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Sent: Tuesday, December 4, 2018 7:14 PM
To: Susie Wiles; Michael Munz
Subject: Fwd: JEA Final Report 11.30.18

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Begin forwarded message:

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> **Date:** December 4, 2018 at 2:25:20 PM EST
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> **Subject: JEA Final Report 11.30.18**
>
> [External Email - Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email.]
>
> Good Afternoon,
>
> Thank you for joining us today at the Jessie Ball duPont Center. Please see attached copy of the JEA Final Report.
>
> Thank you,
>
> **Ann-Marie Braddock**
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EXHIBIT 7

2018

Valuing Municipal Utilities –

The Case of the Potential Sale of JEA in Jacksonville

Public Utility Research Center

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List of Acronyms

CAPEX	Capital Expenditure
CIAC	Contributions in Aid of Construction
COJ	City of Jacksonville
COVB	City of Vero Beach
CUP	Consumptive Use Permit
CWIP	Construction Work in Progress
DEP	Department of Environmental Protection
DES	District Energy System
FEMA	Federal Energy Management Agency
FERC	Federal Energy Regulatory Commission
FIPUG	Florida Industrial Power User's Group
FMPA	Florida Municipal Power Agency
FPL	Florida Power and Light
FPSC	Florida Public Service Commission
FY17	Fiscal Year 2017
GRU	Gainesville Regional Utilities
IEEE	Institute of Electrical and Electronics Engineers
LOI	Letter of Intent
MEAG	Municipal Electric Authority of Georgia
NARUC	National Association of Regulatory Utility Commissioners
NPV	Net Present Value
O&M	Operations and Maintenance
OPEX	Operating Expenditure
OUC	Orlando Utilities Commission
PPA	Power Purchase Agreement
PURC	Public Utility Research Center
PwC	PricewaterhouseCoopers
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SSO	Sanitary Sewer Overflow
TEA	The Energy Authority
W&S	Water and Sewer
W&W	Water and Wastewater

Project Team

Dr. Ted Kury served as the Project Team lead. He is Public Utility Research Center (PURC) director of energy studies. He is responsible for promoting research and outreach activities in energy regulation and policy. He develops research strategies that inform the academic community and practitioners on emerging issues and best practices and serves as an expert resource for regulatory professionals, policymakers, and service providers in Florida and around the world.

Previously, Dr. Kury was a senior structuring and pricing analyst at The Energy Authority in Jacksonville, Florida where he developed proprietary models relating to the management of system-wide cash flows at risk, including the quantification of portfolio risk related to both physical utility and financial assets. He also built custom software packages to quantify cross commodity risk, valuation, and optimization of natural gas storage with dynamic programming. He was also a senior economist at SVBK Consulting Group in Orlando, Florida. Some of his duties there included participating in legal proceedings relating to the deregulation of electric markets and helping municipal electric, natural gas, and water/wastewater utilities develop retail rates. He has delivered numerous presentations at research conferences and has served as an expert witness before the Federal Energy Regulatory Commission and the Florida Public Service Commission.

David Richardson served as the Project Team's expert on water and sewer, and as the municipal operations expert. Mr. Richardson is currently serving as Senior Fellow for PURC. Formerly he was the Interim Chief Financial Officer for Gainesville Regional Utilities (GRU), where he was responsible for the overall financial management and internal control structure. He worked for GRU from 1986 through 2016 in various positions, including Senior Engineer (1986 – 2001), System Planning Director (2002 – 2004), Assistant General Manager (2005 – 2013) and Interim Chief Financial Officer (2013-2015). Mr. Richardson holds a Bachelor of Science degree in Environmental Engineering from the University of Florida and a Master of Science degree in Engineering Administration from the University of Central Florida.

Cindy Miller served as a regulatory and legal expert for the Project Team. Ms. Miller is a private consultant specializing in energy, telecommunications, and Florida administrative law. In 2017, she was elected to serve as Vice President of the Southern Chapter (covering 13 states) of the Energy Bar Association. She continues also as co-chair of the Florida Bar Public Utilities Law Committee. She served as a Senior Attorney (intergovernmental counsel) at the Florida Public Service Commission for more than 20 years. She was responsible for monitoring legislation, Federal energy and telecommunications actions and preparing comments and Court documents for the Commission's consideration. In the energy arena, these included comments to the Federal Energy Regulatory Commission (FERC) on reliability and public policy matters related to energy delivery and state jurisdiction. She made presentations at more than 200 Internal Affairs meetings. She was the lead attorney on dozens of complex rulemakings and worked on public records/ethics issues. Prior to working at the Florida Commission, she was Inspector General at the Florida Department of Management Services. She also worked at the Greenberg Traurig law firm (previously Roberts, Baggett, LaFace and Richard) in legislative activities. She previously lived in Washington, D.C., and worked as a Presidential Management Intern and management analyst at the U.S. Office of Management and Budget. She has been admitted to practice in the Florida Supreme Court, the D.C. Circuit Court of Appeals, and the Fifth Circuit Court of Appeals. Ms. Miller received her J.D. from the University of Florida and a MPA from Florida State University.

Dr. Mark Jamison served as a senior advisor for the Project Team. Dr. Jamison is the director and Gunter Professor of PURC. He provides international training and research on business and government policy, focusing primarily on utilities and network industries. He directs the PURC/World Bank International Training Program on Utility Regulation and Strategy. Dr. Jamison's current research topics include leadership and institutional development in regulation, competition in telecommunications, and regulation for next generation networks. He has conducted education programs in numerous countries in Asia, Africa, Europe, the Caribbean, and North, South, and Central America. Dr. Jamison is also a research associate with the University's Center for Public Policy Research. He blogs for the American Enterprise Institute and for The World Bank. Dr. Jamison served on the US Presidential Transition Team in 2016-2017, focusing on the Federal Communications Commission. He is the former associate director of Business and Economic Studies for the University's Center for International Business Education and Research and has served as special academic advisor to the chair of the Florida Governor's Internet task force and as president of the Transportation and Public Utilities Group. Previously, Dr. Jamison was manager of regulatory policy at Sprint, head of research for the Iowa Utilities Board, and communications economist for the Kansas Corporation Commission. He has served as chairperson of the National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Communications, chairperson of the State Staff for the Federal/State Joint Conference on Open Network Architecture, and member of the State Staff for the Federal/State Joint Board on Separations. Dr. Jamison was also on the faculty of the NARUC Annual Regulatory Studies Program and other education programs. Dr. Jamison received his Ph.D. in economics from the University of Florida.

Acknowledgements

A project of this scope and scale requires the concerted efforts of folks that range far beyond the Project Team. While it impossible to adequately thank them all, we will do our best.

We wish to thank Katie Ensign, Mary Kress Littlepage, Sherry Magill, and everyone at the Jessie Ball duPont Fund for their support of this project that goes above and beyond the financial. This would not exist if you didn't have the strength to ask the difficult questions. Billions of people around the world are served by municipal utilities (or state-owned enterprises, as they're known outside of the United States), and the principles in this study affect every one of them.

We wish to thank Juli Crawford, Melissa Dykes, Ryan Wannemacher, Aaron Zahn and everyone at JEA for their valuable efforts in assisting us with data gathering and offering us their insight into the challenges and opportunities of serving the City of Jacksonville and the surrounding areas.

We wish to thank legal researcher extraordinaire Michael Rosselli, a 3rd year law student at the University of Florida College of Law, for all of his research assistance.

Finally, we wish to thank PURC's office manager Samantha Heflin for all of her valuable administrative support.

Cover photo credit to Visit Jacksonville, accessed October 24, 2018,
https://www.visitjacksonville.com/blog/taking-on-downtown-with-kids/

Purpose

The Jessie Ball duPont Fund asked PURC to provide an academic-quality analysis of the value of JEA, Jacksonville's municipally-owned public utility, in light of local discussions that focused on a potential sale of the utility. The purpose of the analysis is to provide, to the extent possible, objective information for decision-makers regarding JEA. This project is not intended to provide recommendations for future decisions or to pass judgment on past decisions.

JEA serves approximately 459,000 electric customers, 341,000 water customers and 264,000 sewer customers. In the course of this analysis, PURC looked at a number of issues related to the possible sale of JEA, such as:

- The financial impacts on the city and on the JEA customers;
- Other potential impacts on the city and JEA customers;
- The implications of a sale of just the electric portion versus selling all three areas of JEA operation;
- The implications of a bundled sale of all three areas of JEA to a single buyer versus unbundling, or selling different areas of JEA operations to separate buyers;
- The risks that JEA faces and how these affect the future of the utility;
- What happens with the proceeds if JEA is sold; and
- What city leaders should know to best prepare themselves to address these and other issues.

PURC assembled a team of utility and regulatory experts with extensive experience in academic research, the economics and governance of municipal utilities, and the regulation of private utilities. Because the research is an academic project and not a consulting project, the PURC team (hereafter, Project Team) has complete discretion over the content of the research report.

This report represents the final version of the report and encompasses the entire scope of the analysis.

Executive Summary

There are numerous considerations when evaluating a possible transaction, such as a sale of JEA. Value – the price a willing buyer would pay should the City be willing to sell – is but one consideration. In addition, there is the historical relationship between the City of Jacksonville, the municipal utility and the utility's customers. There are the multiple ways in which the utility impacts the City's welfare. There are the advantages (and disadvantages) that accrue to the City as owner of a municipal utility, vs. the advantages (and disadvantages) of being served by an investor-owned utility. These, along with numerous other details, are factors to be evaluated when considering the possible sale of the JEA.

The City of Jacksonville (COJ) entered the utility business in 1880, when it began operating a water and sewer system. Then, in 1895, it added the electric system, which remained a department of city government until the independent Jacksonville Electric Authority was created in 1968. Article 21 of the Jacksonville City Charter gave JEA the authorization to own, manage and operate a utilities system. In 1997, Jacksonville's water and sewer operations merged into JEA.

Today, JEA is the largest municipal electric utility in Florida and the 4th largest utility in the state, serving approximately 459,000 electric customers, 341,000 water customers and 264,000 sewer customers over its 900 square mile service territory.[1]

All utilities in Florida are charged with providing safe, reliable service at just and reasonable rates. However, there are different approaches to fulfilling that responsibility. One of the most significant differences is in their ownership structure, or the basic question of who owns the utilities assets.

There are three basic ownership models in Florida. One model, investor-owned utilities, requires the existence of private investors that voluntarily finance the utility's infrastructure. The second model, the municipal utility, is wholly owned by an individual city, sometimes as a department of the city, other times as a separate corporate entity. The third model, the cooperative, is wholly owned by all of the customers it serves. The ownership model is a critical factor in determining how a utility will provide service, as it determines the roles and responsibilities for utility finance, operations, and regulation, and how the benefits and risks accrue to utility stakeholders.

Regardless of the ownership model, however, the costs of providing service, with only a few exceptions, are covered by the customer.

Utility Value

The value of a utility to its owners or to potential owners can be viewed in two ways: The financial commitments and assets of the current owners to provide utility services, and the value of the services provided by the utility as a going concern. The former approach treats the utility's resources as severable from the business itself, such as might be the case if the owners sold the assets, but retained the business. This might be like a hotel selling its building and property to a third party, and then leasing them back to continue operating the hotel business. The latter approach, going concern, is more holistic in that it treats the utility as both a holder of financial resources and a generator of valuable services. We examine both approaches.

[1] JEA 2017 Annual Report.

Regarding the first approach, the utility's accounting records show the owners' financial commitments. A significant component of this value are the dollars invested in the utility's long-term physical assets, namely the machinery that generates and delivers electricity, processes and delivers water and treats wastewater.

The value of a utility can be seen as the value of its assets as well as the ability of those assets to produce value to its customers

Electric Utility Value

According to JEA's 2017 Annual Report, the net book value[2] of the assets to provide electricity service was $3.055 billion. There are other assets as well, including construction, fuel and materials stocks, and accounts receivable. When these other factors are included, the value of the assets necessary to provide service is approximately $3.495 billion.

This does not mean that JEA's electricity assets could be sold for $3.495 billion. Prices received for asset sales would likely reflect considerations such as inflation – since the book values are historical rather than inflated -- and costs of putting the assets to other uses, since only the assets, and not the business, would be sold in the first approach. As a result the prices received might be higher or lower than those reflected in the $3.495 billion.

The going concern value of the utility is the ability of that asset base to produce goods and services, and ultimately, value for its owner. Each year JEA transfers a portion of its revenue to the COJ. This amount has remained relatively stable in recent years, averaging approximately $93.5 million. Considering that investor-owned utilities in the US are allowed a 9.68% rate of profit,[3] the present value of this return that the COJ receives is approximately $964 million. This makes the value of JEA's electricity business approximately $4.5 billion, which is the sum of the assets value and the present value of future net revenues.

Water Utility Value

Because the utility regulator in Florida – the Florida Public Service Commission or FPSC – values assets of water and wastewater service providers differently than it does assets of electric utilities, we calculate two different values for JEA's water and wastewater assets: the net capital assets reflected in JEA's fiscal year 2017 financials, and the net book regulatory accounting value, which is the approximate value that the FPSC would use if it were regulating JEA's water and wastewater services.[4] Using these two methods, the value of JEA's water and sewer assets ranges from $1.448 billion to $2.616 billion and the money from an asset sale could range from $0.3 billion to $1.5 billion.

[2] Net book value is the original cost of the assets, less any allowances for depreciation.

[3] More specifically, this is the average allowed return on equity for electric utilities, according to the 2017 Rate Case Survey published by Public Utilities Fortnightly. Return on equity is the amount of profit that the utility is allowed divided by the utility shareholders' equity.

[4] As we explain in the body of the report, we had to make numerous assumptions to arrive at a net book regulatory account value.

JEA Water and Sewer business transferred approximately $23.5 million to the COJ in FY17. Historically, from 2011 to 2017, the transfer has grown about 3% per year. Assuming that future transfers grow at that rate in nominal terms, and discounting future transfers at a 5% discount rate to allow for inflation and the time value of money, the net present value (NPV) of the Water and Sewer transfers to the COJ is approximately $400 million.

The COJ would no longer receive annual transfers from the JEA Water and Sewer business, but would receive property taxes if assets were sold to a taxable entity. Considering the loss of transfer and the gain of property taxes, the net financial gain to the city would have a net present value of $0.2 to $1.4 billion.[5]

Total Value

Incorporating the asset value and going concern value for the electric utility, the two different asset valuation methods for JEA's water utility assets combined with the going concern value of the water utility and the asset value of the district energy utility gives a value of $6.3 billion to $7.5 billion for JEA's consolidated operations.

Value to Community

Changing the ownership of any business unit of JEA would change how business and policy objectives are met. Currently JEA's Board holds JEA responsible for pursuing multiple objectives, including providing quality services, maintaining financial health, and meeting community objectives for economic growth and environmental protection. If the businesses were privately held, the owner would likely focus on shareholder return, subject to the regulations of the FPSC regarding service quality and other obligations, and subject to state and federal environmental regulators. In many instances private owners see economic and community development as being consistent with their desire for profitability, but that isn't always the case. Also in some instances the FPSC allows utilities to reflect community economic development goals in the prices the utilities charge customers.[6]

Value to Customers - Quality of Service and Benchmarking

In addition to being valuable to owners, utilities are valuable to their customers. This value is determined in part by the quality of service that a utility provides. But since increasing quality of service often comes with increased costs -- which are generally ultimately born by customers -- utilities, regulators, and policy makers should be vigilant to ensure that the costs customers are asked to cover are worth the value they create. Therefore, it is useful to assess utility performance in terms of quality and costs.

Benchmarking is a widely-used tool for assessing this performance. The findings of benchmarking studies are not definitive because of data limitations and because researchers have yet to find analytical techniques that perfectly address performance issues. Indeed there are several techniques and they may offer conflicting answers. So while benchmarking studies, such as provided in this report, may provide useful insights into utility performance, readers should be aware of their limitations and refrain from considering the results as determinative.[7]

[5] This should not be confused with a financial benefit from selling JEA's Water and Sewage business because other factors, such as the costs of making the transaction and the financial impacts on citizens of Jacksonville, would likely also be considerations.

[6] FPSC Rule 25-6.0426

[7] This report's benchmarking analysis utilizes a relatively new data set, the US Department of Energy's compilation of data on outage frequency and duration spanning electric utilities across the country. While this data has

This report's benchmarking studies the duration and frequency of utility outages in conjunction with two popular benchmarking techniques, one statistical and one numerical, to determine JEA's performance in this aspect of service quality.

Overall, the benchmarking results show that JEA's Electric business performs well in comparison to other electric utilities in Florida. JEA's large number of customers and lower customer density make controlling outages more challenging overall, but performance is still better than average utilities. However, the analysis also offers insight into strategies that JEA might be able to employ to further improve performance.

JEA's Water and Sewer business compares favorably to municipal water and wastewater utilities elsewhere in the US. JEA's business has consistently high credit ratings from multiple agencies, indicating strong financials. JEA's operating and maintenance expenses per 1,000 gallons processed are at or below the median for comparable municipal utilities.

Risk and Uncertainties

Plant Vogtle

JEA has decided to expand its capacity for generating electricity by contracting with a new nuclear plant in Georgia called Plant Vogtle. The value of JEA's obligation is significant, at $1.6 billion.[8]

JEA faces significant obligation and uncertainty as a consequence of the manner in which the Vogtle contract has changed over time.

JEA's contractual role in construction of new Plant Vogtle's nuclear units has been rife with uncertainty recently, as has the project itself. JEA entered into a Power Purchase Agreement (PPA) dated May 12, 2008, with the Municipal Electric Authority of Georgia (MEAG) as seller for the sale and purchase of approximately 41.175% (206 megawatts) of MEAG's share of the electric capacity and energy projected to be generated during the initial 20 years of the operation of Vogtle Units 3 and 4. This is referred to as Project J. This agreement relates to a nuclear power project undertaken by four power providers in Georgia: MEAG, the Georgia Power Company, Oglethorpe Power Corp., and the City of Dalton, Georgia. For a number of years, JEA has touted this as a way to add carbon-free, cleaner electricity.

Recently uncertainty has arisen in the project. It may have started when Westinghouse and WECTEC each filed bankruptcy on March 29, 2017. Those entities were to design, engineer, construct and test the Units 3 and 4. There had been significant cost overruns. However, the contract with the new contractor, Bechtel, shifted the responsibility of cost overruns to the project owners. COJ and JEA have sued MEAG in

historically been compiled by some individual states, a common dataset is a recent development. It is important to note that this data set measures three years of performance in two specific metrics. And while those metrics are seen as valuable to customers, they do not incorporate the entire spectrum of service quality, nor do they speak to the utility's performance in those metrics in the years before or the years ahead. However, this study leverages this dataset to offer insight into some of the factors that influence outages in electricity service and their duration, additional opportunities to influence service outages, and may even offer insight into the performance of utilities in these aspects of service.

[8] City of Jacksonville v. Municipal Electric Authority of Georgia (4th Judicial Circuit, Fla. 9/11/18) Paragraph 51

the Circuit Court in Duval County, Florida, on September 11, 2018, asking for declaratory relief because "JEA acted without authority and in violation of the constitution, laws, and public policy of the state of Florida in entering into the PPA." Also on September 11, MEAG sued JEA in the U.S. District Court for the Northern District of Georgia. MEAG seeks a declaratory judgment that the PPA is valid and enforceable against JEA. It wants the court to issue a specific performance order requiring JEA to cooperate with MEAG in carrying out the contract. JEA has also sought a ruling by the Federal Energy Regulatory Commission (FERC).

The uncertainties around this project, its potential costs, benefits and the accompanying litigation will have a significant impact the value of the JEA to both the City of Jacksonville and any potential JEA purchaser.

Regulatory Considerations

The value of a municipal utility is also affected by how it interacts with the political and legal landscape at the state and federal levels. Laws and rules at both levels may affect municipal utilities differently from investor-owned or cooperative utilities. A comprehensive understanding of these differences can highlight the manner in which a municipal utility's value is impacted.

In general, the FPSC[9] requirements are more numerous and rigorous for investor-owned utilities. Therefore it is likely that an entity acquiring JEA would factor Florida's statutes and the FPSC's rules and orders into its view of JEA's value, including regulatory assessment fees that investor-owned utilities pay, but that municipal utilities do not.

From a regulatory perspective, investor-owned electric utilities are subject to numerous more regulatory requirements than are municipal-owned utilities in Florida. The FPSC has relatively narrow jurisdiction over municipal utilities compared to its broader oversight of investor-owned utilities. Municipal electric utilities are generally subject to FPSC oversight on consumer protection, safety, reliability, rate structure (but not rates), and territorial agreements. The FPSC's jurisdiction over private water and wastewater companies focuses primarily on rates and service. There is an exemption in the statute for systems owned, operated, managed, or controlled by governmental authorities.

Case Studies in Utility Ownership Transitions

The sale of municipal utilities are not numerous in Florida. In the electric arena, there have been two high-profile sales to investor-owned utilities. The most recent involves the Florida Power & Light (FPL) acquisition of the Vero Beach electric utility in 2018. There was also a 1992 acquisition of Sebring Utilities Commission by Florida Power Corp.

Two recent FPSC orders address the issue of a private utility's acquisition of a municipal electric utility. On July 2, 2018, the FPSC issued an order addressing accounting aspects of the FPL acquisition of the Vero Beach electric utility. The transaction includes a positive acquisition adjustment. That order has been challenged but the FPSC reaffirmed their decision on November 27, 2018. In 1992, the FPSC approved certain transactions in Florida Power Corp.'s acquisition of Sebring Utilities Commission.

[9] The FPSC is to ensure that Florida's consumers receive essential services — electric, natural gas, telephone, water, and wastewater — in a safe, reasonable, and reliable manner by exercising its regulatory authority over rates, competitive market oversight, or monitoring of safety, reliability, and service. (Source: Florida Public Service Commission Mission Statement and Goals)

In each case, the FPSC emphasized that its decisions were determined on a case-by-case basis. Also, the FPSC stated that is does not have jurisdiction over the actual approval of the transfer. So, while the proceedings can provide valuable insight into the process of privatization in Florida, their financial or procedural impact on future proceedings is not known.

Other Considerations

Other factors that may cause uncertainty or risk include:

- Fundamental changes to the utility industry from disruptive technologies that may result in stranded costs if the economic value of JEA's current assets is impacted by these changes
- JEA, as a municipal utility, benefits from access to federal and state disaster recovery funds that may not be available to an investor-owned utility. Additionally, JEA employs certain stabilization strategies to reduce volatility – strategies that may not be available to investor-owned utilities.
- JEA's operations have multiple agreements and contracts with an array of government and private entities that have evolved as the utility has expanded service to meet the needs of a growing community. These agreements could bring enormous complexity to the task of selling one of more business units
- Fundamental change in rate determination
- The potential for community expectation that any buyer would retain and use local employees
- The potential for community concerns about combining JEA's administrative, general, operations and capital investments with any buyer's existing organizational structure since the combined organization may not be local
- Potential loss of opportunities to control utility investments
- Decreased influence of capital and operating expenditures to support economic development or other community goals
- Potential loss of synergies with the district energy or the water/wastewater system
- Potential for more narrow focus on regulatory compliance
- Utilization of any sale proceeds

I. Reconciliation of the Report to the Original Study Scope

The original scope of the study was a compilation of concerns advanced by the Jessie Ball duPont Fund and did not necessarily follow the sequence of logical steps necessary for a coherent analysis. As an aid to readers who may only be interested in certain topics contained in the original scope, below is a mapping of the scope to the analysis. The scope topics are in bold and the normal text maps the topics to the report.

Topic 1. An explanation of the value of JEA, including its financial and non-financial value, to the City of Jacksonville, to include a separate valuation of electric, water-sewer, and Internet services

Most of the information assessing the value of JEA is covered in Section IV of this report, but Sections VI and VII contain applicable information for municipal utilities in general that also applies to JEA.

Topic 2. The effectiveness of JEA's operations and management

This topic is covered in Section V of the report, focused primarily on benchmarking JEA against other utilities. Complete detail on the statistical analysis and benchmarking of all of the utilities in the sample is covered in the Technical Appendix.

Topic 3. The relative position of JEA in the utility industry, including its size, operational effectiveness, lines of business, fiscal health, customer service, and nature of ownership

This topic is addressed in Sections II and V of this report.

Topic 4. An understanding of the future of the utility industry, i.e., how utilities – publicly or privately owned – maintain stable revenue in an industry being "disrupted" by innovation in non-traditional sources of energy and energy-saving appliances, etc.

This topic is addressed in Section VI of this report.

Topics 5 and 6. The positive benefits of private ownership; of public ownership; and the negative aspects of private ownership; of public ownership

This topic is addressed in Section IV and VI of this report.

Topic 7. An analysis of market risk and how market risk may impact JEA

This topic is covered in Sections IV, VI, and VII.

Topic 8. An analysis of JEA's liabilities and an explanation of how these liabilities will affect any potential sale of JEA, including JEA's obligation to purchase nuclear power

This analysis is included in Topic 1, the valuation analysis.

Topic 9. An understanding of JEA's water-sewer business, particularly its liabilities

This analysis is included in Topic 1, the valuation analysis.

Topic 10. An understanding of JEA's responsibilities regarding water-sewer, should only the JEA's electric business be sold

The financial implications of this topic are addressed in Section II, while the legal implications are covered in Section VI.

Topic 11. An understanding of services JEA provides that might not be obvious to rate-payers, and what might happen to those services should JEA be sold

The financial implications of this topic are addressed in Section II, while the regulatory implications are covered in Section VI.

Topic 12. A listing of any such sales in the continental United States, and how long these sales typically take

This is covered in Section VII.

Topic 13. An understanding of how the proceeds were used following the sale of a municipally owned utility. For example, when a public hospital is sold to private owners, typically the proceeds are placed in a permanent endowment for meeting a public purpose.

This is covered in Section VII.

II. Overview of JEA

There are three basic utility ownership models in the United States. The first model, the investor-owned utility, requires the existence of investors who voluntarily finance the utility's assets. The second model, the municipal utility, is wholly owned by an individual city, sometimes as a department of the city, other times as a separate corporate entity. Municipal utilities are also called public power. The third model, the electric cooperative, is wholly owned by all of the customers it serves. The ownership model is a critical factor in determining how a utility will provide service as it determines roles, who has authority to make decisions, and who is held accountable for decisions and the nature of the accountability.

The ownership model is a critical factor in determining how a utility will provide service, defining roles and responsibilities for each aspect of utility service

The COJ has operated its water and sewer systems since 1880. It added the electric system in 1895 and that remained a department of city government until an independent authority was created in 1968. Article 21 of the Jacksonville City Charter gave JEA the authorization to own, manage, and operate a utilities system within and outside of Jacksonville. In 1997, Jacksonville's water and sewer operations merged into JEA. In 2004 JEA established a separate District Energy System to provide chilled water service in the densely developed portions of the urban area.

JEA has made several innovations. In the mid-1970s, it was one of the first electric utilities to establish a computerized distribution control center to make power transmission more efficient. In the 1980s, a joint venture between JEA and FPL initiated the St. Johns River Power Park, which JEA decommissioned in 2018. While JEA believed the facility had served customers well for 30 years, it decided it was more economical to close the coal-fired plant and explore lower carbon generation. JEA is currently incorporating 27 additional megawatts of utility-scale solar into its grid through Power Purchase Agreements (PPA).

Regarding other innovations, in the early 2000's JEA adopted online bill payment, network meter reading, and the use of chilled water for air conditioning in downtown buildings. JEA began to explore electric vehicles in the mid 2010's and announced Electric Vehicle rebates for certain qualifying vehicles in 2014.

JEA is the largest municipal electric utility in Florida and the 4th largest in the state, serving approximately 459,000 electric customers, 341,000 water and 264,000 sewer over its 900 square miles service territory.

As the largest municipal electric utility in Florida, JEA had nearly twice the megawatt hour (MWh) sales in 2016 as the next largest municipal, the most recent year for which comparable data is available. JEA is the 4th largest electric utility in Florida overall, as shown in Table 1.

Table 1. Florida Electric Utilities by 2016 MWh Sales

Utility Name	Ownership	MWh Sales (2016)
Florida Power & Light Co	Investor-Owned	109,449,144
Duke Energy Florida, LLC	Investor-Owned	38,773,961

Utility Name	Ownership	MWh Sales (2016)
Tampa Electric Co	Investor-Owned	19,234,525
JEA	Municipal	11,987,738
Gulf Power Co	Investor-Owned	11,081,505
Orlando Utilities Comm	Municipal	6,598,932
Withlacoochee River Elec Coop	Cooperative	3,914,371
Lee County Electric Coop, Inc	Cooperative	3,800,338
Clay Electric Cooperative, Inc	Cooperative	3,279,354
Sumter Electric Coop, Inc	Cooperative	3,238,522
City of Lakeland	Municipal	3,030,066
City of Tallahassee	Municipal	2,639,582
Gainesville Regional Utilities	Municipal	1,796,293
Kissimmee Utility Authority	Municipal	1,513,110
City of Ocala	Municipal	1,300,542
Reedy Creek Improvement Dist	Municipal	1,159,867
Talquin Electric Coop, Inc	Cooperative	953,400
Choctawhatche Elec Coop, Inc	Cooperative	835,460
City of Key West	Municipal	742,272
City of Vero Beach	Municipal	740,288
Beaches Energy Services	Municipal	724,872
Florida Keys El Coop Assn, Inc	Cooperative	709,568
Peace River Electric Coop, Inc	Cooperative	708,466
Florida Public Utilities Co	Investor-Owned	645,696
Fort Pierce Utilities Authority	Municipal	551,618
Suwannee Valley Elec Coop Inc	Cooperative	533,673
City of Homestead	Municipal	530,358
West Florida El Coop Assn, Inc	Cooperative	495,708
Central Florida Elec Coop, Inc	Cooperative	491,417
City of Leesburg	Municipal	473,329
City of Winter Park	Municipal	437,232
City of Lake Worth	Municipal	434,758
New Smyrna Beach City of	Municipal	414,345
Gulf Coast Electric Coop, Inc	Cooperative	341,231
Glades Electric Coop, Inc	Cooperative	315,891
Tri-County Electric Coop, Inc	Cooperative	310,192
City of Bartow	Municipal	276,202
Escambia River Elec Coop, Inc	Cooperative	174,820
City of Alachua	Municipal	130,423
City of Quincy	Municipal	120,177
City of Green Cove Springs	Municipal	106,946
City of Clewiston	Municipal	101,094
City of Starke	Municipal	68,766

Utility Name	Ownership	MWh Sales (2016)
Havana Power & Light Company	Municipal	23,440

JEA, like most municipal utilities in Florida, is a multi-product utility that offers a variety of services to its customers. It is, however, one of the few that offers district energy services. Table 2 shows the services provided by the municipal electric utilities in Florida, per the Florida Municipal Electric Association (FMEA).

While investor-owned utilities provide the majority of electric energy in Florida, water and wastewater services are most often provided by municipal utilities, like JEA, or by water and wastewater departments within municipalities, counties, or by special utility districts. Investor-owned water utilities serve about 5% of the Florida population connected to community water systems. Investor-owned wastewater utilities account for about 5% of the domestic wastewater facility capacity in Florida.

There are approximately 1,600 community water systems in Florida as of 2016. Table 3 shows the largest community water systems in Florida with service populations of 100,000 or more, sorted by population served. All table designations are determined by Florida Department of Environmental Protection (DEP). The largest potable water systems serve the largest population areas: southeast Florida, the Jacksonville area, the Tampa Bay area, and central Florida. All of the largest water systems shown in Table 3 are publicly owned.

Table 2. Utility Services Provided by Florida Municipal Electric Utilities

Municipal Utility	Electric	Water	Wastewater	Natural Gas	District Energy	Communications
Alachua	Yes	Yes	Yes	No	No	No
Bartow	Yes	Yes	Yes	No	No	No
Blountstown	Yes	Yes	Yes	Yes	No	No
Bushnell	Yes	Yes	Yes	No	No	No
Chattahoochee	Yes	Yes	Yes	Yes	No	No
Clewiston	Yes	Yes	Yes	No	No	No
Fort Meade	Yes	Yes	Yes	No	No	No
Fort Pierce	Yes	Yes	Yes	Yes	No	Yes
Gainesville	Yes	Yes	Yes	Yes	Yes	Yes
Green Cove Springs	Yes	Yes	Yes	No	No	No
Havana	Yes	Yes	Yes	Yes	No	No
Homestead	Yes	Yes	Yes	No	No	No
JEA	Yes	Yes	Yes	No	Yes	No
Jacksonville Beach	Yes	Yes	Yes	Yes	No	No
Keys Energy Services	Yes	No	No	No	No	No
Kissimmee	Yes	No	No	No	No	No
Lake Worth	Yes	Yes	Yes	No	No	No
Lakeland	Yes	Yes	Yes	No	No	No
Leesburg	Yes	Yes	Yes	No	No	No
Moore Haven	Yes	Yes	Yes	No	No	No
Mount Dora	Yes	Yes	Yes	No	No	No
New Smyrna Beach	Yes	Yes	Yes	No	No	No
Newberry	Yes	Yes	Yes	No	No	No
Ocala	Yes	Yes	Yes	No	No	Yes
Orlando (OUC)	Yes	Yes	No	No	Yes	No
Quincy	Yes	Yes	No	Yes	No	No

Municipal Utility	Electric	Water	Wastewater	Natural Gas	District Energy	Communications
Starke	Yes	Yes	Yes	Yes	No	No
Tallahassee	Yes	Yes	Yes	Yes	No	No
Vero Beach	Yes	Yes	Yes	No	No	No

Table 3. Largest Potable Water Systems in Florida by population served

County	Mailing Name	City	Owner Type	Pop Served
MIAMI-DADE	MDWASA - MAIN SYSTEM	MIAMI	MUNICIPALITY	2,300,000
DUVAL	JEA MAJOR GRID	JACKSONVILLE	MUNICIPALITY	703,938
HILLSBOROUGH	CITY OF TAMPA WATER DEPARTMENT	TAMPA	CITY	603,000
PALM BEACH	PALM BEACH COUNTY WATER UTILITIES	WEST PALM BEACH	COUNTY	529,876
MANATEE	MANATEE COUNTY UTILITIES DEPT	BRADENTON	MUNICIPALITY	447,382
ORANGE	ORLANDO UTILITIES COMMISSION (7 WPS)	ORLANDO	MUNICIPALITY	428,761
PINELLAS	PINELLAS COUNTY UTILITIES	CLEARWATER	COUNTY	426,877
HILLSBOROUGH	HCPUD/SOUTH-CENTRAL	LITHIA	COUNTY	335,297
PINELLAS	ST PETERSBURG CITY OF	ODESSA	MUNICIPALITY	300,075
ORANGE	OCUD/EASTERN WATER SYSTEM (1 WP)	ORLANDO	COUNTY	290,878
BREVARD	COCOA CITY OF	COCOA	MUNICIPALITY	285,352
ESCAMBIA	EMERALD COAST UTILITIES AUTHORITY	PENSACOLA	COUNTY	249,872
LEE	LEE COUNTY UTILITIES	FORT MYERS	COUNTY	236,944
MIAMI-DADE	HIALEAH CITY OF	HIALEAH	MUNICIPALITY	229,900
PASCO	PCUD-PASCO COUNTY REGIONAL PWS	NEW PORT RICHEY	COUNTY	214,409
LEON	TALLAHASSEE CITY OF	TALLAHASSEE	MUNICIPALITY	193,927
HILLSBOROUGH	HCPUD/NORTHWEST UTILITIES	TAMPA	COUNTY	188,715
BROWARD	FORT LAUDERDALE CITY OF	FT LAUDERDALE	CITY	182,145
ALACHUA	GRU - MURPHREE WTP	GAINESVILLE	MUNICIPALITY	181,468
POLK	LAKELAND CITY OF	LAKELAND	MUNICIPALITY	174,172
SARASOTA	SARASOTA CO SPECIAL UTIL DIST	SARASOTA	COUNTY	171,009
MIAMI-DADE	NORTH MIAMI BEACH	NORTH MIAMI BEACH	MUNICIPALITY	170,000
BREVARD	MELBOURNE CITY OF	MELBOURNE	MUNICIPALITY	162,434
BROWARD	PEMBROKE PINES CITY OF	PEMBROKE PINES	CITY	160,000
ST. LUCIE	PORT ST LUCIE UTILITIES	PORT ST LUCIE	CITY	157,943
ORANGE	OCUD/WESTERN REGIONAL WTR SYS (4 WPS)	ORLANDO	COUNTY	157,609
BROWARD	HOLLYWOOD CITY OF	HOLLYWOOD	CITY	142,705
ORANGE	RCID CENTRAL (4 WPS)	LAKE BUENA VISTA	AUTHORITY/COMMISSION/	136,500
COLLIER	COLLIER COUNTY REGIONAL WTP	NAPLES	CITY	134,780
LEE	CAPE CORAL CITY OF	CAPE CORAL	MUNICIPALITY	132,737
PALM BEACH	BOCA RATON WTP	BOCA RATON	MUNICIPALITY	130,001
CHARLOTTE	CHARLOTTE COUNTY UTILITIES	PORT CHARLOTTE	MUNICIPALITY	128,967
HERNANDO	HERNANDO CO UTL-WEST	BROOKSVILLE	COUNTY	128,820
BROWARD	MIRAMAR (EAST & WEST) PLANTS	MIRAMAR	CITY	128,729
BREVARD	PALM BAY CITY OF	PALM BAY	CITY	114,587
OSCEOLA	TOHO WATER AUTHORITY EASTERN	KISSIMMEE	AUTHORITY	110,102
PINELLAS	CLEARWATER WATER SYSTEM	CLEARWATER	MUNICIPALITY	110,000
CLAY	ORANGE PARK GRID	MIDDLEBURG	AUTHORITY	109,991
INDIAN RIVER	INDIAN RIVER COUNTY UTILITIES (2 WTPS)	VERO BEACH	COUNTY	109,286
OKALOOSA	OKALOOSA CO.WTR.& SWR.SYSTEM	FORT WALTON BEACH	COUNTY	103,688
PALM BEACH	BOYNTON BEACH PWS	BOYNTON BEACH	MUNICIPALITY	102,512
PALM BEACH	WEST PALM BEACH WTP	WEST PALM BEACH	MUNICIPALITY	102,000

There are approximately 1,750 domestic wastewater treatment facilities in Florida. Table 4 shows the largest domestic wastewater treatment facilities in Florida, all with a permitted capacity of 15 million gallons per day. The largest facilities serve population centers in southeast Florida, central Florida, the Tampa Bay area, and the Jacksonville area. The largest wastewater treatment facilities in Florida are publicly owned.

Table 4. Largest Domestic Wastewater Treatment Facilities in Florida

COUNTY	FACILITY NAME	CITY	OWNERSHIP	PERMITTED CAPACITY (MGD)	COMPANY NAME
MIAMI-DADE	MDWASA Central District WWTF	Miami	County	143	Miami-Dade County - Public Works Department
MIAMI-DADE	MDWASD North District WWTP	Miami	County	120	Miami-Dade County - Public Works Department
MIAMI-DADE	MDWASA South District WWTF	Miami	Municipal	112.5	Miami-Dade Water and Sewer Department
HILLSBOROUGH	Howard F Curren AWTP	Tampa	Municipal	96	City of Tampa - Department of Sanitary Sewers
BROWARD	Broward Co North Regional WWTP	Pompano Beach	County	95	Broward County Water and Wastewater Services
PALM BEACH	East Central Regional WWTP	West Palm Beach	Municipal	70	West Palm Beach, City Of
PINELLAS	St Petersburg Master Urban Reuse System	St Petersburg	County	67.854	City of St Petersburg Public Utilities Department
BROWARD	Fort Lauderdale - G T Lohmeyer WWTP	Fort Lauderdale	Municipal	55.7	City Fort Lauderdale
BROWARD	Hollywood Southern Regional WWTF	Hollywood	Municipal	55.5	City of Hollywood
BROWARD	Hollywood Southern Regional WWTF	Hollywood	Municipal	55.5	City of Hollywood
DUVAL	Buckman WWTF	Jacksonville	Authority	52.5	JEA
ORANGE	OCUD/South WRF	Orlando	County	43	Orange County Utilities
PINELLAS	Clearwater City of Master Reuse System	Clearwater	Municipal	40	City of Clearwater Public Utilities Dept.
PINELLAS	South Cross Bayou WRF	St Petersburg	County	33	Pinellas County Utilities
PALM BEACH	Palm Beach County Southern Regional WWTP	Boynton Beach	County	30	Palm Beach County Water Utilities Department
SEMINOLE	Orlando/Iron Bridge Regional WRF	Oviedo	Municipal	28	Orlando, City of
PASCO	Pasco County Master Reuse System	New Port Richey	County	26.75	Pasco Co Utilities
LEON	T P Smith Water Reclamation Facility	Tallahassee	Municipal	26.5	City of Tallahassee
ORANGE	Orlando - Conserv II WRF	Orlando	Municipal	25	Orlando, City of
COLLIER	Collier County North County WRF	Naples	County	24.1	Collier County Water Sewer District
PALM BEACH	South Central Regional WWTP	Delray Beach	District	24	South Central Regional WW Treatment & Disposal
ESCAMBIA	ECUA - Central Water Reclamation Facility	Cantonment	County	22.5	Emerald Coast Utilities Authority
BROWARD	Sunrise No 3 WWTP (Sawgrass)	Fort Lauderdale	Municipal	20	City of Sunrise
ORANGE	Reedy Creek Improvement District	Lake Buena Vista	Private	20	Reedy Creek Improvement Dist
PINELLAS	St Petersburg Northwest WRF	St Petersburg	Municipal	20	City of St Petersburg
PINELLAS	St. Petersburg, City of - Southwest WRF	St Petersburg	Municipal	20	City of St. Petersburg
BROWARD	Plantation Regional WWTP	Plantation	Municipal	18.9	City of Plantation
PALM BEACH	Boca Raton, City of - WWTP	Boca Raton	Municipal	17.5	City of Boca Raton
COLLIER	Collier County South County WRF	Naples	County	16	Collier County Water Sewer District
PINELLAS	St Petersburg Northeast WRF	St Petersburg	Municipal	16	City of St. Petersburg
LEE	Everest Parkway WRF	Cape Coral	Municipal	15.1	City of Cape Coral
DUVAL	Arlington East WWTF	Jacksonville	Authority	15	JEA
PINELLAS	Largo City of	Clearwater	Municipal	15	City of Largo. WWTP
VOLUSIA	Daytona Beach Westside Regional WRF	Daytona Beach	Municipal	15	Daytona Beach, City of
MANATEE	Manatee County Southwest Regional WWTP	Bradenton	County	15	Manatee County Utilities
LEE	Southwest WRF	Cape Coral	Municipal	15	City of Cape Coral
DUVAL	Southwest District WWTF	Jacksonville	Authority	14	JEA
DUVAL	District II WWTF	Jacksonville	Authority	10	JEA
DUVAL	Mandarin WRF	Jacksonville	Authority	7.5	JEA
DUVAL	Monterey WRF	Jacksonville	Authority	3.6	JEA

III. Cooperative, Municipal and Investor-Owned Utilities

All utilities in Florida are charged with providing safe, reliable service at just and reasonable rates, but they vary in how they are organized to carry out this responsibility. One of the most significant differences is in their ownership structure: who owns and controls the utility assets. There is little variance, however, in the question of who pays the costs of providing service; with few exceptions the customer ultimately pays.[10]

Florida statutes set out a different laws and regulations for investor-owned, municipal utilities, and rural electric cooperatives in Florida. The investor-owned utilities are labelled "public utilities" in statute, while the term "electric utility" incorporates municipal electric utilities, investor-owned electric utilities, and rural electric cooperatives that own, maintain or operate an electric generation, transmission, or distribution system within the state.

There are five investor-owned utilities in Florida: Florida Power & Light, Florida Public Utilities, Gulf Power, Duke Energy, Tampa Electric Company. The investor-owned utilities are subject to full regulation by the FPSC regarding rates, service quality, and other aspects of their investments and services.

There are 34 municipal electric utilities in Florida and they serve over 3 million Floridians, or 15% of Florida's population. Municipal utilities are governed by an elected city commission, or an appointed or elected utility board. They are not-for-profit. Capital is raised through operating revenues or sale of tax-exempt bonds. Their legal and regulatory concerns are represented before government bodies by the FMEA.[11]

The Florida Electric Cooperative Association[12] represents the legal and regulatory concerns of 15 electric distribution cooperatives in Florida and two generation and transmission cooperatives, before government bodies. The association members serve over 1 million customers in 58 of the 67 counties in Florida.

Rural electric cooperatives became permanent fixtures in 1936, when the Rural Electrification Act[13] was signed into law. At that time, the majority of Floridians and the majority of citizens of other states did not have electricity service. The Rural Electrification Act empowered local farmers, residents, and businesses to join together to create their own electric utilities, which allowed electricity to spread across the country. These electric cooperatives are not-for-profit, providing at-cost electric service to their members. Each cooperative is governed by a board of cooperative members that is elected by the membership. The first Florida co-ops were incorporated in 1937. While electric cooperatives only serve 10% of Florida's population, their service territory covers more than 60% of Florida's land mass.

Florida's electric cooperatives are relatively small electric utilities compared to the other ownership types, and work together in many ways in an attempt to achieve economies of scales that each could not achieve on its own. For example, in 1975, Florida's cooperatives created the Florida Rural Electric Credit Union to

[10] An exception would be funding from the Federal Emergency Management Administration (FEMA) and the State of Florida that is made available to municipal utilities, but not investor-owned utilities, for storm damage.
[11] Florida Municipal Electric Association, accessed October 13, 2018 http://publicpower.com/,
[12] Florida Electric Cooperative Association, accessed October 13, 2018 http://www.feca.com/
[13] Rural Electrification Act, 7 U.S.C. Ch. 31, Sec. 901 et seq

provide banking services to cooperative employees and members in underserved areas. In 1979, the Florida Rural Electric Self-insurer's Fund was created to provide workers' compensation insurance to electric cooperatives.

IV. Utility Value

A significant component of a utility's value is its investment in its assets -- the machinery that generates and delivers electricity, and that processes and delivers water and treats wastewater – often totaling billions of dollars. However, value consists of two distinct components: The value of the assets themselves, and the ability of those assets to provide value in the future, the going concern value.

Electric Utility Value

Value of the Assets Used to Provide Service (Book Value)

One way of valuing the electric utility is to consider the value of the assets used to provide electricity service. With respect to energy, this value can be determined through inspection of the utility's financial records.

JEA's accounting system conforms to Federal Energy Regulatory Commission's (FERC) Uniform System of Accounts. This system is intended to ensure that every expenditure by a utility is accounted for in a transparent manner, and that this treatment is consistent across utilities and over time. While all investor-owned and cooperative utilities in the U.S. are compelled to follow this accounting system, municipal utilities may be exempt. As it is a transparent and stable accounting system widely recognized throughout the world,[14] JEA conforms to this system as well. Under this accounting system, assets are valued at their original cost. The current value of the assets, also referred to as their net book value, is the original cost of the assets less accumulated depreciation, an accounting construct that recognizes that the value of assets in service decreases over time.

From the latest balance sheet in JEA's financial statements, fiscal year 2017, the book value of JEA's electric utility assets used to provide utility service is $3.055 billion.

> While the book value of JEA's electricity assets is $3.055 billion, the assets required to provide electricity service are not limited to the utility plant itself

While the largest component of the utility's asset base is the value of the assets used to provide service, there are other components as well. To determine the value of the asset base, we start with the Net Utility Plant and add to that other capital that must be invested to allow the utility to provide service. The utility has other capital assets, referred to as Construction Work in Progress (CWIP) that are not yet counted as utility plant because they are not yet providing service. The 2017 amount of approximately $106 million in CWIP is added to the assets needed to provide service. In addition, the utility maintains stocks of fuel and replacement parts and equipment, approximately $72 million and $22 million respectively in 2017. JEA also had $193M in receivables that had not been recovered. Finally, due to the lag in when a utility pays its bills and when it receives money from its customers, Cash Working Capital is also included in the asset base. We calculated the amount for this Cash Working Capital as 45 days of fuel and operations and

[14] While it is a regulatory standard in the U.S., other countries such as Nigeria have also adopted it as their regulatory accounting standard.

maintenance (O&M) expenses (approximately $89 million), in accordance with Deloitte Regulated Utilities Manual. With these other items are added to the Net Utility Plant, the total is approximately $3.537B. However, the customers of JEA have also provided capital to finance the utility. It is standard practice in setting utility prices to deduct such contributions from the asset base to reflect that these amounts are owed by the utility to its customers. JEA is holding approximately $42 million in customer deposits[15] and these deposits are offset from the rate base, leaving a net asset base of $3.495 billion, as shown in Table 5.

Table 5. JEA Book Value of Assets Required to Provide Electricity Service (thousands of dollars)

Item	Source	2017	2016	2015
Net Utility Plant	JEA Balance Sheet	$3,055,656	$3,088,876	$3,213,331
Fuel	JEA Balance Sheet	72,243	49,852	64,683
Materials and Supplies	JEA Balance Sheet	21,914	23,122	22,126
Receivables	JEA Balance Sheet	192,800	198,058	204,726
Cash Working Capital	45 days Fuel and O&M	89,343	84,449	90,073
CWIP	JEA Balance Sheet	106,013	181,247	146,519
Gross Asset Value	Calculated	$3,537,969	$3,625,604	$3,741,458
Less Offsets				
Customer Deposits	JEA Balance Sheet	$42,192	$41,213	$42,543
Net Asset Value		$3,495,777	$3,584,391	$3,698,915

Going Concern Value

The going concern value of the utility is the ability of the business to produce goods and services, and ultimately, value for its owner. However, very little of the utility's revenue for providing services is actually retained by the owner. The operating expenses and fuel expenditures are collected through rates, but paid out to fuel suppliers, employees, and parts suppliers. In the context of determining utility prices, depreciation represents a return of capital to investors. It is a non-cash expense that also reflects that equipment used to provide utility service deteriorates and must be replaced over time. Debt interest is another expense that the utility must pay in order to continue to provide service. Once these amounts are paid out of the utility's revenue, the remainder is considered the equity component of the return that flows back to the utility owners.[16]

The COJ finances JEA's electric asset base with a mixture of debt capital and equity. As the amount of outstanding debt has declined over the last 4 years, the amount of equity capital the COJ has invested in

[15] According to Notes to Financial Statements 17 in JEA's 2017 Annual Report, these customer deposits may be for services other than electricity, and any separation of JEA would need to resolve the assignment of these deposits.

[16] There may also be timing differences in the manner in which depreciation and even some operating expenses are paid out by the utility and collected from customers. Since these timing differences may result in either accruals or deferrals, we have omitted the time value of money on these items from the going concern calculation.

the Electric Utility has increased. However, the transfer to the COJ has remained relatively stable. On March 22, 2016, JEA and COJ entered into a new agreement to establish the contribution formula for the years 2017 through 2021.[17] The contribution is 7.468 mills per kilowatt hour (kWh) delivered to retail customers, subject to a minimum increase of 1% per year with no maximum. The average transfer over the last 4 years has been approximately $93.5 million per year. To express this annual cash flow on a present value basis, we use as a discount factor the average allowed return on equity for electric utilities in the U.S. for 2017, as this represents a valid estimate of what owners of electric utilities have been allowed as a return on their investment. According to the 2017 Rate Case Survey published by Public Utilities Fortnightly, this is 9.68%. Using this, we estimate the present value of the $93.5M revenue stream to be approximately $964 million.[18]

Total Value

Total value is derived by adding the book value to the going concern value of JEA's electricity assets to the going concern value of those assets and amounts to just under $4.5 billion dollars, as shown in Table 6.

Table 6. Net Asset Value plus Going Concern for JEA Electric (thousands of dollars)

Item	Amount
JEA Net Asset Value	$3,495,777
Present Value of Transfer to General Fund	964,000
Net Asset Value plus Going Concern	$4,459,777

The Costs Necessary to Provide Utility Services – the Revenue Requirement

The revenue requirement, or the costs required to provide utility service, consists of three components: the opportunity cost of the capital investment required to secure the assets required to provide service, the return of that capital investment to the investor through depreciation, and the operating expenditures required to provide service. The third component is the most easily understood, as it translates directly to cash flowing outside the utility. Employees, fuel suppliers, parts suppliers, and power suppliers all expect to be paid for their products and services, and this component accounts for that. The first two, while not as easily understood, nonetheless impact the sustainability of the utility system. Figure 1 illustrates.

[17] JEA 2017 Annual Report Notes to Financial Statements 9

[18] This is computed as the $93.5 million divided by the discount rate of 9.68%, and assumes that the revenue stream continues in perpetuity

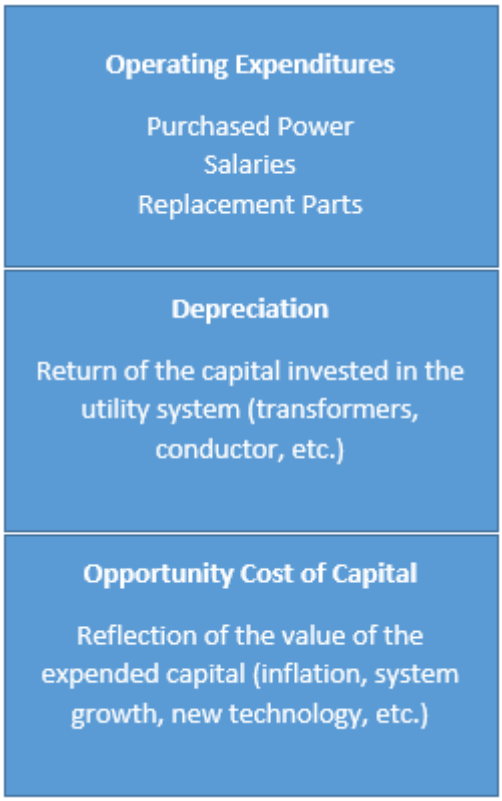

Figure 1. Costs Necessary to Provide Utility Service – The Revenue Requirement

It's relatively easy to understand why the operating expenses of the utility should to be recovered through rates that it charges its customers. These are the most visible expenditures of the system, paying for items such as fuel, salaries, replacement parts, purchased power costs, and any taxes that the utility pays, as opposed to collects for another entity, such as the government. Clearly, if these expenses cannot be recovered then the employees find other jobs, fuel suppliers stop delivering fuel and the utility stops providing service.

The other two components are sometimes less clear to casual observers than are operating expenses, but they are equally important. A reality of engineering is that as soon as a new component is installed on the utility system, it begins to deteriorate. Eventually, it will need to be replaced, at which time money is needed to finance the replacement. Where does the money come from? Certainly not from the operating expenses budget. That money has already been paid to employees and suppliers. In most instances the new investment is financed by owners, creditors or both. Each expects to be paid back for the money it provides. The usual vehicle for this recovery is the depreciation of that asset, where the purchase price of that asset is recovered over a period of time that may or may not correspond with its useful life. However, depreciation alone is not enough to sustain the system. The owners and creditors also expect a return on their money, reflecting both the time value of the money, inflation, and the risk they incur. Allowance for this return is the opportunity cost of capital shown in Figure 1.

Some utilities build up reserves to finance future investments. This takes fiscal discipline on the part of the utility and the entities that oversee it because investment in utility equipment tends to be 'lumpy', that is, significant investment is made all at once, rather than gradually over time. And because these

funds are fungible, there are temptations to appropriate them for other uses, with a promise to repay that may not be honored by a subsequent decision maker or regime. Even if there is fiscal discipline, building reserves may not be optimal. The owners may be able to receive higher returns on the money if they had possession of it rather than the utility. And some owners, as part of their investment portfolio management, may prefer dividend payments over the utility holding large financial reserves.

The calculation of JEA's electric revenue requirement is shown in Table 7. The rate base is the value of the assets required to provide service and the operating expenditures are the sum of fuel, purchased power, and maintenance from JEA's 2017 annual report, which also provides the details on depreciation and taxes. The Ratio of net income to the calculated revenue requirement of 98.11% reflects the fact that the operating income for the Electric Fund was 2% less than the calculated revenue requirement. This revenue requirement is an approximation of the revenues that would be required by a private entity to operate the JEA electric utility, but is not definitive, nor does it reflect any potential decision of the FPSC regarding rates.

Table 7. Calculation of JEA Electric Revenue Requirement

Item	**Source**	**Value**
Rate Base	Table 5	$ 3,495,777
Return on Debt	NYT Corp Invest Rate	4.40%
Return on Equity	2017 PUF Rate Case	12.01%
WACC	Reflects 50% equity	8.20%
Return on Rate Base		$286,827
OPEX	JEA income Statement	802,129
Depreciation	JEA income Statement	242,497
Taxes	JEA income Statement	59,121
Revenue Requirement		$1,390,574
Revenue		$1,364,242
Ratio		98.11%

Other Financial Considerations

The values outlined above are strictly accounting values. Ultimately, the value of the JEA to any potential buyer – and, presumably, to its current owner, the City of Jacksonville – is influenced by a number of other factors. We review the major ones here.

The Regulatory Compact

The regulatory compact is the long-standing doctrine wherein the government grants a company a protected monopoly, essentially a franchise, for the sale and distribution of electricity or natural gas to customers in its defined service territory. In return the company commits to supply the full quantities

demanded by those customers at a price calculated to cover all operating costs plus a "reasonable" return on the capital invested in the enterprise.[19]

Scott Hempling described the regulatory compact this way: "It requires the utility to satisfy the regulator's standards for performance at 'lowest feasible cost,' to use 'all available cost savings opportunities,' and to pursue its customers' legitimate interests free of conflicting business objectives. In return, the regulator must establish compensation that is commensurate with the utility's performance."[20] Leigh Martin defined it as "the relationship created by a government regulated monopoly: the government grants the utility a captive market in return for the ability to regulate the utility's price and requires the utility to serve all customers reliably."[21]

The compact has been the long guiding principle in utility regulation and has continued to be emphasized today. In the FPSC presentation March 7, 2017, at the Florida Senate Communications, Energy and Public Utilities Committee, staff mentioned the 1923 Bluefield Water Works v. Public Service Commission of West Virginia case, 262 U.S. 679 (1923) that "a public utility is entitled to rates that allow it to earn a return on the value of the plant and equipment it owns, while the public utility has no right to profits from speculative ventures." They mentioned the Federal Power Commission v. Hope Natural Gas case, 320 U.S. 591 (1944) where the Supreme Court ruled that "from the investor or company perspective, prices are set such that there be enough revenue for operating expenses and to cover the costs of capital and debt expenses."[22]

JEA Relationship with the Municipal Electric Authority of Georgia through Plant Vogtle

JEA entered into a PPA dated May 12, 2008, with MEAG as seller for the sale and purchase of approximately 41.175% (206 megawatts) of MEAG's share of the electric capacity and energy projected to be generated during the initial 20 years of the operation of Vogtle Units 3 and 4. This is referred to as Project J. This agreement relates to a nuclear power project undertaken by four power providers in Georgia: MEAG, the Georgia Power Company, Oglethorpe Power Corp., and the City of Dalton, Georgia. For a number of years, JEA has touted this as a way to add carbon-free cleaner electricity.

> *The bankruptcy of the design and construction contractors shifted the risk of cost overruns on the Plant Vogtle project*

Recently the arrangement has become mired in controversy. It perhaps started when Westinghouse and WECTEC each filed bankruptcy on March 29, 2017. Those entities were to design, engineer, construct and test the additional units, and there had been cost overruns associated with the project. The agreement

[19] Lesser, Jonathan and Leo Giacchino, Fundamentals of Energy Regulation, 2007 p. 43
[20] Hempling, Scott, "What 'Regulatory Compact'?" March 2015.
[21] Martin, Leigh, "Stranded Investments and the Regulatory Compact in a Deregulated Electric Utility Market," 31 Ga. L. Review 1183.
[22] See "Overview of the Florida Public Service Commission presentation to the Florida Senate Communications, Energy and Public Utilities Committee, March 7, 2017, https://www.flsenate.gov/PublishedContent/Committees/2016-2018/CU/MeetingRecords/MeetingPacket_3696.pdf

with the new contractor, Bechtel, shifted the risk of the cost overruns to the project owners. On September 11, 2018, the COJ and JEA sued MEAG in the Circuit Court in Duval County, Florida, asking for declaratory relief because "JEA acted without authority and in violation of the constitution, laws, and public policy of the state of Florida in entering into the PPA."[23] It is filed as a Complaint for Declaratory Judgment. Also on September 11, MEAG sued JEA in the U.S. District Court for the Northern District of Georgia. MEAG seeks declaratory judgment that the PPA is valid and enforceable against JEA.[24] It wants the Court to issue a specific performance order requiring JEA to cooperate with MEAG Power in carrying out the contract.

Since the Construction Agreement was entered into, the estimated cost to complete construction of the additional units has ballooned from $1.387 billion to $2.918 billion. The estimated completion date has changed from April 2016 to November 2021. JEA's 20-year obligation is estimated to cost JEA more than $1.6 billion.[25]

On September 26, 2018, the co-owners of Plant Vogtle approved a $25 billion budget for the completion of the project. They also approved a sharing agreement for further cost overruns. If the Project costs exceed the current budget of $25 billion by $800 million to $1.6 billion, Georgia Power is responsible for 55.7% of the overrun, with the remainder split proportionally among the other co-owners.

Any overrun from $1.6 billion to $2.1 billion will be borne 65.7% by Georgia Power, with the remainder split proportionally among the other co-owners. If cost overruns exceed $2.1 billion, each co-owner has a one-time option to sell a portion of their share of the output from the plant in exchange for the remainder of their share of the construction costs. Georgia Power could then either accept the offer or cancel the plant at that time.[26]

It remains to be seen what will result from the two separate lawsuits that have been filed. One is in Federal court in Georgia and the other is in a Florida circuit court. On September 17, 2018, JEA asked FERC to determine whether it has authority over the 2008 PPA. There is clearly uncertainty and risk associated with this project.

Ad Valorem Taxes

JEA is exempt from paying ad valorem taxes on its real property. If JEA's electricity assets were sold to a private entity, the private owner would be required to pay property taxes to all appropriate units of government. Based on a book asset value of approximately $3.05 billion, and an ad valorem tax rate of 18.2313 mills, the annual property tax would be approximately $56 million. Of that amount, approximately 60% would be paid to the COJ, or $33 million.

Risk Management

The utility industry faces many risks: Changing fuel prices, interest rates and weather can all impact a utility's costs, and hence the prices that it charges its customers. JEA responds to disaster and financial uncertainties in several ways.

[23] City of Jacksonville v. Municipal Electric Authority of Georgia (4th Judicial Circuit, Fla. September 11, 2018).
[24] Municipal Electric Authority of Georgia v. JEA, (N.D./ Ga., September 11, 2018).
[25] City of Jacksonville v. Municipal Electric Authority, at page 9.
[26] U.S. Securities and Exchange Commission Oglethorpe Power Form 8-K, September 26, 2018

Over the last 20 years, the U.S. power market has changed more dynamically than the preceding 100 years. The U.S. power market now faces a mix of new disruptive trends that will affect how generators and transmitters operate within the market.

Christopher Dann of Price Waterhouse Coopers (PWC) summarized the trends in an August 2017 American Bar Association presentation.[27] He highlighted how slow demand recovery since the 2008 recession has caused changes in the way supply resources are utilized. Relatively low natural gas prices, and aging coal and nuclear plants have caused the continuance of coal and nuclear retirements and natural gas generation expansion. The expansion of low dispatch cost assets such as solar and wind has caused the reduced utilization of traditional baseload assets such as coal and nuclear. Finally, the growth of customer-owned technologies as well as grid-scale energy storage has caused value shifting.

A more detailed discussion of the trends affecting the utility industry and disruption dynamics is contained in Appendix B.

With respect to disaster uncertainties, some of JEA's options are unique to municipal utilities. As a municipal utility, JEA is entitled to recover a portion of the damages it suffers as a result of natural disasters from the state and federal government. More specifically, JEA is permitted to recover 75% of eligible costs from FEMA and 12.5% of eligible costs from the State of Florida. In 2017, JEA reported almost $32 million in storm costs, with almost $28 million in storm damage costs to be recovered through a claim with FEMA.[28] This has implications for the future of JEA, however, as the Stafford Act places restrictions on ownership transfers of property rebuilt with federal money.[29]

To insulate its customers from some uncertainties, JEA engages in several risk mitigation strategies.

JEA maintains a 16.7% ownership interest in The Energy Authority,[30] (TEA) a municipal power marketing and risk management joint venture that provides public power utilities with access to advanced resources and technology systems. TEA assists JEA with natural gas procurement and hedging as well as power marketing. TEA allocates all transaction savings and operating expenses to TEA members. The Project Team did not review any agreements that JEA has with TEA, but it is quite likely that any fundamental change in ownership of JEA would affect its relationship, and potentially its continued partnership in, TEA.

The utility sector faces many uncertainties, now and in the future, and JEA utilizes a number of strategies to manage them

In addition to the interest in TEA, JEA maintains a fuel stabilization fund.[31] In fiscal 2016, JEA incurred fuel costs above what was recovered through the fuel adjustment charge, which JEA customers pay. Rather than change the fuel adjustment charge, the shortfall was simply withdrawn from the stabilization fund. Then, in 2017, when JEA collected more from the fuel adjustment charge than was actually incurred to

[27] Christopher Dann, PWC, American Bar Association presentation, August 2017.
[28] JEA 2017 Annual Report Notes to Financial Statements 2 and 16
[29] Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. Ch 68, Sec. 5121 et seq.
[30] JEA 2017 Annual Report Notes to Financial Statements 7
[31] JEA 2017 Annual Report Notes to Financial Statements 2

buy fuel, this surplus was added back into the fund. In this manner, yearly fluctuations in the price of fuel are not realized by the customers. JEA maintains a similar fund to stabilize payments through the Plant Vogtle PPA.

While this regulatory mechanism is common in municipal utilities, it is not available to utilities that are regulated by the FPSC. For investor-owned utilities, the annual fuel adjustment charge reflects actual fuel costs and actual receipts in each year. While there is no FPSC rule on this issue, the agency has addressed it consistently through numerous orders.

JEA also engages in hedging to decrease price volatility. From 1998-2017, annual natural gas price volatility (at the Henry Hub[32]) was approximately 34.2%. Since 2010, natural gas has been slightly less volatile at 28.3%. But since 2010, the annual volatility of JEA's fuel costs per MWh produced (not all, but substantially, natural gas) has been approximately 11.2%, mitigating more than half of the market volatility. Since JEA's fuel costs are passed directly through to customers, this reduction in volatility has also reduced the volatility in JEA's rates.

In 2017, JEA's fuel expenses were $458 million. Based on the volatility of Henry Hub natural gas prices and the assumption that these expenditures follow a log-normal distribution, the 90% confidence interval[33] for these fuel expenses would be approximately $260 million to $807 million. Under the fuel volatility management initiatives under JEA, this 90% confidence interval would be reduced to $366 million to $573 million. That is, JEA's hedging practices have reduced the volatility of fuel costs to JEA customers by approximately $340 million, at a 90% confidence interval. This, in turn, reduces the volatility of customer's rates.

Natural gas price hedging, however, has been criticized in recent years in Florida.[34]And while a FPSC investigation supported a continuation of the practice,[35] recent rate settlement agreements associated with four investor-owned utilities have effectively placed a moratorium on the practice for those utilities. As a result, this mechanism to reduce risk may only be available to municipal and cooperative utilities in Florida.

Natural gas hedging has been criticized in recent years in Florida, and recent settlement agreements associated with investor-owned utilities have effectively placed a moratorium on the practice.

In a similar manner, JEA utilizes interest rate swaps to manage the volatility on its long-term debt. The volatility on the State and Local Bonds Municipal Bond Index (WSLB20) maintained by the St. Louis Federal Reserve Bank shows that annual volatility of this index from 1953 to 2016 (the last year for which data is

[32] The Henry Hub in Louisiana is the principle price point for natural gas in the United States
[33] The 90% confidence interval is the value we expect to be realized 90% of the time.
[34] https://www.tampabay.com/news/business/energy/floridas-electric-utilities-agree-to-reduce-fuel-hedging-by-25-percent/2274735
[35] http://www.tampabay.com/news/business/energy/staff-for-florida-regulators-recommend-continued-gas-hedging-despite/2319147

available) is approximately 11.07%. Over the period 2009 to 2016, this volatility was approximately 10.93%. Over that same period, the volatility of JEA effective interest rate on its bonds was approximately 7.90%. JEA's hedging initiatives are mitigating more than 25% of the interest rate associated with its long-term debt. In addition to these risk mitigation measures, the percentage of JEA's asset base financed with debt has fallen from over 99% debt in 2009 to just over 78% in 2017, as shown in Figure 2. This has further reduced the exposure of JEA's customers to fluctuations in interest rates for municipal bonds.

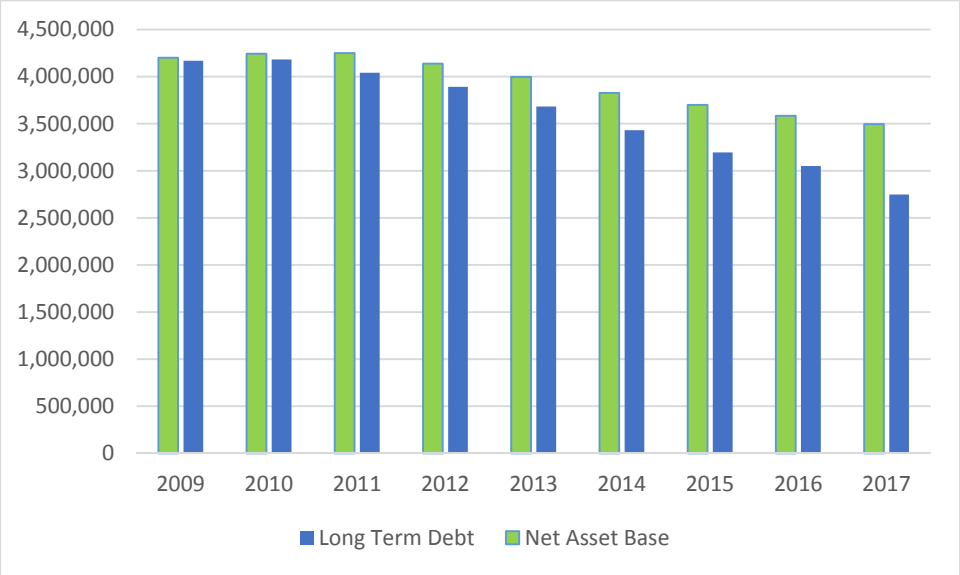

Figure 2. Value of JEA Electric Asset Base and Long Term Debt

The issues that have been raised in Florida regarding natural gas hedging have not been raised with regard to interest rate hedging, so this risk management tool remains accessible to all Florida utilities.

Water Utility Value

As with electric utilities, water utilities are valued through a combination of asset value and going concern value, with one important distinction. The FPSC values assets of water and wastewater service providers differently than it does assets of electric utilities, therefore we calculate two different values for JEA's water and wastewater assets: The net capital assets reflected in JEA's fiscal year 2017 financials, and the net book regulatory accounting value, which is the approximate value that the FPSC would use if it were regulating JEA's water and wastewater services. Using these two methods, the money from an asset sale could range from $0.3 billion to $1.5 billion. The COJ would no longer receive annual transfers from the JEA Water and Sewer business, but would receive property taxes if assets were sold to a taxable entity. Considering the loss of transfer and the gain of property taxes, the net financial gain to the city would have a net present value of $0.2 to $1.4 billion.[36]

Value of Assets Used to Provide Service (Book Value)

JEA's charter was modified in the late 1990s to include ownership, operation, and maintenance for water and sewer facilities within Duval County. Since that time, JEA has expanded its operations by constructing

[36] This should not be confused with a financial benefit from selling JEA's Water and Sewage business because other factors, such as the costs of making the transaction and the financial impacts on citizens of Jacksonville, would likely also be considerations.

and buying additional water and sewer assets in Duval, Nassau, Clay, and St. Johns counties. These combined assets and operations are reflected in JEA's financials, and the values reported in this section are as of September 30, 2017, the end of the most recent fiscal year.

Based on current book values, outstanding debt, and current account balances, and ignoring transactions costs, call provisions on outstanding bonds, and contractual obligations that would have to be satisfied, the book value of JEA's total Water and Sewer assets less total liabilities is approximately $1.5 billion, as shown in Table 8.

Table 8. JEA Water & Sewer Assets and Liabilities (thousands of dollars)

Item	**Amount**
Total assets and deferred outflow of resources	$3,526,024
Total Liabilities	(2,001,219)
Deferred inflow of resources	(22,534)
Total net position	$1,502,271

There are a number of approaches to valuing water utility capital assets:

- net capital assets
- net book regulatory accounting value
- replacement cost new less depreciation[37]
- comparable sales

Of these methodologies, the Project Team utilized two of them. Net capital asset values are readily available from JEA's most recent FY17 financials. With assumptions about regulatory reductions to net asset value, net book regulatory accounting value can also be developed for illustrative purposes.

Determination of replacement cost new less depreciation[38] requires an in-depth analysis that is beyond the scope of this study. Review of comparable sales is another method of utility asset valuation, but the Project Team was unable to identify relevant comparable sales. Therefore, we focus on two methods for valuing JEA's water and sewer capital assets: Net capital assets and net book regulatory accounting value. It should however be pointed out that replacement cost or comparable sales might be better predictors of what the COJ could receive by selling the Water and Sewer business unit and may differ from the net capital assets or net book regulatory accounting values developed below.

Net Capital Assets

The value of land rights and real property owned by JEA from FY17 Financials and necessary for utility operation is summarized in Table 9.

[37] KW Resort Utilities Corporation, Hartman Consultants, LLC January 2015.

[38] Replacement Cost New Less Depreciation is the cost to provide facilities available today with their improved efficiency and more effective cost using the most economical sequence of construction, less accumulated depreciation.

Table 9. JEA Land Rights and Real Property (thousands of dollars)

Item	Amount
Land and Easements	$61,258
Plant in Service	4,340,544
Less Accumulated Depreciation	(1,991,742)
Construction Work in Progress	205,890
Net Capital Assets	$2,615,950

The net capital asset value for JEA's Water and Sewer Plant in Service is approximately $2.6 billion. This value comprises the bulk of total assets listed above, the balance of $0.9 billion is comprised of current and non-current assets separate from capital assets. The book value of net capital assets of $2.6 billion represents original construction costs less depreciation. Water and sewer assets have long service lives and can provide utility even when depreciated values are very low. The replacement cost for the utility assets are likely to be significantly higher than depreciated value since JEAs service area has urbanized over time, land values have increased, and the cost to install utility infrastructure in developed urbanized areas is much higher than in lesser developed corridors. Additionally, utility facility construction costs have increased over time. For these reasons, replacement cost is likely to be significantly higher than the book value of capital assets.

There are, however, uncertainties or obligations that might decrease the market value of JEA's water and sewer business. Right of refusal agreements, outstanding grants, and developer agreements all have the potential to affect the market value.

JEA has entered into agreements with St. Johns County[39] and Nassau County[40] that give JEA the right to serve customers within those counties, but also the obligation to sell its assets within each respective county to the host county under certain conditions. Valuation methodologies are specified in each agreement. The option to purchase is triggered by either contract expiration or change in majority interest of JEA, and each county would be able to purchase assets and begin or resume serving water and wastewater customers themselves. Additionally, should a county exercise its right to purchase assets, they also have rights to purchase plant capacities necessary to serve customers.

JEA's agreements with St. Johns and Nassau Counties give the counties the right to purchase JEA assets and plant capacity under certain circumstances

The COJ may have used Community Development Block Grants to fund infrastructure improvements prior to JEA assuming responsibility for water and sewer in 1997. If so, JEA would have to satisfy any outstanding grant requirements if assets were sold to a private entity, and perhaps to a public entity. The existence of outstanding grants has not been determined by the Project Team.

[39] St. Johns County/JEA Water and Sewer Interlocal Agreement July 20, 1999.
[40] Nassau County/JEA Water and Wastewater Interlocal Agreement December 17, 2001.

JEA has likely entered into numerous developer agreements to provide water and wastewater capacity over time as developments build out. Obligations established in the developer agreements would have to be honored by JEA or its successor, and the disposition of those agreements would impact the sales price of JEA assets. The Project Team has not reviewed any outstanding developer agreements.

Florida Statutes[41] requires that prior to a sale of water and wastewater assets, the governing body hold a public hearing and make a determination that the purchase sale or wastewater facility privatization contract is in the public interest. Considerations are listed in Section 180.301, Fla. Stats., for the governing body to consider in making the determination that the proposed transaction(s) is in the public interest.

Net Book Regulatory Accounting Value

In the event of an ownership change, if the new owner were a private entity regulated by the FPSC, there would be two additional factors important to the revenue generation potential of the business: Used and Useful Plant in Service, and Contributions In Aid of Construction (CIAC). The net capital asset value of $2.6 billion described above is reduced by allowances for Used and Useful and Contributions in Aid of Construction to arrive at the net book regulatory accounting value.

In the event of an ownership change to an entity regulated by the FPSC, there would be two additional factors important to the revenue generation potential of the business: Used and Useful Plant in Service and CIAC

The FPSC allows private utilities to earn a reasonable return on invested capital and to recover operation and maintenance expenses. Section 367.081, Fla. Stats., authorizes the FPSC to approve rates that are "just, reasonable, compensatory, and not unfairly discriminatory." The FPSC has very specific rules on what can and cannot be included in the rate base on which the return on capital is allowed: Only the portion of the water and sewer system determined to be used and useful can be included.

Used and useful is defined as facilities necessary to serve existing customers, or those customers reasonably expected to be served in the next five years. Further, the growth rate on which capacity needs during the prospective five year period cannot exceed 5% per year.[42]

The determination of used and useful as it applies to JEA's capital facilities would require a rather in-depth study in and of itself and is beyond the scope of this study. But a calculation of used and useful related to JEA's capital facilities including allowances for customer growth within a five year period is required to develop an estimate on which rate base can be determined. Though an estimate of used and useful was not prepared, assumptions on used and useful calculations based on a cursory review of available plant flows versus plant capacities, and transmission, distribution, and collection system valuation as a percentage of total plant in service suggest that 90% used and useful is reasonable. Thus the Plant in

[41] Section 180.031 Fla. Stats.
[42] Rule 25-30.431, F.A.C.

Service will be assumed to be 90% used and useful in the determination of the net book regulatory accounting value.

The FPSC methodology for determining return on capital excludes CIAC from the rate base so that customers do not pay a rate of return on capital contributed to the utility by others. CIAC is the amount that customers, developers, or others have contributed to JEA to cover costs of constructing facilities. JEA's published financials show CIAC received from developers on an annual basis, but do not show an accumulated amount. Additionally, JEA has purchased a number of private water and wastewater systems, and the way that the accumulated CIAC (and the related reduction in the rate base) has been accounted for in the accounting records is not known by the Project Team. Determination of the historical treatment of CIAC at JEA, and the accounting treatment of each utility purchased by JEA and how that accounting treatment would impact the establishment of the rate base is not included in this study.

For the purpose of estimating what historical CIAC amounts might be subtracted from the plant in service to determine the rate base, three different analyses were performed as follows:

1. The three most recent annual reports show reduction of plant cost through contributions, the average amount of CIAC for those three years was calculated to determine that 49% of plant in service increases were attributable to CIAC;
2. Rule 25-30.570, F.A.C., provides guidance to estimate CIAC if records are unavailable, assuming that transmission, distribution, and collection assets were CIAC. Review of JEA records yields that transmission, distribution, and collection assets amount to 61% of plant in service value. Based on this methodology, the CIAC as a percent of book value is 61%;
3. Lastly, the proportion of CIAC to capital additions, transfers and adjustments were reviewed and expressed as a percentage for FY11 – FY17. Based on this calculation, CIAC comprised an average of 38.5% plant additions during the sample period.

Though the methodologies above suggest that accumulated CIAC for JEA may range from 38.5% to 61%, CIAC as a percentage of capital additions, transfer and adjustments for FY2011-FY2017 is likely the most reflective of long-term practices. Additionally, accumulated amortization of CIAC is added back to the rate base, and thus decreases the rate base reduction for CIAC. For purposes of valuation in this report, the CIAC is assumed to constitute 38.5% of the net capital assets.

Applying the assumption of JEA plant in service at 90% used and useful, and CIAC at 38.5% of plant in service yields a net book regulatory accounting value of $1.448 billion that a FPSC-regulated utility would likely be allowed to include in the rate base on which a reasonable rate of return would be allowed. This net book regulatory accounting value is significantly below the net capital asset value of $2.616 billion contained in JEA's FY17 financials. This difference illustrates the importance of the used and useful and CIAC determinations described above.

For purposes of illustration, the simplified model in Table 10 applies reductions to JEA's rate base for CIAC and used and useful, considers a range of debt to equity ratios, and calculates revenue requirements based generally on FPSC methodologies for rate cases. There are numerous embedded assumptions on interest rates, taxes, used and useful values, and accumulated CIAC, and the resulting revenue requirements are substantially impacted by changes to each of these. Operating expenses and depreciation are assumed to equal those included in JEA's FY17 financials.

Table 10. 2017 Water and Sewer Revenue Requirement

Assumptions		
Cost of Debt	4.4%	NYT Corporate Investment Rate
Cost of Equity	8.74% - 11.16%	FPSC Formula Based on Equity Ratio
Income Taxes	19.4%	PWC study shows 2015 average is 33.4%. Adopted tax code reduced historical rate by 14%.
Regulatory Assessment Fees	4.5%	
Other Taxes	2.3%	JEA FY 17 Financials
Property Taxes	$ 26,398	Duval Co Ad Valorem Taxes at 18.2313 mills
Op Expenses	$ 163,293	JEA FY 17 Financials
Depreciation	$ 141,838	JEA FY 17 Financials
Used and Useful	90.0%	Based on 2017 sales and published capacities
CIAC	38.5%	CIAC as a portion of Book Value

All Figures in Thousands

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Total Purchase Price = Book Value Less Depr	Rate Base Adusted for Used and Useful	Rate Base Adjusted for Contributions in Aid of Construction	Debt	Equity	Equity Ratio	Return on Equity	WACC	PSC Allowed Net Operating Income	O&M Exp	Depr	Taxes	Revenue Requirement	Revenue Requiremnts Including Regulatory Assessment Fee	FY2017 Op Revenue	Calculated Rev Req/JEA FY17 Op Revenue
$ 2,615,950	$ 2,354,355	$ 1,447,928	$ -	$ 1,447,928	1	8.74%	8.74%	$ 126,549	$ 163,293	$ 141,838	$ 53,859	$ 485,539	$ 507,388	$ 457,908	1.108
$ 2,615,950	$ 2,354,355	$ 1,447,928	$ 434,378	$ 1,013,550	0.7	9.43%	7.92%	$ 114,690	$ 163,293	$ 141,838	$ 51,285	$ 471,107	$ 492,307	$ 457,908	1.075
$ 2,615,950	$ 2,354,355	$ 1,447,928	$ 868,757	$ 579,171	0.4	11.16%	7.10%	$ 102,832	$ 163,293	$ 141,838	$ 48,712	$ 456,675	$ 477,225	$ 457,908	1.042
$ 2,615,950	$ 2,354,355	$ 1,447,928	$ 1,085,946	$ 361,982	0.25	11.16%	6.09%	$ 88,179	$ 163,293	$ 141,838	$ 45,532	$ 438,842	$ 458,590	$ 457,908	1.001

Notes to Table

Column (1)	Net capital assets from JEA FY17 financials
Column (2)	Net capital assets reduced for 90% used and useful
Column (3)	Net capital assets reduced for 38.5% CIAC
Columns (4) & (5)	Assumed levels of debt and equity for various capital options
Column (6)	Equity/adjusted Rate Base
Column (7)	Allowable return on equity based on equity ratio in accordance with Section 367.081(4)(f), F. S.
Column (8)	Weighted Average Cost of Capital (WACC) based on mix of equity and debt and their respective interest rates
Column (9)	Allowable net operating income after expenses, depreciation, taxes, calculated by multiplying adjusted rate base (column 3)by WACC (column 8)
Column (10)	Operation and maintenance expenses from JEA's FY17 financials
Column (11)	Depreciation expenses from JEA's FY17 financials
Column (12)	Income, property, and other taxes anticipated for private utility
Column (13)	Revenue requirment = net operating income (9) + O&M expenses (10) + depreciation expenses (11)+ taxes (12)
Column (14)	Revenue requirment including regulatory assessment fees
Column (15)	JEA operating revenues from FY17 financials pg. 92
Column (16)	Calculated revenue requirements / JEA FY17 operating revenue

If a private entity were to purchase JEA assets at a price above the net book regulatory accounting value, they could propose to the FPSC that they be granted a positive acquisition adjustment to allow them to base the revenue requirements on a higher valuation. The FPSC did recently grant such a positive acquisition adjustment related to the purchase of the electric assets of Vero Beach, making it clear that the decision was based on a particular set of facts and their determination would not set precedent in other cases.

Absent the FPSC granting a positive acquisition adjustment to a buyer of JEA's water and sewer assets, the buyer would likely be willing to pay the book value for JEA's capital assets, or approximately $1.5 billion, although this value might be higher or lower based on anticipated regulatory treatment.

Given that the value of JEA's Water and Sewer assets if purchased by an investor-owned utility would be reduced for accumulated CIAC and for Used and Useful, the actual asset sales prices could be significantly below the current net capital asset value. The magnitude of that reduction could be the difference between the Net Capital Asset value contained in JEA's fiscal year 2017 financials of $2.6 billion[43] and the net book regulatory accounting value adjusted for CIAC and Used/Useful shown above at $1.4 billion, for a reduction of $1.2 billion. JEA Water and Sewer total net position of $1.5 billion reduced by $1.2 billion would yield a benefit of $0.3 billion as shown in Table 11.

Table 11. JEA Net Capital Asset Value (billions of dollars)

Item	**Amount**
Total Net Position	$1.5
Adjusting for net book regulatory accounting value	(1.2)
Potential immediate benefit of sale	$0.3

Some states (California, Missouri, Illinois, Indian, Pennsylvania, New Jersey) have adopted laws that allow utility rate bases to be established on the fair value concept. Appraisals are used to establish the fair value of the utility assets including contributed plant donated at no cost to the public utility as a condition of service. The fair value approach results in higher sale prices by the municipalities, resulting in a higher rate base for the purchasing private utility.[44] North Carolina has recently also adopted fair value.[45] Fair value has not been adopted in Florida.

[43] JEA Annual Report 2017, page 101

[44] "Investor-owned utilities benefit as fair value legislation incentivizes system sales", Global Water Intelligence Magazine, December 2016

[45] "Passage of North Carolina Fair Market Value Legislation Provides Unique Alternative for Municipalities That Own Water, Wastewater Systems", New York Times, July 10, 2018

Fair value ratemaking could potentially increase the amount of money JEA would receive in an asset sale of its water and wastewater facilities, but would likewise also increase the rate base of a purchasing investor-owned utility, and thus the prices they could charge customers.

In summary, using two different valuation approaches with the assumptions described above yield a potential net revenue from a sale of JEA's water and wastewater assets of $0.3 billion to $1.5 billion. A replacement value or comparable sales approach might yield lower or higher values.

JEA has been reducing debt on water and wastewater since 2011. Figure 3 shows the trend, with long-term debt decreasing an average of $65 million per year. If this trend continues, and net asset values remain stable, the revenue from a sale of JEA assets could increase by a comparable amount.

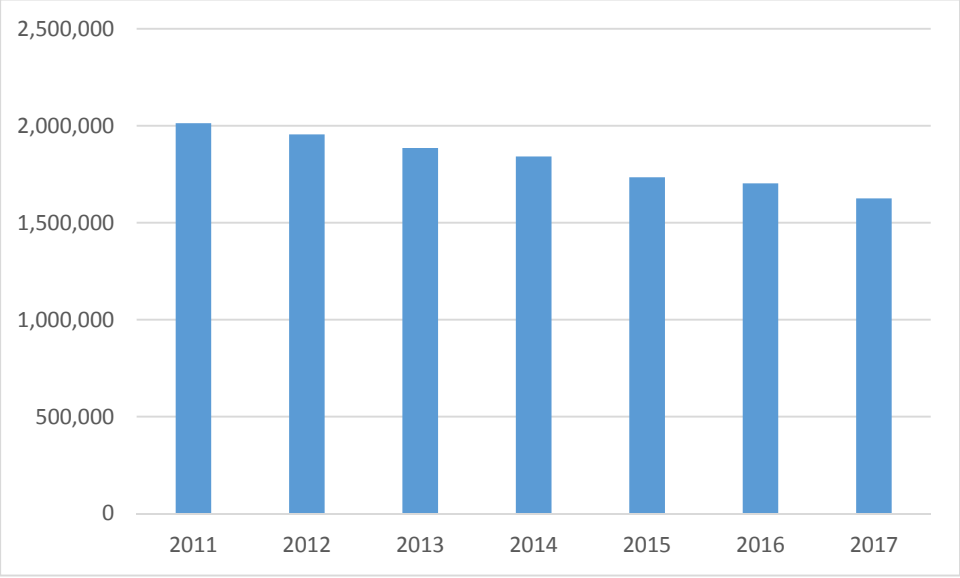

Figure 3. JEA Water and Sewer Long Term Debt 2011-2017

Going Concern Value

JEA currently generates financial value to the COJ in a number of ways including financial transfers to the city and franchise fees. Additionally, non-financial possible benefits accrue to the COJ and will be discussed in later portions of the report.

The JEA Water and Sewer business transferred approximately $23.5 million to the City of Jacksonville in FY17. Historically, from 2011 – 2017, the transfer has grown about 3% per year. Assuming that future transfers grow at that rate in nominal terms, and discounting future transfers at a 5% discount rate[46] to allow for inflation and the time value of money, the net present value (NPV) of the Water and Sewer transfers to the COJ is approximately $400 million.

The JEA Water and Sewer business currently pays a franchise fee of 3% of revenues, which is a direct pass-through from customers to the COJ and does not impact JEA's net revenues. Since the franchise fee is assessed by the COJ, the franchise fee would likely be applied to the Water and Sewer business regardless of ownership. Since the franchise fee would persist regardless of ownership, the franchise fee will not be considered in the calculation of possible benefits to owners.

Other Financial Considerations

JEA is exempt from paying ad valorem taxes on its real property. If JEA's assets were sold to a private entity, the private owner would be required to pay property taxes to all appropriate units of government. Based on a book regulatory accounting value of $1.4 billion, and an ad valorem tax rate of 18.2313 mills, the annual property tax would be approximately $26 million, with a net present value (NPV) of $377 million. Of that amount, approximately 60% would be paid to the COJ, for a NPV of $266 million.

Summary of Financial Impacts of Sale of JEA's Water and Sewer Assets to the COJ

The projected proceeds for a JEA Water and Sewer asset sale is highly dependent on the sale price. For illustrative purposes, two methodologies (net capital asset value and net book regulatory accounting value) were used to project what the sales prices might be. The book regulatory accounting value is in turn dependent on assumed values for:

- Accumulated CIAC
- Used and Useful adjustments
- Positive acquisition adjustment potentially granted by the FPSC

Based on the previously described assumed values for the above items, the Sale of Water and Sewer assets could generate the following (all values expressed as Net Present Values) shown in Table 12.

Table 12. Potential Asset Gains from Sale of W&S Assets (billions of dollars)

Item	Low Estimate	High Estimate
Immediate Proceeds of Asset Sale	$0.3	$1.5
Less Future Transfers to COJ	($0.4)	($0.4)
Plus Future Property Tax Receipts	$0.3	$0.3
Net Proceeds from Sale of W&S Assets	$0.2	$1.4

Potential Rate Impacts

In the event of the sale of JEA's Water and Sewer assets to an investor-owned utility, rate impact for Jacksonville residents and businesses is difficult to predict, and would be significantly impacted by the previously discussed factors:

[46] A 5% discount rate was used by JEA for NPV calculations in Exhibit B of the Nassau County interlocal agreement dated July 20, 1999.

1. Used and useful determination;
2. The CIAC historically received by JEA and its predecessors, and the resulting rate base after adjustment for CIAC;
3. Whether a "positive acquisition adjustment" would be proposed by the buyer, and whether such adjustment would be granted by the FPSC increasing the rate base and the resulting approved rates.

Additionally, there are several statutes that prescribe how rates are established for private water and wastewater utilities which are described in the subsequent paragraphs:

- Section 367.081(4) Fla. Stats., allows the FPSC to establish a price increase or decrease Index for major categories of operating costs. This enables certain rate increases or decreases without further action by the FPSC.
- Section 367.08(7) Fla. Stats., requires the FPSC to determine the reasonableness of rate case expenses and disallow all costs determine to be unreasonable. Rate case expenses must be apportioned for recovery over a 4 year period (FS 367.08(8)).
- Section 367.913 Fla. Stats., allows a utility to submit a reuse project plan for FPSC consideration and approval. The FPSC determines whether the projected costs are prudent and rates are reasonably in the public interest. All prudent costs shall be recovered in rates.
- Regulatory assessment and application fees are set out in Section 367.145 Fla. Stats. The FPSC sets assessment fees by rule, but the fee shall not exceed 4.5% of the gross revenues of the utility derived from intrastate business, excluding sales for resale made to a regulated company. A governmental authority to which ownership is transferred is not liable for any fees owed the FPSC by the utility at the date of transfer. Each utility must pay an application fee for an original certificate of authorization, a request for rate relief and more. The fees collected may only be used to cover the cost of regulating water and wastewater systems (Section 367.145). The fee is currently set in Rule 25-30.120, F.A.C., at 4.5%.

Based on assumptions on used and useful, CIAC, and a range of debt to equity mixes, and assuming that no positive acquisition adjustment was sought or granted, the annual revenue requirement justified by the net book regulatory accounting value of plant in service and current operation and maintenance expenses, corporate taxes, regulatory assessment fees, and ad valorem taxes would range from $458 million to $507 million. These are higher than JEA's FY17 operating revenue of $448 million. Though there are significant uncertainties related to a FPSC rate case, the revenue requirements and thus rates charged to users appear to be slightly higher than currently charged by JEA for water and sewer services. Based on these revenue requirement projections, rates granted to a private utility purchasing JEA's water and sewer assets could range from rates roughly equal to existing rates to 11% higher than rates under municipal ownership. If the JEA's water and sewer assets were sold at capital asset value and allowed to be included in the rate base, rates would be even higher.

Non-financial Value

Changing the ownership of JEA's Water and Sewage business may change how business and policy objectives are met. JEA's current governance is comprised of local business and community leaders, who are charged with making JEA a "premier service provider, valued asset and vital partner in advancing our community." This is consistent with JEA's Mission Statement, which says that JEA is to be a key player in "advancing this community because the services we provide – electricity, water and wastewater – are the foundation for Jacksonville's economic and social development." To accomplish this, JEA's Board should ensure the long term health and vitality of JEA while approving rates and pursuing policies that promote economic and social development.

If the business were privately held, the owner would likely focus on shareholder return, subject to the regulations of the FPSC regarding service quality and other obligations, and subject to state and federal environmental regulators. In many instances private owners see economic and community development as being consistent with their desire for profitability, such as in the case of the balanced scorecard[47] and stakeholder strategy,[48] but that isn't always be the case, either in investor-owned or publicly held utilities.[49] For investor-owned utilities, the FPSC sometimes allows utilities to reflect community economic development goals in the prices the utilities charge customers.

Private ownership would also change JEA's operational and capital decision making. Currently the JEA Board reviews and recommends approval of JEA's operation and maintenance (O&M) and capital budgets, and the resulting rates that fund the proposed budget. If JEA were to be privatized, O&M and capital budget decisions would be made by private owners that would consider how the costs would be treated by the FPSC in rate cases.

Section 367.081, Fla. Stats., requires the FPSC to approve rates for service, which allows a utility to recover from customers the full amount of environmental compliance costs. Capital and operating expenditures could be reviewed only on their role in meeting regulatory and business needs. This view of expenditures could result in fewer partnerships with other governmental agencies, and could discourage operating and capital expenditures that provide community or environmental benefits in excess of regulatory requirements. Determining whether this is indeed what happens would need a more comprehensive review of the decisions made by private utilities versus municipal utilities. Further, water and sewer infrastructure expansion is key to sustaining and promoting economic growth and development. Private owners might be more reluctant to make capital investments that may or may not ultimately be allowed to be included in the utility's rate base, although the utilities in Florida do have an obligation to serve customers in their territories.

If the JEA Water and Sewer business were sold to private owners, the COJ would have limited, if any, control on subsequent asset sales unless those provisions were negotiated in the original purchase and sale agreement.

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[47] Balanced Scorecard Institute, "Balanced Scorecard Basics," https://www.balancedscorecard.org/BSC-Basics/About-the-Balanced-Scorecard ,accessed November 15, 2018

[48] Freeman, R. Edward (2010) "Strategic Management: A Stakeholder Approach," Cambridge, UK: Cambridge University Press, 2010.

[49] Spiller, Pablo T., and William D. Savedoff, eds. (1999) "Spilled Water: Institutional Commitment in the Provision of Water Services in Latin America," Washington, D.C.: Interamerican Development Bank, 1999.

JEA currently receives some support services from the COJ and pays for these services directly. Upon sale of water and sewer assets, the use of support services would likely be reduced or eliminated, potentially impacting those resources provided by the COJ.

Besides the financial impact of unwinding numerous interlocal agreements, the dissolution of these agreements would potentially impact the relationships, with uncertain impacts on the cooperation of and with neighboring counties.

District Energy System

JEA's District Energy System (DES) provides chilled water to customers for air-conditioning. The facilities for the chilled water business consist of chilled water plants and underground piping to distribute the chilled water to buildings located within the respective districts served by the plants and ancillary equipment.

DES was established as a separate utility system and began operation in March 2003. As of 2017, DES has 4 chilled water plants with 21,500 tons of capacity. DES revenues are derived from two basic types of charges. The demand charge is based on the contract amount of cooling tons or the monthly measured tons whichever is greater. The consumption charge is based on the actual amount of chilled water used by the customer.

The DES Hogan's Creek location was the first DES facility, opening in 2003. The plant serves the Baseball Grounds and Arena.

DES's downtown facility opened in 2005. It serves the Duval County Courthouse, Main Library, Library Parking Garage, City Hall Annex, State Attorney's Office Building, the JEA Tower and Customer Center Building.

The Springfield Plant was built in 2005 and serves The University of Florida College of Medicine, the Proton Beam Facility, and the Shands Healthcare campus.

The San Marco Facility, built in 2006 and put into operation in 2007, serves the San Marco Place Condominiums.

Value of the Assets Used to Provide Service (Book Value)

The value of the DES utility, in contrast to the electric and water utilities, consists entirely of the value of the assets used to provide service. Because there is currently no transfer to the COJ general fund, there is no basis for calculating its going concern value. Because of the value of these assets and the resulting debt load necessary to finance them, the City has little, if any, equity investment in the District Energy Fund, and would realize little in net proceeds if the DES was sold for the value of its assets. This financial structure would be highly unusual for a privately held business as the creditors and owners would consider the high debt load to be too risky.

From the latest financial statements, the book value of JEA's assets used to provide district energy service is $34.2 million. The outstanding debt on these assets, however, is $36.446 million. Similar to the Electric and Water and Wastewater Funds, there are additional considerations when determining the value of assets required to provide service, such as Receivables, Cash Working Capital, and CWIP, bringing the total value of its assets to $37.3, as shown in Table 13.

Table 13. Value of Assets Required to Provide District Energy Service (thousands of dollars)

Item	Source	2017	2016	2015
Net Utility Plant	JEA Balance Sheet	$34,200	$34,884	$36,118
Receivables	JEA Balance Sheet	550	141	964
Cash Working Capital	45 days O&M	563	595	608
CWIP	JEA Balance Sheet	1,980	1,675	926
Gross Assets		$37,293	$37,295	$38,616

In a similar manner to the Electric and Water examples above, the Project Team derived a revenue requirement for the DES, shown in Table 14. Because the Project Team could not identify any sources for required returns on equity for district energy systems, the equity return for electricity systems was used. The ratio here reflects that the actual income for the DES was roughly 83.34% of the revenue requirement for providing service, indicating that a private entity would likely not recover its revenue requirement from current rates. Table 14 shows the analysis.

Table 14. 2017 Revenue Requirement for JEA District Energy System

Item	Source	Value
Rate Base	Table 13	$37,293
Return on Debt	NYT Corp Invest Rate	4.40%
Return on Equity	2017 PUF Rate Case	12.01%
WACC	Reflects 50% equity	8.20%
Return on Rate Base		$3,060
OPEX	JEA income Statement	$4,570
Depreciation	JEA income Statement	2,364
Taxes	JEA income Statement	0
Revenue Requirement		$9,994
Revenue	JEA Income Statement	$8,329
Ratio		83.34%

Other Considerations Affecting DES Value

In addition to serving their customers, the various business units of JEA provide utility service to each other as well. This creates an interdependency between the various units that is most striking in the relationship between the district energy utility and the electric utility. Electricity is a significant input in the operation of chillers, while water is a less significant, but still meaningful, input. In 2016 and 2017, the DES electricity bill was just over $3.3 million[50] and the water bills were $144,000 and $133,000, respectively. The electricity bill represents roughly 40% of all of the costs to provide district energy

[50] JEA Annual Report 2017 Notes to Financial Statements 17

services. Therefore, any increase in electricity rates flows through to an increase in district energy rates as well. A 10% increase in electricity rates, for example, flowed through to DES customers would result in a 4% increase in their rates. The water bill for the district energy system is a much smaller proportion of the total costs to provide service, so while the same effect would occur, it would be much smaller in magnitude, with a theoretical 10% increase in water rates translating to a roughly 0.16% increase in district energy rates if the water rate change were flowed through.

Total Value

Combining the estimates of value for the electricity, water and wastewater, and district energy systems gives the value for consolidated JEA, as shown in Table 15.

Table 15. Consolidated JEA Value (billions of dollars)

Item	Net Capital Asset Value	Net Book Regulatory Accounting Value
Electric Utility Asset Value	$3.496	$3.496
Electric Utility Going Concern	0.964	0.964
Electric Utility Total Value	**$4.460**	**$4.460**
Water Utility Asset Value	2.615	1.448
Water Utility Going Concern	0.400	0.400
Water Utility Total Value	**$3.015**	**$1.848**
District Energy Utility Asset Value	**$0.037**	**$0.037**
JEA Consolidated Utility Value	**$7.513**	**$6.346**

Incorporating the two different asset valuation methods for JEA's water utility assets gives a value of $6.3 billion to $7.5 billion for JEA's consolidated operations.

V. Benchmarking

In addition to being valuable to owners, utilities are valuable to their customers. This value is determined in part by the quality of service that a utility provides. But since increasing quality of service often comes with increased costs -- which are generally ultimately born by customers -- utilities, regulators, and policy makers should be vigilant to ensure that the costs customers are asked to cover are worth the value they create. Therefore, it is useful to assess utility performance in terms of quality and costs.

As we explain in the next section, we employ two of the most common benchmarking methods to gain understanding into JEA's performance. Benchmarking is a widely-used tool for assessing performance. While useful, the findings of benchmarking studies are not definitive with respect to how a utility performs or how it should change; there are data limitations and researchers have yet to find analytical techniques that perfectly address performance issues. Indeed, benchmarking models often reach ambiguous conclusions, which is the case in this report.

While benchmarking can be a useful tool and provide insight into behavior, it should not be used to blindly make operational decisions. A critical tenet of benchmarking is to do no harm.

One of the techniques, ordinary least squares (OLS), ranks JEA's performance low among Florida's municipal utilities. The other techniques that we use, data envelopment analysis (DEA), ranks JEA at or near the top. We explain those techniques – and the apparently conflicting findings - in more detail in the next section.

As is often the case with empirical studies, our research is constrained by data limitations. We utilize a relatively new data set, the Department of Energy's compilation of data on outage frequency and duration spanning electric utilities across the country. While this data has historically been compiled by some individual states, a common dataset is a recent development. This data set measures three years of performance in two specific metrics. And while those metrics are seen as valuable to customers, they do not incorporate the entire spectrum of service quality, nor do they speak to the utility's performance in those metrics in the years before or the years ahead. However, this study leverages this dataset to offer insights into some of the factors that influence outages in electricity service and their duration, additional opportunities to influence service outages, and may even offer insight into the performance of utilities in these aspects of service.

While it is tempting to draw meaningful conclusions regarding the relative rankings from the benchmarking analyses, the data utilized represent only three years' worth of data, albeit the best we have, for utilities that have existed for over 100 years. These ranking cannot be used to assess the utilities performance throughout history or even their performance in the future. It is far more useful, then, to focus on results that can be used to improve utility performance going forward, rather than 'keeping score' over something that happened in a limited sample of the past.

Complete regression results are provided in the Technical Appendix to this report.

Quality of Service

When customers in the United States think about the quality of their electricity service, their concerns tend to focus on how often the lights stay on. Two common metrics that quantify that concern are the System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI). SAIDI is defined as the average time that an individual customer is without service and is measured in minutes per year. It is calculated as:

$$SAIDI = \frac{\sum minutes\ of\ interruption\ on\ a\ system}{\sum number\ of\ customers}$$

While SAIFI is defined as the average number of service outages that an individual customer experiences and is measured in occurrences per year. It is calculated as:

$$SAIFI = \frac{\sum service\ interruption\ on\ a\ system}{\sum number\ of\ customers}$$

Municipal utilities tend to have lower SAIDI and SAIFI scores on average than investor-owned and cooperative utilities, as shown in Table 16, but there is a great deal of variability within those groups. Benchmarking is a common tool to control for some of this variability and to potentially identify strong performing utilities within these groups.

Table 16. 2016 SAIDI and SAIFI Scores for Electric Utilities in the U.S. by Ownership Type

Ownership Type	SAIDI	SAIFI
Municipal Utilities	41.51	0.86
Investor-Owned Utilities	114.79	1.07
Cooperative Utilities	163.91	1.51

Quality of Service: OLS Analysis

OLS benchmarking is a statistical method that attempts to quantify the relationship between a dependent variable – service quality in this case -- and an array of independent variables that are believed to possible affect the dependent variable. The relationship between these variables is then used to model an expectation for the dependent variable. Each utility's actual performance can then be compared to its expected performance.

Utilities that respond to the EIA-861 survey, an annual report of operational and financial data to the U.S. Department of Energy, report their SAIDI and SAIFI scores including and excluding what are known as Major Event Days. The Institute of Electrical and Electronics Engineers (IEEE) Working Group on System Design within the Distribution Subcommittee has defined a "major event" as an interruption or series of interruptions that exceed reasonable design and/or operational limits of the electric power system, such as unusual weather events. To remove the effects of events that may be beyond the distribution system operator's control, the SAIDI and SAIFI metrics that exclude Major Event Days are used.

The size of each utility's service territory is not directly identified in the EIA-861 survey. However, the counties that each utility serves are. By merging the service territory data in the EIA-861 survey with data from the U.S. Census Bureau, the service territory in square miles for each utility can be determined. By dividing the number of customers by square mileage, customer density can be derived.

The explanatory powers of OLS can be affected by variables that were not used. These are referred to as omitted variables and they affect the analysis if they do in fact influence the dependent variable in the regression (SAIDI or SAIFI, in this case) and are correlated with one of the included explanatory variables. The most obvious candidate for an omitted variable in this analysis is the level of O&M expenses for each utility. Unfortunately, O&M data is not available for every utility in the data set, so it could not be included.

The independent variables utilized to explain variations in SAIDI and SAIFI in this study were: the number of customers; customers per square mile; the percentage of residential, commercial, and industrial customers; the number of distribution circuits and the number of these circuits equipped with voltage optimization; and the ownership structure of the utility. In addition, state-level fixed effects were employed to account for state-specific factors (such as geography, climate, or weather) that are not captured by other dependent variables.

The effect of the dependent variables on SAIDI and SAIFI were largely consistent throughout the analysis. The coefficient on customers was positive, indicating that more customers leads to more frequent or longer outages. Customer density was negative, however, indicating that increased density reduces outages.

Some conclusions from the OLS benchmarking are intuitive, but the magnitude of their effects may be enlightening. For example, the results suggest that when the number of customers increases by 10%, outage duration per customers increases by 0.7% to 2.2%, and outage frequency per customer increases by 1.5% to 1.9%. When customer density increases by 10%, outage duration per customer decreases by 2.0% to 2.5% and outage frequency per customer and outage frequency decreases by 1.3% to 2.2%. But these variables are (primarily) beyond the control of the utility. One interesting insight is the potential benefit of investing in voltage optimization technology on distribution circuits. The regression model suggests that for every 10% increase in the distribution circuits employing the technology, outage duration decreases by 2.5% to 4.9% and outage frequency decreases by 1.0% to 2.3%. The benefit of this technology, therefore, can be estimated and used to inform future investment decisions, providing an alternative to engineering studies.

When the number of customers increases by 10%, outage duration per customer increases by 0.7% to 2.2%, and outage frequency per customer increases by 1.5% to 1.9%

We generated an expected value for each metric and then compared the utility's actual performance in that year to the modeled result. That difference is the Distance to the Frontier (DTF), with a negative value denoting a utility that is experiencing fewer or shorter outages than would be expected, and a positive value denoting utilities experiencing greater or longer outages than expected.

For 2014, JEA's actual SAIDI score was about 32 minutes longer than the model predicted, that is, what would be achieved by the average municipal utility in the sample, and its SAIFI score was almost 1.2 outages more. The scores for all Florida municipal utilities who reported SAIDI and SAIFI metrics in 2014 is given in Table 17.

Table 17. 2014 OLS Model Results for Florida Municipal Utilities

Utility	SAIDI	SAIFI	SAIDI DTF	SAIFI DTF
City of Key West	54.00	1.14	3.39	0.47
Kissimmee Utility Authority	52.00	0.98	7.44	0.28
Orlando Utilities Comm	51.00	0.78	7.97	0.08
City of Vero Beach	62.49	0.56	11.60	-0.03
City of Bartow	61.00	0.57	12.85	-0.25
City of Winter Park	65.00	0.16	17.21	-0.53
City of Lakeland	69.00	1.29	27.71	0.62
Gainesville Regional Utilities	70.00	1.23	28.32	0.57
JEA	92.00	2.00	32.46	1.18
City of Leesburg	167.00	1.93	130.69	1.25
City of Homestead	289.72	2.71	241.19	1.84

For 2015, the OLS model suggests that JEA's SAIDI score was about 47 minutes longer than expected, and its SAIFI score was almost one outage more. The scores for all Florida municipal utilities who reported SAIDI and SAIFI metrics in 2015 is given in Table 18.

Table 18. 2015 OLS Model Results for Florida Municipal Utilities

Utility	SAIDI	SAIFI	SAIDI DTF	SAIFI DTF
City of Bartow	17.61	0.16	-26.85	-0.55
City of Vero Beach	31.30	0.54	-9.52	-0.07
Havana Power & Light Company	16.55	0.24	-9.48	-0.25
Orlando Utilities Comm	31.77	0.54	-7.38	-0.14
City of Key West	47.10	1.00	5.44	0.34
Kissimmee Utility Authority	42.07	0.79	5.78	0.13
Fort Pierce Utilities Authority	40.57	0.50	7.79	-0.06
Gainesville Regional Utilities	47.07	1.02	15.91	0.41
City of Lakeland	55.40	0.73	22.81	0.08
City of Leesburg	60.06	0.97	35.14	0.42
City of Winter Park	82.27	1.92	44.94	1.29
JEA	84.08	1.67	46.93	0.92
City of Homestead	188.46	1.53	143.79	0.74

For 2016, the OLS model suggests that JEA's SAIDI score was about 30 minutes longer than expected, and its SAIFI score was about 0.77 outages more. The scores for all Florida municipal utilities who reported SAIDI and SAIFI metrics in 2016 is given in Table 19.

Table 19. 2016 OLS Model Results for Florida Municipal Utilities

Utility	SAIDI	SAIFI	SAIDI DTF	SAIFI DTF
Orlando Utilities Comm	48.30	0.60	-3.90	-0.29

Utility	SAIDI	SAIFI	SAIDI DTF	SAIFI DTF
City of Key West	47.20	1.30	-0.30	0.50
Kissimmee Utility Authority	53.20	0.96	8.48	0.19
Gainesville Regional Utilities	54.00	0.94	14.47	0.25
City of Lakeland	60.85	1.01	15.68	0.21
City of Winter Park	58.86	0.58	17.02	-0.15
City of Bartow	64.49	0.64	20.15	-0.09
JEA	82.70	1.67	29.87	0.77
City of Leesburg	72.26	1.14	36.92	0.48
Fort Pierce Utilities Authority	85.55	1.02	43.49	0.28
City of Homestead	124.05	1.35	82.03	0.66
City of Vero Beach	162.20	2.30	125.99	1.64
Tri-County Electric Coop, Inc	222.08	2.57	92.94	0.91
Florida Public Utilities Co	185.21	1.95	100.03	0.79
Glades Electric Coop, Inc	262.43	1.84	122.27	0.12
City of Vero Beach	162.20	2.30	125.75	1.64
Suwannee Valley Elec Coop Inc	271.90	3.00	153.38	1.47

These results imply that JEA may have been able to perform better in these years, but this conclusion must include caveats. The analysis does not tell JEA where it should look for improvements as the gap is simply measured and not explained. It might also be that JEA's differences from other Florida municipal utilities are reasonable, but the reasons could not be quantified using OLS. Also, the results only apply to 2014 through 2016, allowing for the possibility that the years were anomalies. So the insight from OLS is that JEA might benefit from further investigations into how to improve service quality, although we have no indication that JEA isn't already doing this.

Provisional data for 2017 was made available on August 1, 2018, and while the official data will not be released until after publication of this report, the Project Team constructed an OLS model using this preliminary data. The results are consistent with the results observed for the previous three years.[51] Table 20 provides the results.

Table 20. 2017 OLS Model Results for Municipal Utilities - Data NOT Official

Utility	SAIDI	SAIFI	SAIDI DTF	SAIFI DTF
City of Winter Park	2.13	0.14	-32.34	-0.53
City of Bartow	19.53	0.42	-18.25	-0.30
Orlando Utilities Comm	47.00	0.63	6.18	-0.20
Kissimmee Utility Authority	42.58	0.85	7.51	0.13
Gainesville Regional Utilities	55.61	0.92	25.39	0.25
Fort Pierce Utilities Authority	74.75	1.26	40.30	0.58
City of Ocala	88.10	1.41	44.28	0.64

[51] Because DEA analysis is much more sensitive to outliers, a DEA data was not performed on this provisional data.

Utility	SAIDI	SAIFI	SAIDI DTF	SAIFI DTF
JEA	99.49	1.69	60.89	0.88
City of Homestead	97.33	1.33	63.86	0.65
City of Vero Beach	133.52	2.27	104.21	1.61
City of Leesburg	136.42	1.92	107.70	1.23

Quality of Service: DEA Analysis

In addition to the OLS benchmarking model, the Project Team derived a DEA model. Unlike statistical techniques such as OLS, DEA is a numerical technique. Rather than necessitate assumptions regarding the relationship between a set on dependent variables and an independent variable, DEA creates linear combinations of other utilities to create a theoretical firm, and then compares the performance of that theoretical firm to the firm being evaluated.[52]

There are two principle drawbacks of DEA analysis. The first is that the utility is not being compared to another utility that actually exists, but a combination of utilities. It is implicitly assumed by the analysis that this combination is feasible even though it might not be. For example, a DEA analysis might use information from a small utility with one generator and a larger utility with two generators to set expectations about a medium sized utility, which the model would assume has 1.5 generators even though this isn't possible. The second drawback is that the DEA model is highly sensitive to outliers. If the model is evaluating the largest utility in the data set, for example, that firm will always be on the efficient frontier because it is mathematically impossible to form a linear combination of any other two utilities that is as large as the target firm.

Since neither the statistical technique OLS nor the numerical technique DEA are free from weaknesses, and each has unique strengths, it is typical in benchmarking exercises to use both techniques and look for similarities in their results. In one sense, each technique serves as a robustness check on the other. On the other hand, each tells its own story.

The DEA analysis was run utilizing one variable of interest (either SAIDI or SAIFI) and three variables to control for factors that might influence SAIDI or SAIFI. The three variables chosen for this analysis were the number of customers, the number of customers per distribution circuit, and the percentage of distribution circuits that employ voltage optimization technology, as these variables were consistently statistically significant in the OLS analysis. The results of the DEA analysis on 2014 data in listed in Table 21. Similar to the OLS analysis, the DEA analysis only included the municipal utilities for which the necessary data was available. The numbers in the table suggest that JEA's outages (both in duration and frequency), could have been about 23% of what they actually were.

Table 21. 2014 DEA Model Results for Florida Municipal Utilities

Utility	SAIDI	SAIFI
JEA	22.89%	20.83%

[52] For example, JEA was often compared to a theoretical combination of the City of San Antonio and the City of Knoxville by the DEA model, as these systems have similar characteristics to JEA (except in size), yet the utilities in both tend to have fewer outages than JEA.

Utility	SAIDI	SAIFI
Orlando Utilities Comm	5.90%	12.88%
City of Lakeland	1.33%	4.31%
Gainesville Regional Utilities	0.93%	3.40%
Kissimmee Utility Authority	0.87%	2.97%
City of Key West	0.50%	1.77%
City of Vero Beach	0.48%	4.24%
City of Winter Park	0.22%	3.75%
City of Bartow	0.20%	1.05%
City of Homestead	0.07%	0.46%
City of Leesburg	0.06%	0.48%

Table 22 presents the DEA results for 2015. The results utilizing the 2015 data are very similar to 2014. JEA performs well in the DEA model compared to other Florida municipalities, but the analysis suggests that its outages could have been roughly one-third of the outages actually experienced. And again, while it occupies a lower position utilizing the OLS model, which suggests that its outages were almost 47 minutes longer than the model would have predicted, the difference between JEA and the strongest performing utility was about 70 minutes.

Table 22. 2015 DEA model Results for Florida Municipal Utilities

Utility	SAIDI	SAIFI
Orlando Utilities Comm	43.68%	20.96%
JEA	33.86%	13.75%
City of Lakeland	13.18%	8.37%
Gainesville Regional Utilities	11.19%	4.35%
Kissimmee Utility Authority	8.43%	3.82%
City of Vero Beach	5.01%	3.99%
City of Key West	2.75%	1.79%
Fort Pierce Utilities Authority	2.34%	1.87%
City of Leesburg	0.94%	0.72%
City of Bartow	0.76%	1.83%
City of Homestead	0.38%	0.65%
City of Winter Park	0.23%	0.16%
Havana Power & Light Company	0.01%	1.23%

Table 23 provides DEA results for 2016. The results are similar to the previous years. JEA compares will with other Florida municipal utilities, but the results suggest that its outages could have been roughly one third of the outages actually experienced. And while it occupies a lower position utilizing the OLS model, which suggests that its outages were almost 30 minutes longer than the model would have predicted, the difference between JEA and the strongest performing utility was less than 35 minutes.

Table 23. 2016 DEA model Results for Florida Municipal Utilities

Utility	SAIDI	SAIFI
JEA	31.41%	12.82%
Orlando Utilities Comm	26.69%	17.78%
City of Lakeland	11.13%	5.58%
Gainesville Regional Utilities	9.05%	4.37%
Kissimmee Utility Authority	6.40%	3.01%
City of Key West	2.66%	1.31%
Fort Pierce Utilities Authority	1.12%	0.86%
City of Leesburg	1.02%	0.62%
City of Vero Beach	0.84%	0.53%
City of Homestead	0.66%	0.81%
City of Winter Park	0.43%	0.52%
City of Bartow	0.39%	0.47%

Quality of Service: Conclusions

Assessing JEA's position with Florida's municipal utilities is complicated. The DEA analysis places JEA firmly at or near the top of Florida municipal utilities while the OLS analysis places JEA in the bottom half. Indeed, with a number of utilities, the models give apparently conflicting results. But some of the contradiction fades upon deeper analysis. JEA occupies high rankings when assessed in the DEA model. And while it ranks about ninth in the OLS model, the differences between JEA and the top performer in OLS is small over an entire year.

Our interpretation is that OLS and DEA are telling separate, yet complementary stories. Both say that JEA performs well relative to Florida municipals, with the OLS adding that JEA could have done better during the study period since it ranked low, but was not far from the higher ranked utilities in absolute terms. The DEA is saying that JEA should look outside of Florida for case studies in improvement because JEA is at or near the top for comparable utilities in Florida.

Water Utility Performance

Effectiveness of JEA's W&S Operations and Management

JEA's consistently high credit ratings from multiple agencies indicate that it has strong financials for a municipal water utility. This is consistent with our analysis of JEA's operations and management. While there are limited operating metrics to allow comparisons, JEA's O&M costs on a per volume basis show that its costs are at or below the median for municipal utilities. JEA's reports to its Board show consistent environmental permit compliance.

The project team was able to obtain limited financial data that allows comparison of JEA's performance compared with other municipal water and wastewater systems. The comparative financial information was obtained from audited financial data that was publicly available and included in the utility's annual report. The O&M costs were gathered for each utility to measure operational efficiency. Generally speaking, higher water and wastewater treatment volumes during a fiscal year would result in higher operating and maintenance costs, so it is important to compare those data on a cost per volume basis.

Some annual reports (or other publicly available operating data) also include operating data on water and wastewater flows used for billing purposes, or the amount of water treated during the fiscal year. Ideally, the flow data would be reported as the amounts used for billing purposes since that figure only reflects the volumes that customers pay for and does not include operational losses in a water system or the addition of inflow and infiltration in a wastewater system. However, in numerous cases the only available data was flow treated at the water plant or wastewater plant. Since total flow treated data includes losses, the costs are divided over larger volumes, tending to decrease the costs per gallon treated. Unfortunately, the volume data is not reported uniformly in annual reports of water and wastewater utilities, some report total flow, some report total billed. JEA reports billed water and wastewater in its annual report.

Another complicating factor is that some utilities report water and wastewater financials separately, and some combine revenues and expenses. JEA combines revenues for its water and wastewater systems in their financials, so the only financial comparison that is possible for JEA is for combined water and wastewater systems. When only combined financial data is available, it makes comparisons less granular and thus less meaningful since the ratio of water to wastewater customers in any given system is variable. If JEA were regulated by the FPSC, financial data would have to be shown by system to facilitate separate rate making for the water system and wastewater system.

For purposes of comparison, all municipal utilities identified by the FMEA were included if those systems had water and wastewater operations in addition to electric systems and if separate financials were available for FY17. Additionally, to include the largest publicly owned utility systems in Florida that do not have municipal electric systems, the 10 largest counties by population were reviewed to identify the county's water and wastewater systems for which financial and operating data was available. Additionally, a number of Florida's largest cities with substantial water and wastewater systems were included if data were available.

Figure 4 shows JEA's FY17 combined water and wastewater operating and maintenance expenses per thousand gallons (Kgals) compared to other systems where billed volumes were available. Acknowledging that the data set is limited, and that JEA's water and wastewater system is much bigger (presumably providing economies of scale), JEA's combined water and sewer system has the second lowest cost per Kgal billed among the comparable water and wastewater utilities.

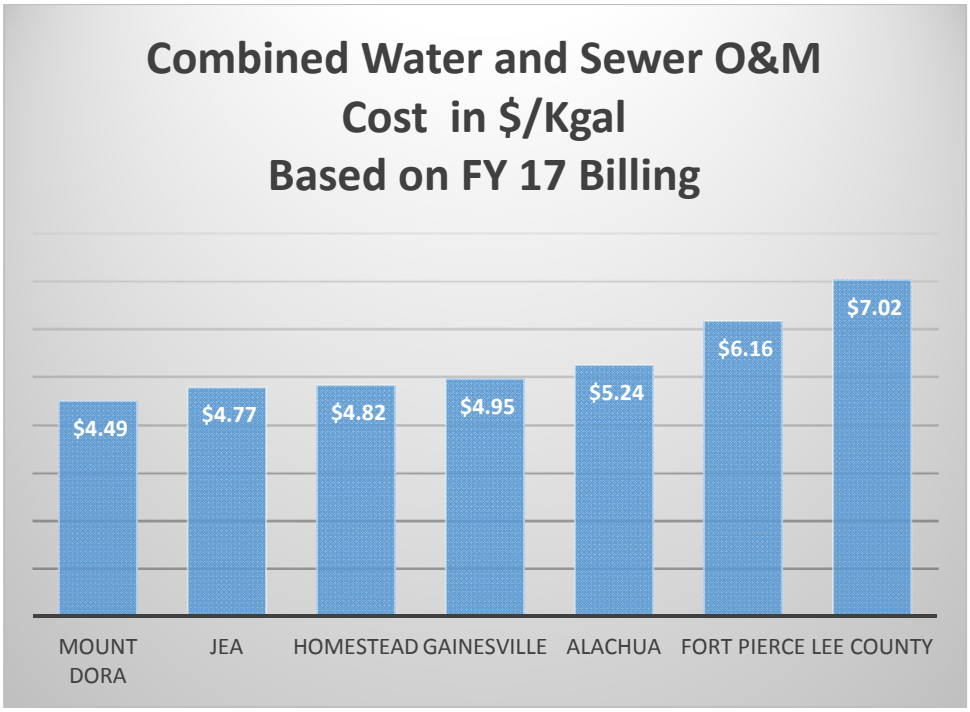


Figure 4. 2017 Combined Water and Sewer Operating and Maintenance Costs in $/Kgal

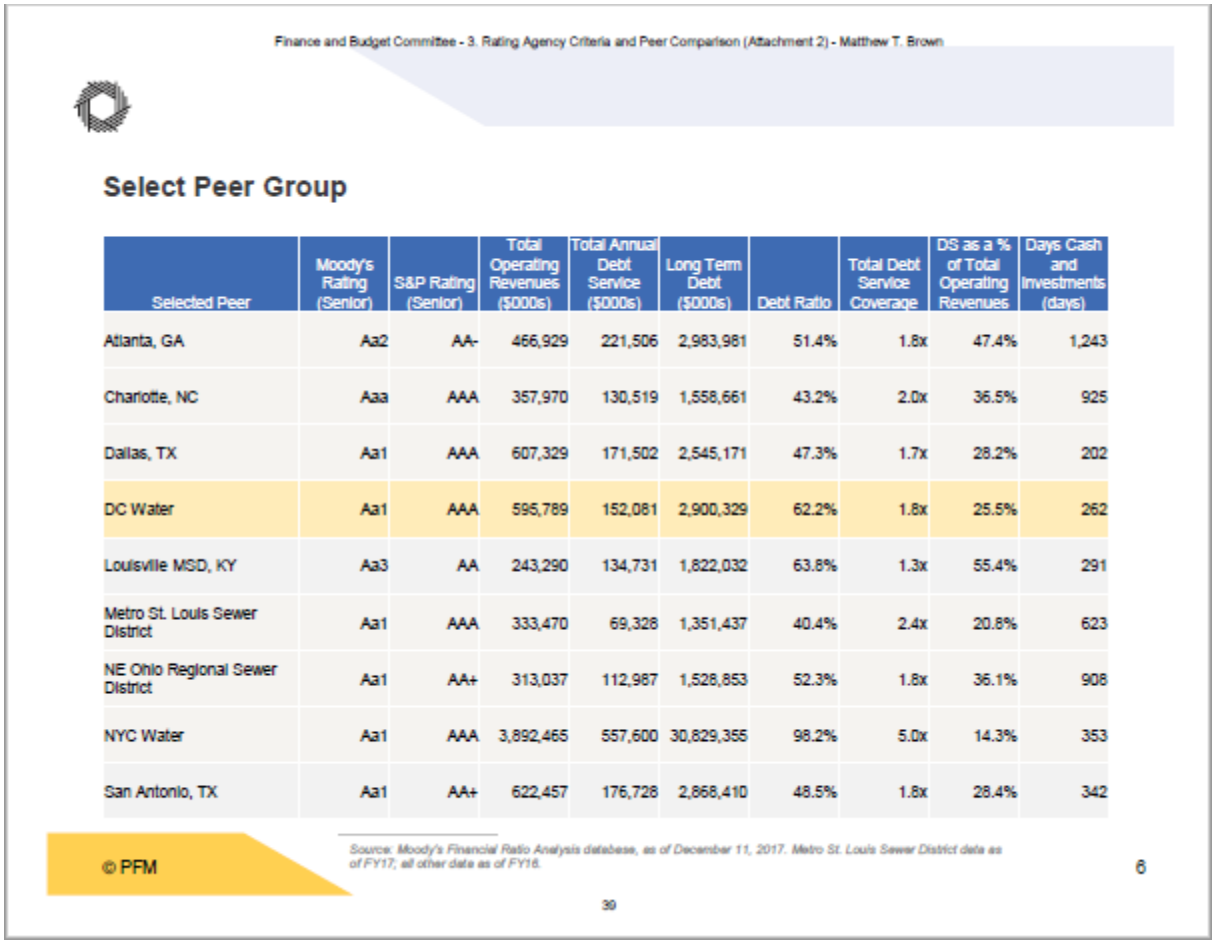
There are environmental and hydrogeological conditions that drive the total costs per Kgal for each system. These cost comparisons are provided for general information and since treatment costs are so site specific, the inferences from this comparisons are limited. JEA compares favorably on O&M costs per Kgal for those utilities for which data are available.

Comparison of Financial Metrics

JEA maintains very high credit ratings. Rating agency ratings reflect the ability of the utility to meet its debt obligations and are based on a number of considerations including the utility's financials, governance, management, ability to operate and maintain facilities, and ability to address industry challenges or challenges unique to the organization. Every ratings agency uses a different nomenclature for assessing investment-grade credit: Moody's ranges from Baa to Aaa, Standard & Poor's and Fitch Investor's Service from BBB to AAA. As reported in JEA's Annual Disclosure Report for FY17, JEA's long-term debt rating from Moody's is Aa2, from Standard & Poor's AAA, and from Fitch AA. JEA's ratings are some of the strongest for investment grade bonds. Strong credit ratings allow access to debt at the best interest rates.

Comparison of JEA's financial metrics to national peers for large water and wastewater utilities is instructive. Professional Financial Management (PFM) recently evaluated a number of comparable water and wastewater utilities for one of their clients, DC Water.[53] Figure 5 shows this comparison as of December 2017.

[53] DC Water Finance and Budget Committee Meeting December 19, 2017. "Rating Agency Criteria and Peer Comparisons for Financial Metrics", PFM Financial Advisors, LLC.



Finance and Budget Committee - 3. Rating Agency Criteria and Peer Comparison (Attachment 2) - Matthew T. Brown

Select Peer Group

Selected Peer	Moody's Rating (Senior)	S&P Rating (Senior)	Total Operating Revenues ($000s)	Total Annual Debt Service ($000s)	Long Term Debt ($000s)	Debt Ratio	Total Debt Service Coverage	DS as a % of Total Operating Revenues	Days Cash and Investments (days)
Atlanta, GA	Aa2	AA-	466,929	221,506	2,983,981	51.4%	1.8x	47.4%	1,243
Charlotte, NC	Aaa	AAA	357,970	130,519	1,558,661	43.2%	2.0x	36.5%	925
Dallas, TX	Aa1	AAA	607,329	171,502	2,545,171	47.3%	1.7x	28.2%	202
DC Water	Aa1	AAA	595,789	152,081	2,900,329	62.2%	1.8x	25.5%	262
Louisville MSD, KY	Aa3	AA	243,290	134,731	1,822,032	63.8%	1.3x	55.4%	291
Metro St. Louis Sewer District	Aa1	AAA	333,470	69,328	1,351,437	40.4%	2.4x	20.8%	623
NE Ohio Regional Sewer District	Aa1	AA+	313,037	112,987	1,528,853	52.3%	1.8x	36.1%	908
NYC Water	Aa1	AAA	3,892,465	557,600	30,829,355	98.2%	5.0x	14.3%	353
San Antonio, TX	Aa1	AA+	622,457	176,728	2,868,410	48.5%	1.8x	28.4%	342

Source: Moody's Financial Ratio Analysis database, as of December 11, 2017. Metro St. Louis Sewer District data as of FY17; all other data as of FY16.

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Figure 5. Financial Comparison of Major Municipal Water Utilities in the U.S

JEA's comparable Water and Sewer financial metrics as of September 30, 2017 are shown in Table 24.

Table 24.2017 JEA Water and Sewer Financial Performance Metrics

Moody's Senior Rating	S&P Senior Rating	Total Operating Revenues ($000s)	Total Annual Debt Service ($000s)	Long Term Debt ($000s)	Debt Ratio	Total Debt Service Coverage	DS as a % of Total Operating Revenues	Days Cash and Investments (days)
Aa2	AAA	457,908	112,791	1,625,187	60%	3.0x	25%	268

Generally, JEA compares favorably with the water and wastewater utilities comparison developed by PFM. Rating agency ratings are middle to top of the group. Operating revenues, a general indicator of utility size for the purpose of comparison, shows JEA below the median value. Total debt service coverage ratio is the second highest, and debt service as a percent of operating revenues is third lowest. It should be noted that Moody's has recently downgraded JEA's Water and Sewer debt related to litigation filed by the

COJ and JEA with the Municipal Electric Authority of Georgia.[54] In October 2018, Moody's Investors Service downgraded JEA Water and Sewer Enterprise bond ratings to A2 from Aa2, and the outlook has been revised to negative from stable.[55] Also in October 2018, S&P Global Ratings affirmed its AAA long-term rating on JEA's senior water and sewer debt. [56] Comparing the ratings issued in October 2018 by Moody's and S&P with the ratings of water and wastewater utilities in Figure 5, JEA's rating from Moody's is lower than other listed utilities while its rating from S&P is the same as the highest rated utilities. Since the litigation referenced Moody's and S&P ratings is on-going, readers are advised to monitor rating agencies for current ratings of JEA's outstanding debt instruments.

Overall, JEA compares favorably with national water and wastewater utilities

Figure 6 is from an October 2016 JEA Utility Board meeting and shows the long-term trend in debt outstanding and debt to asset ratios for JEA's Water and Sewer business from 1998 through 2016.[57] JEA increased total debt in their Water and Sewer system to fund capital expenditures from approximately $0.3 billion in 1998, when JEA expanded to include the former COJ water and sewer system, to a peak of $2.1 billion in 2011. From 2011 to present, JEA reduced debt in its Water and Sewer system, to a debt level of $1.6 billion at September 20, 2017. Debt reduction over the last six years has seen debt in Water and Sewer system decline to approximately $0.5 billion, or 24%. Debt to asset ratios have declined during the same period.

[54] Shelly Sigo, "Jacksonville, JEA slapped with downgrades over nuclear lawsuit", Bond Buyer, October 12, 2018.
[55] Moody's Investors Service Rating Action: Moody's downgrades JEA, FL's Water & Sewer ratings to A2 and District Energy bonds to A3; outlook negative. October 11, 2018.
[56] S&P Global Ratings "Jacksonville Electric Authority, FL 'AAA' Water, Sewer System Revenue Bond Rating Affirmed. October 23, 2018. In affirming the AAA rating, S&P based its decision on "its belief that a recent lawsuit filed by JEA does not constitute a lack of willingness to support obligations of the water and sewer utility".
[57] JEA October 2016 Board Meeting. Peer ratio calculated from Moody's Municipal Financial Ratio Analysis database of 214 Aa rated public water-sewer utilities, December 17, 2015

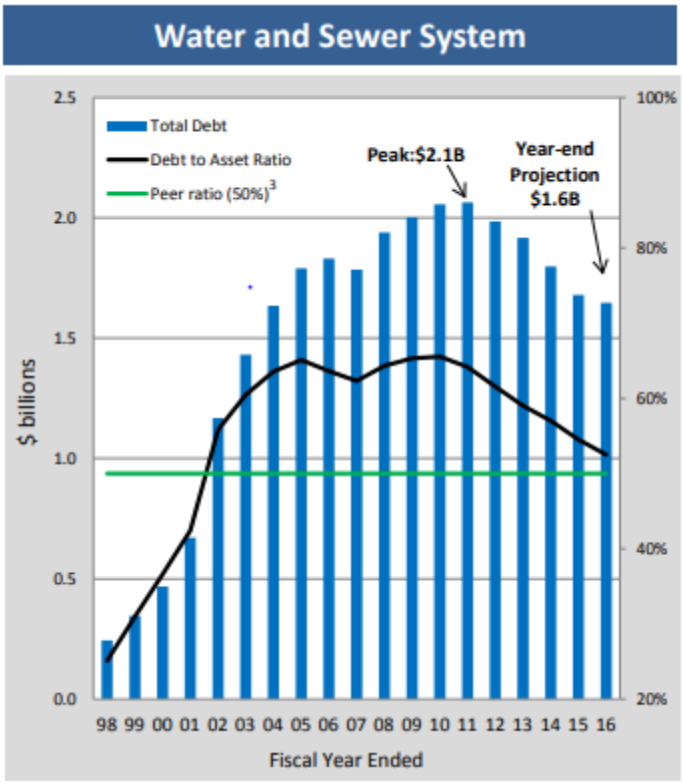

Figure 6. Long Term Debt in JEA's Water and Sewer Fund

The Project Team attempted to compare JEA's operational performance with comparable organizations in Florida and throughout the U.S., but had limited success. Generally, variations in utility characteristics and site specific environmental and hydrogeological settings make comparison amongst water and wastewater utilities challenging. There is, however, a benchmarking effort known as Qualserve that is sponsored by a number of organizations including the American Water Works Association (AWWA). JEA has participated in Qualserve in the past, but we were unable to learn whether JEA participated in the latest 2017 effort. JEA's self-assessment and comparison with national benchmarking standards would likely provide a good national comparison for JEA on numerous operating metrics.

In the absence of comparative operating data, review of previous JEA Board meeting presentations from October of 2016 and 2017 provide the following insights to the utility's management, operations, and maintenance:

- Prices charged to customers have historically been at or below the median comparing to large utilities within Florida
- Water consumption has historically met Consumptive Use Permit (CUP) conditions of the St. Johns River Water Management District
- There is a CUP condition that allows increases in groundwater withdrawals for potable use in 2021 and beyond if JEA increases the use of reclaimed water it provides to the community by at least 60%. Capital expenditures related to reuse expansion are not included in JEA's current capital

budget. JEA used 88% of its allowable groundwater usage in FY17, so the importance of the CUP increases in 2021 and beyond is unclear.

- Nitrogen discharge limits have been reduced by permit, and current discharges are compliant
- Sanitary Sewer Overflows (SSOs) are variable, but generally decreasing. SSOs will continue to be a challenge for all Florida wastewater utilities as regulations continue to become more restrictive and penalties for SSO's continue to increase.[58]

[58] In addition, from David Richardson's personal observation from interacting with JEA extensively from 2004 - 2016 – JEA junior and senior staff are process oriented, identify emerging industry trends and adjust their plans and operations accordingly, develop and track performance trends extensively, and focus on and promote efficient investments and operations. Further, JEA tracks legislation and regulations that affect or will affect them and engages regulatory agencies on issues with significant capital and operational impacts. JEA's goals, objectives, strategies seem to be well communicated throughout the organization, and employees are engaged in activities to promote initiatives

VI. Other Value Considerations for Municipal Utilities

Another aspect of the value that a municipal utility provides is in the different ways that it interacts with the political and legal landscape of the state. Laws and rules at both the state and federal level may affect municipal utilities differently from investor-owned or cooperative utilities. A comprehensive understanding of these differences can highlight the manner in which a municipal utility's value is impacted.

In general, the FPSC's requirements are more numerous and rigorous for investor-owned utilities than for others. For example, municipal utilities have more discretion over prices and service than do investor-owned utilities. Thus, in assessing the effects of a sale of JEA to a private entity it is important to consider how the entity would be affected by the FPSC's rules, decisions, and regulatory assessment fees, and the statutes regarding investor-owned utilities.

In general, the FPSC's requirements are more numerous and rigorous for investor-owned utilities than for others.

Regulation

There is a complex body of Florida law on regulation of utility operation and ownership for electric, gas, and water and wastewater. The project team reviewed applicable statutes, rules, and FPSC orders. The rules are extensive, so our review was not exhaustive. For electric and gas investor owned utilities, the law is found in Chapter 366, Fla. Stats. For private water and wastewater companies, the laws are found in Chapter 367, Fla. Stats. For municipal electrics and municipal water and wastewater, such as JEA, there are provisions in Chapter 180, Fla. Stats. on Municipal Public Works as well as in other chapters.

Electric and Gas Regulation

From a regulatory perspective, investor owned utilities are subject to more regulatory requirements than are municipal-owned utilities in Florida. The FPSC has relatively narrow jurisdiction over municipal utilities compared to its broader oversight of investor owned utilities. Municipal utilities are generally subject to FPSC oversight on consumer protection, safety, reliability, rate structure, and territorial agreements, as are investor-owned utilities.[59] Both Investor-owned utilities and municipal utilities are subject to power plant siting requirements in Chapter 403, Fla. Stats. The FPSC regulates actual rates for investor-owned utilities.

[59] Section 366.11, Fla. Stats., exempts certain municipals and cooperatives generally from FPSC regulation, except for some enumerated sections. They are Sec. 366.04 (to prescribe uniform system of accounts, prescribe rate structure, require electric power conservation and reliability within a coordinated grid, address territorial agreements and disputes), Sec. 366.05(7) and (8) (to require reports to assure the development of adequate and reliable energy grids, to require installations or repairs), Sec. 366.051 (to address cogeneration), Sec. 366.055 (to address grid reliability and energy reserves), Sec. 366.093 (public utility records), Sec. 366.095 (impose penalties), Sec. 366.14 (regulatory assessment fees), Secs. 366.80-83 (Florida Energy Efficiency and Conservation Act), and Sec. 366.91 (renewable energy)

Also, the regulatory assessment fees set out in statute and rules are higher for the investor owned utilities. The fees cover the costs of FPSC oversight. For the investor owned electric utilities, the fee may be up to 0.125% of gross operating revenues derived from intrastate business. It is currently set at 0.072%, pursuant to Rule 25-6.0131(1)(a), F.A.C. For each municipal electric or cooperative, the fee is 0.015625%, pursuant to Rule 25-6.0131 (1)(b), F.A.C. . The lower regulatory assessment for municipal utilities is because the FPSC is less involved with the regulation for the municipal utilities and cooperatives.

For gas utilities, the regulatory assessment fee is in Rule 25-7.0131, F.A.C. For investor owned gas utilities, the amount is 0.005% of gross operating revenue derived from intrastate business, excluding sales for resale between public utilities, municipal gas utilities, and gas districts or any combination. For municipal or gas districts, the amount is 0.001919% of such revenue.

For investor owned utilities, the FPSC sets rates. The FPSC balances the interests of both customers and utilities; balances reliability with cost; and balances long-term impacts with short-term impacts, while following the statutory requirements discussed below.

The rate mechanisms for investor-owned electric and gas utilities include the annual cost recovery clauses, base rate proceedings, and storm surcharge proceedings. The purpose of cost recovery clauses is to allow recovery of certain costs that can vary year-to-year, that are beyond the control of the utility, and that fluctuate too quickly to fit in rate case proceedings. Base rate proceedings can be highly contentious and costly, although settlements have been frequent.

A review of Chapter 366 indicates there are numerous requirements on investor owned electric utilities (referred to as “public utilities” in the statute) that are not placed on municipal electric utilities:

- Public utilities must furnish to each person applying for service reasonably sufficient, adequate, and efficient service upon terms as required by the FPSC. The utility may not give unreasonable preference or advantage to any person or locality or disadvantage.
- Public utilities are subject to FPSC jurisdiction with respect to rates and service, and assumption of liabilities as guarantor. The FPSC may take final action to grant an application by a public utility to issue and sell securities or to assume liabilities. The FPSC may deny authorization if the issuance is for nonutility purposes; and it must deny it if the financial viability of the public utility is adversely affected such that the public utility’s ability to provide reasonable service at reasonable rates is jeopardized.
- For rates, the FPSC is authorized to consider the efficiency, sufficiency and adequacy of the facilities provided and services rendered, etc. The FPSC must take up service complaints involving the rates, as long as the utility has been given notice.
- The FPSC may adopt construction standards that exceed the National Electrical Safety Code to ensure the reliable provision of service; and to require repairs and improvements and additions to the plant and equipment of any public utility.
- The public utility must keep separate accounting for selling appliances or other merchandise. The FPSC provides for the testing of all meters.
- The FPSC may require the filing of reports and other data by the public utility, including its parent company, regarding transactions or allocations of common costs, among the utility and affiliated companies. The FPSC may also require such reports or other data necessary to ensure that a utility’s ratepayers do not subsidize nonutility activities.

- The FPSC may seek relief in circuit court including temporary and permanent injunctions and restraining orders if a utility violates FPSC orders or rules constituting irreparable harm.
- The FPSC may assess the public utility for reasonable travel costs associated with the reviewing of records of the utility and its affiliates when they are kept out of state.
- On cogeneration, the FPSC establishes guidelines and sets rates for public utilities purchasing from a cogenerator or small power producer. Also, the public utility must provide transmission or distribution service to enable a retail customer to transmit electric power generated by the customer at one location to the customer's facilities at another location, if the FPSC finds it would not likely result in higher cost electric service to the general body of customers or adversely affect the adequacy or reliability of electric service to all customers.
- On rates, the statute sets out detailed requirements in Sec. 366.06, Fla. Stats., for public utilities coming before the FPSC. There are also sections or rate adjustments, interim rates, experimental rates and limited proceedings.
- The FPSC may during all reasonable hours enter upon the premises of the utility and use necessary appliances for investigations.
- A process on confidentiality is set out for the public utilities to follow.
- There are numerous requirements on public utilities relating to medically essential electric public utility service.
- Each public utility may submit for FPSC approval a plan to bring generating units into compliance with the Clean Air Act, which the FPSC must approve or disapprove.
- A process is set out for storm recovery financing for investor owned utilities.
- Financing for certain nuclear generating asset retirement or abandonment costs is set out to apply to investor owned utilities.

The FPSC has jurisdiction over the planning, development and maintenance of a coordinated electric power grid, pursuant to Sec. 366.04(5), Fla. Stats., incorporating all forms of utility ownership. Also, it has jurisdiction to prescribe and enforce safety standards for transmission and distribution facilities of all public electric utilities, cooperatives, and electric utilities owned and operated by municipalities. (Sec. 366.045(6), Fla. Stats). It also has jurisdiction over impact fees. The FPSC can require reports from all electric utilities to assure the development of adequacy and reliability energy grids.[60]

For small municipal utilities located in a non-charter county, a municipal electric utility must conduct a referendum election of all its retail customers as to whether a separate electric utility authority should be created. This does not apply to JEA.[61]

Each investor owned utility and each municipal electric and cooperative are required to develop standardized interconnection agreements.[62] Also, Sec. 366.92, Fla. Stats. applies renewable energy policy to investor-owned utilities, municipal, and cooperative utilities.

Table 25 summarizes the statutory treatment of investor-owned and municipal utilities.

[60] Sec. 366.05(6), Fla. Stats.
[61] Sec. 366.04(7), Fla. Stats
[62] Sec. 366.91, Fla. Stats

Table 25. Comparison of FPSC Regulation of Municipal Electric Utilities and Investor-Owned Electric Utilities

FL Statutes	Investor-Owned Electric Utilities & Municipals	Investor-Owned Utilities Only
Sec. 366.04	Prescribe uniform system of accounts, rate structure, electric power conservation and reliability within a coordinated grid, territorial agreements and disputes.	
Sec. 366.05(7) and (8)	Require reports for development of adequate and reliable energy grid, require installations and repairs.	
Sec. 366.051	Cogeneration	
Sec. 366.055	Grid reliability and energy resources	
Sec. 366.093	Public records	
Sec. 366.095	Penalties	
Sec. 366.14	Regulatory assessment fees but higher for Investor-Owned Utilities	
Sec. 366.80-83	Fla. Energy Efficiency and Conservation Act	
Sec. 366.91	Renewable energy	
Sec. 366.03		Must furnish to each person applying reasonably sufficient, adequate, and efficient service upon terms required by FPSC.
Sec. 366.04		Subject to FPSC with respect to rates and service, and assumption of liabilities as guarantor. FPSC may deny authorization if issuance is for nonutility purposes and must deny it if the financial viability is adversely affected.
Sec. 366.041		Rate fixing – criteria are set out
Sec. 366.05		FPSC prescribes fair and reasonable rates and charges, classifications, standards of quality, including construction standards. Utility must keep separate accounting for selling appliances or other merchandise. FPSC may require filing of reports regarding transactions or allocations of common costs, among the utility and affiliated companies. May seek relief in

FL Statutes	Investor-Owned Electric Utilities & Municipals	Investor-Owned Utilities Only
		circuit court including injunctions and restraining orders.
Sec. 366.06		Rates - Detailed requirements on rates.
Sec. 366.07		Rate adjustment – PSC can require new rates if rates unjust, etc.
Sec. 366.071		Interim rates – FPSC may authorize interim rates.
Sec. 366.08		Investigations - FPSC may enter premises of utility to inspect, etc.
Sec. 366.093		Public utility records – FPSC has reasonable access to all public utility records and utility's affiliated companies, including its parent company.
Sec. 366.15		Medically essential service – detailed process for each investor-owned to follow.
Sec. 366.825		Clean Air Act compliance – process for compliance with Clean Air Act.
Sec. 366.8255		Environmental cost recovery
Sec. 366.8260		Storm recovery financing.

Water and Wastewater Regulation

The statutes for regulating water/wastewater private sector facilities are set forth in Chapter 367, Fla. Stats. There is an exemption in Sec. 367.022, Fla. Stats., for systems owned, operated, managed, or controlled by governmental authorities. The FPSC has exclusive jurisdiction over each nongovernmental utility with respect to its authority, service and rates. Here are some of the state requirements that are not placed on municipal utilities:

- Original certificate – each utility must obtain this to provide water or wastewater service. This must be obtained from the FPSC.
- A certificate of authorization is also required. The applicant must provide all information required by rule or order of the FPSC. The applicant may not delete or extend its service outside the area described in its certificate of authorization until it has obtained an amended petition.
- Sale, assignment or transfer of the certificate of authorization – FPSC approval must be obtained that it is in the public interest and that the buyer, assignee, or transferee will fulfill commitments.
- The FPSC may impose a penalty when a transfer occurs prior to FPSC approval. The transferor remains liable for any outstanding regulatory assessment fees, fines, or refunds of the utility. There is an application fee as well, except if the buyer is a governmental authority. The sale of facilities to a governmental authority must be approved as a matter of right. However, the authority must take certain steps.[63]

[63] Sec. 367.071, Fla. Stats

- The FPSC may by order establish the rate base for a utility or its facilities or property when approving a sale, assignment, or transfer, except for such action to a governmental authority.
- Any entity that obtains ownership/control over a system, through foreclosure of a mortgage or other encumbrance, must continue service without interruption and may not remove or dismantle any portion of the system previously dedicated to public use which would impair the ability to provide service, without the express approval of the FPSC. This may be enforced by a court injunction.
- Section 367.081, Fla. Stats., sets out the procedures for ratemaking. Generally, a utility may only apply rates and charges approved by the FPSC. The FPSC shall, either upon request or its own motion, fix rates which are just, reasonable, compensatory, and not unfairly discriminatory. In the proceeding, the FPSC must consider the value and quality of the service and the cost of providing the service, which includes but is not limited to: debt interest, the requirements of the utility for working capital, maintenance, depreciation, tax, and operating expenses incurred in the operation of all property used and useful in the public service; and a fair return on the investment of the utility in property used and useful in the public service. However, the FPSC shall not allow the inclusion of CIAC in the rate base of any utility during a rate proceeding, nor shall the FPSC impute prospective future CIAC against the utility's investment in property used and useful in the public service; and accumulation depreciation on such CIAC shall not be used to reduce the rate base, nor shall depreciation on such contributed assets be considered a cost of providing utility service.
- The FPSC must consider utility property, including land acquired or facilities constructed or to be constructed within a reasonable time in the future, not to exceed 24 months after the end of the historic base year used to set final rates unless a longer period is approved, to be used and useful in the public service, if: (a) such property is needed to serve current customers; (b) such property is needed to serve customers 5 years after the end of the test year used in the FPSC's final order on a rate request at a growth rate for the equivalent residential connections not to exceed 5% per year; or (c) such property is needed to serve customers more than 5 full years after the end of the test year used in the FPSC's final order on a rate request only to the extent that the utility presents clear and convincing evidence.
- The FPSC must approve rates for service which allow a utility to recover from customers the full amount of environmental compliance costs.
- In fixing rates, the FPSC may determine the prudent cost of providing service during the period of time the rates will be in effect following the entry of a final order relating to the rate request of the utility and may use such costs to determine the revenue requirements that will allow the utility to earn a fair rate of return on its rate base.
- Section 367.081(4) authorizes the FPSC to establish a price increase or decrease index for major categories of operating costs. This enables certain increases or decreases, without further action by the FPSC. The FPSC may regularly, not less often than once each year, establish by order a leverage formula that reasonably reflects the range of returns on common equity for an average water or wastewater utility. Details are set out.

- Section 367.08(7) requires the FPSC to determine the reasonableness of rate case expenses and disallow all determined to be unreasonable. It must be apportioned for recovery over a 4 year period.[64]
- A utility may request the FPSC to process its petition for rate relief using the agency's proposed agency action procedure, and the FPSC must do so within 5 months after the official filing date.[65]
- Gain or loss on purchase or condemnation by governmental authority is set out in Sec. 367.0813, Fla. Stats. The Legislative policy is that gains or losses from a purchase or condemnation of a utility's assets which results in the loss of customers and the associated future revenue streams must be borne by utility shareholders.
- Staff assistance in rate cases is authorized but only for utilities whose gross annual revenues are $250,000 or less, so this would not apply to a private utility purchasing JEA water/wastewater.[66]
- A utility may submit a reuse project plan for FPSC approval, pursuant to Sec. 367.0817, Fla. Stats. The FPSC determines whether the projected costs are prudent and rates are reasonable and in the public interest. All prudent costs shall be recovered in rates.
- The FPSC may conduct limited proceedings to consider and act upon, any matter within its jurisdiction, including the resolution of which requires a utility to adjust its rates.
- Rate adjustment orders are addressed in Sec. 367.084, Fla. Stats.
- Section 367.091, Fla. Stats., restricts that a utility may only impose and collect those rates and charges approved by the FPSC for the particular class of service involved.
- Charges for just and reasonable service availability, pursuant to Sec. 367.101, Fla. Stats. are set by the FPSC.
- Service requirements are set out in Sec. 367.111, Fla. Stats. Each utility must provide service to the area described in its certificate of authorization within a reasonable time. If the utility fails to do so, the FPSC may amend the certification of authorization or rescind it.
- The powers of the FPSC are set out in Sec. 367.121, Fla. Stats.: to prescribe fair and reasonable rates, charges, etc. and to prescribe service rules; to prescribe a uniform system of accounts, which establish adequate, fair and reasonable depreciation rates and charges; to require regular or emergency reports from a utility; to require repairs, improvements, etc.; to adopt rules to implement and enforce the chapter; to order interconnections; to require the filing of reports; to assess a utility for travel costs associated with reviewing records kept out of state; and to enter upon utility premises for making investigations.
- A utility must own the land or possess the right to continued use of the land upon which treatment facilities are located, pursuant to Sec. 367.1213, Fla. Stats.
- A utility must notify the FPSC and its customers before changing its name.[67]
- The FPSC may provide for examination and testing of all meters used for measuring any product or service of the utility.[68]
- The FPSC may require the utility to provide service for resale, if certain conditions are met, pursuant to Sec. 367.123, Fla. Stats.

[64] Sec. 367.0816, Fla. Stats
[65] Sec. 367.08(8), Fla. Stats
[66] Sec. 367.0814, Fla. Stats
[67] Sec. 367.1214, Fla. Stats
[68] Sec. 367.122, Fla. Stats

- Regulatory assessment and application fees are set out in Sec. 367.145, Fla. Stats. The FPSC sets this by rule, but the fee shall not exceed 4.5% of the gross revenues of the utility derived from intrastate business, excluding sales for resale made to a regulated company. A governmental authority to which ownership is transferred is not liable for any fees owed the FPSC by the utility at the date of transfer. Each utility must pay an application fee for an original certificate of authorization, a request for rate relief and more. The fees collected may only be used to cover the cost of regulating water and wastewater systems.[69]
- Other provisions address public utility records and confidentiality, penalties the FPSC may impose, a process for abandonment.[70]
- The effectiveness of the chapter is addressed in Sec. 367.171, Fla. Stats. The provisions become effective in a county upon the adoption of a resolution by the Board of County Commissioners, or, in counties operating under a countywide charter, by the appropriate board, declaring that the county is subject to the chapter. A county, after 10 continuous years under FPSC jurisdiction, may rescind any prior resolution. A process is set out for the utility to make certain filings with the FPSC after the chapter becomes applicable to the county.
- The FPSC has exclusive jurisdiction over all utility systems whose service transverses county boundaries, whether the counties involved are jurisdictional or nonjurisdictional, except under certain conditions.[71]

Florida Public Service Commission Orders and Rules

In addition to the statutes listed above, there are FPSC orders and rules that impact investor-owned utilities more than municipal utilities. For investor owned electric utilities, the rules are primarily located in Chapter 25-6 and 25-17, Florida Administrative Code (F.A.C.). Gas rules are located in Chapter 25-7., F.A.C. Water and wastewater rules are primarily located in Chapter 25-30, F.A.C. The rules are extensive. For example, the water/wastewater rules are 80 pages in length. Thus, a cursory review has been performed by the Project Team on these rules.

The rules that set out the "used and useful" framework for ratemaking purposes are located for water and wastewater in Rules 25-30.431, 25-30.432, and 25-30.4325, F.A.C. Also, there are orders that apply the rules. Order No. PSC-17-0091-FOF-SU on KW Resort Utilities Corp. is a recent example describing the methodology and considerations for "used and useful" analysis for a wastewater plan.

The rules that set out the regulatory assessment fees for both investor-owned electrics and municipal electric utilities are in Rule 25-6.0131, F.A.C.

For water and wastewater, the regulatory assessment fees are set out in Rule 25-30.120, F.A.C. The amount, per Sec. 350.112, Fla. Stats., is set at 0.045% of the utility's gross revenues derived from intrastate business. This is a significant assessment fee and larger than the percentages for electric and gas.

There are also orders issued by the FPSC which impact primarily the investor owned utilities. For example, there are orders on fuel hedging, "used and useful," and other matters of direct impact.

[69] Sec. 367.145, Fla. Stats

[70] Sec. 367.156-367.165, Fla. Stats

[71] Sec. 367.171, Fla. Stats

As an illustration, the current moratorium on fuel hedging has occurred through orders approving settlements. For Tampa Electric, the language is in paragraph 11(a) in Order No. PSC-2017-0456-SE.

The FPSC has rarely taken up a case involving an investor-owned utility acquiring a governmental utility. The most recent case is that of FPL's intent to purchase the City of Vero Beach (COVB) electric utility. Table 26 provides the legal timeline. That Proposed Agency Action order was challenged by the Florida Industrial Power Users Group (FIPUG) and an Indian River civic association and was set for hearing at the FPSC in October. FIPUG withdrew its challenge, but the challenge alleged that the FPSC decision would cause FIPUG members and other FPL ratepayers to pay the $116.2 million premium that FPL paid above and beyond book value for the system.

In its July 2, 2018, order on the case,[72] the FPSC noted that FPL has projected that the addition of the Vero Beach customers will reduce the shared amount of fixed cost spread across FPL's existing body of customers. Also, there are extraordinary circumstances that warrant the positive acquisition adjustment. One of those is that approximately 60 to 65% of Vero Beach's customers reside outside the city's municipal borders, and those customers have had little or no voice in the operation of the city's electric utility or in rate setting decisions. The FPSC noted that a disparity in rates alone does not constitute an extraordinary circumstance to support a positive acquisition adjustment. The Order also addressed a short-term power purchase agreement with Orlando Utilities Commission (OUC).

The FPSC emphasized that its decision is limited to the unique set of circumstances in this case and does not represent a change in regulatory policy concerning positive acquisition adjustments: "We reiterate that, as a general rule, we do not preapprove the prudence of rate base acquisitions outside of a rate case, nor do we permit positive acquisition adjustments, particularly outside of a rate case." The threshold determination of whether extraordinary circumstances exist will be determined on a case-by-case basis through "informed Commission judgement."

Table 26. Legal Timeline for City of Vero Beach Acquisition (based on FPSC Staff recommendation)

Year	Event
2008	Legislation passed that required a municipal electric utility meeting certain criteria to conduct a referendum of its customers on the question of whether a separate electric utility authority should be created to operate the business of a city's electric utility.
2009	Complaint filed with the FPSC by two City of Vero Beach customers asking for a hearing to address FPSC enforcement of Sec. 366.04 on referendum, and to review territorial agreement between City and FPL. Complaint was voluntarily dismissed because of negotiations between FPL and Vero Beach. But negotiation did not result in sale.
2010	Attempt to pass legislation to address concerns of Vero Beach customers living outside the City. (HB 725 Mayfield/SB 2632 Negron; HB 1397, Mayfield.
2011	Legislation – HB 899, Mayfield
2013	Legislation – HB 733 Mayfield, SB 1620 Garcia
2014	Legislation – HB 813, Mayfield, SB 1248 Latvala, HB 861 Mayfield, SB 442 Altman

[72] See Appendix A for a more detailed summary of the order.

Year	Event
	Indian River Shores advised Vero that it was taking several actions to achieve rate relief, and filed in Indian River County Circuit Court, Case No. 31-2014-CA-000748, and filed petition with FPSC.
2015	Legislation – HB 773 Mayfield, HB 337, Mayfield SB 442 Altman.
	On Nov. 11, 2015, the Circuit Court granted Vero's motion to dismiss, finding that the question of whether Vero had authority to continue to provide electric service within Indian River Shores was squarely within FPSC jurisdiction.
2016	Legislation – HB 5790 Mayfield, SB 840 Simpson
	Indian River Shores filed a petition for declaratory statement with the FPSC. In response, the FPSC issued order declaring it had the jurisdiction to determine whether Vero had authority to continue to provide electric service within Indian River Shores upon expiration of the franchise agreement.
	On 3/4/16, Indian River Shores filed a petition with the FPSC asking that there be a modification of the territorial order. The FPSC issued an order denying the petition for modification. The hearing is held in abeyance.
2017	On 11/3/17, FPL filed a petition in Docket No. 20170235-EI for authority to charge FPL's rates and charges to Vero Beach customers and for requested accounting treatment. Also, FPL and City of Vero Beach filed in Docket No. 20170236-EU for approval to terminate their territorial agreement.
2018	Hearing held October 18 in above two dockets, with Special Agenda scheduled for November 27, 2018.

The process for the acquisition has taken almost 10 years. As shown in Figure 7, COVB first approached FPL about purchasing their electricity system in 2009. In November 2011, FPL filed a letter of intent with COVB proposing an offer. But COVB had existing contractual relationships with OUC in Orlando as well as the Florida Municipal Power Agency (FMPA). The final letter of intent between COVB and FPL, ratified by COVB in May 2017, set the purchase price for the utility at $185 million,[73] which included an estimated $108 million to exit all obligations under the FMPA, $20 million to settle COVB's wholesale power agreement with OUC, $20 million to retire COVB electric utility bonds, and $36.6 million to COVB. In addition, FPL agreed to build a new substation for the city and dismantle the existing one, and to offer employment to all qualified Vero Beach electric employees.

[73] Florida Power & Light, accessed September 18, 2018 https://www.fpl.com/landing/vero-beach/agreement.html

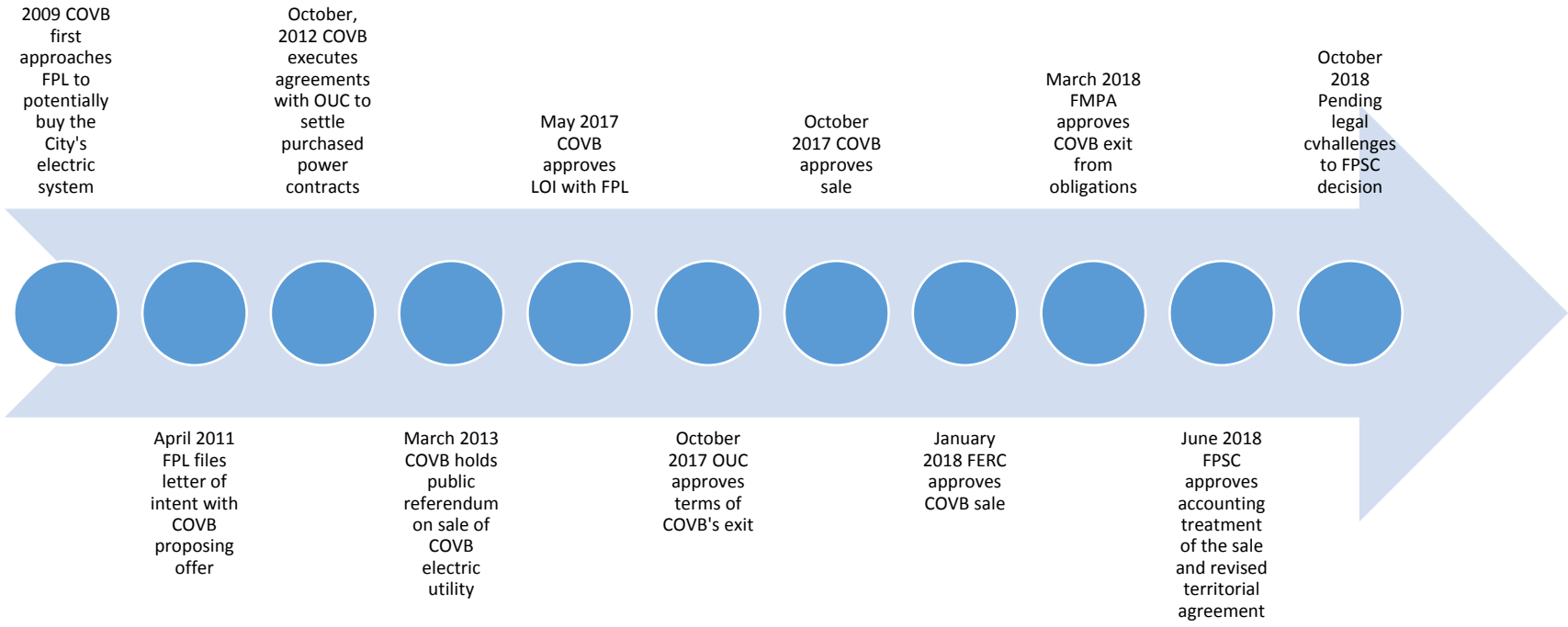

Figure 7. Procedural timeline of COVB sale to FPL

Florida Power Corp. Acquisition of Sebring Utilities Commission

The earlier case of a private acquisition of a municipal utility is Florida Power Corp.'s acquisition of Sebring Utilities Commission. The docket at the FPSC was called Joint Petition of Florida Power Corp. and Sebring Utilities Commission for Approval of Certain Matters in Connection with the Sale of Assets by Sebring Utilities Commission to Florida Power Corp, Docket No. 920949-EU. In Order No. PSC-92-1468-FOF-EU on December 27, 1992, the FPSC found it was in the public interest to grant relief sought. "It is clear that FPC's acquisition of the Sebring electric system is the most reasonable resolution of Sebring's financial problems."

The FPSC emphasized that as a general rule, it does not preapprove the prudence of rate base acquisitions outside of a rate case, nor permit acquisition adjustments outside of a rate case. Also, it does not generally permit utilities to identify a pool of debt costs and apply those costs to a particular set of customers. "Nevertheless, unique problems require unique solutions, and under this particular set of extraordinary circumstances, we believe our decision is in the best interest of all concerned." The FPSC "uncategorically" stated that this decision has no precedential value and is limited to the unique set of facts in the case.

The case was challenged at the Supreme Court of Florida by a customer association. They contested the surcharge to the customers of the system being sold to pay for part of the acquisition. The Court, in Action Group v. Deason, affirmed the authority of the FPSC to approve the surcharge.[74]

Municipal Public Works

There are numerous provisions relating to municipalities in Chapter 180, Fla. Stats. However, these statutes do not appear to superimpose a layer of regulation by another entity on top of the municipal public works. They are more empowering statutes. For example, Sec. 180.13 authorizes the municipality to create a separate board to have supervision and control of the operation of the public works constructed. The body may establish just and equitable rates or charges to be paid to the municipality for the use of the utility by each person whose premises are served. Section 180.06, Fla. Stats., authorizes provision of water and alternative water supplies and sewage systems, construction and operation of gas plants and distribution systems, and more.

Additional Comparison between Municipal Utilities and Private Utilities

JEA, through its Board, currently meet multiple objectives that include providing appropriate service to customers, ensuring the financial health of the organization, and meeting community objectives for economic growth and environmental protection. If the JEA Water and Sewer business were sold to a private entity, it would probably focus on shareholder return, but might also desire and support the continued economic growth of the community, as described earlier in this report.

The efficiency and public benefits of private versus public ownership has been studied extensively with mixed conclusions

[74] Action Group v. Deason 615 So. 2d 683 (Fla. 1993)

Also as indicated earlier in this report, changing JEA's ownership. Whereas today JEA's Board purses multiple objectives, including service quality, financial performance, and community objectives for economic growth and environmental protection, if JEA were privately owned, these roles would be distributed across the owners, the FPSC, and several other regulatory agencies.

Both public and private ownership of utility monopolies have advantages and disadvantages, and each stakeholder could hold different perspectives on the pros and cons of any particular consequence of the ownership structure. Our focus will be on what is known about the effects of different ownership structures, leaving to the stakeholders to make their own value judgements.

The efficiency effects of private versus public ownership has been studied extensively with mixed conclusions. Beecher, et al.[75] surveyed 13 econometric studies of water and wastewater utilities summarized in Table 27. Four studies found that publicly-owned utilities were more efficient, four studies found that private utilities were more efficient, and five studies concluded ambiguous results or no significant difference.

Table 27. Selected Econometric Studies of Water Utility Efficiency

Authors	**Year**	**Research Finding**
Mann and Mikesell	1971 and 1976	Public more efficient
Hausman	1976	Private more efficient
Morgan	1977	Private more efficient
Crain and Zardkoohi	1978 and 1980	Private more efficient
Bruggink	1982	Public more efficient
Lindsay	1984	No significant difference or ambiguous results
Boland	1983	Private more efficient
Feigenbaum and Teeples	1983	No significant difference or ambiguous results
Teeples, Feigenbaum, and Glyer	1986	No significant difference or ambiguous results
Byrnes, Grosskopf, and Hayes	1986	No significant difference or ambiguous results
Teeples and Glyer	1987	No significant difference or ambiguous results
Lambert, Dichev, and Rafflee	1993	Public more efficient
Bhattacharyya, Parker, and Rafflee	1994	Public more efficient

Stiel, et al.[76] conducted an efficiency analysis of electricity retailers in Germany over the 2003-2012 time period. They found overall increased efficiencies in electricity provision until about 2008, but no increase

[75] Beecher, Janice, Richard Dreese, and John Standford (1995) "Regulatory Implications of Water and Wastewater Utility Privatization", National Regulatory Research Institute

[76] Stiel, Caroline, Astrid Cullman, and Maria Nieswand (2017), "Do Private Utilities Outperform Local Government-Owned Utilities? Evidence from German Retail Electricity" German Economic Review Vol 19 Issue 4 pp 1-25

thereafter. They also found that ownership had no impact on productivity. Kwoka[77] estimated cost functions for over 500 U.S. electric utilities and concluded that while investor-owned utilities might enjoy greater efficiency in the generation of electricity, municipal utilities achieve greater efficiency in the transmission and distribution of electricity. Rose and Joskow[78] studied the manner in which utilities adopt new technologies (specifically new natural gas-fired generators) and concluded that investor-owned utilities are more likely to innovate than municipal utilities.

The most frequent reasons given for selling municipal W&S utilities:

- Extensive funding needs for necessary capital expenditures;
- To address and improve compliance with environmental permit conditions;

In contrast, the most frequent reasons for pursuing municipalization appear to be:

- Control of infrastructure construction and operation to support growth and economic development;
- To gain rate making control;
- To lower rates.

According to Beecher et al., a key difference between municipal utilities and private utilities is related to consumer protection. Consumer protection for publicly owned utilities is provided by government ownership, operation, and rate making. Consumer protection for privately owned utilities is provided by regulation, in Florida primarily through the FPSC. The Office of Public Counsel, the Office of the Attorney General, and the Department of Agriculture are also involved in consumer protection.

A recent study by Konisky and Teodoro found that privately owned utilities were more likely to comply with environmental regulations than publicly owned utilities. According to the authors, the reason is the compliance decision is a more straight-forward economic choice for a private utility: Make capital and operational investments to comply with the environmental regulation or suffer the financial penalty(s) for non-compliance. Regarding publicly-owned utilities, the authors said that the effective cost of compliance is higher than for private utilities since public utility managers bear both the direct cost that private utilities bear, plus the political cost of raising rates to fund capital and operating expenditures. Also, according to the authors, regulators are less likely to punish publicly-owned utilities for violations. The study found that publicly-owned utilities were 29% more likely to violate monitoring requirements.[79]

Affordability of Service

In some instances people believe that the revenue requirement need should be balanced against service affordability. This view misses a reality that, if the utility is unable to obtain sufficient revenue to cover its

[77] Kwoka, John (2005), "The comparative advantage of public ownership: evidence from U.S. electric utilities", The Canadian Journal of Economics, Vol 38 No. 2 (May, 2005) pp. 622-640

[78] Rose, Nancy L., and Paul L. Joskow (1990) "The Diffusion of New Technologies: Evidence from the Electric Utility Industry". *The RAND Journal of Economics* Vol. 21, No. 3 (1990), pp.354-373

[79] Konisky, David M. and Manuel Teodoro (2016) "When Governments Regulate Governments", American Journal of Political Science, Vol. 6, No. 3, July 2016, pp. 559-574

costs as shown in Figure 1, owners, creditors, and other suppliers will cease to provide the utility with resources, so service will decline. Faced with this reality, sometimes people look to the government to provide subsidies, erroneously viewing these as free money. But ultimately the government's only source of money is its citizens, so they are both the providers and the recipients of the subsidy.

Therefore it is critical, when considering the affordability question, to carefully identify which customers truly need a subsidy, measure the precise amount needed, and manage the gathering and distribution of the subsidy.

Unbundling Considerations

Though the Project Team did not engage in an extensive legal review of these agreements, many of JEA's cross-agency relationships may be affected by any attempt to unbundle aspects of JEA's operations. A summary of the interrelationships of the water and wastewater utility are given in Table 28.

Table 28. Effects of Unbundling on Cross Agency Arrangements

	Sell all JEA Assets	**Sell only JEA Electric Assets**
AGREEMENTS WITH THIRD PARTIES		
Interlocal Agreements with Surrounding Counties	Surrounding Counties have right to purchase facilities in their county prior to sale	Surrounding Counties likely have purchase rights, triggered by "change in majority interest"
SJRWMD Consumptive Use Permit	Rights and obligations transferred to new owner	Rights and obligations of CUPs for electric facilities transferred to new owners
Consent decrees with regulatory agencies	Obligation of new owner	Electric obligations transition to new owner, JEA retain W&S obligations
NEW AGREEMENTS FOR PREVIOUSLY SHARED SERVICES AND FACILITIES		
Utility Costs Between Utilities (e.g. electric charges to water & sewer)	Transferred facilities subject to newly established rates	Newly established electric rates apply to W&S/DES facilities per tariff
Easements	Complex land rights, numerous issues will likely exist in asset sale	More complicated than sale of assets to one entity. Legal rights would have to be retained/established separately for Electric, W&S, DES
Rights of Way	Transfers of property rights defined by purchase and sale agreement	Transfers of property rights defined by purchase and sale agreement, allocation of rights in shared utility corridors would be complex
Shared Facilities (e.g. customer service centers)	Likely purchased as part of overall asset sale	Shared facilities would require allocation to electric and all other systems. Some facilities would likely be retained by W&S/DES
Shared Utility Administrative and CS services (e.g. procurement, customer service, billing, metering, field services, engineering, environmental planning and	New owner would have responsibility for and provide all shared services, may be combined with existing operations of purchasing entity	New electric owner provide as required for electric operations. JEA continue to provide shared services for W&S/DES, but demand would be significantly less due to smaller operation.

	Sell all JEA Assets	**Sell only JEA Electric Assets**
compliance, finance, accounting, legal services, community and investor relations, fleet, human resources, construction, operation, collections)		
Point of electric service and facility maintenance responsibility for W&S/DES Facilities	As determined and defined by new owner	As defined in purchase and sale agreement
Pole Attachment Agreements	As defined in purchase and sale agreement	As defined in purchase and sale agreement. W&S/DES would likely have continuing needs for pole attachments
FINANCIAL PAYMENTS		
Franchise Fees	Due from purchasing entity	Due from respective utilities
Property Taxes	Due for purchased facilities from new owner (if not tax exempt)	Due for purchased facilities from new owner (if not tax exempt)
Annual Transfer	Discontinued	Portion allocated to W&S/DES would likely continue
AGREEMENTS WITH THE CITY OF JACKSONVILLE		
Use of Easements/ROWs for COJ use	By agreement as stipulated in purchase and sale	By agreement as stipulated in purchase and sale for those not retained by W&S/DES
Septic Tank Conversion Program	Renegotiated in purchase and sale, new owner may or may not provide funding	Would likely continue as currently defined and operating subject to provisions of existing agreements
Pole Attachment Agreements	As defined in purchase and sale agreement. COJ would likely have continuing needs for pole attachments	As defined in purchase and sale agreement. COJ would likely have continuing needs for pole attachments
Landfill Leachate Treatment	As defined in purchase and sale agreement	No Change
Chilled water to COJ facilities	As defined in agreement and/or rates approved by FPSC	As defined in agreement and/or rates approved by FPSC
Shared responsibilities and costs of NNC compliance	By agreement as part of purchase and sale agreement	Continue existing agreement between W&S and Public Works

VII. Case Studies in Utility Ownership Transitions

Privatizations

The Project Team was unable to identify examples of public water system sales similar in size and scope to JEA's water system. News articles suggest that Atlanta's water system was privatized in the late 1990s. However, review of the relationship suggests that Atlanta entered into a 20 year contract with United Water Atlanta for system improvements, operation, and maintenance with the system reverting to Atlanta at contract end. This contract relationship would more accurately be termed as a Public Private Partnership since it did not apparently include an asset sale. The relationship proved to be unsatisfactory to Atlanta and the contract was terminated in 2003.

In the electric arena, there have been two high-profile privatizations in Florida. The most recent involves the FPL acquisition of the Vero Beach electric utility. On July 2, 2018, the FPSC issued an order approving FPL's accounting treatment for the transaction and granting a petition to terminate the territorial agreement. In this case, the FPSC found there are extraordinary circumstances that warrant a positive acquisition adjustment. Approximately 60 to 65% of Vero Beach's customers reside outside the City's municipal borders, and those customers have had an inability to have a voice in the operation of the City's electric utility or in rate setting decisions.

In the electric arena, there have been two high-profile privatizations in Florida, Sebring Utilities Commission and the City of Vero Beach Electric.

This FPSC order has been challenged and a hearing was held at the FPSC in October 2018 and the FPSC upheld the Order on November 27, 2018.

Another case involved Florida Power Corp's acquisition of Sebring Utilities Commission. In 1992, the FPSC found that the acquisition is the most reasonable resolution of Sebring's financial problems. The case was challenged at the Florida Supreme Court by a customer association. They contested the surcharge to the customers of the system being sold to pay for part of the acquisition. However, the Court affirmed the FPSC's decision.

The FPSC had noted that the Sebring Utility Commission was in serious financial distress. Faced with escalating debt obligations in 1992, the Sebring Utilities Commission sold its generation facilities and most of its transmission facilities to Tampa Electric Company. Sebring entered into a purchased power contract with Tampa Electric to supply all of its capacity needs. The sale to Tampa Electric did not solve the financial problems, and debt service on approximately $85 million of bonds that remained outstanding had drained Sebring's resources and brought it to the verge of bankruptcy.

Municipalizations

There are few examples of private water or wastewater systems being purchased by municipalities from private parties. Failure to resolve purchase prices and other terms of the potential sale have stopped some municipalities from buying systems from investor owned utilities. Mooresville, Indiana pursued the purchase of water infrastructure offering more than $9 million, but through court proceedings a judge placed the appropriate purchase price at $20.3 million and the town of 10,000 declined to proceed. Fort

Wayne, Indiana and Missoula, Montana both went through expensive and/or lengthy legal proceedings, ultimately purchasing assets from investor owned utilities that served their cities.[80]

In Florida, municipalizations have arisen in Winter Park and in the City of Casselberry. The Winter Park scenario is described in detail below. The Casselberry case is Florida Power Corp. v. City of Casselberry, 793 So. 2d 1174 (Fla. 5th D.C.A. 2001). It related to Florida Power being ordered to arbitrate with the city regarding the purchase price of Florida Power's distribution lines located within the city limits. Florida Power had maintained there were obstacles to Casselberry's operation of an electrical distribution system within its city limits, the main one being that the FPSC has exclusive jurisdiction over matters of rates, service and territorial disputes. The District Court of Appeal found that Florida Power had to enter arbitration, but Florida Power and the Casselberry ultimately entered into a new franchise agreement.

According to the Orlando Sentinel, Altamonte Springs announced in October 2017 that it will seek to form its own municipal utility, with the goal of providing electricity from renewables to government facilities. Residents and business would remain with Duke Energy.[81]

A report by Synapse Energy Economics, Inc., "An Analysis of Municipalization and Related Utility Practices," [82]provides descriptions of four case studies. This 2017 study states that reliability concerns, high bills, a perceived loss of local control, and a citywide sustainability policy with performance targets for energy savings were reasons communities have considered municipalization.

The study argues that some costs of operating and maintaining a municipal utility can be lower than what utility customers would pay an investor-owned utility in rates. Municipal bonds typically have lower interest rates than investor-owned utility bonds, resulting in lower costs. Also, municipal utilities do not pay dividends to investors since the city is the owner and apparently can decline to seek a return on the taxpayer funds use to finance the utility. Finally, municipal utilities are exempt from federal taxes.

However, the study also held that municipal utilities face challenges that can result in higher costs. The acquisition cost for municipalized infrastructure was in some cases higher than what was being recovered by the investor-owned utility through its rates. Operationally, large investor-owned utilities may have economies of scale that can lead to lower legal, management, and purchasing costs per unit of energy. The study further held that municipal utilities are not typically monitored closely by public service commissions and there can be inadequate auditing resulting in poor utility practices. Incumbent investor-owned utilities have focused business objectives, which can facilitate efficient decision making. Cities often ask their municipal utilities to pursue multiple policy goals, which can change, leading to more complex management decision making.

The study's authors believed that municipal utilities hold a higher potential for innovation than investor-owned utilities, but found that municipal utilities are inconsistent in exploiting that potential.

According to the U.S. Energy Information Administration's most recent data, more than 900 electric utilities have ownership structures of "municipal" or "political subdivision." Municipalization is rare in

[80] "Towns sell their public water systems – and come to regret it", Washington Post July 8, 2017

[81] "Altamonte Springs forms its Own Utility," Orlando Sentinel, October 15, 2017

[82] "An Analysis of Municipalization and Related Utility Practices," Synapse Energy Economics, Inc., September 30, 2017, Prepared for the District of Columbia Department of Energy and Environment.

recent years, according to Synapse. Of these 900 municipals, only 2% have municipalized since 1990. Usually this is in small communities.

VIII. Considerations

This study does not have a section on conclusions, because the Project Team doesn't offer advice regarding the future of the relationship between JEA and the COJ. So in the place of conclusions, this section summarizes thoughts on what different stakeholders are likely to consider regarding any future transaction. This is unlikely to be exhaustive. We do, however, remind the reader of numerous factors that merit consideration should the sale of JEA be seriously contemplated.

Plant Vogtle

The final disposition of the Plant Vogtle project will probably not be resolved for years. There is uncertainty surrounding the various court challenges raised by COJ and MEAG for the project, as well as JEA's petition before the FERC. The resolution of these proceedings should help to clarify JEA's obligation under its contract with MEAG. Beyond the contract itself, there is uncertainty regarding what the project will ultimately cost, the capacity and energy that will be available to JEA, and when the plant will go into service, so JEA does not know either the cost of the energy and capacity they will receive or when delivery will begin.

Disruptive Technology

The electricity and water and wastewater industries are rapidly changing in both the type and scale of technologies being deployed, and how those technologies interact with the existing systems. Unforeseen changes in policy regarding access to markets, environmental restrictions, and how non-traditional stakeholders will be compensated all have the potential to change the rights, opportunities and responsibilities for the traditional utility. The changes to the utility industry from these disruptive technologies may result in stranded costs if the economic value of JEA's current assets is impacted by these changes.

Shifts in Risk Management

JEA, as a municipal utility, benefits from access to federal and state disaster recovery funds that may not be available to an investor-owned utility. FEMA reimburses JEA for 75% of costs related to storm damage and the State of Florida reimburses an additional 12.5%. Additionally, JEA employs certain stabilization strategies, such as hedging and rate stabilization funds, to reduce volatility of the prices charged to customers – strategies that may not be available to investor-owned utilities.

Relationships with Government and Private Entities

JEA's operations have multiple agreements and contracts with an array of government and private entities, such as its interlocal agreements with neighboring counties, which have evolved as the utility has expanded service to meet the needs of a growing community. These agreements could bring complexity to the task of selling one or more business units.

Change in Rate Determination

Currently, the JEA Board approves budgets for operating and capital expenditures and submits these budgets to the City Council and Mayor for final approval. Rates are set to recover these approved expenditures and any transfers. Any change in ownership would shift the responsibility for setting rates to other entities, such as the FPSC.

Contributions to General Fund

JEA operations currently result in transfers to the City's General Fund. Any change in the legal or ownership structure of JEA will likely result in a change in the manner in which COJ receives a return on its investment in JEA. While COJ retains control of the mechanism for the General Fund transfer, the degree of control it has over the new mechanism may change.

Community Expectations

JEA has a long history operating as an integral part of the COJ and members of the community - citizens, businesses, and local officials - all have ingrained an understanding of what the relationship between the utility and the COJ is or should be. Any change in the legal, regulatory or financial structure of the utility has the potential to alter these expectations, perhaps in unexpected ways. Any potential buyer will likely need to reconcile these expectations with any new realities that may emerge from this potential change. This might include the expectation that a buyer would retain local employees or the local presence that JEA currently occupies.

Change in Synergies

JEA electric, water/sewer, and district energy share many administrative assets including a billing system, customer deposits, and administrative personnel. In addition, each utility is a customer of the other. The financial impact of separating those utilities, if JEA were to be unbundled cannot be determined.

Change in Local Control

The JEA Board of Directors in responsible for approving all operating and capital expenditure budgets, before sending them to the City Council and Mayor's office. They are also responsible for rates, regulatory compliance strategies, and ensuring that JEA is meeting community goals such as economic development and other aspirations. In the event that the ownership structure of JEA changes, these responsibilities may no longer lie with the JEA board, but with other agencies. To the extent that these agencies lie outside the City, the City's goals for the utility may not be realized if they conflict with broader regulatory or legal mandates.

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Appendix A – Summary of FPSC Vero Beach Order

Issued July 2, 2018 in Docket Nos. 20170235-EI and 20170236-EU.

"Notice of Proposed Agency Action Order Granting Petition by Florida Power & Light Company for Authority to Charge FPL Rates to Former City of Vero Beach Customers and for Approval of FPL's Accounting Treatment for City of Vero Beach Transaction and Granting Joint Petition of FPL and the City of Vero Beach to Terminate Territorial Agreement"

The COVB electric utility is a municipally-owned electric utility providing service to customers through approximately 35,000 customer accounts using the COVB transmission and distribution facilities. Approximately 60% of COVB's utility customers reside outside the City's municipal borders including customers residing in portions of unincorporated Indian River County and portions of the Town of Indian River. For many years, here has been controversy because customers living outside the boundaries of the City wanted to be served by FPL because it charges lower rates than COVB. The customers who live outside the City have argued they have no ability to vote for members of the City Council and thus have no voice concerning the operation or management of the City's electric utility and no redress to any governmental authority.

On November 3, 2017, FPL filed a petition for authority to charge FPL's rates and charges to COVB customers and for approval of FPL's requested accounting treatment.

FPL states that in order to implement the purchase sale agreement (PSA), COVB needs to address power contracts to which it is a party, including (1) a 20 year wholesale services agreement with the Orlando Utilities Commission (OUC) to provide supplementary power to COVB, due to expire in 2023; and (2) a series of three contracts for the City's share of the FMPA generation entitles from certain power plants. The petition states that as part of the PSA and to enable the COVB to terminate its obligations with OUC, FPL negotiated a short-term power purchase agreement with OUC for capacity and energy, commencing at the close of the PSA and extending through 2020.

FPL states that in order to implement the PSA, it requests that the FPSC: (1) grant FPL approval to charge its approved rates and charges to the COVB customers; (2) approve the establishment and base rate recovery of a positive acquisition adjustment of approximately $116.2 million with respect to the City's electric utility system acquired by FPL; and (3) approve recovery of costs associated with the short-term PPA with OUC. An acquisition adjustment is the difference between the purchase price paid to acquire a utility asset or group of assets and the depreciated original cost, or net book value, of those assets. A positive acquisition adjustment exists when the purchase price is greater than the net book value. With respect to the OUC PPA, FPL requests that the FPSC: (1) approve recovery of the energy portion of charges through FPL's Fuel and Purchased Power Cost Recovery Clause; and (2) approve recovery of the capacity charges component through the Capacity Cost Recovery Clause.

In addition, FPL and COVB filed a joint petition for approval to terminate their territorial agreement. The joint petitioners state that FPL's purchase of COVB's electric system is projected to result in more economical service to both COVB's customers and FPL's current customers and therefore termination of the territorial agreement is in the public interest. COVB's existing service territory is surrounded by FPL's service territory. The joint petitioners state that the geographic configuration will allow FPL to make efficient use of resources in providing electric service to COVB's customers. Also, they say this will result in excellent service reliability for COVB's customers. Also, they say that COVB's residential and commercial

customers will be eligible to participate in FPL's energy conservation programs and commercial customers will have the opportunity to enroll in economic development rates.

Jurisdiction:

FPSC stresses that it does not have jurisdiction over approval of the transfer of the City's electric utility assets to FPL. However, it says that it has jurisdiction over the matters raised in the petitions pursuant to Sections 366.06 and 366.076, Fla. Stats.

The FPSC approves the request for FPL to charge its approved rates and charges to the COVB customers because those customers would become FPL customers. The rule mentioned is Rule 25-9.044(1), F.A.C. that states in the case of a change of ownership or control of a utility that places the operation under a different or new utility, the company which will thereafter operate the utility must adopt and use the rates, classifications, and regulations of the former operating company unless the FPSC authorizes a change.

Request for Termination of Existing Territorial Agreement:

According to the Order, the FPSC has the responsibility to ensure that the termination of the territorial agreement and concomitant transfer of customers to FPL results in no harm or detriment to the public interest, citing Utilities Commission of the City of New Smyrna Beach v. Florida Public Service Commission, 469 So. 2d 731, 732-33 (Fla. 1985). The public interest is the ultimate measuring stick to guide the decision. Gulf Coast Electric Cooperative v. Johnson, 727 So. 2d 259, 264 (Fla. 1999). Utility ratemaking is viewed as a matter of fairness. GTE Florida INC. v. Clark, 668 So. 2d 971, 972 (Fla. 1996). The decision must be based on the effect termination of the territorial agreement will have on all affected customers, both those transferred and those not transferred. See New Smyrna Beach, 469 So. 2d at 732.

The FPSC concluded that termination of the territorial agreement results in no harm or detriment to the public interest.

FPL's Request for a Positive Acquisition Adjustment

The Order states that the narrow question is whether FPL's proposed accounting treatment should be approved. A positive acquisition adjustment is when the purchase price is greater than the net book value. The approval for ratemaking purposes means that a utility can recover the purchase price premium from all of its customers. The policy has been to evaluate the specific facts and circumstances on a case by case basis and to determine whether there are extraordinary circumstances that warrant the approval of a positive acquisition adjustment.

The Order discusses the Sebring case in 1992, where the FPSC determined that extraordinary circumstances existed for allowing a positive acquisition adjustment because the acquisition represented "the most reasonable resolution of Sebring's financial problems." In the Sebring case, the cost of the debt attached to the Sebring electric system was not recovered from the existing general body of FPC customers through an acquisition adjustment.

FPL projects that the addition of the COVB customers will reduce the shared amount of fixed cost spread across FPL's existing general body of customers. FPL provided a cumulative present value revenue requirements analysis that showed potential 30-year present value savings of $105.3 million to the existing body of FPL customers. FPL identified three cases involving natural gas utilities where they

addressed positive acquisition adjustments. In those cases, FPL states there were five factors in determining whether an acquisition and any resulting positive acquisition adjustment are in the public interest: (1) increased quality of service; (2) lowered operating costs; (3) increased ability to attract capital for improvements; (4) a lower overall cost of capital; and (5) more professional and experienced managerial, financial, technical and operational resources.

FPL also cited to Rule 25-30.0371, F.A.C. which addresses acquisition adjustments for water and wastewater utilities. The rule states consistent without policy for all regulated industries, that a positive acquisition adjustment shall not be included in rate base absent proof of extraordinary circumstances.

Extraordinary Circumstances:

The Order says the FPSC practices original cost ratemaking. The value of a utility's rate base is determined by the depreciated original cost of the property devoted to public service.

Absent a clear demonstration of extraordinary circumstances, the purchase of a utility system at a premium does not affect the determination of rate base. If the purchase price of a utility is greater than the net book value, the difference between the purchase price and net book value is not passed on to the general body of customers vis-à-vis an increase in rate base absent a demonstration of extraordinary circumstances.

The FPSC does not agree with FPL that its reliance on a specified analysis demonstrates extraordinary circumstances. Also, they do not agree with FPL that Rule 25-30.0371 concerning acquisition adjustments for water and wastewater is applicable to this case. It does not apply to electric utilities. Also, the reliance on a positive acquisition adjustment for a gas utility purchase is not determinative in this case.

According to the Order, the FPC/Sebring Order is the only case where the FPSC approved a positive acquisition adjustment in the electric industry. That Order (Order No. PSC-92-1468k-FOF-EU, Page 11), discussed the difficulty of preapproving the prudence of rate base acquisitions outside of a rate case. "As a general rule, we do not permit utilities to identify a pool of debt costs and apply those costs to a particular set of customers. The FPSC emphasized that "we uncategorically state that this decision has no precedential value. It is limited to the unique set of facts in this case."

However, the FPSC found there are extraordinary circumstances here that warrant the approval of a positive acquisition adjustment. Approximately 60 to 65 percent of COVB's customers reside outside the City's municipal borders, and those customers have had an inability to have a voice in the operation of the City's electric utility or in rate setting decisions. No objections were received in either docket from any COVB or FPL customers. The legal system favors settlement of utility territorial disputes by mutual agreement between contending parties. This will resolve the ongoing contention between the COVB and Indian River County and the Town of Indian River Shores. Thus, the FPSC found extraordinary circumstances justify approval.

The FPSC notes that a disparity in rates alone does not constitute an extraordinary circumstance to support a positive acquisition adjustment. Electric utility customers cannot choose between electricity providers based on which one has the lower rates. Also, a significant price differential in rates between two providers does not give a customer a substantial interest in the proceeding on a territorial agreement.

Positive Acquisition Adjustment Amount

According to the Order, extraordinary circumstances due to the unique nature of the territorial issues merit the FPSC's approval of a positive acquisition adjustment. "Due to the facts of this case, we need not determine a value above net book value that could benefit the general body of ratepayers because we find that allowing a positive acquisition adjustment of $116.2 million will not harm FPL's existing customers." Thus, the FPSC authorizes FPL to record a positive acquisition adjustment in the amount of $116.2 million on its books in FERC Account 114 – Electric Plant Acquisition Adjustments and to amortize this amount over the requested 30 years.

Short-Term Power Purchase Agreement with OUC

FPL states that obtaining COVB's release from an existing wholesale contract with OUC, due to expire in 2023, is a necessary step to proceed with the acquisition of the City's utility. OUC would not grant COVB a release from the contract without additional compensation beyond the $20 million that DOVB committed to pay from the proceeds of the sale. So FPL negotiated a power purchase agreement with OUC upon the closing of the PPA through December 2020.

Under the agreement, FPL is obligated to purchase a specified amount of capacity at a specified price from OUC, but the purchase of energy is optional. FPL states the agreement would be effectively exercised as a peaking option to cover load during periods of high demand. However, FPL made no assertion that the PPA is needed for reliability purposes.

FPL requested that the FPSC approve recovery of the energy portion through the Fuel and Purchased Power Cost Recovery Clause and approve recovery of the capacity charges through the Capacity Cost Recovery Clause. From an avoided cost perspective, FPL customers will receive a total of $6.9 million in net energy savings, compared to total fixed costs of $23.5 million. Therefore, based on FPL's estimates, the PPA is approximately $16.6 million above avoided cost.

Typically, a power purchase agreement is considered appropriate for cost recovery if it is reasonably demonstrated that it will not result in costs above avoided cost. However, due to extraordinary circumstances, the PSC approves this cost recovery.

In conclusion, the decision is limited to the unique set of circumstances and does not represent a change in regulatory policy, according to the Order. "Unique problems require unique solutions," and this decision is "in the public interest."

Thus, the FPSC authorizes FPL to charge its approved rates to the City of Vero Beach customers, and approves the request to terminate the existing territorial agreement. The FPSC finds that FPL has demonstrated extraordinary circumstances that justify the positive acquisition adjustment. The FPSC authorizes FPL to record the positive acquisition adjustment of $116.2 million.

Chairman Art Graham dissents on the issue of the finding that extraordinary circumstances exist to authorize a positive acquisition adjustment; on the issue of the approval of a positive acquisition adjustment; and on the issue of the approval of FPL's requested cost recovery of the short-term Power Purchase Agreement with the Orlando Utilities Commission.

Commissioner Donald Polmann dissented on the amount of the positive acquisition adjustment and the cost recovery of the short-term Power Purchase Agreement with the OUC.

Note: this Order was protested. A FPSC hearing was held and the FPSC upheld their Order on November 27, 2018.

Appendix B – Industry Trends and Disruptions

Five Trends Impacting Power

Technological innovation has been a catalyst for rapid change in many industries. Advances are happening in many parts of the power sector, such as offshore wind and high-voltage DC transmission. According to Dann, elements of the old centralized system are becoming obsolete as power moves to a much more decentralized system. There is a growing desire to find an alternative utility business model that integrates technological advances. Smart grids have the potential for greater interactivity with customers. A breakthrough in the cost and practicality of battery storage technology could open the gates towards off-grid customer self-sufficiency. Other tools, such as mobile devices, data analytics, and cloud computing have the potential to help smart grids and smart metering become more efficient, making the relationship with customers stronger.

Also according to Dann, the changing economics and regulation of power generation will affect utility business models. The power sector accounts for more than two-thirds of global greenhouse-gas emissions. Resource scarcity, and the associated geopolitics and economics of energy supply, are key factors shaping power market policy. In the U.S. alone, over 30% of new electricity generation capacity added in 2012-2013 involved solar and wind power. Energy efficiency has also become a more pressing concern in the policy and customer agenda. This is causing the value chain to shift, away from large conventional power plants towards local power generation.

Disruption Dynamics

Changes in customer behavior has become an increasingly impactful disruptor in the power market. Changes in the economics and capabilities of self-generation and storage are growing and could possibly lead to some customers saying “goodbye to the grid.” If this pattern continues, utilities face choices for the roles they might serve in the future. For example, utility companies could become active in the self-generation market. They could also be providers of secondary or back-up power to customers. Some people aspire to limit utilities to simply providing wires over which others do business. Successful utilities will be those that align their business models with how customers will choose to use energy, assuming that regulatory controls allow utilities the opportunity to adapt to the changing economics.

As markets evolve, the opportunity for higher profit margins shift into newer parts of the value chain, at least until competition erases those profits. If barriers to competition decline, existing companies face the risk of being outmaneuvered by new competitors, if these entrants are less constrained by regulations or hard-to-change business practices. Micro-grids, which are growing in popularity, represent a case in point, according to Dann. The arrangement introduces new entities that assume some of the roles of the traditional utility, but not necessarily with all of the rights and obligations of a traditional utility. The asymmetry distorts market incentives for consumers, utilities, and the providers of the micro-grids.

Many industry observers believe that electric grids will be reshaped by distributed energy resources, which is the situation where electricity production becomes less centralized and where energy storage becomes part of the value chain. If technologies such as solar generation continue to fall in price, battery storage becomes more economical, and technologies such as blockchain lower the costs of managing small transactions involving local generation and storage, the opportunities for competitive energy markets could grow substantially. Countering this pattern is the improving economics of utility-scale solar and storage, and the opportunity for artificial intelligence to redefine utility-customer relationships. There

is an abundance of opinions about how these economic trends will affect industry structure, but experiences from other industries that have undergone rapid technological change – such as telecommunications – indicate that most predictions will be wrong.

The frictions between centralized and distributed service models of the grid is showing up in several situations. In some jurisdictions offshore wind is competing with traditional utility infrastructure, which can be left stranded if regulations permit and the economics favor new grid design. Natural disasters, such as the Fukushima disaster in Japan, have led to major policy changes, such as in Germany, which began phasing out nuclear altogether. In Japan, plants were brought back to operation, but polls have shown that the majority of Japanese are opposed to their use. In the US, changes in policy have threatened the viability of coal-fired power plants. Overreliance on the centralized power generation model can leave companies vulnerable if their assets become obsolete.

Demand management services is another key area shaping the future. Here companies provide industrial and commercial clients strategies for reducing their demand for electricity. Sufficient declines in demand will make it more important for service providers – whether traditional utilities or new entrants – to align their prices with underlying costs. Today's electricity prices reflect regulatory considerations, such as rate averaging, that are based on public policies that are viewed as important, but that will be challenged when customers and service providers are empowered to respond to individual economic incentives.

Digital technologies could also change utilities' relationships with customers. Several established technology companies, such as Google and Amazon, have tested strategies for becoming the customer interface for energy management. If existing power companies lose the customer relationship, they risk losing data that could prove important to managing energy production and for creating new services. In a grid-connected but distributed system there are roles for intermediaries who can act on behalf of customers, matching supply and demand, and providing services rather than energy.

Finally, government and regulation can be a disruptor, a protector of established utility interests, or a champion of new economic interests. Energy is a key economic and political issue. Companies often depend on political context and the public trust in order to operate. The cost of electricity is a prevalent factor in most household budgets as well as with businesses. Public opinion and political will have the power to alter the nature of the power market, for better or for worse, with a huge impact on utilities. More and more citizens are voicing their concerns with regards to the power market, but often lack the depth of expertise to comprehend the implications of their preferences. The volatility highlights the importance of public trust and perception, with increasing numbers of people emphasizing climate change and the belief that planet's finite energy resources represent a binding constraint on the future. Some see the desire for energy transformation equating to a need to reduce dependence on utility companies. If these public perceptions become hardwired into public policies, they create risks because, as we indicated above, most predictions about the future turn out to be wrong. If instead the predictions lead to less regulatory control, there are risks that companies will make serious financial mistakes – such as happened during telecommunications deregulation and electricity restructuring in some states – which could threaten essential services.

Technical Appendix – SAIDI and SAIFI Benchmarking

2014 Results

Table 29. 2014 OLS Regression Results

Variable	SAIDI	SAIFI
Log of Customers	0.0764 (0.09444)	0.1547** (0.0680)
Percent Residential	0.1334 (1.2480)	0.9833 (1.1684)
Percent Commercial	0.1546 (1.6305)	-0.4545 (1.4231)
Log Customer Density	-0.0094 (0.1009)	-0.1950** (0.0720)
Log Distribution Density	-0.0727 (0.1380)	0.0815 (0.1032)
Percent of Optimized Circuits	-0.3058** (0.1556)	-0.1016 (0.1190)
Investor-Owned	0.0337 (0.2759)	-0.2949 (0.2002)
Municipal	-1.2036** (0.2123)	-0.6293** (0.1560)
R squared	0.2527	0.2835

Table 29 shows the results of the regression analysis. For the SAIDI model the coefficients on customers, percent of residential and percent of commercial customers are all positive, implying that an increase in any of these characteristics increases outage duration. However, the coefficients are not statistically significant at any reasonable level. Similarly, the coefficients on customer density and distribution density are negative, but not statistically significant. Optimized circuits is negative and statistically significant, implying that a 1% increase in optimized circuits leads to a 0.3% decrease in outage duration. Finally, the coefficient on investor-owned utilities is positive, but not statistically significant, but the coefficient on municipal utilities is negative and significant. This implies that municipal utilities have less than half the outage duration of cooperative utilities.

For the SAIFI model the coefficients on customers is positive and significant, while the percent of residential and percent of commercial customers are positive, but not statistically significant. The positive coefficient of customers, though, implies that an increase of 1% in a utility's customer base will lead 0.15% more outages. However, the coefficients on customer density is negative and significant, indicating that a 1% increase in customer density will lead to a 0.19% decrease in outages. The coefficients on distribution density and optimized circuits are not significant. Finally, the coefficient on investor-owned utilities is negative, but not statistically significant, but the coefficient on municipal utilities is negative and significant. This implies that municipal utilities have fewer outages than cooperative utilities.

2015 Results

Table 30. 2015 OLS Regression Results

2015 Regression Results		
Variable	**SAIDI**	**SAIFI**
Log of Customers	0.2236** (0.0684)	0.1981** (0.0560)
Percent Residential	-0.2593 (0.9753)	-0.3706 (1.0484)
Percent Commercial	-1.5896 (1.2260)	-1.1040 (1.2675)
Log Customer Density	-0.0917 (0.0692)	-0.1386** (0.0565)
Log Distribution Density	-0.2403** (0.1119)	0.0341 (0.0957)
Percent of Optimized Circuits	-0.4872** (0.1181)	-0.2352** (0.1008)
Investor-Owned	-0.3320 (0.2105)	-0.4490** (0.1694)
Municipal	-1.0599** (0.1550)	-0.7819** (0.1265)
R squared	0.3100	0.3255

As shown in Table 30, for the SAIDI model the coefficients on customers is positive and statistically significant. This implies that a 1% increase in the utility's customer base increases outages by about 0.22%. The coefficients on percent of residential and percent of commercial customers are both negative, implying that an increase in any of these characteristics decreases outage duration. However, the coefficients are not statistically significant at any reasonable level. Similarly, the coefficients on customer density is negative, but not statistically significant. The coefficient on distribution density and optimized circuits are negative, and statistically significant. Finally, the coefficient on investor-owned utilities is negative, but not statistically significant, but the coefficient on municipal utilities is negative and significant. This implies that municipal utilities have less than half the outage duration of cooperative utilities.

For the SAIFI model the coefficients on customers is positive and significant, while the percent of residential and percent of commercial customers are negative, but not statistically significant. The positive coefficient of customers, though, implies that an increase of 1% in a utilities customer base will lead to 0.19% more outages. However, the coefficients on customer density is negative and significant, indicating that a 1% increase in customer density will lead to a 0.13% decrease in outages. The coefficients on distribution density is not significant, but the coefficient on optimized circuits is statistically significant. Finally, the coefficient on investor-owned utilities and municipal utilities is negative and statistically significant, implying that investor-owned and municipal utilities have fewer outages than cooperative utilities.

2016 Results

Table 31. 2016 OLS Benchmarking Results

2016 Regression Results		
Variable	**SAIDI**	**SAIFI**
Log of Customers	0.2021** (0.0598)	0.1782** (0.0573)
Percent Residential	0.3786 (0.8142)	1.2057 (1.0371)
Percent Commercial	0.6068 (1.1189)	1.9059 (1.3377)
Log Customer Density	-0.0594 (0.0593)	-0.0567 (0.0575)
Log Distribution Density	-0.2557** (0.0990)	-0.2229** (0.1026)
Percent of Optimized Circuits	-0.2468** (0.0940)	-0.1790* (0.0959)
Investor-Owned	-0.5161** (0.1797)	-0.5868** (0.1728)
Municipal	-1.3491** (0.1312)	-0.9344** (0.1302)
R squared	0.4357	0.3578

From Table 31, for the SAIDI model the coefficients on customers is positive and statistically significant. This implies that a 1% increase in the utility's customer base increases outages by about 0.20%. The coefficients on percent of residential and percent of commercial customers are both positive, implying that an increase in any of these characteristics increases outage duration. However, the coefficients are not statistically significant at any reasonable level. Similarly, the coefficients on customer density is negative, but not statistically significant. The coefficient on distribution density and optimized circuits are negative, and statistically significant. This implies that increasing customer density on distribution circuits or increasing the percentage of circuits on voltage optimization by 1% decreases outage duration by about 0.20%. Finally, the coefficient on investor-owned utilities and municipal utilities is negative and significant. This implies that investor-owned and municipal utilities experience shorter outage durations than cooperative utilities.

For the SAIFI model the coefficients on customers is positive and significant, while the percent of residential and percent of commercial customers are positive, but not statistically significant. The positive coefficient of customers, though, implies that an increase of 1% in a utilities customer base will lead to 0.18% more outages. The coefficient on customer density is negative but not statistically significant, while the coefficients on distribution density and optimized circuits are both negative and statistically significant. Finally, the coefficient on investor-owned utilities and municipal utilities is negative and statistically significant, implying that investor-owned and municipal utilities have fewer outages than cooperative utilities.