

VERO BEACH UTILITIES COMMISSION MEETING
Tuesday, March 8, 2016 – 9:00 a.m.
City Hall, Council Chambers, Vero Beach, Florida

AGENDA

- 1. CALL TO ORDER**
- 2. APPROVAL OF MINUTES**
 - A) February 9, 2016**
- 3. ELECTION OF OFFICER**
 - A) Chairman**
- 4. PUBLIC COMMENT**
- 5. NEW BUSINESS**
- 6. OLD BUSINESS**
 - A) Solar Photovoltaic Project Presentation – Ms. Michele Jackson of Florida Municipal Power Agency (FMPA)**
 - B) Resolution Expressing Support for the Construction of the Groveland Reservoir and Treatment Area and Requesting St. John’s Water Management District to Protect and Preserve the Florida Aquifer Public Water Supply by Restricting Withdrawals from the Floridan Aquifer for Electric Utility Use.**
- 7. CHAIRMAN’S MATTERS**
- 8. MEMBER’S MATTERS**
- 9. ADJOURNMENT**

This is a Public Meeting. Should any interested party seek to appeal any decision made by the Commission with respect to any matter considered at such meeting or hearing, he will need a record of the proceedings and that, for such purpose he may need to ensure that a record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. Anyone who needs a special accommodation for this meeting may contact the City’s Americans with Disabilities Act (ADA) Coordinator at 978-4920 at least 48 hours in advance of the meeting.

VERO BEACH UTILITIES COMMISSION MINUTES
Tuesday, February 9, 2016 – 9:00 a.m.
City Hall, Council Chambers, Vero Beach, Florida

PRESENT: Vice Chairman/Indian River Shores Representative, Robert Auwaerter; Members: Chuck Mechling, Judy Orcutt, Stephen Lapointe, Laura Moss, and Alternate Member #1, George Baczynski **Also Present:** City Manager, James O'Connor; Water and Sewer Director, Rob Bolton and Deputy City Clerk, Sherri Philo

Unexcused Absences: Scott Stradley and Bill Teston

1. CALL TO ORDER

The Vice Chairman called today's meeting to order at 9:01 a.m.

2. APPROVAL OF MINUTES

A) January 12, 2016

Mrs. Moss referred to page nine of the January 12, 2016 Utilities Commission meeting minutes. She reported that she asked Ms. Philo to add that she read into the record the Mission Statement of the Utilities Commission. She suggested that a copy of the Mission Statement be attached to the original minutes.

Mr. Mechling made a motion to approve the minutes of the January 12, 2016 as amended. Mrs. Moss seconded the motion and it passed unanimously.

Mrs. Moss noted that the Chairman had stated at the January 12th meeting that discussion of Florida Municipal Power Agency (FMPA) representation would be on today's agenda. She said that she was not suggesting that they add it to today's agenda as she didn't know how long today's presentations would be, but felt it might be something that they would want to discuss now or after today's presentations. Also, the Finance Commission received an update on the Electric Utilities at their meeting yesterday and she felt this Commission should also receive the update. She requested that she be able to speak before Mr. Bolton's presentation in order to establish the context as she was the one who requested that he attend today's meeting.

3. PUBLIC COMMENT

None

4. NEW BUSINESS

Mrs. Orcutt asked that they add to today's agenda Florida Power and Light's (FPL) application for groundwater usage.

Mr. Mechling made a motion to add to today's agenda, FMPA representation, update on Electric Utilities, and FPL's application for groundwater usage to be after today's presentations (items 5-C, 5-D, and 5-E). Mrs. Moss seconded the motion and it passed unanimously.

5. OLD BUSINESS

A) Water Quality Presentation – Mr. Rob Bolton

Mrs. Moss reported that she attended the February 2, 2016 City Council meeting noting that the water quality and outage was not on their agenda, but she brought this up under Public Comment. She read into the record an excerpt of what she said at the City Council meeting, *“Our community cannot drink the water today. This is the most serious breach of public trust that Elected Officials can incur. There are no public matters more important than the matter of sanitation and clean water. The very existence of society depends upon it. This failure to protect the public was compounded by the Councils' inability to communicate with the public. Ironically that deficiency is on the agenda on that date and the Council has been aware of it for quite some time according to the attached memorandum, but has not acted on it.”* She said that she then invited the public to attend today's meeting. She said that she spoke with Mr. Bolton on Monday of last week, which was the first full day of the precautionary water advisory and Mr. Bolton readily agreed to attend today's meeting and explain to the Commission and to the public exactly what happened. She said that she suggested at the City Council meeting that robo calls might be considered in order to inform the public (of situations such as the precautionary boil water notice). She said there was great difficulty in getting this information to the public and she volunteered to help Mr. O'Connor to accomplish this. She reported that she would be meeting with Mr. O'Connor to work on this project after today's meeting. She said that everyone is aware of the problem and they are going to work on it. She hoped that Mr. Bolton would be able to explain this in a step by step fashion using layman's terms so the community can understand it.

Mr. Rob Bolton, Water and Sewer Director, reported that last Sunday there was a power outage, which resulted in loss of pumping capacity to pump the water from the ground storage tanks into the distribution system. He reported that currently there are two Water Treatment Plants at the water treatment site at the Airport. One is a Lime Softening (LS) Plant and one is a Reverse Osmosis (RO) Plant. He said the water is combined, mixed, and pumped into ground storage. There are three tanks at that site that have four (4) million gallons of capacity, which are normally kept full.

Mrs. Moss asked is that a reserve.

Mr. Bolton said it is actually a buffering. He explained that they would use it for things, such as if there was a fire and they needed a lot of water, if they had large demands because of a drought, etc.

Mrs. Moss asked is there a possibility that the water that was stored could be contaminated.

Mr. Bolton answered no.

Mrs. Moss asked in terms of usage for the City, how long would the “buffered” water last.

Mr. Bolton said this month they are probably producing 5 ½ million gallons of water per day. During a drought they might push 7 million gallons and during a rain event probably about 4 million gallons. He said the Treatment Plant has 4 million gallons of storage.

Mrs. Moss asked how much of that is used per day.

Mr. Bolton said it is almost like a big bucket. He explained that they are treating water, putting it into the bucket, and then they pump the water out of the bucket to distribute it to the homeowners. The concept is to keep the bucket full. He said there is no way that the customer demand is going to exceed what they have in treatment capacity. He said the concern is to keep the power on for the pumps to pull the water out of the bucket. He reported that there were nine (9) pumps at the LS Plant. Two of those pumps can also be powered from the RO Treatment Plant. The power that feeds into the LS Plant comes from two sub-stations, Substation 5 and Substation 6. The power feed for the RO Plant comes only from Substation 5. Because they have two feeds coming from two different substations that is all that is required by law. He said they also have a backup generator that will generate enough power for the entire Plant facility. Once it is powered there is a Programmable Logical Controller (PLC) that controls the pump starts, stops, and sequence on when they run based on how many hours they ran for any given time.

Mr. Auwaerter asked how long can the generator run.

Mr. Bolton answered about three or four days.

Mr. Bolton reported that last Sunday when the power failed, the generator came on and then the PLC had a failure. He explained that the PLC itself did not fail, but the battery charger that charges the battery backup failed. He said they replaced the battery backup and everything is fine at this point. They are currently looking for a company so they can have two battery backup systems with an auto transferring switch where if one is not getting power it would immediately switch to the other. He said they don’t know if it will be fast enough because what happened was that when the power went off, the power on the generator came on, but because it is fed through the backup system the PLC went into an error failure. Therefore, they physically would have to push the button to reset the PLC to start everything back up. He said whatever they purchase would need to be fast enough so it doesn’t send the PLC into an error failure and still require someone to physically start it. He said that they installed a mechanical switch safeguard. The RO Treatment Plant on Pump 8 or 9 has a mechanical switch that even if a power failure occurs and the PLC goes down, the power from the generator will come on. He explained that once the mechanical switch senses the pressure to drop below 50 it will automatically close two contacts and will start the pump. At the LS Plant they did the same thing on Pump 4 once the pressure drops to 45. They are going to install it on a third one for if the pressure drops down to 30.

Mr. Auwaerter asked have they identified anything other than the PLC and the inverter.

Mr. Bolton answered no. He said they identified some of these things in the past, but the PLC situation didn't show up. He said this is touchy because they don't have an elevated tower in their system. He explained that an elevated tower has the gravity to feed the system. On the night of the incident about four (4) minutes after the point of when the power went on and it didn't start back up, pressure was getting close to the 20 PSI mark. He noted that they do have Operators at the Water Treatment Plant 24 hours a day and their first job is to walk to the pump room to make sure these are operational. They can turn pumps on manually as long as power is available. In this case the Operator went down there, but when the power went off the ink pen stopped on the pressure chart and didn't send a signal to capture the new pressure. Therefore, when the Operator read the chart the pressure was good. He then heard the alarm. During this time the Chief Operator of the Plant received a call from a customer who stated that they did not have any water pressure. The Chief Operator called the Plant and the Operator on duty said the chart read that they had 65 pounds of pressure. The Chief Operator told the Operator on duty to manually turn the pumps on, which he did but they were down five to ten minutes and the pressure had dropped below the 20 PSI requirement, which required the City to put out a precautionary mandatory boil water notice.

Mrs. Moss asked what is the concern of going below 20 PSI.

Mr. Bolton said one concern is there could be something hooked up as someone's home that could cause a backflow into the City's water system.

Mr. Baczynski said from the description of the Operator's activities, it would have helped if they had a direct reading pressure gauge that doesn't rely on electronics. He said it is possible that the Operator's instructions were not complete. He did not know if it was a problem with training or with the procedure.

Mr. Bolton said they are looking into a mechanical alarm that is audible. He said if there was an audible alarm a pressure issue that would override everything. He said the Operator that was on duty has been there for over 25 years and is well rehearsed. But, the Operator was unaware that they now have an electronic chart. He reported that there is some training that will be done.

Mr. Baczynski said in his experience in working in chemical plants, every pump has their own pressure gauge where the operator can walk by and look to check them. It also would give them an early warning if a pump was having a problem because the gauge would be drifting down.

Mr. Bolton said they were looking at putting a gauge on the wall in the Operation Lab.

Mr. Bolton said their biggest failure was communication. He explained that by law they are required to put the notice in the newspaper and local media, which they did. However, in today's society they also need to put the notices out to smart-phones,

facebook, etc. He reported that the notice was put out to the EOC, which the people who are signed up to receive notices from them did receive the notice. The problem was that it stated "Vero Beach" and not "City utility customers." He noted that one of his employees, Mrs. Sharon Penrose, created an app for the STEP System and they are working with both the EOC and the County to do something similar. They are also working with the Police Department as they can get information out on facebook to the people who are signed up with them.

Mr. Baczynski suggested that they put something in the utility bills explaining how to sign up to receive notifications.

Mrs. Moss thanked Mr. Bolton for speaking with her this past Monday and for attending today's meeting.

Mr. Mucher said that he thought he understood both the water and the electrical failure, but one thing that was said today struck a nerve in that there is an Airport substation that feeds the system and it was his understanding that the substation at the Airport did not go down. He asked why they experienced the failure if the substation at the Airport did not go down.

Mr. Bolton said Substation 6 did not go down; however the two feeds going into the LS Plant are going through separate transformers. Therefore, half the power for the LS Plant and the pumping system is balanced on the substation coming from Substation 6 and the other half of the Plant and the pumping capacity is balanced on the electrical load coming in from Substation 5. However, there is only one generator and the generator cannot power half the Plant. It can only power the entire Plant so if either substation goes down the generator fires up automatically and drops out the second load coming into the facility.

Mr. Jim O'Connor, City Manager, said if anyone on the Commission wants to take a tour of the Plant to see how it operates they can contact him or Mr. Bolton.

B) Presentation on Process in Power Outages (backup to be sent at a later date)

*Please note that discussion occurred throughout the presentation.

Mr. O'Connor gave a presentation on the process in power outages with the Commission members (attached to the original minutes).

Mr. Auwaerter referred to *13KV Distribution Lines* of the presentation. He asked Mr. O'Connor if they had the money what would be the target in terms of the percentage underground.

Mr. O'Connor said ideally about 70% to 80%.

Mr. Auwaerter asked what would that cost.

Mr. O'Connor said that he did not have that figure.

Mrs. Moss referred to *System Reliability Indices – Causes of Outages in December* of the presentation. She asked what is “*all remaining outages.*”

Mr. O'Connor said it could be an auto accident or something that they don't know the cause. He reported that when there is an outage, he receives an indicator on his phone that tells him when the outage happened, when the crew was dispatched, and when the outage is corrected. He also will receive a message stating the cause and in some cases the outage is unknown. He said they don't spend a lot of time researching that unless they think it is something in the City's system.

Mr. Baczynski said underground outages would seem to be less random events, such as an automobile accident. He asked do they look at the area that is underground. He asked could that be broken down into specific causes.

Mr. O'Connor said if they were concentrated in one area they would start tracing those lines.

Mr. Mechling said that he has been involved with bringing on an electrical system with the City for a 400 unit project and everyone at the Transmission and Distribution (T&D) Department has been outstanding to work with. He said if every department in the City and in the County were as responsive, knowledgeable, and reliable as they have been it would be a much easier process. He said it has been a pleasure dealing with staff.

Mr. Mechling said years ago he was remodeling his home and he wanted to run underground power to his home. He didn't know if there could be a program for the City to allow underground power to homes. He felt that they would find there were a lot of people willing to do it.

Mr. O'Connor said they can look at it.

Mrs. Moss questioned the update on the Electric Utility that was given to the Finance Commission.

Mr. O'Connor said it was general in nature.

Mrs. Moss asked was it covered under today's presentation.

Mr. O'Connor answered yes. He noted that the Finance Commission did not receive the presentation that was just given to the Utilities Commission.

Add on item: Groundwater Usage

Mrs. Orcutt said that she previously brought up FPL's project that they are building in Okeechobee. She reported that FPL is in the process of applying for a permit to withdraw 9 to 11 million gallons of water from the aquifer per day. She gave the Commission members a copy of a map showing FPL's proposed gas fire power plant and information on the Grove Land Reservoir and Stormwater Treatment area (attached to the original minutes). She reported that the intent of the reservoir is twofold. One is to stop huge volumes of water from entering the Indian River Lagoon, which would be a plus for the Lagoon. The second would be to allow some of that groundwater to reenter the system. At this point in time, FPL's discussion with St. John's Water Management District (SJWMD) is not really addressing the requirement to have FPL utilize the surface water. Therefore, she felt it would be important for the Utilities Commission to request that the SJWMD consider or require FPL to use surface water if it becomes available. She said anything they could do to lessen the impact on the aquifer is good for all of them. She urged the Commission to ask Mr. Bolton to look at this issue and to write a letter to the permitting agency urging FPL to consider using the surface water.

Mr. Auwaerter asked what is the distance between the two sites.

Mrs. Orcutt thought it was about six (6) miles.

Mr. Auwaerter said in theory, they could run a pipe.

Mrs. Orcutt said it is doable.

Mr. Bolton was in agreement. He said it is best to use the least quality source of water first. He said that he was not a big fan of surface water for potable consumption because it is susceptible to contamination. If it is the Commission's decision, staff can draft a Resolution to bring back before them for approval and then bring it before the City Council. He said the Resolution would be to the SJWMD letting them know that the community of the City has a concern.

Mrs. Orcutt thought at this point SJWMD's language is that they are requiring FPL to evaluate alternative surface water if it becomes available. She didn't think that was strong enough.

Mr. Auwaerter felt that they needed a Resolution. He suggested that they reach out to Indian River County and St. Lucie County.

Mr. Bolton said that he would do some research to see where they are with the project and bring the information back before the Commission at their next meeting.

Mr. Richard Winger, Councilmember, said that he would be glad to take the Resolution to the Treasure Coast Council of Local Governments (TCCLG). He said that he is also the City's representative on the subcommittee for the Lagoon Coalition and if the City Council agrees he could bring the Resolution to them as well.

Add on item: FMPA Representation

Mr. Auwaerter said currently Mr. O'Connor is the City's representative on the FMPA Board.

Mrs. Moss suggested that they postpone this item to a time when Mr. Stradley is present. She said that the past Chairman of the Utilities Commission (Mr. Herbert Whittall) wrote a letter last year regarding this and there is other correspondence on this matter.

The Commission agreed to postpone discussion of the FMPA representation to their next regularly scheduled meeting.

Mrs. Moss asked the Deputy City Clerk to send the Commission members Mr. Whittall's letter, as well as any information regarding FMPA representation.

6. CHAIRMAN'S MATTERS

None

7. MEMBER'S MATTERS

Ms. Orcutt reported that a representative of FMPA will be giving a presentation on the solar farm they are proposing at the March 8, 2016 Utilities Commission meeting.

8. ADJOURNMENT

Today's meeting adjourned at 10:59 a.m.

/sp



MEMORANDUM

TO: Utilities Commission of the City of Vero Beach
FROM: Michele Jackson
DATE: February 17, 2016
SUBJECT: Solar Photovoltaic Projects

Introduction

- The Florida Municipal Power Agency (FMPA) is currently soliciting interest among its 31 members to jointly develop a solar photovoltaic (Solar PV) project. The intent of this joint action solar project is to provide solar energy to participating cities in the most cost-effective manner possible.
- Prior to launching this initiative, FMPA staff researched the kind of solar PV projects being developed by utilities around the country including other Florida municipal electric utilities.
- Also, to make the business case for this initiative, staff researched the costs and benefits associated with building and owning a Solar PV project.
- The purpose of this memo is to provide general information on Solar PV projects to the Utility Commission.

Solar PV History

Solar PV technology has been around for nearly 60 years. Solar PV was developed in the 1950s and used primarily to provide electrical power for earth-orbiting satellites. In the 1970s, improvements in manufacturing, performance and quality of PV modules helped to reduce costs and opened up a number of opportunities for powering remote terrestrial applications, such as offshore signals. In the 1980s, photovoltaics became a popular power source for consumer electronic devices, including calculators, watches, radios, lanterns and other small battery-charging applications. International applications for PV systems to power rural health clinics, refrigeration, water pumping and telecommunications increased dramatically. Due to a steady decline in technology prices and with the assistance of federal and state subsidies, nearly 784,000 U.S. homes and business have “gone solar” as of December 2014.¹

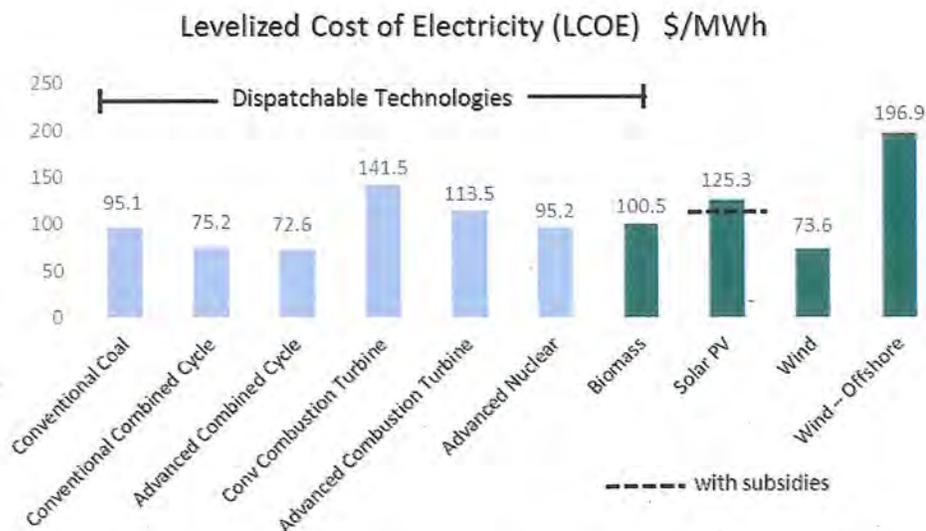
Solar Limitations

However, the high cost of PV modules and equipment, compared to conventional energy sources, is still the primary limiting factor for widespread adoption of solar PV for power applications. Figure 1 depicts how the *national average* cost of electricity from a utility-scale solar PV plant compares to the cost of electricity from other conventional generation technologies. As Figure 1 depicts, electricity from a solar PV

¹ From Solar Energy Industries Association, Solar Energy Facts: Q2 2015, published December 17, 2014.

plant can be expected to be roughly two times as expensive (or 173% higher, to be precise) as the electricity from an advanced natural gas combined cycle plant, such as FMPA's Cane Island Unit 4 and Treasure Coast Energy Center Unit 1.

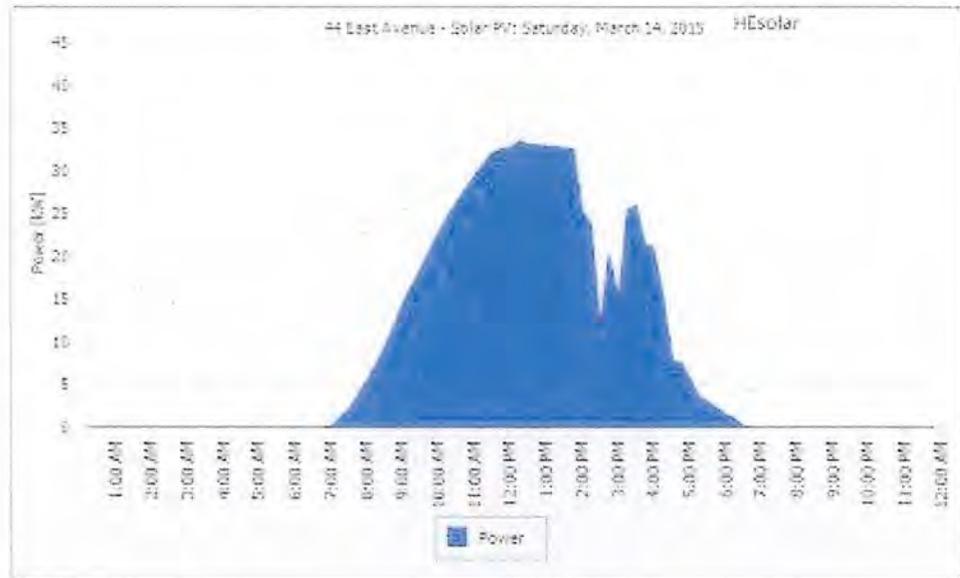
FIGURE 1
National Average Levelized Cost of Electricity for Plants in Service in 2020



SOURCE: U.S. Energy Information Agency (EIA), 2015 Annual Energy Outlook, June 3, 2015. LCOE is in 2013 dollars based on a 2020 deployment of the technologies (2022 for Advanced Nuclear), a 30-year cost recovery period, and a weighted average cost of capital (WACC) of 6.1%.

But cost alone is not the only limiting factor to widespread deployment of solar PV power plants. These plants are “intermittent resources” in that they generate electricity only when the sun is shining. (See Figure 2.) Utilities need dispatchable, round the clock reliable generating resources to serve customers when they need electricity. While battery storage technologies are emerging and promise to store solar energy for round-the-clock dispatch of solar resources, these storage systems are currently very costly.

FIGURE 2
A Typical Solar PV Production Curve (with Cloud Cover from 2 pm – 4 pm)



Solar Initiatives

Florida’s nickname as the Sunshine State has drawn calls from solar proponents for more solar PV projects in the state. To promote solar energy, two separate Constitutional Amendments (see attachments) were proposed in Florida for the 2016 ballot. Figure 3 below shows the ballot titles and supporters for each amendment.

FIGURE 3
Proposed Solar Amendments to the Florida Constitution

	Option 1 Floridians for Solar Choice	Option 2 Consumers for Smart Solar
Ballot Title	Limits or Prevents Barriers to Local Solar Electricity Supply	Rights of Electricity Consumers Regarding Solar Energy Choices
Supporters	A coalition led by the Southern Alliance for Clean Energy, conservative organizations, retail federation, solar industry association and others. Financial supporters include companies in the solar industry.	A coalition of businesses, civic and faith-based organizations. Financial supporters include Florida’s investor-owned utilities.

Some distinctions between the two amendments are apparent and some are subtle.

- Option 1 includes the concept of “local solar electricity supply” from a “local solar electricity supplier.” In other words, an entity that is not subject to state or local utility regulation, nor subject to any restrictions of electric utility service territory.
- Option 2 establishes a right for consumers to own or lease solar equipment on their property for their own use.
- Both address ratemaking so that customers who install solar are not discriminately assessed “barrier” or extra fees (Option 1), and consumers that don’t install solar are not unfairly subsidizing those who do (Option 2).

The proposed amendment sponsored by the Floridians for Solar Choice did not gather enough signatures from voters as of the cut-off date of February 1, 2016, and this group is now working towards placement of their amendment on the 2018 ballot. The proposed amendment sponsored by the Consumers for Smart Solar did achieve enough signatures, and pending review by the Florida Supreme Court, may be placed on the 2016 ballot.

Solar Options

Rooftop Solar: The average cost for a residential, rooftop solar PV systems nationally is approximately \$30,000.² Actual costs for an individual homeowner will vary depending on the size of system installed and whether the homeowner receives any federal, state or local subsidies.

Not all customers can afford an investment in their own system, especially since the payback period typically takes a long time. In addition, not all customers are single-family homeowners, or if they are, their home may not be in an ideal location for sun exposure or structurally capable of an installation.

Community Solar: Many utilities are initiating a type of solar project that is known as community solar. A community solar project is when multiple entities (e.g., a utility and its retail customers) work together to fund a solar project and share the electricity output from the facility. When first implemented, community solar projects were built within the community that it was to serve, for example, within a neighborhood or for a homeowners association. That is, community solar projects were initially sized for tens of households (not hundreds or thousands), and located within close proximity to the customers receiving the output of the facility.

The Solar Electric Power Association (SEPA) conservatively estimates that there are more than 100 community solar programs in various stages of development within the U.S. Many of these programs are utility-initiated, although where the necessary policy environment exists, programs initiated by third-party developers and special purpose entities are growing.

Under the community solar program model, the sponsor builds a solar PV facility and offers subscriptions to consumers for the energy output of the system. These programs

² SolarNation.org website, “How much does a solar system cost these days?”

are accessible by all consumers, and can be targeted directly to renters, multi-family dwellers, and in some cases, lower income customers. In exchange for a subscription, which typically involves paying an on-going community solar rate for the subscribed amount of solar energy, the participant receives benefits, such as kWh offsets to its metered energy consumption.

The benefits of a utility-sponsored community solar program include:

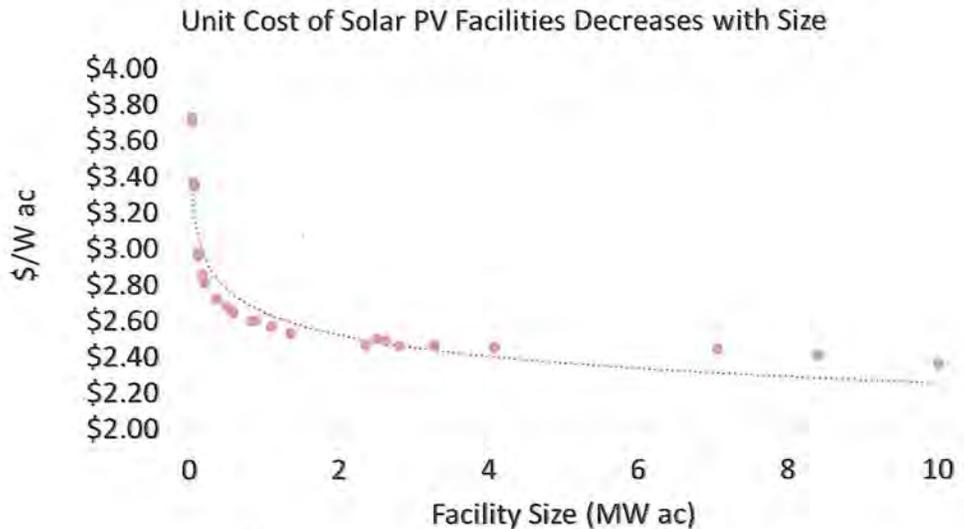
- Providing an option for customers who want to power their homes and businesses with solar energy.
- Improving integration of solar into the utility system, and retention of customers who might otherwise self-generate solar energy or buy it from a third-party provider.

The challenges of community solar programs include:

- The marketing efforts required to keep the program subscribed, rate design and billing system changes.
- The sponsoring utility needs to think through potential issues of cross-subsidization of a not-fully-subscribed program by customers who are not interested in investing in solar energy.
- With proper rate design and successful marketing, though, these projects can pay for themselves.

Utility-Scale Solar Farms: Utility-scale solar PV power plants, or solar farms as they are sometimes called, are generally large solar facilities with a capacity greater than 5 MW. Because of the scale of the power plant, solar energy can be produced at a lower cost per MWh than smaller systems. Figure 4 depicts the “economies of scale” associated with building larger solar PV facilities.

FIGURE 4
Unit Cost to Build Various Sizes of Solar PV Facilities in Florida³



Because solar farms require a substantial amount of land, a solar farm may be built on the outskirts of a utility's service territory, not in close proximity to retail customers. Many utilities are offering subscriptions to the output of the solar farm to their customers, thereby extending the traditional community solar model to include more customers (thousands of households) and more remote solar facilities. Some utilities opt not to provide specific customer offerings from their solar farm but provide the output of the solar farm to all of its retail customers as part of its energy mix.

Public Opinion

It seems that a growing percentage of Floridians like the concept of solar energy, even if it comes at a higher cost than conventional power generation.

In early 2015, Seminole Electric Cooperative, Inc. (SECI) asked its distribution co-ops across the state to survey their members' interest in a solar project being considered by SECI with the understanding that the costs of solar generation may remain higher than those of traditional power sources.⁴ Among survey respondents, 42% said they would be willing to allocate between 5% and 20% of their monthly bill to a solar rate, and nearly 20% of those surveyed said they would be willing to assign greater than 20% of their electric bill to a solar rate. With regard to the magnitude of the solar rate, 43% of respondents said they would be willing to pay \$5 more for a 100 kWh block of energy, which means they would be willing to pay a 5 cent per kWh premium. Another important note from the survey is that 53% of respondents felt that those customers who

³ From Black & Veatch Draft Community Solar Cost Estimates prepared for FMPA, September 14, 2015

⁴ SECO News (a newsletter to co-op members) February 2015 (background) and April 2015 (survey results).

want to invest in renewable energy shouldn't be subsidized by those who don't want to invest in solar.

It is an important time for Florida's municipal electric utilities to evaluate offering solar options and strategically positioning themselves to have a role in serving the increasing desires of customers for solar energy.

Recent Solar Projects

Several municipal electric utilities in Florida have developed solar PV projects, including JEA in Jacksonville, Orlando Utilities Commission (OUC) and Lakeland Electric.

Pursuant to a policy adopted in 2014, JEA is currently entering into Power Purchase Agreements (PPAs) to purchase the output from solar PV facilities rated at 38 MW ac that are being developed within and throughout its service territory by third-party developers. JEA already has a PPA for the output from an existing 12 MW ac facility located in its service territory; thus, JEA's will be purchasing the output from solar farms with a total capacity of 50 MW ac by the end of 2017. JEA is currently developing customer offerings so that retail customers can choose whether to pay a premium for solar PV energy to power their homes or businesses.

Lakeland Electric entered into a PPA in 2008 for the output from solar PV facilities totally 25 MW. The PPA stipulated that the facilities were to be built and placed into service in phases. As of August 2015, Lakeland was taking the output from three solar farms with a combined capacity of approximately 12 MW. The remaining two farms are to be completed by the third-party developer in mid-2017. Lakeland adds the solar energy into its energy mix and adds the cost of the PPAs into its retail rate base.

OUC entered into a PPA in 2011 for the output from a 6 MW solar farm that a third party developed at OUC's Stanton Energy Center. In 2015, OUC entered into another PPA for the output from a 13 MW solar farm that is also currently being developed at OUC's Stanton Energy Center. Besides purchasing power from these large solar farms and adding the energy to its energy mix, OUC built and owns a 400 kW solar PV system that was installed on top of a parking shade structure at its Gardenia Energy Center. OUC developed this project as the first community solar project in Central Florida. OUC's customers were offered the opportunity to subscribe to the energy output of up to a 15 kW block and pay a fixed, subscription rate. The rate for the solar energy was higher than OUC's current energy rate. The community solar program was fully subscribed within 48 hours, and OUC currently has a list of customer waiting for a subscription.

Ownership vs. PPA

As described above, JEA, Lakeland Electric and OUC have opted to purchase the energy output from third-party developed, owned and maintained solar farms through Power Purchase Agreements (PPAs) rather than build and own these solar farms themselves. The reason for this is due to federal tax incentives for solar development,

including the 30% Investment Tax Credit⁵ and a 5-year accelerated depreciation deduction. Municipal electric utilities cannot take advantage of these incentives, but because of competition in the solar PV development market, municipals may find developers willing to share some of these benefits through attractive PPA pricing. The federal tax benefits are greater than the benefit that municipal utilities receive through a lower cost of financing, like tax-exempt municipal bonds.

Cost Analysis

FMPA retained an engineering firm, Black & Veatch, to provide an estimate of the cost to build solar PV facilities based on projects of which they are familiar.⁶ Figure 5 shows data from Black & Veatch for the cost of building fixed-tilt PV systems for the range of project sizes studied. The costs shown in Figure 5 are “all in” costs and include direct costs such as the cost of all equipment and hardware, and construction labor, interconnections costs and indirect costs. Indirect costs include costs for the land, permitting, studies and fees associated with the interconnection and the costs of financing a construction loan.

FIGURE 5
Cost to Build Fixed-Tilt Solar PV Facilities in Florida (\$2015)

Plant Size (dc)	Maximum Output (ac)	Total Installed Cost (\$/W dc)	Total Installed Cost (\$/W ac)	Approximate Total Installed Cost
54 kW	40 kW	\$2.76	\$3.73	\$149,000
675 kW	500 kW	\$1.99	\$2.68	\$1,341,000
1.35 MW	1 MW	\$1.90	\$2.57	\$2,566,000
5.4 MW	4 MW	\$1.82	\$2.45	\$9,819,000
13.5 MW	10 MW	\$1.75	\$2.36	\$23,629,000
40.5 MW	30 MW	\$1.69	\$2.28	\$68,461,000

FMPA then developed this information into an estimated annual projection of what it would cost FMPA to own and maintain facilities in a range of sizes, including the debt service (on municipal bonds sold in order to pay for construction and to pay interest during construction), on-going maintenance and necessary repair and replacement of major equipment components. Figure 6 shows the estimated year-by-year costs for a 10 MW ac solar PV plant with a commercial operation date of January 1, 2017, and an estimated 20-year life. We believe that these cost projections are relevant to any municipal entity with tax-exempt bond authority, like FMPA.

⁵ The Business Energy Investment Tax Credit (ITC) was recently amended in December 2015. For solar projects that begin construction prior to 12/31/2019 the investment tax credit is 30%. The ITC drops to 26% for solar projects that begin construction by 12/31/2020; to 22% for solar projects that begin construction by 12/31/2021; and to 10% for solar projects that begin construction thereafter.

⁶ See footnote 3.

FIGURE 6
Estimated FMPA Costs
 10 MW ac Fixed-Tilt Solar PV Plant in Florida (\$ Nominal)

Year	Debt Service (\$000)	O&M (\$000)	Repair & Replacement (\$000)	Total Annual Fixed Cost (\$000)	Unit Cost (\$/kW-mo)
2017	\$2,284	\$243	\$0	\$2,527	\$21.06
2018	\$2,284	\$249	\$0	\$2,532	\$21.10
2019	\$2,284	\$254	\$0	\$2,538	\$21.15
2020	\$2,284	\$260	\$0	\$2,544	\$21.20
2021	\$2,284	\$267	\$115	\$2,665	\$22.21
2022	\$2,284	\$273	\$118	\$2,674	\$22.29
2023	\$2,284	\$279	\$120	\$2,683	\$22.36
2024	\$2,284	\$286	\$123	\$2,693	\$22.44
2025	\$2,284	\$293	\$126	\$2,702	\$22.52
2026	\$2,284	\$299	\$129	\$2,712	\$22.60
2027	\$2,284	\$306	\$132	\$2,722	\$22.69
2028	\$2,284	\$314	\$135	\$2,733	\$22.77
2029	\$2,284	\$321	\$138	\$2,743	\$22.86
2030	\$2,284	\$329	\$142	\$2,754	\$22.95
2031	\$2,284	\$336	\$145	\$2,765	\$23.04
2032	\$2,284	\$344	\$148	\$2,776	\$23.14
2033	\$2,284	\$352	\$152	\$2,788	\$23.23
2034	\$2,284	\$361	\$155	\$2,800	\$23.33
2035	\$2,284	\$369	\$159	\$2,812	\$23.43
2036	\$2,284	\$378	\$163	\$2,824	\$23.54

Figure 7 depicts the amount of MWh generation expected from a 10 MW ac fixed-tilt solar PV facility in Florida, and the expected unit cost of solar energy from the facility on a \$/MWh basis:

FIGURE 7
Estimated Solar Energy Costs
 10 MW ac Fixed-Tilt Solar PV Plant in Florida (\$ Nominal)

Year	Expected Production (MWh)	Total Annual Fixed Cost (\$000)	Unit Cost (\$/MWh)
2017	20,435	\$2,527	\$123.65
2018	20,290	\$2,532	\$124.81
2019	20,122	\$2,538	\$126.14
2020	20,004	\$2,544	\$127.19
2021	19,835	\$2,665	\$134.37
2022	19,721	\$2,674	\$135.61
2023	19,591	\$2,683	\$136.97
2024	19,478	\$2,693	\$138.25
2025	19,296	\$2,702	\$140.05
2026	19,140	\$2,712	\$141.71
2027	19,016	\$2,722	\$143.16
2028	18,969	\$2,733	\$144.06
2029	18,781	\$2,743	\$146.06
2030	18,626	\$2,754	\$147.86
2031	18,500	\$2,765	\$149.46
2032	18,395	\$2,776	\$150.93
2033	18,254	\$2,788	\$152.73
2034	18,135	\$2,800	\$154.39
2035	18,135	\$2,812	\$155.06
2036	18,135	\$2,824	\$155.74
Levelized Cost of Electricity 20 yrs			\$138.21

As stated above, the annual cost and unit cost projections presented in Figures 6 and 7 are based on the “all-in” cost of constructing a solar PV facility. Also as stated above, municipal electric utilities may find it more cost-effective to enter into a Power Purchase Agreement (PPA) with a third-party developer who can take advantage of federal tax incentives for solar development rather than self-build and own the solar project. We believe that the cost projections presented here provide a benchmark against which FMPA and other municipal utilities can evaluate third-party proposals for PPAs.

Rate Impact

When assessing the impact to utility rates from the addition of a solar PV project to a utility's portfolio, or when designing rates for a subscription-based customer offering, the economic benefits associated with the solar PV project also have to be taken into account. For example, when the solar PV project is producing energy, the utility is avoiding energy costs by producing less energy from nuclear, natural gas and coal-fueled power plants. Also, a solar PV project allows a utility to avoid CO₂ emissions each year, which under a carbon-regulated environment results in improved emission target compliance.

Conclusion

Consumers are increasingly interested in powering their homes and businesses with solar. Municipal utilities can satisfy their customers who want solar energy—some of whom may, in the absence of a utility solar program, turn to self-generation—by developing a solar facility and offering customer programs. Or, municipal utilities can opt to forego the customer programs and add solar PV to its energy mix to deliver solar energy to all of its retail customers. The most cost-effective way to deliver solar energy is through utility-scale solar PV projects for the greatest economies of scale.

/mj
Attachments

CONSTITUTIONAL AMENDMENT PETITION FORM

Note:

- All information on this form, including your signature, becomes a public record upon receipt by the Supervisor of Elections.
- Under Florida law, it is a first degree misdemeanor, punishable as provided in s. 775.082 or s. 775.08, Florida Statutes, to knowingly sign more than one petition for an issue. [Section 104.185, Florida Statutes]
- If all requested information on this form is not completed, the form will not be valid.

Your Name: _____
(Please Print Name as it appears on your Voter Information Card)

Your Address: _____

City: _____ Zip: _____ County: _____

Please change my legal residence address on my voter registration record to the above residence address (check box, if applicable).

Voter Registration Number: _____ (or) Date of Birth _____

I am a registered voter of Florida and hereby petition the Secretary of State to place the following proposed amendment to the Florida Constitution on the ballot in the general election:

BALLOT TITLE: Limits or Prevents Barriers to Local Solar Electricity Supply

BALLOT SUMMARY: Limits or prevents government and electric utility imposed barriers to supplying local solar electricity. Local solar electricity supply is the non-utility supply of solar generated electricity from a facility rated up to 2 megawatts to customers at the same or contiguous property as the facility. Barriers include government regulation of local solar electricity suppliers' rates, service and territory, and unfavorable electric utility rates, charges, or terms of service imposed on local solar electricity customers.

ARTICLE AND SECTION BEING CREATED OR AMENDED: Add new Section 29 to Article X

FULL TEXT OF PROPOSED AMENDMENT:

Section 29. Purchase and sale of solar electricity. –

(a) **PURPOSE AND INTENT.** It shall be the policy of the state to encourage and promote local small-scale solar-generated electricity production and to enhance the availability of solar power to customers. This section is intended to accomplish this purpose by limiting and preventing regulatory and economic barriers that discourage the supply of electricity generated from solar energy sources to customers who consume the electricity at the same or a contiguous property as the site of the solar electricity production. Regulatory and economic barriers include rate, service and territory regulations imposed by state or local government on those supplying such local solar electricity, and imposition by electric utilities of special rates, fees, charges, tariffs, or terms and conditions of service on their customers consuming local solar electricity supplied by a third party that are not imposed on their other customers of the same type or class who do not consume local solar electricity.

(b) **PURCHASE AND SALE OF LOCAL SMALL-SCALE SOLAR ELECTRICITY.**

(1) A local solar electricity supplier, as defined in this section, shall not be subject to state or local government regulation with respect to rates, service, or territory, or be subject to any assignment, reservation, or division of service territory between or among electric utilities.

(2) No electric utility shall impair any customer's purchase or consumption of solar electricity from a local solar electricity supplier through any special rate, charge, tariff, classification, term or condition of service, or utility rule or regulation, that is not also imposed on other customers of the same type or class that do not consume electricity from a local solar electricity supplier.

(3) An electric utility shall not be relieved of its obligation under law to furnish service to any customer within its service territory on the basis that such customer also purchases electricity from a local solar electricity supplier.

(4) Notwithstanding paragraph (1), nothing in this section shall prohibit reasonable health, safety and welfare regulations, including, but not limited to, building codes, electrical codes, safety codes and pollution control regulations, which do not prohibit or have the effect of prohibiting the supply of solar-generated electricity by a local solar electricity supplier as defined in this section.

(c) **DEFINITIONS.** For the purposes of this section:

(1) "local solar electricity supplier" means any person who supplies electricity generated from a solar electricity generating facility with a maximum rated capacity of no more than 2 megawatts, that converts energy from the sun into thermal or electrical energy, to any other person located on the same property, or on separately owned but contiguous property, where the solar energy generating facility is located.

(2) "person" means any individual, firm, association, joint venture, partnership, estate, trust, business trust, syndicate, fiduciary, corporation, government entity, and any other group or combination.

(3) "electric utility" means every person, corporation, partnership, association, governmental entity, and their lessees, trustees, or receivers, other than a local solar electricity supplier, supplying electricity to ultimate consumers of electricity within this state.

(4) "local government" means any county, municipality, special district, district, authority, or any other subdivision of the state.

(d) **ENFORCEMENT AND EFFECTIVE DATE.** This amendment shall be effective on January 3, 2017.

Date: _____ X _____

(Date of signature)

(Signature of registered voter)

Initiative petition sponsored by Floridians for Solar Choice, Inc., 120 E. Oakland Blvd., Suite 105, Ft. Lauderdale, FL 33334

If paid petition circulator is used:

Circulator's Name _____

Circulator's Address _____

For official use only:

Serial number: 14-02

Date approved: 12/23/2014

CONSTITUTIONAL AMENDMENT PETITION FORM

Note:

- All information on this form, including your signature, becomes a public record upon receipt by the Supervisor of Elections.
- Under Florida law, it is a first degree misdemeanor, punishable as provided in s. 775.082 or s. 775.08, Florida Statutes, to knowingly sign more than one petition for an issue. [Section 104.185, Florida Statutes]
- If all requested information on this form is not completed, the form will not be valid.

Your name: _____
Please Print Name as it appears on your Voter Information Card

Your address: _____

City _____ Zip _____ County _____

Please change my legal residence address on my voter registration record to the above residence address (check box, if applicable).

Voter Registration Number _____ or Date of Birth _____

I am a registered voter of Florida and hereby petition the Secretary of State to place the following proposed amendment to the Florida Constitution on the ballot in the general election:

BALLOT TITLE: Rights of Electricity Consumers Regarding Solar Energy Choice

BALLOT SUMMARY: This amendment establishes a right under Florida's constitution for consumers to own or lease solar equipment installed on their property to generate electricity for their own use. State and local governments shall retain their abilities to protect consumer rights and public health, safety and welfare, and to ensure that consumers who do not choose to install solar are not required to subsidize the costs of backup power and electric grid access to those who do.

ARTICLE AND SECTION BEING CREATED OR AMENDED: Add new Section 29 to Article X

FULL TEXT OF THE PROPOSED CONSTITUTIONAL AMENDMENT:

Section 29 – Rights of electricity consumers regarding solar energy choice. –

- (a) ESTABLISHMENT OF CONSTITUTIONAL RIGHT. Electricity consumers have the right to own or lease solar equipment installed on their property to generate electricity for their own use.
- (b) RETENTION OF STATE AND LOCAL GOVERNMENTAL ABILITIES. State and local governments shall retain their abilities to protect consumer rights and public health, safety and welfare, and to ensure that consumers who do not choose to install solar are not required to subsidize the costs of backup power and electric grid access to those who do.
- (c) DEFINITIONS. For purposes of this section, the following words and terms shall have the following meanings:
- (1) "consumer" means any end user of electricity regardless of the source of that electricity.
- (2) "solar equipment," "solar electrical generating equipment" and "solar" are used interchangeably and mean photovoltaic panels and any other device or system that converts sunlight into electricity.
- (3) "backup power" means electricity from an electric utility, made available to solar electricity consumers for their use when their solar electricity generation is insufficient or unavailable, such as at night, during periods of low solar electricity generation or when their solar equipment otherwise is not functioning.
- (4) "lease," when used in the context of a consumer paying the owner of solar electrical generating equipment for the right to use such equipment, means an agreement under which the consumer pays the equipment owner/lessor a stream of periodic payments for the use of such equipment, which payments do not vary in amount based on the amount of electricity produced by the equipment and used by the consumer/lessee.
- (5) "electric grid" means the interconnected electrical network, consisting of power plants and other generating facilities, transformers, transmission lines, distribution lines and related facilities, that makes electricity available to consumers throughout Florida.
- (6) "electric utility" means any municipal electric utility, investor-owned electric utility, or rural electric cooperative which owns, maintains, or operates an electric generation, transmission, or distribution system within the state.
- (d) EFFECTIVE DATE. This section shall be effective immediately upon voter approval of this amendment.

X

DATE OF SIGNATURE

SIGNATURE OF REGISTERED VOTER

Initiative petition sponsored by Consumers for Smart Solar, 2640-A Mitcham Drive, Tallahassee, FL 32308

If paid petition circulator is used:

Circulator's name _____

Circulator's address _____

For Official Use Only:

Serial Number: 15-17

Date Approved: 7/21/2015

6-B)

RESOLUTION NO. 2016 - _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF VERO BEACH, FLORIDA, EXPRESSING SUPPORT FOR THE CONSTRUCTION OF THE GROVELAND RESERVOIR AND TREATMENT AREA AND REQUESTING THE SAINT JOHNS RIVER WATER MANAGEMENT DISTRICT TO PROTECT AND PRESERVE THE FLORIDA AQUIFER PUBLIC WATER SUPPLY BY RESTRICTING WITHDRAWALS FROM THE FLORIDAN AQUIFER FOR ELECTRIC UTILITY USE; PROVIDING FOR CONFLICT AND SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Floridan Aquifer has provided and currently provides a principle supply of raw public water for Brevard, Indian River and Saint Lucie Counties ("Counties") as well as many other cities and counties; and

WHEREAS, the Floridan Aquifer has been identified as the source for future raw public water supplies for said Counties; and

WHEREAS, the Saint Johns River Water Management District ("SJRWMD") regulates and permits withdrawals of this raw public water from the Floridan Aquifer through its Consumptive Use Permit ("CUP") process; and

WHEREAS, the SJRWMD has identified the Floridan Aquifer as a reliable supply source for raw public water through its adopted Water Supply Plan; and

WHEREAS, the Florida Power and Light Company ("FPL") has requested to withdraw an estimated 9 million gallons of raw public water per day from the Floridan Aquifer for use in the production of electric power; and

WHEREAS, such withdrawal of this raw public water from the Floridan Aquifer by FPL for use in production of electric power does not appear in the SJRWMD Water Supply Plan as an intended use; and

WHEREAS, the Groveland Reservoir and Stormwater Treatment Area ("Groveland Reservoir") has received funding from the Florida Department of Environmental Protection to begin

the preliminary design and engineering for the creation of a reservoir that will capture and treat stormwater that normally would discharge to the Indian River Lagoon; and

WHEREAS, the Groveland Reservoir is identified by the SJRWMD as having a potential capacity of 136 million gallons of treated stormwater per day that could be used as a water supply source for utility and other purposes in place of the Floridan Aquifer; and

WHEREAS, such captured stormwater could be made available and would be more appropriate for use by FPL and other companies instead of using and further stressing the Floridan Aquifer public water supply planned and intended for public use; and

WHEREAS, the Groveland Reservoir is also identified by the South Florida Water Management District ("SFWMD") in their Upper East Coast Water Supply Plan as a potential water supply; and

WHEREAS, the Groveland Reservoir is also identified by the Central Florida Water Initiative ("CFWI") as a potential water supply; and

WHEREAS, the City Council of the City of Vero Beach, Florida, ("City Council") desires to express its concerns to the SJRWMD that the raw public water supply from the Floridan Aquifer should be used for the public and Counties' residents' needs as intended, which use should take precedence over the use of this same water supply for the production of electric power; and

WHEREAS, in order to help preserve the Floridan Aquifer and to provide additional sources for future water supply and to eliminate stormwater discharges destructive to the Indian River Lagoon, the City Council supports the construction of the Groveland Reservoir,

NOW, THEREFORE, BE IT RESOLVED THAT THE CITY COUNCIL OF THE CITY OF VERO BEACH, FLORIDA, AS FOLLOWS:

Section 1 – Adoption of “Whereas” clauses.

The foregoing “Whereas” clauses are hereby adopted and incorporated herein.

Section 2 – Support For Groveland Reservoir and Stormwater Treatment Area.

The City Council hereby expresses its support for construction of the Groveland Reservoir and Stormwater Treatment Area to provide future water supply to the SJRWMD, SFWMD, and CFWI Basins and to help eliminate discharges destructive to the Indian River Lagoon, thereby protecting and preserving the Indian River Lagoon both now and for future generations.

Section 3 – Request to Limit Floridan Aquifer Withdrawals for Utility Purposes.

The City Council hereby urges and requests the SJRWMD, through its CUP process, to require FPL to utilize water from the Groveland Reservoir for its production of electric power when said reservoir is constructed and operational instead of using the raw public water supply from the Floridan Aquifer. The City Council acknowledges that use of water from the Groveland Reservoir may not be available for FPL's electric power generation for some time in the future and therefore the SJRWMD might grant approval of temporary limited withdrawals from the Floridan Aquifer for such use. Therefore, the City Council further urges and requests that the SJRWMD, through its CUP process, restrict and limit future withdrawals from the Floridan Aquifer once water from the Groveland Reservoir is made available to FPL, thereby protecting the raw public water supply of the Floridan Aquifer for current and future public use of Brevard, Indian River, and Saint Lucie Counties, as well as other cities and counties.

Section 4 - Conflict and severability.

The provisions of this Resolution shall control over those provisions of previously adopted resolutions in conflict herewith. If any provision of this Resolution is held to be invalid, unconstitutional, or unenforceable for any reason by a court of competent jurisdiction, such invalidity shall not affect the validity of the remaining portions.

Section 5 – Effective Date.

This resolution shall become effective upon adoption by the City Council.

This Resolution was heard at a public hearing on the ____ day of _____ 2016, after which hearing it was moved for adoption by Councilmember _____, seconded by Councilmember _____, and adopted by the following vote of the City Council:

Mayor Jay Kramer _____
Vice-Mayor Randy Old _____
Councilmember Pilar E. Turner _____
Councilmember Richard T. Winger _____
Councilmember Harry Howle, III _____

ATTEST:

CITY COUNCIL
CITY OF VERO BEACH, FLORIDA

Tammy K. Vock
City Clerk

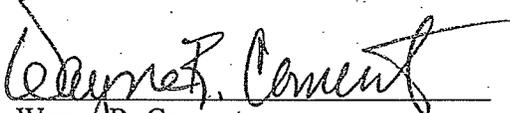
Jay Kramer
Mayor

[SEAL]

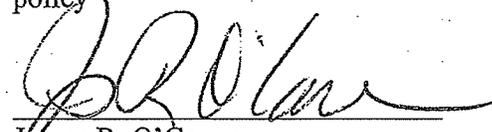


Approved as to form and legal sufficiency:

Approved as conforming to municipal policy

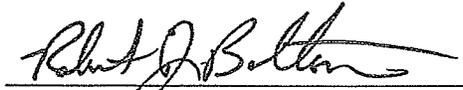


Wayne R. Coment
City Attorney



James R. O'Connor
City Manager

Approved as to technical requirements:



Robert J. Bolton
Water & Sewer Director