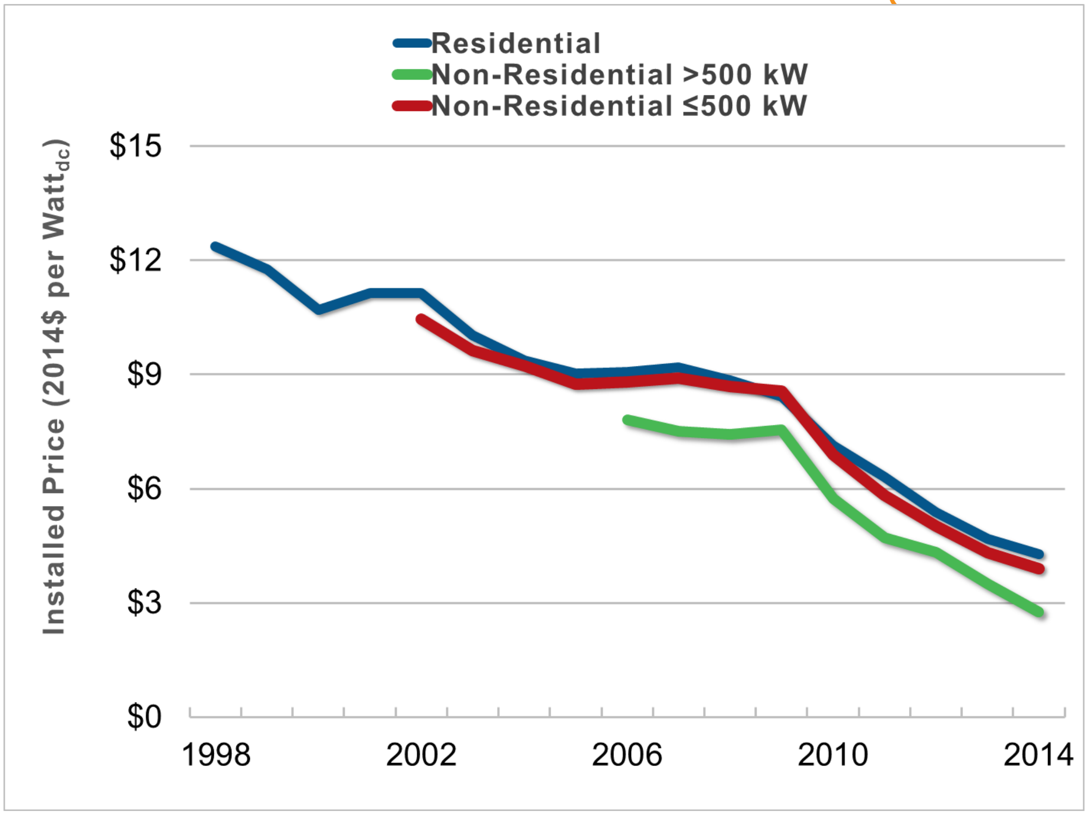
7 There were 25 NGCC units larger than 200 MW in operation in Florida in 2013 and 26 units in 2014.

B. Short and Long-Term Alternative: Invest in Solar Energy and Energy Efficiency Investing in Solar Energy Makes Economic Sense

Lakeland Electric and OUC should increase their investments considerably in solar energy. Diversifying their resource mixes by aggressively investing in and encouraging customer investment in additional solar capacity and energy would be reasonable considering:

- Installation prices for distributed residential and commercial solar PV have plummeted in recent years, as shown in Figure 14, below. Solar PV installation prices decreased by 6-8% per year from 1998 through 2013, dropping an additional 9% from 2013 to 2014. Preliminary data suggests similar price declines in the first half of 2015.

Figure 14: Residential and Commercial Solar PV Installation Prices (Median Values).[8]



Installation prices for residential and commercial distributed solar PV systems are expected to continue to decline in coming years, with some analysts projecting prices as low as $1.50 to $3 per watt by 2016, with additional declines expected in future years.[9]

8 *Tracking the Sun VIII: An Historical Summary of the Installed Price of Photovoltaics in the United States from 1998 to 2014*, Lawrence Berkeley National Laboratory, August 2015, at Figure 7.

9 *Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections, 2014 Edition,* researchers at the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory, September 17, 2014, at slides numbers 5 and 26-28.

The installation prices for utility-scale solar PV projects also have declined, by approximately 40%, when comparing projects completed in 2007-2009 to those completed in 2012. And the average system prices for utility-scale projects are expected to reach $1.30-$1.95 in 2013 dollars per watt by 2016.[10] However, the installed prices for utility-scale projects do vary substantially from project to project.[11]

- A state-by-state analysis by the National Renewable Energy Laboratory of the U.S. Department of Energy has found that Florida has the third most solar-photovoltaic (solar PV) potential of all 50 states, with the technical potential for 49,000 MW of solar PV capacity and 63.897 million MWh of energy generation.[12] Only California and Texas have greater solar potential than Florida. However, Florida ranks 13th today in cumulative solar capacity installed. The 22 MW of solar installed in Florida in 2014 ranked it 20th nationally in that category.[13]
- Distributed solar PV (that is, solar energy that is installed at individual homes or businesses, rather than large central generating stations) brings a number of important advantages, including:
    - Energy cost savings that stem from the fact that distributed solar PV displaces the need for wholesale energy purchases.
    - Generation capacity savings from the added capacity provided to the electric grid by the distributed solar PV.
    - No fuel price uncertainty, thus no risk of rising fuel prices as with fossil fuels.
    - Reduced need for new capital investments in the transmission and distribution system.
    - Reduced transmission and distributed system line losses.
    - Significant environmental and health benefits (lower carbon dioxide, sulfur dioxide, nitrous oxide, small particulate, and other emissions) because the footprint of solar PV is considerably smaller than that of fossil-based generation.[14]

A meta-analysis by the Rocky Mountain Institute (RMI) in 2013 examined 15 solar PV benefit/cost studies in detail and concluded that the benefits from solar can exceed costs. Four of the 15 studies reviewed by RMI found that the benefits of solar exceed 20 cents per kilowatt hour (cents/KWh); with two finding that benefits exceed approximately 30 cents/KWh.[15]

According to an analysis by Synapse Energy Economics, the lower installation costs for new residential and commercial solar PV arrays suggest that the levelized costs of solar PV systems could be as low as 10 to 12 cents/KWh by 2020. In other words, the costs of installing PV solar are significantly lower than the overall benefits.[16]

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10 Id, at slide 27.
11 Id, at page 40.
12 *U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis*, NREL, July 2012, at page 12.
13 See http://www.seia.org/state-solar-policy/florida.
14 See, for example, *Designing Austin Energy's Solar Tariff Using a Distributed PV Value Calculator*, Karl Rebago, et al, available at http://rabagoenergy.com/files/value-of-solar-rate.pdf; *Designing Distributed Generation Tariffs Well: Fair Compensation in a Time of Transition*, Regulatory Assistance Project, November 2013, available at www.raponline.org; *A Review of Solar PV Benefit and Cost Studies*, the Rocky Mountain Institute, September 2013, at page 22, available at http://www.rmi.org/elab_empower.
15 *A Review of Solar PV Benefit & Cost Studies,* Rocky Mountain Institute, September 2013, at page 22, available at http://www.rmi.org/elab_empower.
16 Direct Testimony of Tim Woolf, Florida Public Service Commission Docket Nos. 130199-EI through 130205-E, May 19, 2014, at pages 94 and 95.

OUC has recently announced that it plans to build a 13-megawatt solar installation at the site of the Stanton Energy Center in Orlando, a sign that the utility is recognizing the economic benefits of solar projects. The solar plant will be built by American Capital Energy, which says that electricity from the plant will cost 7 cents per megawatt hour, as compared to the 8 cents per megawatt hour OUC says it pays for coal and natural gas generation.[17]

Investing in Energy Efficiency Also Makes Economic Sense

Energy efficiency is almost always a utility's least expensive resource. According to a recent review of energy efficiency programs in the U.S., the cost to a utility to save one kilowatt of electricity averages 2.8 cents, with a range of 1.3 to 5.6 cents per kWh.[18] This is almost always less expensive than generating the same unit of power. There are many ways in which utilities can invest in energy efficiency, including offering rebates for more energy-efficient appliances; providing home energy audits; and providing incentives to industrial energy users to improve the efficiency of their processes.

Lakeland Electric released a Strategic Resource Plan (SRP) in March 2015 that examined its energy needs and resource options over the next 20 years.[19] The stated purpose of the SRP was to enable Lakeland Electric to:

> "leverage **diverse, sustainable resources** to deliver **competitive, innovative** solutions that support our **vibrant community**. [Emphasis in original][20]"

The SRP also stated that it was based on the recognition that:

> "The energy and power market is changing like at no other time in the past 50 years. Advancements and developments in renewable energy, distributed generation, regulations, smart appliances, energy efficiency, smart grid, electric vehicles, power generation and utility programs are all beginning to converge and drive significant change in the electric grid, utilities and consumer consumption. In addition, many municipal utilities not only face these market demands but additional societal and community related demands on their operations. In response to these uncertain times and a need to plan for imminent generation resource decisions, Lakeland Electric (LE) developed a Strategic Resource Plan.[21]"

One of the key uncertainties addressed in Lakeland's plan was the then-pending U.S. EPA Clean Power Plan.[22]

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17 Spear, Kevin, "OUC solar power from new plant will cost less," Orlando Sentinel, July 30, 2015

18 M. Molina, "The Best Value for America's Energy Dollar: A national review of the cost of utility energy efficiency programs," American Council for an Energy Efficient Economy, March 2014.

19 Strategic Resource Plans (also known as Integrated Resource Plans) are prepared by many utilities around the nation. They typically examine a range of supply-side (generating) and demand-side (energy efficiency, demand resource, etc.) options to determine the lowest cost set of new supply-side and demand-side options a utility should pursue in the coming years. Many SRPs also evaluate the risks associated with each possible option or set of options. SRPs rely on the projected loads contained in a utility's Ten-Year Site Plan and add detailed economic analyses.

20 Id, at page 2-2.

21 Lakeland Electric *Strategic Resource Plan*, March 15, at page 1-1.

22 Id, at page 4-3.

Lakeland Electric presented four business cases in the SRP to reflect current generation-technology planning options and external market conditions in anticipation of being required to reduce greenhouse-gas emissions.

Business Case 1: Build new resources – repower existing LE generation units.

Business Case 2: Purchase future resources – purchase capacity and energy from the market as needed.

Business Case 3: Customer demand technology – elimination of load growth through high customer adoption of energy conservation and distributed generation (e.g., solar photovoltaic).

Business Case 4: Greenhouse gas regulation – developing generation and demand-side resources to meet EPA proposed regulations.[23]

The SRP acknowledged that Lakeland Electric is approaching significant decisions regarding the future of its current fleet of power-generation resources, and that market and regulatory forces are converging with aging resources to accelerate decision making regarding future capital investments, technology, and customer services.[24] However, none of the business cases included the potential retirement of McIntosh Unit 3, the company's largest source of greenhouse gas emissions at any time through 2034. At most, Business Case 4 assumed that Unit 3 would have to be converted to burn natural gas instead of coal, an action that would degrade the Unit's capacity by approximately 24% and raise its heat rate by 4%.[25]

The SRP concluded that coal would continue to be a major source of Lakeland Electric's power through 2034, if not beyond. Even in Business Case 4, where Unit 3 would be converted to burn gas, Lakeland Electric would still be dependent on fossil fuels for more than 80% of its energy in 2034.[26]

However, the SRP also found a number of significant advantages to Business Case 3, which aggressively relied on energy conservation and distributed solar PV resources:

- Under Business Case 3, Lakeland Electric's customers would be using less power, "due to the widespread adoption of energy-saving measures (known as "demand-side management") such as efficient light bulbs, air conditioning, appliances, and smart meter programs."[27]
- Average levelized power supply costs under Business Case 3 from 2015-2034 would be lower, by far, than under the other Business Cases.[28] The power supply costs under Business Case 3 would be low because of the higher utilization of low-cost energy resources and because it includes no new capital and fixed costs for future resource additions.[29]

23 Id, at page 2.
24 Id, at page 1-1.
25 Id, at page 3-18.
26 Id, at pages 3-22 and 3-23.
27 Id, at page 3-31.
28 Id, Table 3-9, at page 3-26.
29 Id, at page 3-26.

- Although Business Case 3 had the second highest average rates, it also had the lowest Net Present Value of annual retail revenues.[30] These lower annual retail revenues were driven by the reduction in overall loads and consumption in this Case.[31] According to the SRP, "Under Case 3, customers have higher rates but lower power bills." The size of their electric bills is what customers generally care about.
- "Because of the modest investment required to achieve reduced load growth, [Business Case 3] yields the most certain projection of average system rates. LE reduces exposure to market prices, carbon emission taxes and the cost of large capital projects in Business Case 3. In addition, LE has slightly more control over the impacts of Case 3 versus Case 4 [Greenhouse Gas Regulation]. The management of fixed costs associated with exiting utility operations is under the control of LE staff unlike the price of commodities such as natural gas or the adverse cost impact of environmental regulation in Case 4."[32] This means, simply put, that Business Case 3 would be a better way to reduce Lakeland Electric's greenhouse gas emissions.

The reduction in demand and decline in system load was unique to Business Case 3. Lakeland Electric's SRP concluded that "in the other Business Cases, Lakeland Electric's system load is growing and costs are increasing. In Business Cases 1, 2, and 4, it is likely the system average rate increases, as well as the overall monthly bills for customers."[33] In other words, customers' electric bills would stay the same or decline in Business Case 3, which relies on more aggressive development of conservation and solar photovoltaic resources while bills would increase under each of the other three Business Cases examined.

With the aggressive energy conservation and renewable solar PV resources included in Business Case 3, Lakeland Electric would have more than enough capacity to retire C.D. McIntosh Unit 3, serve projected system summer and winter loads, and still assure a 15% reserve margin. In fact, Lakeland Electric would be able to retire other aging generating capacity if it decided that was prudent.

30 The SRP noted that "The NPV of the system average rate revenues is an effective way to compare the system average revenues for each Business Case. The lowest NPV among the Business Cases will identify the lowest overall system rate revenues for the full 20-year Study Period…. At page 3-39.

31 Id, at page 3-40.

32 Id, at page 3-41.

33 Id, at page 3-31.

Figure 15.a: Lakeland Electric Summer Excess Capacity with the Aggressive Energy Conservation and Renewable Solar PV Resources Included in Business Case 3 but without McIntosh Unit 3.[34]

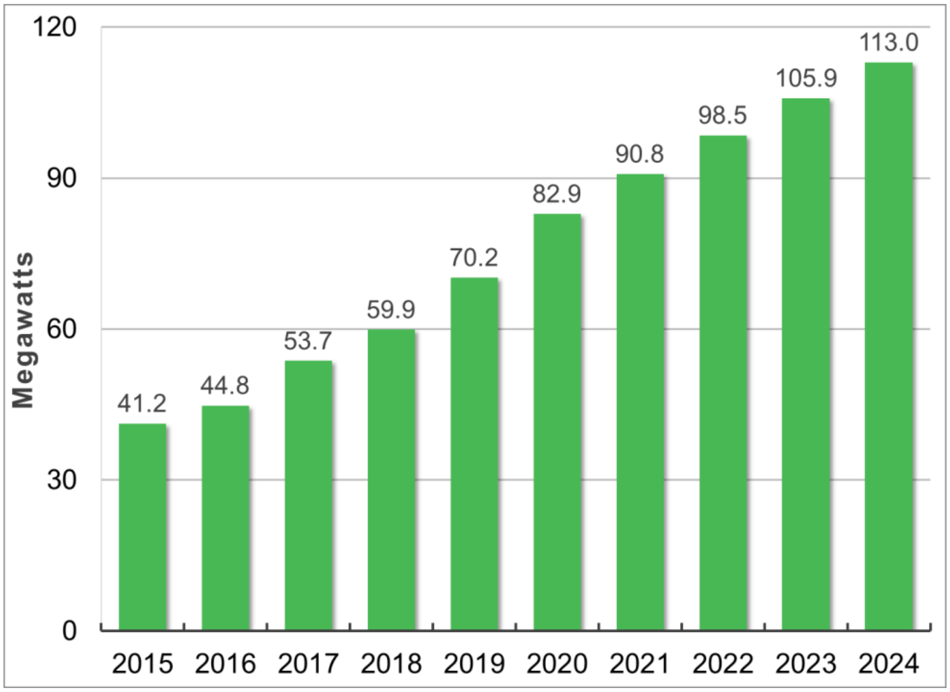
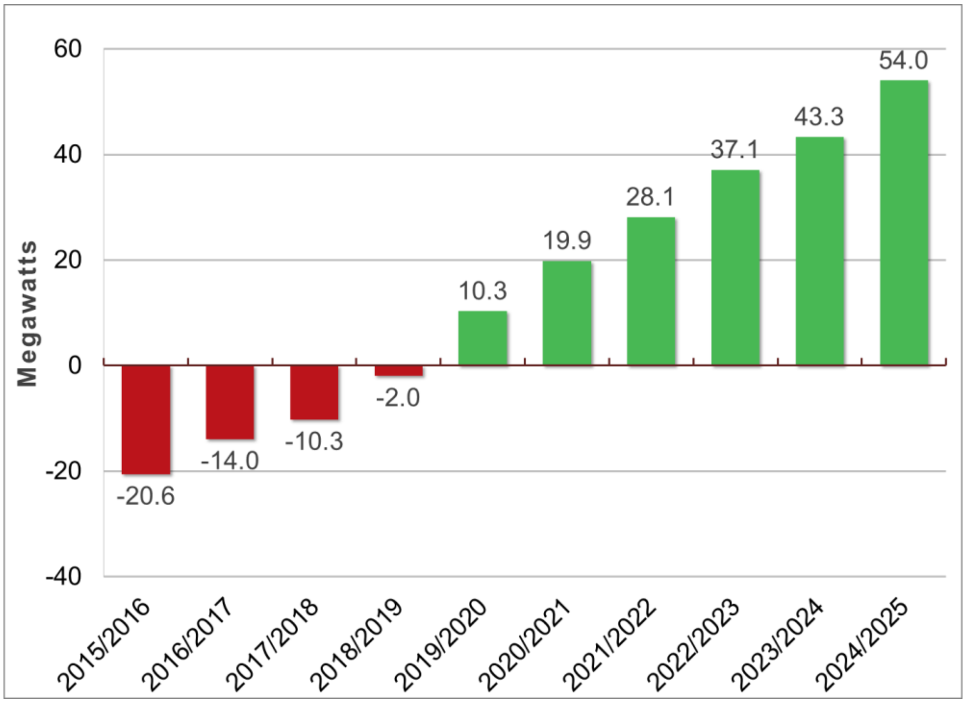


Figure 15.b: Lakeland Electric Winter Excess Capacity with the Aggressive Energy Conservation and Renewable Solar PV Resources Included in Business Case 3 but Without McIntosh Unit 3.



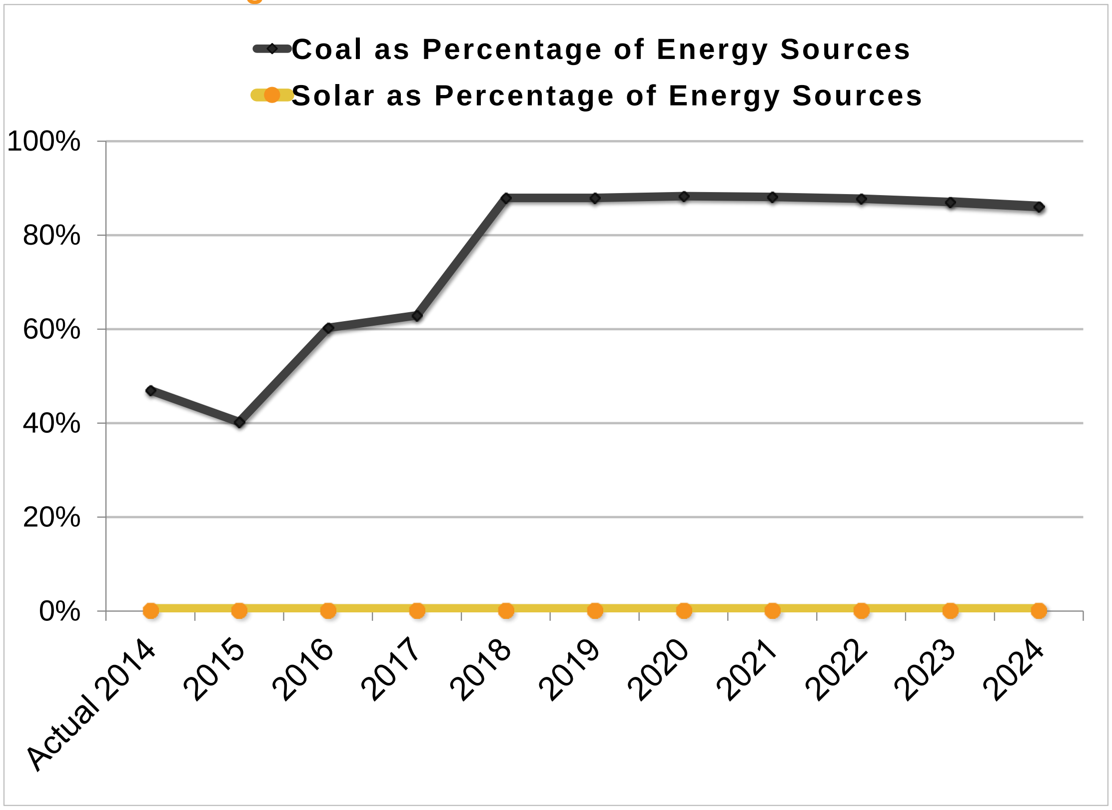
34 Figures 15.a. and 15.b. use Lakeland Electric's 2015 forecast of future summer and winter peak loads.

Neither Utility Has Made Adequate Plans To Reduce Its Reliance on Fossil Fuels

Neither Lakeland Electric nor Orlando Utilities Commission has made plans to reduce, in a substantial and meaningful way, its reliance on coal and natural gas in the next 10 years.

Despite an announced plan to build a 13 MW solar installation, the Orlando Utilities Commission's 2015 Ten-Year Site Plan shows that the utility plans to maintain its very heavy reliance on coal-fired generation while obtaining only a very minimal amount of energy from solar photovoltaic resources. Note that the line in Figure 16, below, showing how much of its resource mix Orlando Utilities Commission expects to come from solar is virtually indistinguishable from the x-axis because OUC's 2015 Ten-Year Site Plan projects that solar will only provide 0.12 to 0.13% of its energy each year through 2024.

Figure 16: Orlando Utilities Commission's Forecasted Reliance on Coal and Solar in the Years 2014 through 2024.[35]



Lakeland Electric is planning to add some solar capacity for a total of approximately 21 MW by 2015[36] but does not project adding any additional solar capacity after that year. That means Lakeland Electric projects that solar will only provide 0.58 to 1.27% of its annual energy needs

35 Source: Orlando Utilities Commission, *2015 Ten-Year Site Plan*, filed on April 1, 2015, at page 12-12.
36 Lakeland Electric's, *2015 Ten-Year Site Plan*, filed in April 2015, at page 4-12.

through 2024. At the same time, Lakeland Electric expects coal and natural gas to provide essentially all of its remaining internal energy needs while enabling the utility to sell power to other utilities each year.

Both Lakeland and Orlando Will Need to Decide How to Meet the Requirements of the U.S. EPA Clean Power Plan

The aggressive energy conservation and renewable solar PV resources added under Business Case 3 would help Lakeland Electric meet the requirements of the EPA's Clean Power Plan and would reduce the economic risk that the utility's customers might face if a price were put on carbon-dioxide emissions.

Given its projected very heavy dependence on coal (for nearly 90% of its energy), the Orlando Utilities Commission will also have to make very substantial steps under the Clean Power Plan to reduce its overall carbon dioxide emissions. These steps would almost certainly include additional energy conservation and non-or low-carbon energy sources and the retirement of some of its existing coal-fired resources, such as McIntosh Unit 3.

Conclusion

Lakeland Electric and the Orlando Utilities Commission should retire the McIntosh Unit 3 coal-fired power plant, which they own jointly. The plant is expensive to operate and is not reliable. The two utilities could reasonably replace the power generated by C.D. McIntosh Unit 3 with power generated by natural gas, in the short term, and by investments in solar energy and energy efficiency in both the short and long term.

About the Authors

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