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IEEFA Technical Comments on the Orlando Utilities Commission's Draft 2020 Electric Integrated Resource Plan Report

Introduction

The Orlando Utilities Commission (OUC) has released a draft Electric Integrated Resource Plan (EIRP) to develop a pathway for transitioning to a more sustainable energy future. OUC is to be commended for preparing this draft EIRP, but it has set an unjustifiably short period for its customers to review that draft. Moreover, OUC so far has been unwilling to require its consultant, Siemens PTI, to provide the workpapers and data underlying the analyses in the EIRP. Thus, it is simply impossible to provide complete comments at this time. Moreover, it appears OUC is committed to maintaining its dependence on fossil fuels, a strategy that will make it difficult to achieve the needed transition to no-carbon fuels.

Comment No. 1: OUC's customers have not been allowed a reasonable and fair opportunity to review the draft EIRP.

1. The EIRP, which includes more than 120 pages of discussion of nine different resource plans, 70 exhibits (tables and charts) presenting the results of Siemens' analyses, and hundreds of numbers, was released to the public on Tuesday, Nov. 10, only one week before the scheduled public hearing and five weeks before the OUC board's expected vote.

2. The EIRP itself is a black box, lacking the information that anyone would need to verify its key results and conclusions. For example, the draft does not include any of the following critical information:

    a) An explanation for why OUC must decide now that it will undertake the conversion of Stanton Units 1 and 2, conversions that will not be completed until 2025 and 2027 under the EIRP's Optimized Portfolio.

    b) Information on the projected post-conversion operating performance (that is, heat rate; annual generation in megawatt-hours (MWh)) of Stanton Units 1 and 2; annual operating and maintenance costs and expected capital expenditures; and annual carbon dioxide (CO_2) emissions.

    c) There is no discussion in the draft of the expected impacts (positive or negative) of the conversion of the two coal-fired Stanton units on the communities surrounding the plant site.

3. The EIRP provides no information on the projected annual generation by any of OUC's fossil-fired units for any years and energy secured pursuant to a power purchase agreement. This information is vital because CO_2 emissions from fossil-fired units are essentially proportional to their generation. Without this annual generation data, it is impossible to assess whether OUC can be expected to achieve the interim CO_2 reduction goals set out in the EIRP—50% by 2030 and 75% by 2040.

   Instead, the EIRP presents a single chart (Exhibit 59) showing declining CO_2 emissions under just the Optimized Portfolio, without any of the workpapers or underlying calculations for this chart or the assumptions about annual generation underlying the claimed downward trajectory in CO_2 emissions. Consequently, there is not adequate evidence to prove that the Optimized Portfolio can achieve the identified emission reduction goals.

4. The EIRP provides no information on the projected annual generation by OUC's nuclear capacity and projected solar capacity. Although the EIRP discusses how cloudy conditions in Florida might disadvantage the economics of solar resources, it provides no information on the recent capacity factors of solar facilities in the state or on the projected solar capacity factors Siemens used in its analyses.

5. No workpapers or tables were provided showing the projected annual generation or CO_2 emissions from each of OUC's fossil-fired units between 2020 and 2050.

6. A utility's fuel mix (the percentage of OUC's total energy generation (in MWh) by technology) is a critical determinant of its CO_2 emissions. Unfortunately, the draft EIRP provides only a single chart showing fuel mix; that one chart (Figure 60) is only for the Optimized Portfolio and only for the year 2050. No similar fuel mix information is provided for the Optimized Portfolio for any other years between 2020 and 2049, or for any other of the resource portfolios presented in the EIRP for any years. This information would give insights into how quickly OUC's fuel mix is evolving over time under each portfolio, which in turn would indicate whether and how quickly it is meeting its emission reduction goals.

   Instead, the EIRP provides far less useful pie charts for each portfolio showing only the installed capacity (in megawatts) for each technology in the years 2030, 2040 and 2050. This information is far less useful because it does not reflect how much power is generated by each technology, which, as noted above, is a key determinant of the portfolio's annual CO_2 emissions.

   The failure to present the annual fuel mix data in the EIRP is surprising given that OUC's annual Ten-Year Site Plan filings with the Florida Public Service Commission contain actual and projected fuel mix information (the percentage of generation by fuel source).[1] Providing the annual plant-specific and system-wide generation and fuel mix data for each of the resource portfolios in the EIRP

[1] For example, see OUC's 2020 Ten-Year Site Plan, Schedule 6.2, at page 12-12.

would be simple, and it would not disclose any privileged information regarding Siemens' analysis.

7. Affordability is one of the four attributes used by the EIRP to evaluate potential resource portfolios. However, the EIRP does not present any detail on the economic analyses that were conducted for each portfolio. Instead, only a single table (Exhibit 49) is presented that summarizes the present value of the costs of eight portfolios over the 2020-2030 and 2020-2050 periods. There are no workpapers or underlying calculations for any of the cost figures in this table, and no information was provided on the expected annual costs for each of the resource portfolios considered in the draft. Therefore, it is impossible to verify the accuracy and validity of the EIRP's affordability claims.

8. The failure to provide this critical information, on top of the very short amount of time that the ratepaying public has been given to review the EIRP before the OUC board vote, makes it impossible to comment fully on the EIRP and on the reasonableness of the proposed resource plan developed by Siemens for OUC.

Comment No. 2: OUC could remain heavily dependent on fossil-fired generation for another two decades if Stanton Units 1 and 2 are converted to burn natural gas in 2025 and 2027 as proposed in the EIRP's Optimal Portfolio.

OUC has historically been almost exclusively dependent on generation from coal- and natural gas-fired generators. For example, in 2018 and 2019, OUC obtained approximately 92% of its electricity from coal- and natural gas-fired resources.[2]

With the proposed retirement of McIntosh Unit 3 in 2024, and the conversion of Stanton Units 1 and 2 to burn gas in 2025 and 2027, OUC would become even more heavily dependent on natural gas for a significant portion of the period 2025-2040, with only a secondary reliance on solar and storage and nuclear resources. However, it is impossible to determine the extent of OUC's reliance on natural gas during this period because, as noted above, the EIRP does not include any substantive generation or fuel mix data.

The EIRP hides how heavily dependent OUC would continue to be on fossil-generation under the Optimized Portfolio by presenting several pie charts on page 9-2, which show only what OUC's projected installed capacity in 2030, 2040 and 2050. This understates how heavily dependent on natural gas OUC could remain because it doesn't present what portion(s) of OUC's energy generation each technology would provide, and it also doesn't show the information year to year. OUC has been unwilling to provide the workpapers for the EIRP, making an independent verification of this information impossible.

At the same time that OUC can be expected to be very dependent on just a single fuel, the entire state of Florida also will be extremely heavily dependent on natural

[2] *Ibid.*

gas for electricity generation. For example, natural gas provided 67.8% of Florida's generation in 2019 and is still expected to provide 61.8% of its electricity in 2029, despite a projected doubling in generation from the state's renewable resources (from 21% of Florida's fuel mix in 2019 to 21.7% in 2029), driven by a quadrupling in the state's installed renewable resources.

The optimized portfolio in the draft EIRP would make OUC extremely dependent on natural gas, exposing OUC ratepayers to a number of serious risks. First, there is the risk of higher rates caused by spikes in the price of natural gas. Second, there is a reliability risk if the gas supply is widely disrupted by a natural disaster such as a hurricane. Finally, there is an additional reliability risk that thermal resources will operate less effectively during extreme temperature conditions, a problem that can be expected to become more frequent because of changing climate conditions.

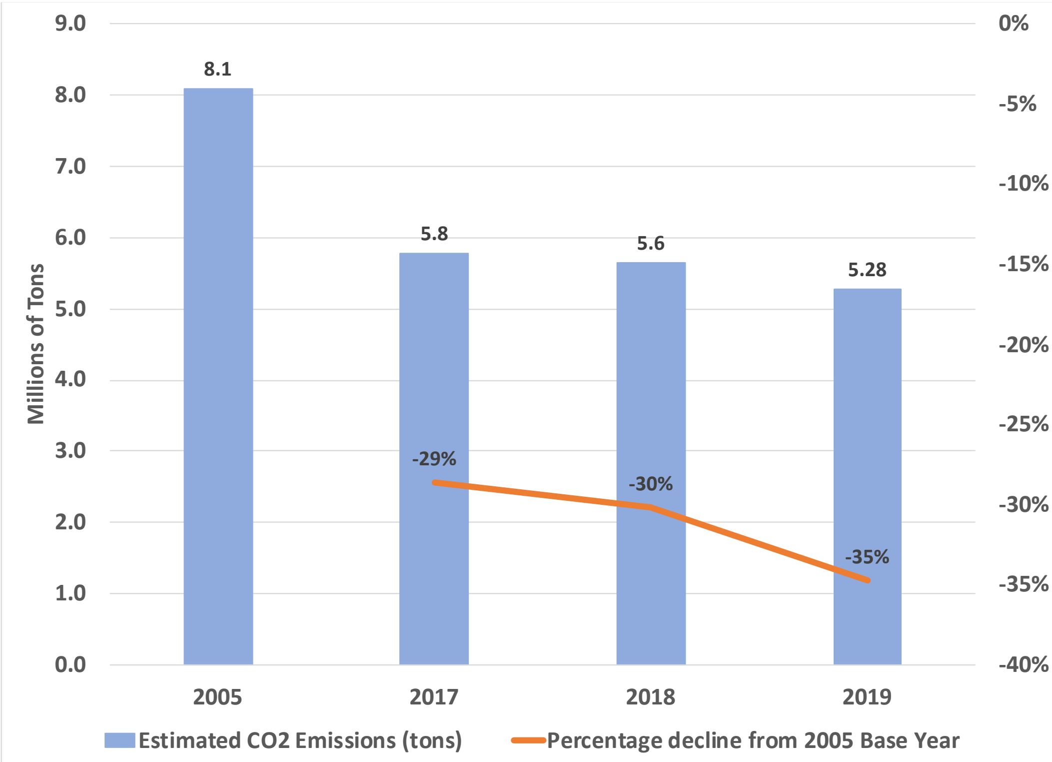
Comment No. 3: OUC should re-evaluate whether its CO_2 reduction goals are aggressive enough.

OUC's main CO_2 reduction goal is to achieve 100% net zero CO_2 emissions by 2050, with interim goals of >50% by 2030 and >75% by 2040. Although these goals might seem aggressive, that view changes when several factors are considered.

First, climate change is real and it is already having a major global impact as shown by the massive wildfires that scorched the U.S. West and Australia this year; melting glaciers and polar ice; droughts; and the increased number and power of hurricanes.

Second, OUC's proposed CO_2 reduction goals are based on percentage declines from a 2005 base year that unfortunately is the standard for the industry. As shown in Figure 1 below, OUC's CO_2 emissions declined by about 36% between 2005 and 2019. Therefore, OUC would need to reduce its CO_2 by only another 14 to 15% from 2019 to 2030 to achieve its 2030 interim goal, and by another 39% to achieve its 2040 interim goal—not exactly an aggressive goal.

Figure 1: The Decline in OUC Annual CO_2 Emissions From 2005 Base Year To the Years 2017-2019[3]



Third, the EIRP focuses exclusively on the CO_2 emissions from the combustion of fossil fuels. However, methane, the primary component of natural gas, is a potent greenhouse gas when leaked from the gas supply chain.[4] In fact, it has been calculated that when averaged over a 100-year timeline (the comparison most frequently used), methane is approximately 25 times more powerful in trapping heat as a greenhouse gas than CO_2. When averaged over a 20-year period, however, it is 86 times stronger.[5]

There is uncertainty about how much methane is leaking into the atmosphere from the gas supply chain. The U.S. Environmental Protection Agency estimates that the

[3] This Figure reflects OUC's actual shares of the CO_2 emissions reported for Stanton Energy Center, McIntosh Unit 3, Stanton A, Stanton B and the Indian River CTs as part of the U.S. EPA's Continuous Emission Monitoring System (CEMS) program plus the CO_2 emissions associated with OUC's power purchases.

[4] For example, see: Environmental Research Letters. Timelines for mitigating the methane impacts of using natural gas for carbon dioxide abatement. 2019. Also: National Geographic. Natural gas is a much 'dirtier' energy source than we thought. February 19, 2020.

[5] Environmental Research Letters. Timelines for mitigating the methane impacts of using natural gas for carbon dioxide abatement. 2019.

methane leak rate is 1.3 to1.4%,[6] while a series of recent scientific studies suggest that the leakage rate might be more than 2%.[7]

No matter how much methane is leaking into the atmosphere, there appear to be two main options for dealing with the problem. Either the massive number of methane leakage points needs to be addressed, or utilities like OUC need to reduce their reliance on natural gas as rapidly as possible. The EIRP's Optimized Portfolio does not do this. Instead, it proposes to continue to rely heavily on gas-fired generators for another two decades.

Comment No. 4: There is no reason to expect that converting Stanton Units 1 and 2 to burn gas will significantly reduce OUC's CO_2-equivalent emissions.

There are two reasons why it is overly optimistic to expect that converting Stanton Units 1 and 2 to burn gas instead of coal will result in significantly lower CO_2-equivalent emissions. First, as discussed in the previous comment, fugitive emissions of methane from the supply chain that will supply Stanton Units 1 and 2 will lead to substantial amounts of CO_2-equivalent being leaked into the atmosphere.

Second, when a coal-fired generator is converted to gas, it can be expected to burn the gas at about the same efficiency (that is, heat rate) as it did when burning coal. Thus, coal plants like Stanton Units 1 and 2 that have been burning fuel at a heat rate of about 10,500 British thermal units (BTUs) per net kilowatt-hour (kWh) of output should be expected to continue to burn fuel at about the same heat rate after being converted to gas unless (a) the plant is rebuilt as an efficient new combined cycle unit or (b) the plant's generation declines significantly, in which case its heat rate can be expected to increase, perhaps substantially. The latter is more likely to happen as the converted Stanton Units 1 and 2 compete with increasing solar generation and much more efficient Stanton A and Stanton B combined cycle gas units. A higher heat rate (and lower efficiency at burning fuel) will mean that Stanton Units 1 and 2 will need to burn more gas and consequently will emit more CO_2 per MWh of output.

Comment No. 5: OUC should issue an RFP before deciding whether to convert Stanton Units 1 and 2 to burn natural Gas.

Utilities around the nation have issued all-source requests for proposals (RFP) in recent years that seek electric generation (including renewable facilities) and energy storage resources to meet projected needs or to replace existing fossil-fired

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[6] EPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016. 2018.

[7] For example, see: IEEFA. Is the Gas Industry Facing Its Volkswagen Moment? March 2020. Also: PBS Newshour. The U.S. natural gas industry is leaking way more methane than previously thought. July 4, 2018. Also: Environmental Defense Fund. Major studies reveal 60% more methane emissions. June 21, 2018.

generators.[8] OUC should issue such an RFP for resources to replace Stanton Units 1 and 2 and evaluate the responding bids before it decides if converting those units to natural gas is a prudent option for reducing CO_2 emissions.

Before deciding whether to convert Stanton Units 1 and 2 to burn gas, OUC also should evaluate whether (1) increasing spending to achieve the goal of achieving 1% annual energy efficiency savings and (2) adopting programs and policies to increase the amounts of distributed solar (rooftop) resources should be included as cost-effective parts of their resource plan.

Finally, converting coal-fired generators to burn natural gas can take several years, or less, to complete. Before committing to converting Stanton Units 1 and 2 to gas, OUC should require Siemens PTI to demonstrate why a decision to proceed with such a conversion must be made now, four years before the EIRP assumes that the units will stop burning coal.

Comment No. 6: OUC would be taking on significant new risks by committing to natural gas through 2040.

Research conducted by IEEFA and the Applied Economics Clinic on proposed gas generation projects in the PJM market area show that these plants face a series of risks that are likely to undercut their long-term economic viability.[9] Many of the same risks are present in the OUC case. Among the most pressing are:

1. The continued cost declines in emissions-free solar, battery storage and demand response alternatives. Already competitive with fossil generation, these alternatives are likely to be significantly cheaper by 2027 when the second Stanton conversion is scheduled for completion.

2. Uncertainty surrounding the future direction of gas prices, particularly given the sharp recent rise in U.S. liquefied natural gas exports. Any increase in domestic prices will make gas generation even less competitive with solar and other clean alternatives.

3. Rising concern about the impact of climate change, particularly regarding sea level rise and the increasing frequency and power of hurricanes. These issues pose significant risks for Florida and are likely to increase opposition to continued use of fossil fuel generation resources—especially when cheaper and cleaner alternatives are available.

None of these risks appear to have been factored into the draft EIRP. This is an oversight that could prove costly to OUC and its customers.

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[8] A few examples of utilities that have issued such all-source RFPs just since early 2017 include Public Service Company of Colorado, PacifiCorp, Northern Indiana Public Service Company (NIPSCO) and Puget Sound Energy.

[9] IEEFA. Risks Outweigh Rewards for Investors Considering PJM Natural Gas Projects. October 2020.

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About the Author

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David Schlissel, Director of Resource Planning Analysis for IEEFA, has been a regulatory attorney and consultant on electric utility rate and resource planning issues since 1974. He has testified as an expert witness before regulatory commissions in more than 35 states and before the U.S. Federal Energy Regulatory Commission and Nuclear Regulatory Commission. He also has testified in state and federal court proceedings concerning electric utilities. His clients have included regulatory commissions in Arkansas, Kansas, Arizona, New Mexico and California. He has also consulted for publicly owned utilities, state governments and attorneys general, state consumer advocates, city governments, and national and local environmental organizations. Schlissel has undergraduate and graduate engineering degrees from the Massachusetts Institute of Technology and Stanford University. He has a Juris Doctor degree from Stanford University School of Law.