

# INTEGRATED RESOURCE PLAN (IRP)

PREPARED BY

**Horizons Energy**

December 12, 2022

---

For



## *STATEMENT OF LIMITATIONS*

In preparation of this IRP, Horizons Energy (HE) has relied upon information provided by Lake Worth Beach Electric Utilities. While HE has no reason to believe that the information provided, and upon which Horizons has relied, is inaccurate or incomplete in any material respect, HE has not independently verified such information and cannot guarantee its accuracy or completeness.

Estimates and projections prepared by HE relating to performance, construction costs and operating and maintenance costs are based on experience, qualifications, and judgment as a professional consultant. Since HE has no control over weather, cost and availability of labor, material and equipment, labor productivity, construction contractor's procedures and methods, unavoidable delays, construction contractor's method of determining prices, economic conditions, government regulations and laws (including interpretation thereof), competitive bidding, and market conditions or other factors affecting such estimates or projections, Horizons does not guarantee the accuracy of its estimates or predictions. Actual rates, costs, performance, schedules, etc., may vary from the data provided.

## Contents

Executive Summary.....	6
Introduction .....	6
The IRP Process .....	6
Scenarios and Sensitivities.....	7
Resource Expansion Options .....	8
Findings .....	9
Portfolio Selection.....	11
Lake Worth Beach Electric Utilities (LWBEU) Overview .....	14
Objectives and Process .....	15
LWBEU Objectives.....	15
LWBEU Planning Criteria.....	15
Horizons Planning Process .....	15
Existing Generation System .....	17
Background .....	17
Observations .....	17
Load Forecast.....	18
Loads and Load Growth .....	18
Alternate Load Forecast Methodologies .....	18
Generating Resource Options.....	19
Resource Constraint Assumptions.....	21
FRCC Market Overview .....	22
Florida Evolving Landscape.....	24
Natural Gas .....	25
Environmental.....	29
Transmission .....	32
Energy & Capacity Markets Development Methodology .....	33
Fundamental Approach .....	34
Scenario Assumptions.....	35
Florida Energy & Capacity Market Assumptions.....	36
Inflation.....	39
Demand.....	39
Natural Gas .....	39

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Renewable Portfolio Standard (RPS) Requirements .....	41
Resource Mix.....	41
Planning Supply/Demand Balance .....	42
Portfolio Evaluation .....	45
Analysis .....	45
Sensitivities .....	45
Addenda .....	47
The EnCompass Power Planning Model .....	47
Figure Tables .....	49
Scenario Figures .....	53
Supply and Demand Balance .....	53
Net Present Value Revenue Requirements (Savings)/Cost.....	76
Builds by Sensitivity.....	81
List of Acronyms.....	99

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 1 Capacity Needs Forecast .....	10
Figure 2 Energy Needs Forecast.....	11
Figure 3 Solar PPA and DR Resources by 2025 .....	12
Figure 4 Solar and Battery Entitlement Resources by 2030.....	13
Figure 5 Reference Scenario Resource Addition Sensitivities.....	13
Figure 6 NPVRR by Scenario.....	14
Figure 7 EnCompass Power Planning Model .....	16
Figure 8 Portfolio Process .....	17
Figure 9 LWBEU Demand Forecast .....	19
Figure 10 Level Ten ISO Solar PPA Pricing.....	21
Figure 11 Florida Infrastructure .....	23
Figure 12 Utility and Municipality Service Areas .....	23
Figure 13 Florida Annual Solar Installations .....	24
Figure 14 Florida Generation Mix (GW) – Reference Scenario .....	24
Figure 15 Historical Monthly Dry Shale Gas Production .....	25
Figure 16 Natural Gas Delivery Stations Map.....	26
Figure 17 Horizons Monthly Henry Hub Reference Case Forecast.....	27
Figure 18 Horizons Natural Gas Markets.....	28
Figure 19 Florida Natural Gas Delivered Price Map.....	28
Figure 20 Florida Citygate Adder .....	29
Figure 21 Carbon Price Trajectories.....	30
Figure 22 City of Lake Worth CO <sub>2</sub> Footprint in Florida.....	30
Figure 23 Percentage of Clean Energy Delivered NEE Emission Target .....	31
Figure 24 Percentage of Clean Energy Delivered FRCC Advisory Emission Rate .....	32
Figure 25 NERC Regions.....	33
Figure 26 FRCC-Florida Base Annual Energy Prices.....	37
Figure 27 FRCC-Florida All Hour Scenario Energy Prices .....	38
Figure 28 FRCC-Florida Capacity Prices.....	38
Figure 29 FRCC-Florida Demand Forecast.....	39
Figure 30 Natural Gas Liquid Market Centers.....	40
Figure 31 Henry Hub Scenario Prices .....	41
Figure 32 FRCC-Florida 2050 Resource Mix .....	41
Figure 33 Reference Case Planning Requirement versus Existing Capacity .....	43
Figure 34 Reference Capacity Price Supply Demand Balance .....	43
Figure 35 2030 Peak Day Supply Demand Balance Example .....	44
Figure 36 \$60/kW year Capacity Price Supply Demand Balance .....	44
Figure 37 Carbon Import Emission Rate .....	46
Figure 38 EnCompass Software .....	48
Figure 39 Reference Supply Demand Balance Sensitivities.....	53
Figure 40 High Demand Supply Demand Balance Sensitivities.....	56
Figure 41 Low Demand Supply Demand Balance Sensitivities.....	59
Figure 42 High Natural Gas Supply Demand Balance Sensitivities .....	61
Figure 43 Low Natural Gas Supply Demand Balance Sensitivities .....	64
Figure 44 CO <sub>2</sub> High Natural Gas Supply Demand Balance Sensitivities.....	66
Figure 45 CO <sub>2</sub> Low Natural Gas Supply Demand Balance Sensitivities .....	69
Figure 46 Carbon Tax Scenario Supply Demand Balance Sensitivities .....	71
Figure 47 Zero Carbon Additions Supply Demand Balance Sensitivities .....	74
Figure 48 NPVRR Sensitivities .....	76

*Table 1 Expansion Resource Characteristics* .....9  
*Table 2 Generation Entitlement*.....14  
*Table 3 Generation Assets* .....17  
*Table 4 Historical Demand*.....18  
*Table 5 Resource Expansion Options* .....20  
*Table 6 Builds through 2030 by Sensitivity (Cumulative MW)* .....81

## Executive Summary

This document describes a long-term economic evaluation performed by Horizons Energy (Horizons) of the capacity and energy options available to the Lake Worth Beach Electric Utilities (LWBEU) in support of its goals of providing low cost, reliable and low carbon service to its customers.

Previously, Horizons worked with LWBEU in 2018 to evaluate resource electrical generating options available to economically meet its customer needs for a robust reliable electrical supply service. This report includes a refresh of those options by updating the economic and operating assumptions since 2018 with the goal of developing a robust Integrated Resource Plan (IRP). The previous report included evaluation of the benefits of additional transmission transfer and focused exclusively on supply side alternatives. Given that the construction of an additional tie line which, by 2023, is anticipated to provide improved and adequate reliability, the transmission evaluation was removed for this 2022 report. To reflect the goals of an IRP, this effort is broader, incorporating both supply and demand side options and contains a greater emphasis on meeting target emissions reduction. Horizons provides analysis to LWBEU in support of its directive to reduce costs while achieving the lowest CO<sub>2</sub> emissions in the State of Florida by 2024.

## Introduction

Horizons Energy LLC ([www.horizons-energy.com](http://www.horizons-energy.com)) was formed in Ohio as a Limited Liability Company in September 2016 by Greg Turk. Horizons Energy has over 60 years of combined experience in the North American energy industry providing consulting services, custom scenarios and conducting studies on behalf of over 50 clients. Horizons consultants contributed to over 30 North America integrated resource plans (IRP), including the City of Palo Alto, City of Springfield Oregon and numerous cities in the state of North Carolina. Additionally, Horizons consultants have performed billions of dollars in valuation including KeySpan due diligence, Public Service Colorado resource bidding, Placer County California Water Agency financial feasibility, New York Independent Power Producer (IPP) battery valuations and the Public Service New Mexico abandonment and replacement power cases. Horizons Energy semi-annually develops a North American advisory service and database containing a long-term outlook of the energy markets which includes a forecast of energy, capacity and fuel prices for 78 market areas through the year 2050.

## The IRP Process

Integrated Resource Planning is the process by which supply and demand side options are consistently planned, implemented, and evaluated to provide energy services at a cost that appropriately balances the interests of stakeholders. IRP's are long-term forecasting efforts, covering many future years, in order to incorporate the life-cycle benefits and costs of alternative resources. For the LWBEU IRP, the planning time frame is 2023 to 2050. This time frame was specifically chosen to consider zero carbon emissions targets as discussed below.

The IRP begins with an evaluation of the maximum, or peak, demand of the utility customers as well as the hourly energy requirements, generally across all hours of the year. Customer requirements over time are compared against both the Existing Generating System and alternative possible future resources, called Resource Expansion Options. In addition, the IRP evaluates a host of other factors, including the price and availability of fuel and the costs of financing capital projects. This entire framework acts as inputs to a large software power planning model. This tool can identify the optimal

## Lake Worth Beach Electric Utilities Integrated Resource Plan

resource choice over time and the optimal operation of the power system on an hourly and daily basis, while considering a large number of additional factors, including environmental compliance and exchanging power with external power systems. For the LWBEU IRP, Horizons Energy utilized the EnCompass Power Planning model provided by Anchor Power Solutions.

Horizons developed the LWBEU IRP by testing resource decisions against a range of scenarios and sensitivities. Scenarios represent a range of plausible futures with variations in energy, capacity and fuel prices. Sensitivities are a means of evaluating a change in the outcome by varying a single assumption. Combining these two uncertainty techniques results in a robust exploration of market and operational risk and corresponding assessment of LWBEU's resource expansion outlook.

### Scenarios and Sensitivities

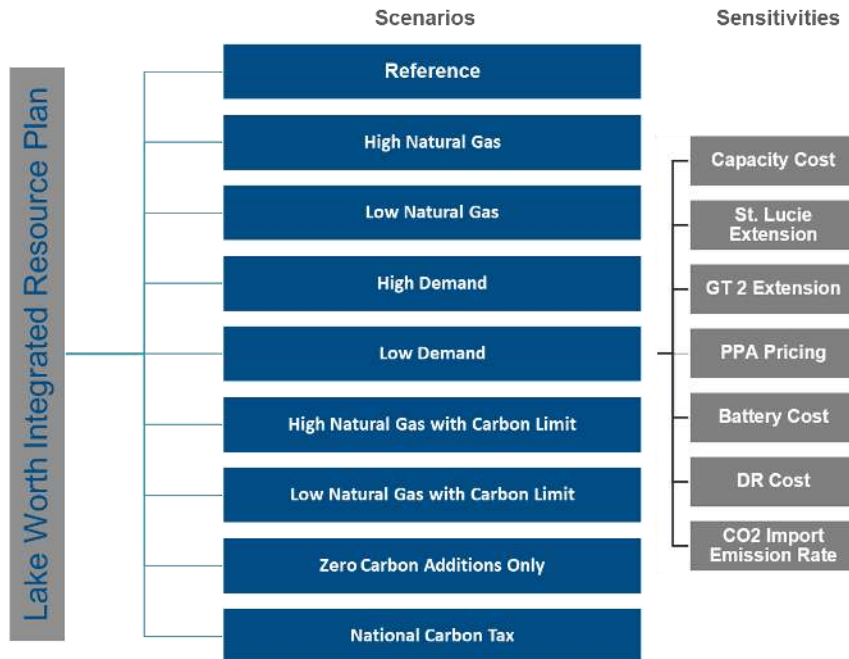
Horizons utilized its Spring 2022 Advisory Service in support of the planning scenarios. The Service includes the scenarios listed below. A more detailed description is contained in the Scenario Assumptions section of this report. Scenarios measure uncertainty in the energy markets for the major drivers: natural gas, demand, carbon pricing and renewable penetration.

- Base – Business as usual Henry Hub prices average \$5.09/MMBtu in nominal dollars
- High Natural Gas – Henry Hub prices average over \$7.64/MMBtu in nominal dollars
- Low Natural Gas – Henry Hub prices average \$2.62/MMBtu in nominal dollars
- High Demand – Increased demand by approximately 30 percent reflecting electrification
- Low Demand – Decreased demand by approximately 7 percent
- Carbon Tax – Institute US-wide carbon tax of \$15 per ton increasing by 5 percent/year above inflation through 2029 and 2.5 percent above inflation thereafter
- Low Natural Gas with a Carbon Limit – Same Henry Hub pricing as low natural gas target to decrease CO<sub>2</sub> electric sector emissions by 80 percent
- High Natural Gas with a Carbon Limit – Same Henry Hub pricing as high natural gas target to decrease CO<sub>2</sub> electric sector emissions by 80 percent
- Zero Carbon Additions – US-wide implementation of 100 percent renewable generation by 2050 with higher energy efficiency and demand response resulting in demand reduction of nearly 30 percent

Variations of all-hour energy prices for the nine scenarios are shown in Figure 27.

In addition to the nine scenarios, Horizons also conducted sensitivities to:

- Capacity cost where it is assumed LWBEU continues at \$60/kW year
- Extension of the St. Lucie nuclear license from 2043 to 2063
- Solar PPA (Purchase Power Agreement) pricing at \$35/MWh compared to \$40/MWh
- Fifty percent reduction in demand response costs
- CO<sub>2</sub> import emission rate



The GT 2 Extension and In-City Solar sensitivities were only conducted on the Reference Scenario.

LWBEU staff provided information on the size, characteristics of their existing assets along with expected retirement dates. Horizons used this information to develop the LWBEU portfolio within the EnCompass<sup>1</sup> model which Horizons used to perform hourly production simulations for the years 2023 through 2050. The LWBEU potential resource options include partial ownership of new resources as well as purchased power agreements (PPA). Exogenous input assumptions were made for behind-the-meter (BTM) penetration which varies by scenario.

### Resource Expansion Options

Horizons assumed the characteristics are taken from the Horizons Spring 2022 Advisory as shown in Table 1.

Because the magnitude of LWBEU resource needs is small compared to utility-scale sizing shown below Horizons assumed that LWBEU will be able to participate in partial ownership of specific resource options. For example, in the analysis LWBEU could potentially purchase 10 MW of a 702 MW utility-scale combined cycle at the pricing and operating characteristics shown below.

<sup>1</sup> EnCompass is a state-of-the-art power simulation engine developed by Anchor Power Solutions to address a range of power planning problems. This tool was used in the development of the market assessment and portfolio analysis for this report. A description of EnCompass is provided in the Addenda.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Table 1  
Expansion Resource Characteristics

Unit Characteristics	Type	Internal Combustion	Combustion Gas Turbine	Combined Cycle	Photovoltaic	Battery
	Detail	IC	GT	CC	PV 1-Axis	Utility Scale
Online Year	1st Year	2025	2025	2026	2023	2023
Summer Capacity	MW	65	178	702	20	10
Winter Capacity	MW	85	237	645	20	10
Full Load Heat Rate	HHV, Btu/kWh	8,500	9,750	6,736	0	0
SO2 Emission Rate	(lb/MMBtu)	0.0000	0	0	0	0.0000
NOX Emission Rate	(lb/MMBtu)	0.0700	0.0329	0.00736	0	0.0000
CO2 Emission Rate	(lb/MMBtu)	119	117	117	0	0
Fixed O&M	2021 \$/kW-yr	19.60	10.00	13.25	15.00	25.00
Variable O&M	2021 \$/MWh	4.60	4.50	2.25	0	0.00
Forced Outage Rate	%	5.00%	5.00%	3.50%	0.00%	0.00%
Maintenance Outage Rate (MOR)	%	4.10%	3.27%	5.00%	0.00%	0.00%
Overnight Construction Cost	2021 \$/kW	1,350	785	1,101	1,050	1,350
Book Life	Years	20	20	25	20	15
Tax Life	Years	15	15	15	5	5
Property Tax Rate	%	0.80%	0.80%	0.80%	0.00%	0.00%
Insurance Cost	%	0.30%	0.30%	0.30%	0.30%	0.30%

## Findings

LWBEU will require additional capacity over the 2024-2050 timeframe, as shown in Figure 1. The top line represents LWBEU peak demand plus a 15 percent reserve margin. The 15 percent reserve margin is consistent with the assumption used in FRCC for municipalities and cooperatives in the state. The orange line represents the total existing firm capacity of LWBEU. The decline in the existing firm resources 2025 is related to the retirement of Stanton and the additional decline in 2027 is the retirement of portions of the Tom G. Smith plant. The Reference scenario assumes retirement of St. Lucie in 2043. Although a sensitivity was conducted assuming St. Lucie attains an operating license extension. The difference between the planning reserve and the existing resources, in the absence of obtaining ownership shares or contracts for additional generation, would require a supplemental contract similar to the City’s current contract with OUC.

Key Scenarios and Sensitivities are enumerated below and portrayed in Figure 48:

- Horizons evaluated the impact of relying solely on a supplemental contract as compared to obtaining other expansion options over the planning horizon. Under the Reference scenario, the NPVRR was \$52 million higher when relying solely on a supplemental contract.
- When evaluating alternative available resources over the planning horizon, the Solar PPA was found to be a preferred choice in almost all scenarios, with 7 MW of Solar PPA chosen in the Reference case by 2025. When the Solar PPA was chosen, its on-line year was either 2024 or 2025 to provide maximum benefit throughout the forecast period.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

- Demand Response (DR) resources were chosen by the year 2025 in about 24% of the scenarios/sensitivities evaluated, with increasing penetrations over time.
- Similarly, utility scale batteries first appear in 2027 in about 10% of cases. By 2035, 100% of scenarios/sensitivities have at least 1 MW of batteries. The maximum builds from batteries, 24 MW including the hybrid battery, is achieved in a number of Scenarios.
- One sensitivity evaluated in the Reference case was to invest in a 10-year life extension of the GT 2 combustion turbine resource starting in 2028 at an estimated cost of \$500,000. This GT2 life extension, due to its capacity value, provided a net economic benefit of about \$6 million in NPVRR in the Reference scenario results.
- A \$62.40/MWh In-City Solar resource with an on-line date of 2025 was evaluated as a sensitivity of the Reference scenario. It was found to cost approximately \$3 million in NPVRR relative to the Reference scenario.
- A carbon emission rate for imports was applied over time when purchasing power from the external Florida market. This is discussed further in the Sensitivities section of this document. In this case, it becomes very difficult and costly to achieve the 100% carbon reduction by 2050. This illustrates that LWBEU’s ability to achieve the carbon free target by 2050 will be highly dependent on the emissions rate of purchased power of the external system.

Figure 1  
Capacity Needs Forecast

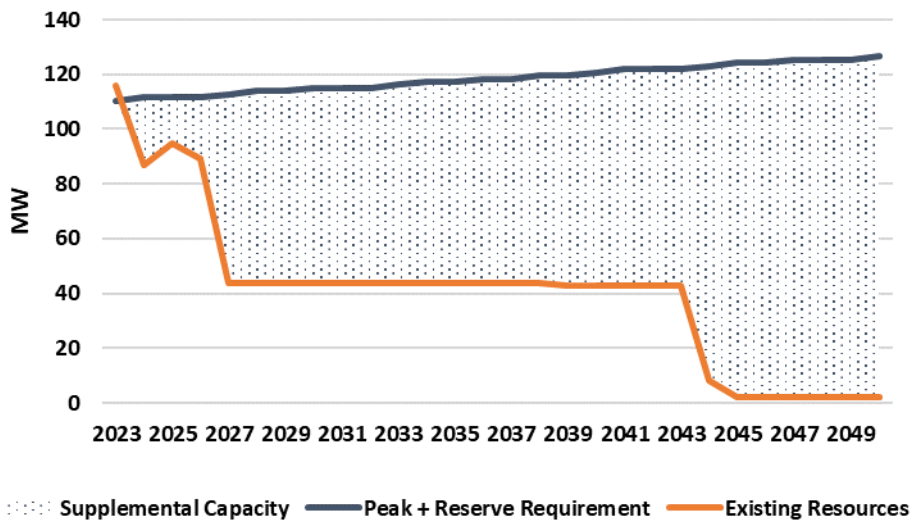
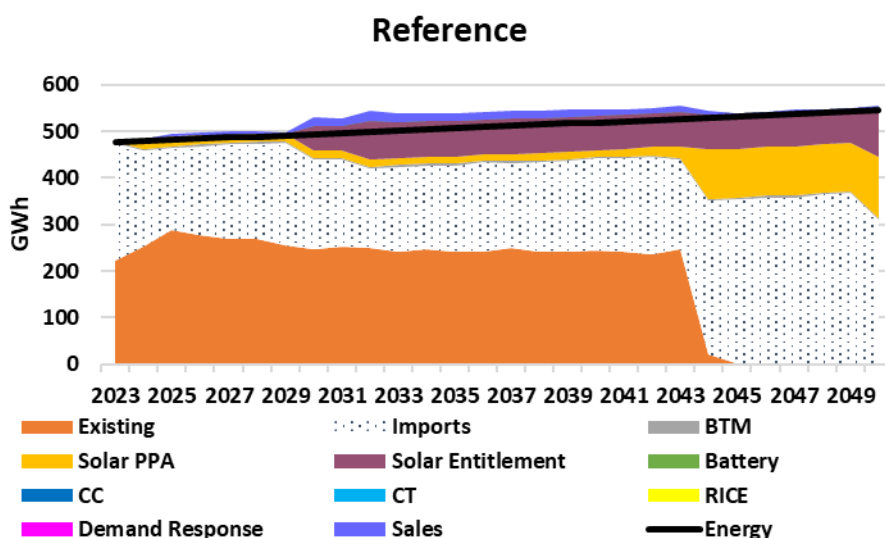


Figure 2  
Energy Needs Forecast



### Portfolio Selection

Evaluation of results across the various Scenarios and Sensitivities, Horizons proposes the following Portfolio elements. This is divided into three distinct periods: 2023-2030 as the Action Plan, 2031-2040 the Intermediate Term, and 2041-2050 as Towards Carbon Free.

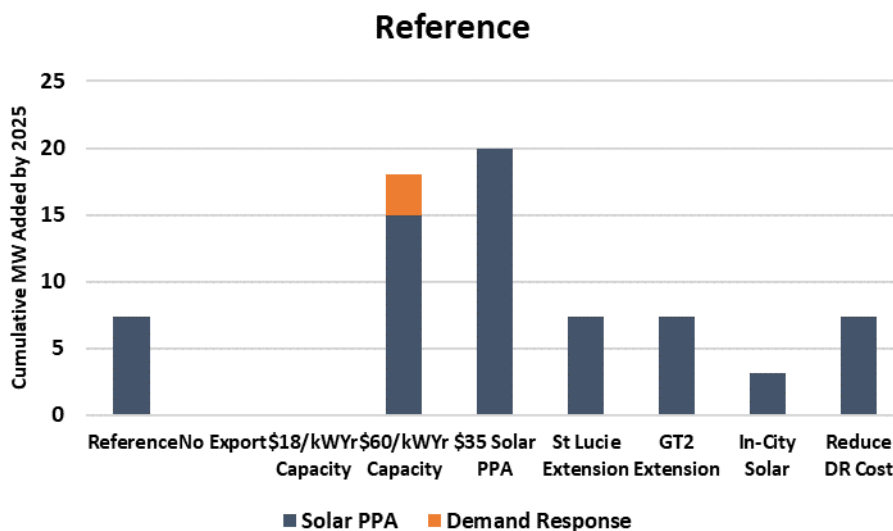
The Action Plan is intended to represent the time-period over which decisions must be made, or further evaluation warranted. The Intermediate Term represents a transitional period where the resource mix will be driven by economics and increasingly stringent emissions targets. Towards Carbon Free is impacted by the retirement of the remaining Existing Resources, while simultaneously identifying the resource mix which will achieve a 100% carbon-free portfolio. Elements of this proposal are drawn from resource decisions identified as robust over a wide range of plausible futures. Resource decisions beyond the period of the Action Plan are more general, reflecting the lead time to respond to changing future conditions.

- 2023-2030: Action Plan
  - Solar PPA: in 2024 and 2025 identify the optimal level of additional Solar PPA, depending on the contract forward price, and the expected future path.
  - Follow-on supplemental contract in 2026 based upon anticipated energy and capacity needs after owned generation and contracts.
  - Further evaluate economics of Demand Response (DR). This alternative appears economic, particularly in the 2027-2030 time, depending on the Scenario assumed. Additional research into costs and market level will firm up both the timing and size of this resource.
  - Identify the contract price of batteries relative to the rest of the portfolio. Opportunistic acquisition of battery capacity appears to be viable by the end of the 2020's in most planning Scenarios.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

- Further evaluate life extension on GT2. The current estimate of additional capacity value of the 19.2 MW resource relative to the cost of life extension implies that the life extension is a strong economic choice.
- 2031-2040: Intermediate Term
  - Identified a need for firm capacity
  - Consider a mix of batteries, DR, CT depending on pricing relative to market purchases
  - Combustion turbines utilized as lower capacity cost and low energy usage technologies with possible transition to hydrogen generation
  - Solar entitlement increases significantly, providing substantial percent of energy requirements
- 2041-2050: Toward Carbon Free
  - St. Lucie and FMPA solar retirements reflect a need for significant resource acquisition
  - Low carbon purchases may significantly contribute to supply zero carbon emissions to LWBEU customers
  - Lead time to this period implies significant uncertainty and possible opportunity for technology improvements

Figure 3  
Solar PPA and DR Resources by 2025



Later in the forecast horizon entitlement of utility-scale solar and batteries become economic as shown in Figure 4. Figure 5 provides insight into the total resource expansion by 2050. It should be noted that “gas-fired” resources are added and LWBEU continues its glide path to zero carbon emissions because the “gas-fired” resources are added to meet firm capacity needs. Figure 2 provides the energy outlook where the only source of carbon is from supplemental energy purchases.

Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 4  
Solar and Battery Entitlement Resources by 2030

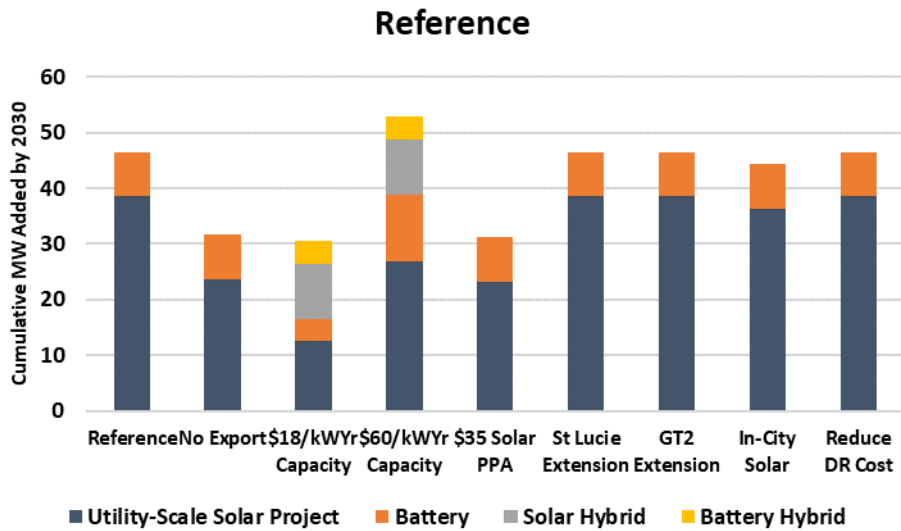
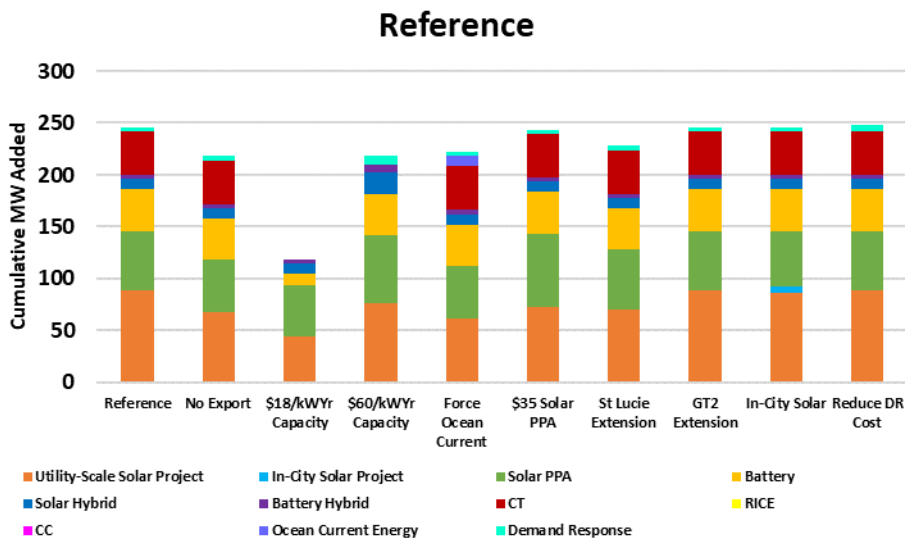


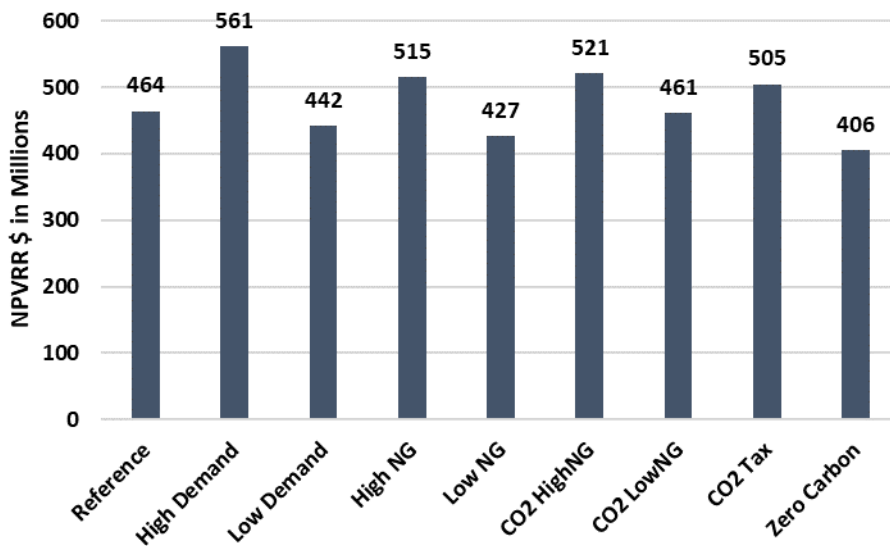
Figure 5  
Reference Scenario Resource Addition Sensitivities



The mix of resource expansion varies across scenarios which result in varying levels of net present value of revenue requirements (NPVRR). NPVRR represents the total cost over the forecast horizons for LWBEU to meet its resource needs. A description of the scenarios is available in the Scenario Assumptions section.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 6  
NPVRR by Scenario



## Lake Worth Beach Electric Utilities (LWBEU) Overview

Lake Worth is a coastal city of 27,000 customers located in Palm Beach County, Florida. The Atlantic Ocean and the broad waters of the Lake Worth Lagoon form the city's east boundary and the beautiful fresh waters of Lake Osborne to the west. Next door to Palm Beach, it is situated along the northern most latitude of the subtropics.

Residential customers, representing over 85 percent of total customers, drives the peak consumption for electricity primarily driven by air conditioning load. As of 2022, the all-time peak load for the City of Lake Worth was 97.2 MW which was reached in June 2019.

LWBEU contracts with OUC to provide additional generation needs beyond the entitlements outlined in Table 2. This contract, expiring at the end of 2025, provides for both energy and capacity, which is scheduled by OUC. This report assumes that LWBEU will continue to have access to a similarly structured supplemental contract and will additionally have the ability to displace portions of the new contract if additional, more economic, resources are acquired.

Table 2  
Generation Entitlement

Sources of Energy Calendar 2021		
Supplier	MWh	% of Total
OUC	244,327	50.6%
OUC-Econ.	13,192	2.7%
Stanton	47,000	9.7%
St. Lucie	171,441	35.5%
LW Solar 1	3,095	0.6%
Tom Smith	3,368	0.7%

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Total	482,423
-------	---------

The City-owned portions of the St. Lucie and Stanton generating stations contain strong contractual provisions for selling ownership. The Stanton generating station is slated for retirement by December 31, 2025. The NRC license for St. Lucie runs through 2043. In the 3rd Quarter of 2021, FPL applied to the NRC for an SLR for its existing St. Lucie nuclear Units 1 & 2. If approved by the NRC, the SLRs for St. Lucie Units 1 & 2 will extend the licenses for those facilities for an additional 20 years; until 2056 and 2063, respectively. The NRC is currently scheduled to decide on FPL’s SLR request for the St. Lucie units by mid-2023, but those dates are likely to be delayed somewhat as the NRC revises its generic EIS for license renewal in response to their recent Turkey Point SLR decision. Due to the unknown outcome, Horizons conducted a sensitivity to the license extension.

## Objectives and Process

### LWBEU Objectives

LWBEU has goals to provide low-cost, reliable energy while maintaining a low carbon footprint. Beginning in mid-2023 LWBEU expects to begin receiving significant quantities of solar energy from our commitments to the Florida Municipal Power Agency Solar Projects, so much so that by 2025 they expect to see periods of time during daylight hours when 100 percent of their energy will be coming from carbon-free resources.

LWBEU established a carbon reduction plan that sets targets of 50 percent reduction by 2025, 75 percent by 2035 and 100 percent by 2050.

### LWBEU Planning Criteria

Power generation systems plan for the need of additional generation based upon a variety of criteria, including loss of load probability, loss of energy expectation and reserve margin. The most common, and the method used in this study, is reserve margin. For purposes of this study LWBEU will maintain a 15 percent reserve margin consistent with requirements for municipalities in FRCC. This means that the total generating capacity required by LWBEU will be the sum of the annual peak demand for electricity plus an additional 15 percent of that value. These values are based upon reliability studies with the goal of achieving a loss of load of less than one day in ten years.

### Horizons Planning Process

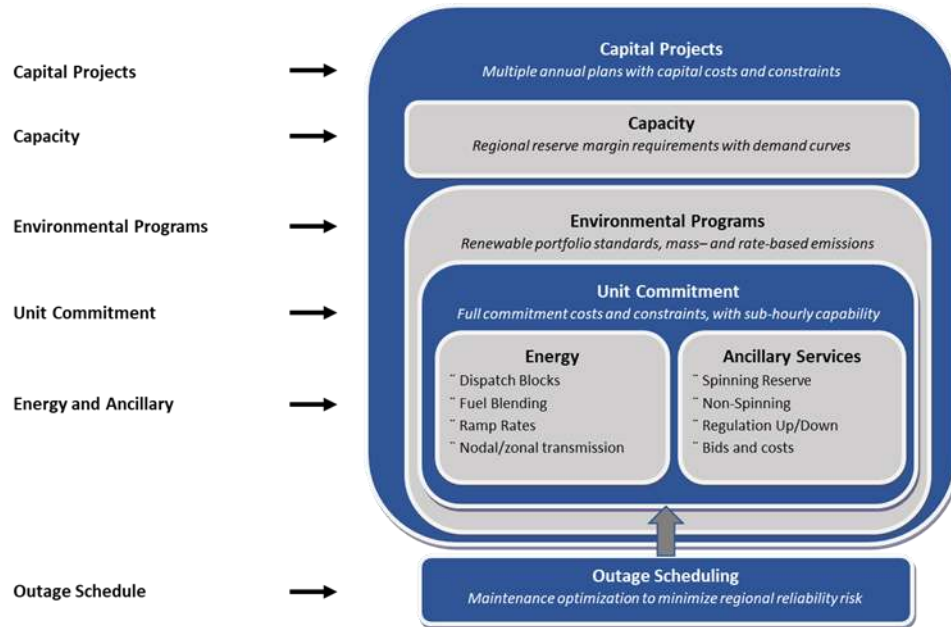
Consistent with established Integrated Resource Planning practices, this evaluation will quantify the relative costs of alternative resource options as measured against a range of possible futures or scenarios. Options are resource expansion plant types, which include the type and timing of new resource additions. It incorporates the investment and operating costs as well as operating characteristics of existing and expansion options capable of meeting the future energy and capacity requirements.

Scenarios aid in addressing how future uncertainties impact the value of expansion options. Examples of scenarios would include future -high, base and low - variations of demand and the cost of natural gas. All scenarios are measured relative to a Reference case, intended to reflect ‘business as usual’.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Horizons utilizes the state-of-the-art power simulation engine, EnCompass, by Anchor Power Solutions. This tool uses an advanced Mixed Integer Linear Programming (MILP) algorithm which is capable of addressing a wide range of planning problems within a single database, including market price forecasting, generation resource expansion optimization and power operations.

Figure 7  
EnCompass Power Planning Model



To drive the EnCompass simulations, Horizons Energy maintains an extensively researched database of the North American power system, including over 23,000 generators, 78 market areas, zonal transmission constraints and customer demand for 8,760 hours per year. In addition, Horizons maintains a forward view of power markets out to the year 2050 and across multiple scenarios. This database, updated semi-annually, is called the Horizons Advisory. The Spring 2022 Horizons Advisory scenarios will be used for this study.

By combining the Horizons Advisory forecast with the EnCompass tool, Horizons is able to provide consistently derived Scenarios for planning purposes. The following graph illustrates the process of performing Market Simulations and Portfolio Optimization for each Scenario:

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 8  
Portfolio Process



The required Market Data (External and Local) drives the power market simulations from the Advisory service. The market prices, fuel prices and other elements are then passed to the Portfolio Optimization capabilities of EnCompass. This combines the capital projects, operations, outages and interaction with the external market to derive resource expansion plans.

## Existing Generation System

### Background

Table 3  
Generation Assets

Resource	On-Line Date	Retire Date	Capacity (MW)	Age
FMPA Solar Project 2	12/1/2023	11/30/2043	13.275 yr 1 26.55 thereafter	
FMPA Solar Project 3	12/1/2025	11/30/2044	10.0	
GT-1	5/1/1976	5/31/2027	25.7	46
GT-2	1/1/2024	5/31/2027	19.2	
Lake Worth CC	5/1/1978	12/31/2023	29.2	44
LW Solar 1	11/1/2017		1.7	5
M 1-5	5/1/1965		10.0	57
S3	5/1/1967	12/31/2023	25.6	55
St. Lucie	3/1/1976	12/31/2043	22.2	46
Stanton I	1/1/1987	12/31/2025	11.1	35

The M1-5 plant consists of five two MW units and are used strictly for emergency operations. In 2024, LWBEU will shut down a portion of the Lake Worth CC therefore reducing capacity to 19.2 MW.

### Observations

Currently, LWBEU reserve margin is over 31 percent for 2022 given the assets in Table 3 and an expected peak of 95.62 MW. LWBEU will be adding additional solar resources in 2023 and 2025 in

## Lake Worth Beach Electric Utilities Integrated Resource Plan

anticipation of the Stanton I retirement. However, solar resources are not 100 percent available at time of peak and reserve margin is expected to decline to 15 percent.

### Load Forecast

The primary drivers' utilities use in developing the load forecast include population growth, economic conditions, electric prices, weather, energy-efficiency codes and standards. Horizons relies on these forecasts to develop the long-term load forecast for the national database. For LWBEU, Horizons applied a 0.5 percent annual growth based on current work that a consultant is performing for LWBEU.

As a frame of reference, FPL's 2022 10-year site plan reflects a compound annual growth rate (CAGR) of 1.4 percent. OUC's 2022 10-year site plan reflects a CAGR of 1.6 percent. FMPA expects annual growth of -0.60 percent in its 10-year site plan.

### Loads and Load Growth

Based on the historic information provided by LWBEU, LWBEU has been experiencing a CAGR of 1.05 percent since 2013. However, as seen in Table 4 that varies greatly from year-to-year. This variation is driven by new customers rather than autonomous growth.

*Table 4  
Historical Demand*

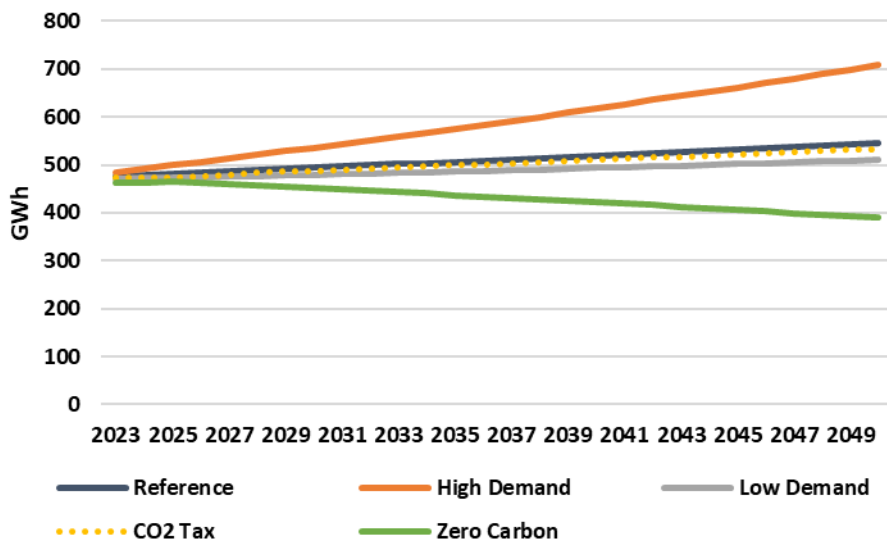
Fiscal Year	Maximum Peak (MW)	Year-to-Year Change
2013	87.4	
2014	92.1	5.4%
2015	92.6	0.5%
2016	96.3	4.0%
2017	96.4	0.1%
2018	94.6	-1.9%
2019	97.2	2.7%
2020	96.7	-0.5%
2021	96.0	-0.7%
CAGR	1.05%	

### Alternate Load Forecast Methodologies

To address the uncertainty associated for the load forecast, Horizons utilized it's high and low demand growth scenario assumptions from the Horizons Spring 2022 Advisory. These assumptions are consistent with the EIA's 2022 Annual Energy Outlook cases for high and low economic growth, which assume CAGRs for U.S. gross domestic product of 2.7 percent and 1.8 percent, respectively, compared with 2.2 percent in the Reference Case. Horizons developed multipliers of the high and low demand associated with the cases to the Horizons Reference case. As shown in Figure 9. LWBEU load forecast results in 0.75 percent CAGR for Base, 0.99 percent for high demand and nearly flat at 0.07 percent for low demand. Further discussion on the assumptions for high and low demand are in the Scenario Assumptions section.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 9  
LWBEU Demand Forecast



## Generating Resource Options

Horizons Energy researches publicly available data to determine the operational and financial assumptions for resource options. This data is gathered through industry publications such as Energy Information Administration (EIA) Annual Energy Outlook, Lazard levelized cost of energy (LCOE) reports and National Renewable Energy Laboratory (NREL).

The EnCompass model, which simulates the operation of the system over the future study period, is offered various alternative sources of generating capacity. The model simulates the system using various combinations of the available generating resources and identifies the ones that are economically optimal. The table below summarizes the fossil-fueled generating resources which were offered to the model and identifies their key characteristics as used by the model.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Table 5  
Resource Expansion Options

Unit Characteristics	Type	Internal Combustion	Combustion Gas Turbine	Combined Cycle	Photovoltaic	Battery
	Detail	IC	GT	CC	PV 1-Axis	Utility Scale
Online Year	1st Year	2025	2025	2026	2023	2023
Summer Capacity	MW	65	178	702	20	10
Winter Capacity	MW	85	237	645	20	10
Full Load Heat Rate	HHV, Btu/kWh	8,500	9,750	6,736	0	0
SO2 Emission Rate	(lb/MMBtu)	0.0000	0	0	0	0.0000
NOX Emission Rate	(lb/MMBtu)	0.0700	0.0329	0.00736	0	0.0000
CO2 Emission Rate	(lb/MMBtu)	119	117	117	0	0
Fixed O&M	2021 \$/kW-yr	19.60	10.00	13.25	15.00	25.00
Variable O&M	2021 \$/MWh	4.60	4.50	2.25	0	0.00
Forced Outage Rate	%	5.00%	5.00%	3.50%	0.00%	0.00%
Maintenance Outage Rate (MOR)	%	4.10%	3.27%	5.00%	0.00%	0.00%
Overnight Construction Cost	2021 \$/kW	1,350	785	1,101	1,050	1,350
Book Life	Years	20	20	25	20	15
Tax Life	Years	15	15	15	5	5
Property Tax Rate	%	0.80%	0.80%	0.80%	0.00%	0.00%
Insurance Cost	%	0.30%	0.30%	0.30%	0.30%	0.30%

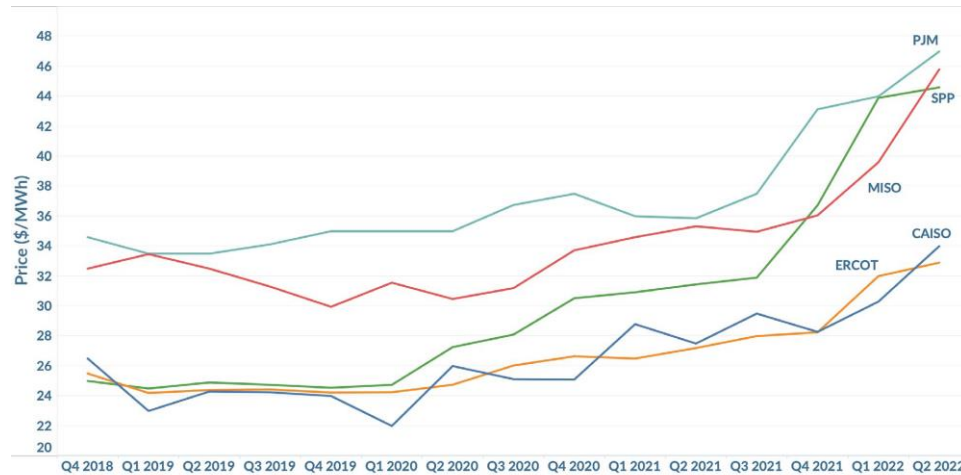
This section of the report provides a high-level description of alternative generating resources and some of the key assumptions that determined the specific values provided to the model. The results of the economic modeling are intended to compare *types* of generation – not specific vendor offerings.

Horizons assumes that LWBEU would be able to enter partial ownership contracts for the resources in Table 5 to meet its supply needs.

Solar Purchased Power Agreement (PPA) are not included in the table above. Horizons assumed a constant price of \$40/MWh. Recent activity indicates that this pricing is conservative and the ability to secure a PPA at a price less than this is probable. In addition, with the passing of the Inflation Reduction Act (IRA) the expectation is that pricing will decline because of the extension of solar investment tax credits.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 10  
Level Ten ISO Solar PPA Pricing



Source: LEVELTEN ENERGY Q2 2022 PPA PRICE INDEX NA

Demand Response was also included as an expansion option which would reduce demand. Pricing was based on research conducted by Horizons in reviewing the cost of demand response programs for FPL. Assumed an energy price of \$275/MWh which equates to the resource would only be called upon in emergency situations and a limit of 4 MW total for the study period. Four MW represents roughly 4 percent of the total LWBEU peak demand.

### Resource Constraint Assumptions

The resource size and annual growth assumptions for each technology are summarized below:

- Demand Response
  - Builds may begin 2024
  - Maximum program size: 4 MW
  - Maximum growth per year: 1 MW
- Solar PPA
  - Builds may begin in 2024
  - Maximum resource size: 50 MW
  - Maximum growth per year: no limit
- Battery
  - Builds may begin in 2024
  - Maximum resource size: 20 MW
  - Maximum growth per year: 4 MW
- Solar Entitlement
  - Builds may begin in 2030
  - Maximum resource size: 50 MW
  - Maximum growth per year: 10 MW
- Combustion Turbine Ownership Share
  - Builds may begin in 2024
  - Maximum resource size: 42 MW

## Lake Worth Beach Electric Utilities Integrated Resource Plan

- Maximum growth per year: 42 MW
- Combined Cycle Ownership Share
  - Builds may begin in 2024
  - Maximum resource size: 54 MW
  - Maximum growth per year: 54 MW
- Reciprocating Internal Combustion Engine Ownership Share
  - Builds may begin in 2024
  - Maximum resource size: 51 MW
  - Maximum growth per year: 8.5 MW
- In-City Solar
  - Build may occur in 2025 only
  - Maximum resource size: 6.52 MW
  - Maximum growth per year: 6.52 MW
- Solar/Battery Hybrid
  - Builds may begin in 2030
  - Maximum resource size: 10 MW solar, 4 MW battery
  - Maximum annual addition: 14 MW
- Florida Supplemental Energy and Capacity:
  - Available 2023-2050
  - Quantity of energy and capacity determined by model up to 200 MW per hour
  - Prices of energy and capacity from Horizons Energy Spring 2022 Advisory

## FRCC Market Overview

The Florida Reliability Coordinating Council’s (FRCC) membership includes 30 Regional Entity Division members and 23 Member Services Division members composed of investor-owned utilities (IOUs), cooperatives, municipal utilities, power marketers, and independent power producers. FRCC is divided into 10 Balancing Authorities with 47 registered entities (both members and nonmembers) performing the functions identified in the NERC Reliability Functional Model and defined in the NERC Reliability Standards. The Region contains a population of over 16 million people and has a geographic coverage of about 50,000 square miles over Florida. FRCC’s mission is to coordinate a safe, reliable, and secure bulk power system with their members.

FRCC’s Members include electric utilities who represent six sectors:

- Non-Investor-Owned Utility Wholesale Sector
- Load Serving Entity Sector
- Generating Load Serving Entity Sector
- Investor-Owned Utility Sector
- Suppliers Sector
- General Sector

Figure 11 displays the infrastructure in Florida, including natural gas pipelines, transmission and generating units.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 11  
Florida Infrastructure

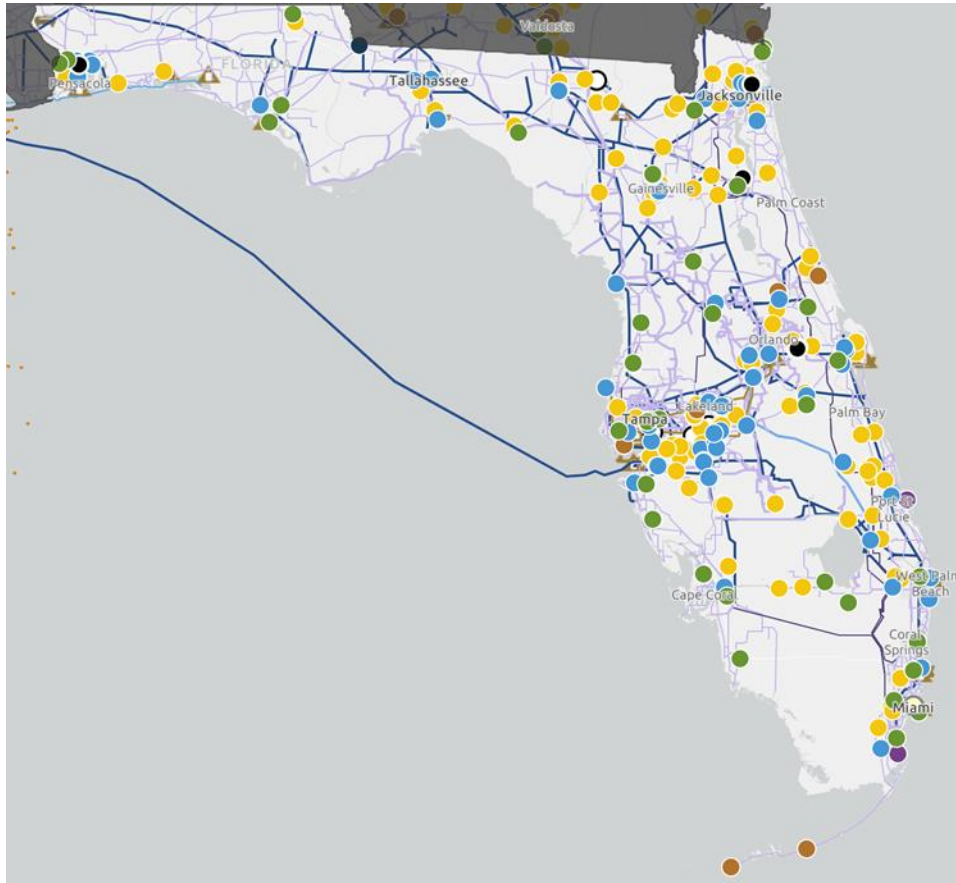


Figure 12  
Utility and Municipality Service Areas

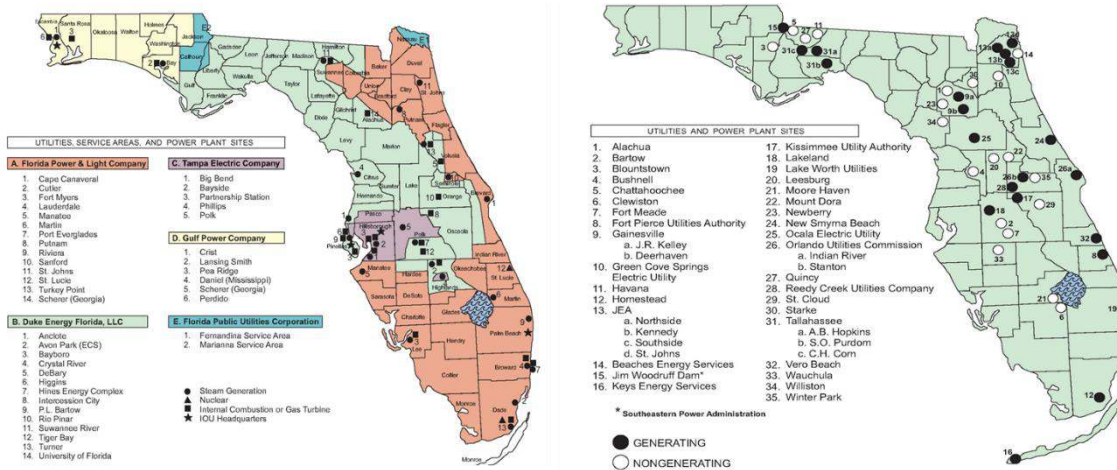
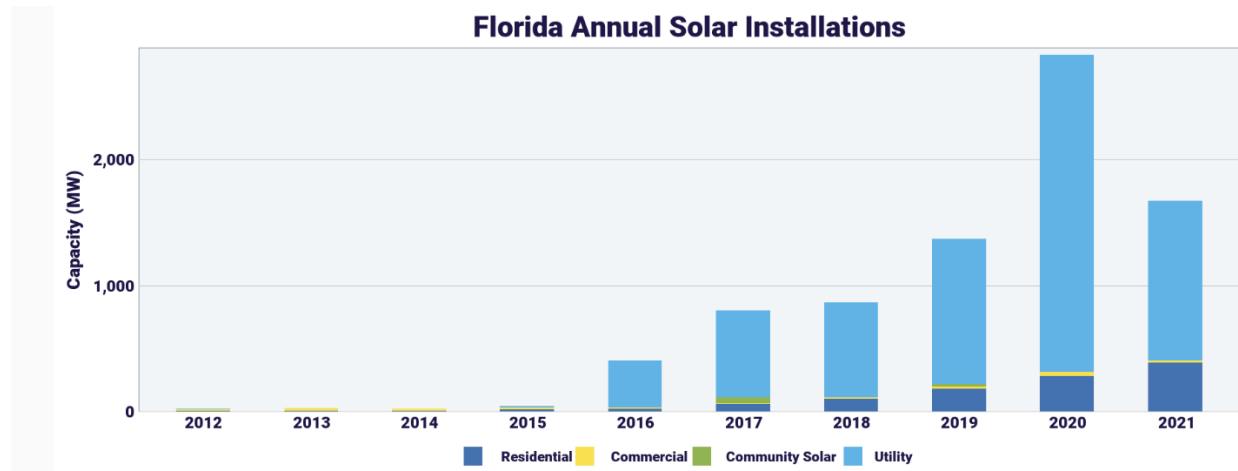


Figure 12 shows a general mapping of the service territories within Florida. The graph on the left is of the investor-owned utilities (IOU) and on the right are the municipalities.

Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 13  
Florida Annual Solar Installations



<https://www.seia.org/state-solar-policy/florida-solar>

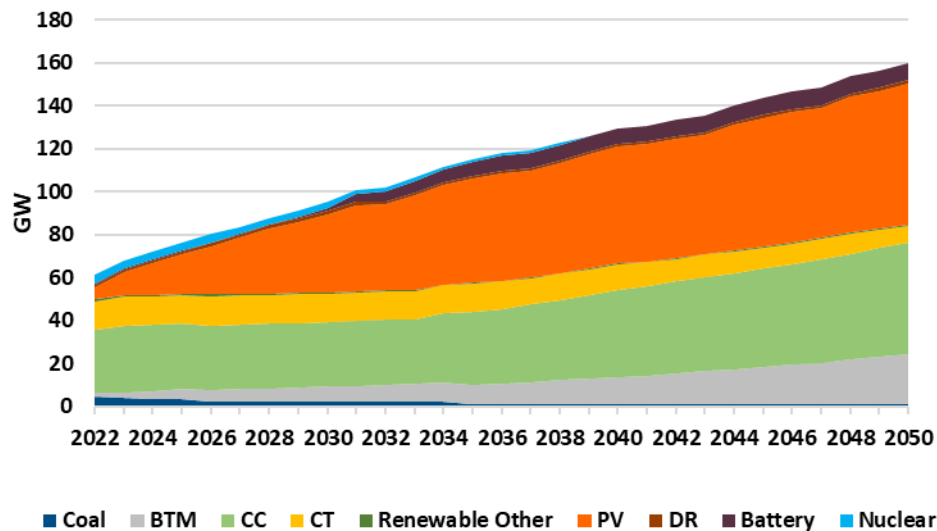
Florida is ranked 3<sup>rd</sup> in the country for total solar installations with 9,536 MW installed as of 2021. Utility investments in clean energy and other recent developments, significant growth is on the horizon with over 2,400 MW in the queue based on the EIA 860M.

Florida Evolving Landscape

On January 1, 2019, Gulf Power became a subsidiary of NextEra which also owns FPL. NextEra fully integrated Gulf Power into the integrated system in June 2022.

As seen in Figure 14, the expectation is that Florida will be coal free by 2034. In addition, solar makes up a larger portion of total capacity increasing to 41 percent.

Figure 14  
Florida Generation Mix (GW) – Reference Scenario

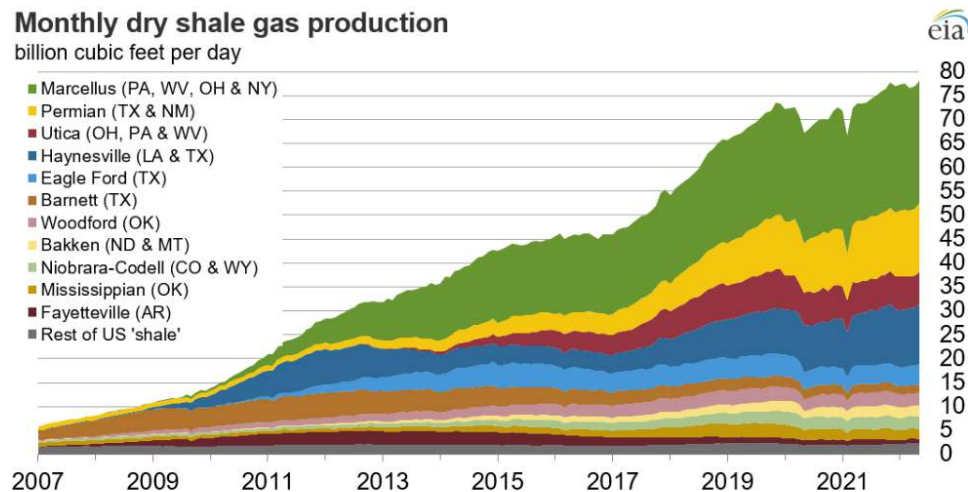


## Lake Worth Beach Electric Utilities Integrated Resource Plan

### Natural Gas

Prior to 2000, the majority of natural gas produced in the United States originated from West Texas, Louisiana, off-shore and imports from Canada. As a result, much of the existing Florida infrastructure was delivered from the west through the Florida Gas Transmission (FGT) and Gulfstream transmission systems. With the advent of fracking and horizontal drilling, significantly cheaper dry shale natural gas from Marcellus, Utica and other regions has displaced much of the conventional source of gas, resulting in lower prices. In June, 2017 a new pipeline originating in Alabama and terminating in Central Florida, the Sabal Trail opened up a significant new source of shale gas. While relieving transport congestion north of Lake Worth, the eastern coast of Florida is served by an increasingly congested FGT transportation network. As a result, firm natural gas transmission costs more at points further south on that line.

Figure 15  
Historical Monthly Dry Shale Gas Production



Data source: Enverus state administrative data. Data are through May 2022 and represent EIA's official tight gas estimates but are not survey data. State abbreviations indicate primary state(s).

Note: Improvements to play identification methods have altered production volumes of various plays. Data for May 2022 are the most recent available at this time.

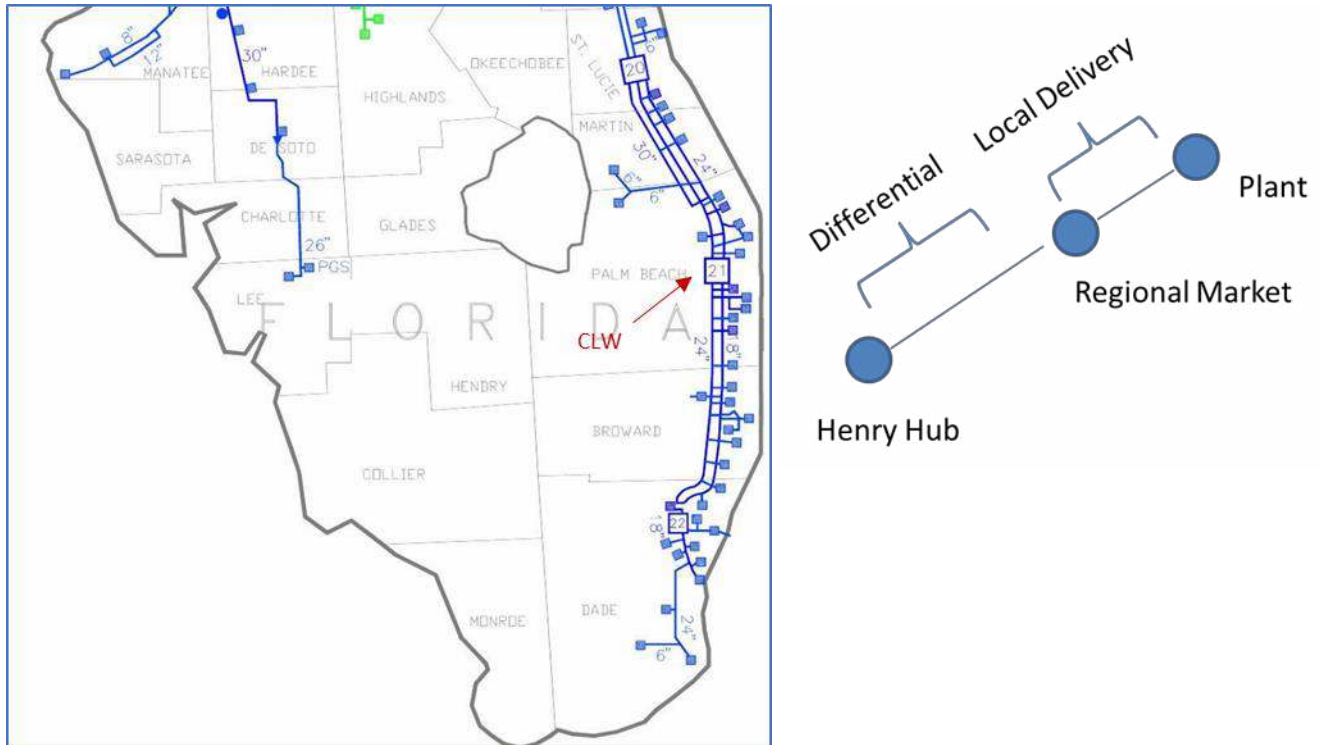
Natural gas is, and will be into the foreseeable future, a key source of energy in the production of electricity in Florida. In fact, Florida has the highest concentration of natural gas as a percent of total generating capacity (75 percent) and is the second largest consuming state of natural gas for power generation. Generating resources utilizing natural gas in the Florida include combined cycles, combustion turbines and gas steam generation. Combined cycles (CC's) provide base and cycling generation; while, combustion turbines (CT's) and gas steam generation provide predominately peaking generation. Florida CC's are big, efficient and primarily owned by the State's Investor Owned Utilities (IOU's). Florida CC's, and to a lesser degree CT's, play a key role in understanding the relative benefits drive the economics of resource choice, as they drive marginal price of energy for many hours of the year and are usually considered the 'avoidable resource' when contemplating generation options.

Natural gas is delivered to points within Florida predominately by three large inter-state pipelines: Florida Gas Transmission (FGT), Gulfstream Natural Gas System, and as of June of 2017, Sabal Trail. With the addition of Sabal Trail, gas pipeline congestion was relieved up to its termination point, well north of

## Lake Worth Beach Electric Utilities Integrated Resource Plan

LWBEU. Significantly, the Florida Southeast Connector also commenced operation in 2017. The 126-mile line is owned by Next Era and delivers natural gas to two FPL plants terminating at the Martin Plant, about 50 miles northwest of LWB. It is connected to FPL infrastructure to deliver to natural gas to five additional plants. The City of Lake Worth is served by the East leg of the FGT system. As the only pipeline provider of natural gas to coastal southeast Florida, the availability of additional firm natural gas to Lake Worth is both limited and relatively expensive (quote FGU).

Figure 16  
Natural Gas Delivery Stations Map



(Source: Florida Gas Transmission Company)

The conventional resource options evaluated in this study - CT's, CC's and RICE - utilize natural gas as the primary fuel. Horizons develops a natural gas forecast comprised of three components:

- The Henry Hub price
- Regional market differentials and
- Local distribution company (LDC) cost

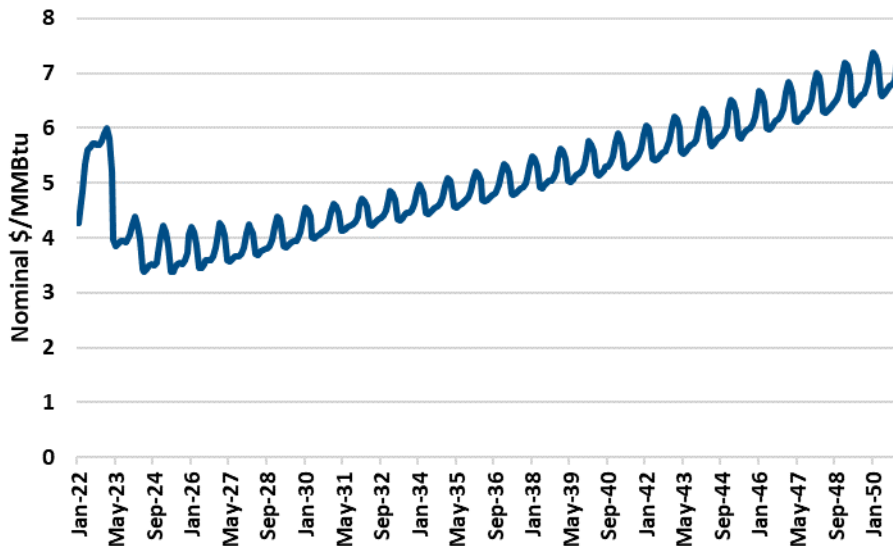
The sum of these three components represents the delivered price of natural gas to a power plant as illustrated in Figure 16.

Henry Hub is a major distribution point on the natural gas pipeline system. Prices at Henry Hub are intended to reflect the cost of natural gas commodity. Futures contracts for natural gas are generally traded monthly with seasonal variation as illustrated in Figure 17 due primarily to winter heating demand. In developing its Henry Hub forecast, Horizons utilizes Natural Gas Intelligence's <https://www.naturalgasintel.com/> Forward View service. Henry Hub prices remained below historical

## Lake Worth Beach Electric Utilities Integrated Resource Plan

levels for 2019 and 2020, averaging around \$2.25/MMBTU. Due to a confluence of events including significantly reduced production, increased liquified natural gas (LNG) exports and later the war in Ukraine, starting in mid-2021, Henry Hub increased significantly and has experienced unprecedented price volatility through the summer of 2022. As a result, today the forward price for Henry Hub is well above historical levels, with a substantial and continual reduction in price for the next 30 months with a gradual near inflation level of increase thereafter.

Figure 17  
Horizons Monthly Henry Hub Reference Case Forecast



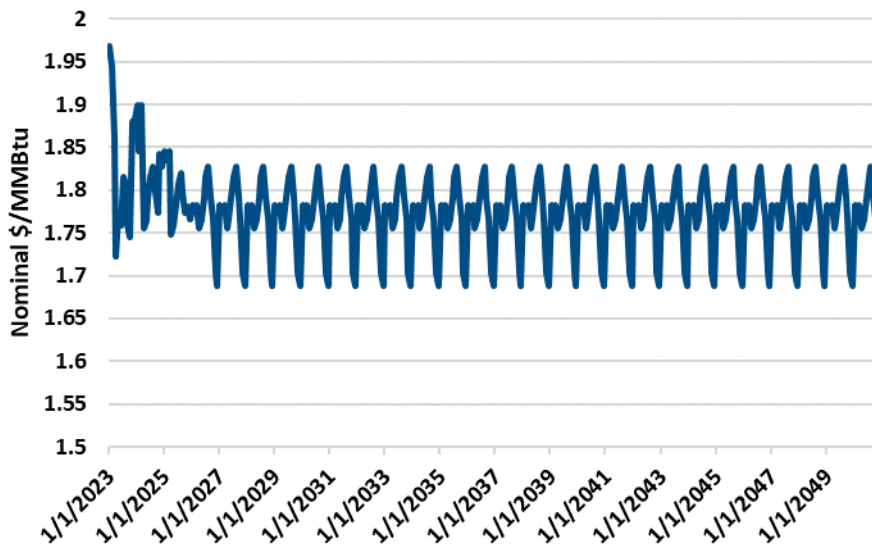
(Source: Horizons Energy)

Regional markets price differentials are located at liquid market centers disbursed at significant points throughout the North American pipeline network. The market price differential represents the difference in market price between Henry Hub and the liquid market center. There are 37 liquid market centers in the Horizons Advisory topology as shown in Figure 19. The primary liquid market center for this study is the Florida City Gate. Local delivery costs for power plants are generally either tariffs or negotiated pricing between the local transmission company and the power producer. Regional market differentials and local delivery costs in this study are based upon historical prices as well as incorporating known changes to the market.



# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 20  
Florida Citygate Adder



(Source: Horizons Energy)

## Environmental

LWBEU’s diesel generating units M1-5 fall under EPA RICE rules for emissions and their use is restricted. The Tom G. Smith Power Plant Title V Air Operation Permit, Section III, Subsection A, permitting notes, states in reference to these units that “as emergency engines, electrical power may not be supplied to the grid. For future operation, these units may only be used to provide on-site power during emergency situations”.

The resource options evaluated emit no SO<sub>2</sub>, minimal NO<sub>x</sub> and since only gas-fired conventional resources were considered low levels of CO<sub>2</sub>. The Stanton coal-fired resource is slated for retirement in 2025 and therefore contributes to the steep decline in CO<sub>2</sub> seen in 2026.

The state of Florida is considered high risk to be impacted by climate change driven by greenhouse gases or CO<sub>2</sub>. This risk is both from a climate and economic perspective. LWBEU wanted assurance that resource options would be reflective of its policy on environmental stewardship. In 2017, Mayor Pam Triolo signed the resolution, “Mayors for 100% Renewable Energy”, to move to 100 percent renewables at the Conference of Mayors. City of Lake Worth joins twenty-five U.S. cities, including Columbia, SC, San Diego, CA, Salt Lake City, UT, and San Jose, CA which already adopted 100 percent clean, renewable energy goals and six U.S. Cities, including Aspen, CO, Burlington, VT, Greensburg, KS, Kodiak Island, AK and Rock Port, MO which have already hit their targets to generate 100 percent. In 2017 LWBEU’s 5-acre 2 MW solar field on an unused landfill became operational which provides green energy to all customers. In 2018 LWBEU signed a 20-year PPA with FMPA for 10 MW of solar capacity beginning in June 2020.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 21  
Carbon Price Trajectories

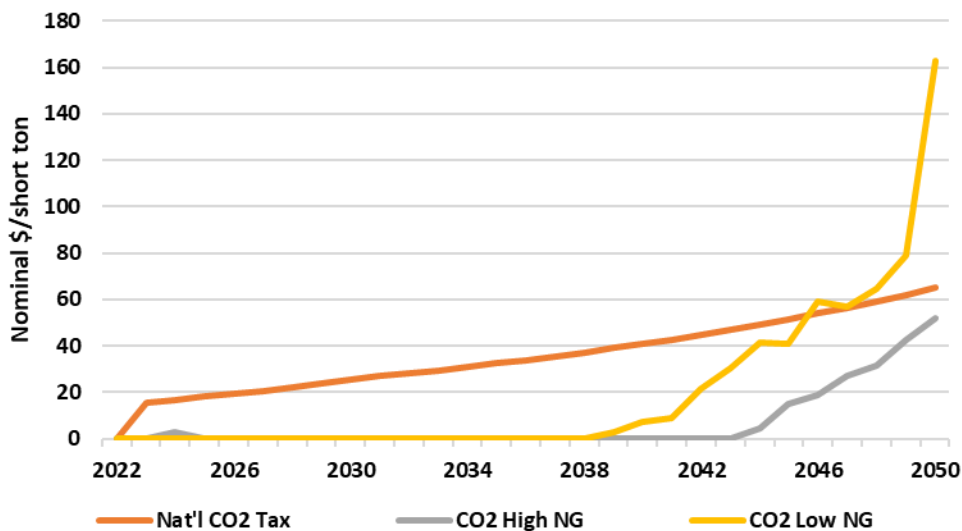
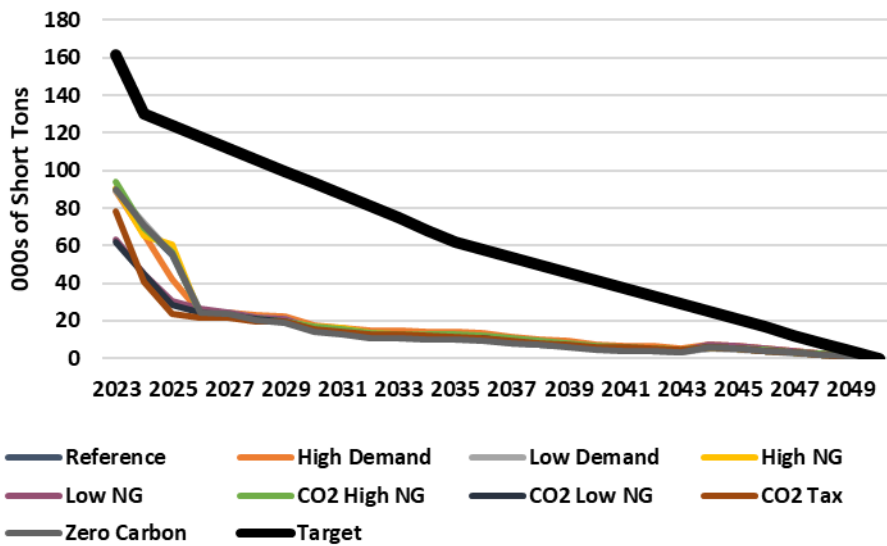


Figure 21 reflects the different carbon price trajectories in the Horizons scenarios which impact the energy and capacity market prices. One of the scenarios used in the evaluation of the resource options is “Zero Carbon Additions” which reflects increased penetration of wind and solar due to declining cost. This scenario results in lower CO<sub>2</sub> emissions. The CO<sub>2</sub> emissions for LWBEU across scenarios is shown in Figure 22. The interesting take away is that most scenarios result in LWBEU transitioning to near zero CO<sub>2</sub> emissions.

Figure 22  
City of Lake Worth CO<sub>2</sub> Footprint in Florida



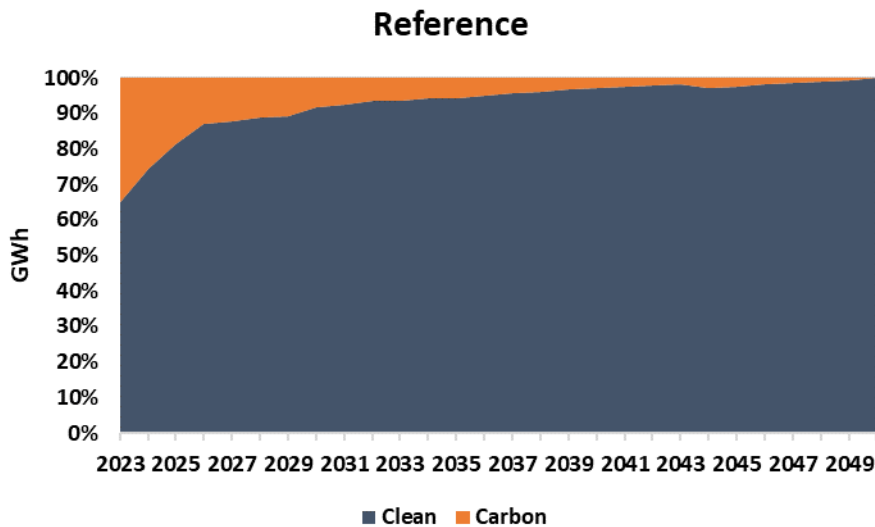
(Source: Horizons Energy)

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 22 reflects the level of CO<sub>2</sub> emissions for LWBEU including its full energy requirements. Horizons developed a CO<sub>2</sub> target based on input from LWBEU direction of 50 percent reduction by 2025; 75 percent reduction by 2035 and 100 percent reduction by 2050. CO<sub>2</sub> emissions for imports outside the city were assumed to be provided from Florida markets. Horizons used the Florida market lbs./MWh from each of the nine scenarios to imply the carbon emissions from imports in the Florida CO<sub>2</sub> sensitivities. The base assumption reflects a glide path to zero emissions consistent with NEE strategic plan. LWBEU CO<sub>2</sub> footprint without imports is zero post 2025 even though natural gas-fired resources are built they do not run and energy is purchased from the market.

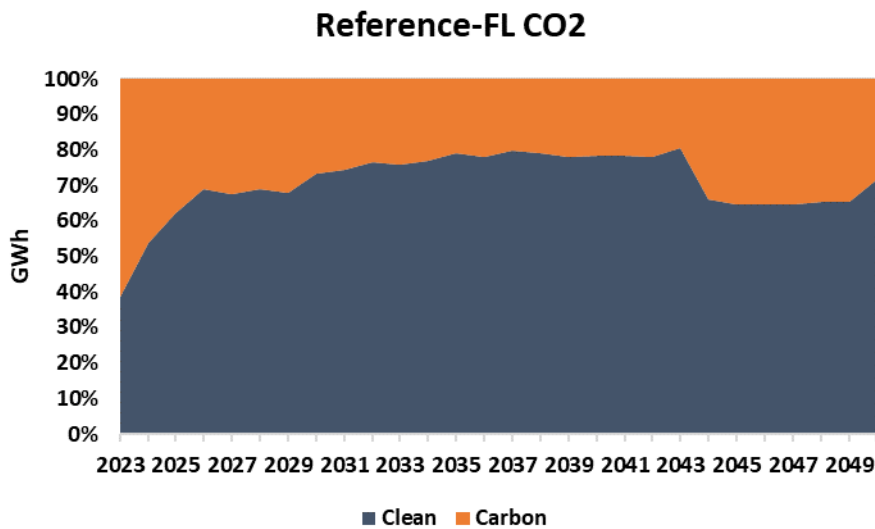
To further evaluate LWBEU’s sensitivity to CO<sub>2</sub> imports from a total energy delivery perspective, the Reference scenario assumes that LWB will purchase energy with a carbon intensity over time that reflects the stated NEE strategic planning goal of achieving zero carbon by 2050. Figure 23 displays that with NEE’s strategic plan LWBEU clean energy delivered achieves its goal by 2050.

Figure 23  
Percentage of Clean Energy Delivered NEE Emission Target



However, if NEE does not achieve its strategic planning goal, Figure 24 shows that 100 percent carbon free energy delivered is not achieved due to reliance on carbon intensity from imports based upon the of FRCC generation. In this case, a maximum of 80 percent of total LWBEU needs is met from carbon free sources in 2037.

Figure 24  
 Percentage of Clean Energy Delivered FRCC Advisory Emission Rate



### Transmission

LWBEU currently has a single connection point to the external Florida power system through FPL’s Hypoluxo substation. The City plans to obtain a second tie-line connection from FPL’s transmission system delivered to the Canal substation by end of 2023. This will permit loop flow rather than a single terminating line, improving both reliability and outage schedule flexibility. This analysis assumes that 200 MW can flow to LWBEU from the larger Florida power system. All scenarios assume that up to 15 MW/hour of excess solar generation can flow from LWBEU to the Florida power system.

## Energy & Capacity Markets Development Methodology

Horizons produces an NDB semi-annually. The NDB is used to develop a long-term outlook of the energy markets in North America which includes a forecast of energy, capacity and fuel prices for 78 market areas through 2050. Horizons utilized the results for energy and capacity prices for FRCC-Florida for the feasibility study.

The database contains:

1. Operational characteristics of over 23,500 generating plants in North America developed from:
  - EIA 860 annual and monthly data. EIA collects generator-level specific information about existing and planned generators and associated environmental equipment at electric power plants with 1 megawatt or greater of combined nameplate capacity.
  - EIA 923 annual data. EIA collects detailed electric power data -- monthly and annually -- on electricity generation, fuel consumption, fossil fuel stocks, and receipts at the power plant and prime mover level.
  - Horizons internet search of relevant RTO and ISO websites
2. Long-term energy and demand outlook
  - Annually NERC publishes a Long-Term Reliability Assessment (LTRA). North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the reliability and security of the bulk power system (BPS) in North America. NERC’s jurisdiction includes users, owners, and operators of the BPS, which serves more than 334 million people. The North American BPS is divided into eight Regional Entity (RE) boundaries as shown in Figure 25.

Figure 25  
NERC Regions



(Source: NERC)

- The LTRA is developed based on data and narrative information collected by NERC from the eight REs on an assessment area basis to independently assess the long-term reliability of the North American BPS while identifying trends, emerging issues and

## Lake Worth Beach Electric Utilities Integrated Resource Plan

potential risks during a 10-year assessment period. Horizons trends from the 10-year period to extend through the 2050 timeframe.

3. Fuel forecast is developed utilizes a variety of sources, Horizons uses Natural Gas Intelligence (NGI) to obtain forwards and historical LMCs, the EIA Annual Energy Outlook and other published sources
  - Henry Hub
  - Liquid market center
  - Local delivery adder
  - Coal forecast by basin
  - Oil forecast for distillate, residual and kerosene
  - Uranium
4. Resource Expansion Options which are economically selectable resource expansion options for EnCompass to utilize to meet a minimum reserve margin requirement for a given market. In addition, renewable resources are selected based on economics to meet individual state renewable portfolio standards (RPS). The options include the construction cost and operational characteristics. These options include:
  - Combustion turbines
  - Internal combustion turbines
  - Combined cycles
  - Nuclear
  - Coal-fired
  - On- and off-shore wind
  - Utility scale solar
  - Utility scale battery storage
  - Utility scale hybrid

In addition to the data, the NDB also contains Horizons assumptions regarding penetration levels of demand response, behind-the-meter generation, economic retirement of generating units and RPS requirements.

Each release of the NDB contains nine scenarios which vary depending upon relevancy of current trends in the energy industry.

### Fundamental Approach

Horizons uses a fundamentals-based methodology to forecast energy, capacity, environmental and ancillary service prices for 78 North America market areas. Based on Anchor Power's EnCompass power planning model, Horizons simulates the operation of each region of North America. EnCompass is recognized in the industry for its flexibility and breadth of technical capability, incorporating extensive details in generating unit operating characteristics and constraints, transmission constraints, generation analysis, unit commitment/operating conditions, and market system operations. This fundamental approach utilizes the operating characteristics of over 23,500 generating assets, fuel prices, hourly demand, transmission transfer capabilities, market rules of ISO's and other factors.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

The EnCompass power planning model utilizes this database of market information and simulates both annual capital decisions as well as the operational commitment and dispatch of resources. The model simultaneously determines energy, capacity, environmental and ancillary service prices with hourly resolution and across scenarios. Horizons forecasts market prices throughout North America through 2050 forecast horizon.

A key benefit of this approach is that it provides a very flexible and consistent ability to vary input drivers in order to observe the impact on market prices. As an example, changing fuel prices will influence the cost of commitment and dispatch which in-turn changes market prices. Altering demand may also change the marginal resources needed to meet demand. Imposing a cost of carbon or carbon limit will impose a dispatching cost on those resources emitting CO<sub>2</sub>.

### Scenario Assumptions

Horizons evaluated eight scenarios in addition to the reference case scenarios. The reference case is a “business as usual” scenario reflecting assumptions consistent with the EIA’s reference case scenario and NERC’s LTRA load forecast

1. **High Demand** - Consistent with NREL’S Medium electrification which represents widespread electrification in select sub-sectors with potentially lower barriers, but it does not result in transformational change. It does reflect roughly 30 percent more light-duty plug-in electric vehicles in 2050. EIA’s high demand case reflects High Economic Growth case assumes higher average growth rates for population (0.7 percent per year) and productivity (2.4 percent per year), resulting in higher nonfarm employment (0.8 percent per year). With higher productivity gains and employment growth, inflation and interest rates are lower than in the Reference case for most years, and as a result, economic output, as measured by real GDP, grows at a higher rate.

The combination of higher growth rate associated with electrification and EIA growth results in a CAGR of 1.8 percent and reflects the uncertainty that the ISOs and utilities are addressing with electric vehicles and electric heating.

2. **Low Demand** - Reflects EIA’s Low Economic Growth case assumes lower average annual growth rates for population (0.3 percent per year) and nonfarm labor productivity (1.4 percent per year), resulting in lower growth in nonfarm employment (0.5 percent per year), higher prices and interest rates, and lower growth in industrial output.
3. **High Natural Gas** – Reflects the 95<sup>th</sup> percentile based upon historical volatility and consistent with EIA’s short-term outlook. Horizons also reviews EIA’s Low Oil and Gas Resource and Technology case, the estimated ultimate recovery per well for tight oil, tight gas, or shale gas in the United States and undiscovered resources in Alaska and the offshore Lower 48 states is assumed to be 50 percent lower than in the Reference case. Rates of technological improvement that reduce costs and increase productivity in the United States are also 50 percent lower than in the Reference case. These assumptions increase the per-unit cost of crude oil and natural gas development in the United States.
4. **Low Natural Gas** - Reflects continued depressed pricing based on the forward outlook in the markets. It assumes Henry Hub pricing at \$2.00/MMBtu growing at slightly higher than the rate of inflation. This is based upon the 95th percentile using historical price volatility and is consistent with EIA’s short-term outlook.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

5. **High Natural Gas with Carbon Limit** - Same natural gas price as the high natural gas scenario. However, Horizons imposes a limit on carbon emissions to reflect an 80 percent reduction in carbon emission levels from 2005 by 2050. The EnCompass model solves for the carbon price based on the cost of compliance.
6. **Low Natural Gas with Carbon Limit** - Same natural gas price as the low natural gas scenario. However, Horizons imposes a limit on carbon emissions to reflect an 80 percent reduction in carbon emission levels from 2005 by 2050. The EnCompass model solves for the carbon price based on the cost of compliance.
7. **Carbon Tax** - Reflects an input price of carbon based on the EIA 2021 AEO Outlook which imposed a \$15 carbon tax increasing by 5 percent above inflation each year through 2030 and dropping to 2.5 percent increase/year above inflation thereafter. Due to the introduction of carbon and its impact on natural gas generation a lower Henry Hub price is also introduced.
8. **Zero Carbon Additions** - Horizons developed this scenario to reflect the trend across the US in cities and states exploring reducing emissions exclusively through renewable generation. Horizons assumed that no fossil-fired resources may be built to meet demand. In addition, increased levels of demand response and energy efficiency were reflected to reduce demand requirements. This is also consistent with legislation being introduced that would set a nationwide goal of achieving a 100 percent clean energy economy by 2050.

Zero Carbon Additions also allows for transmission expansion to address the addition of intermittent zero carbon resources. It also reflects the addition of nearly 12 GW of nuclear power plants to address base load zero carbon resources.

### Florida Energy & Capacity Market Assumptions

The major drivers of an energy and capacity market forecast are demand, fuel and emission cost as well as resource expansion or mix which would represent the price-setting technology.

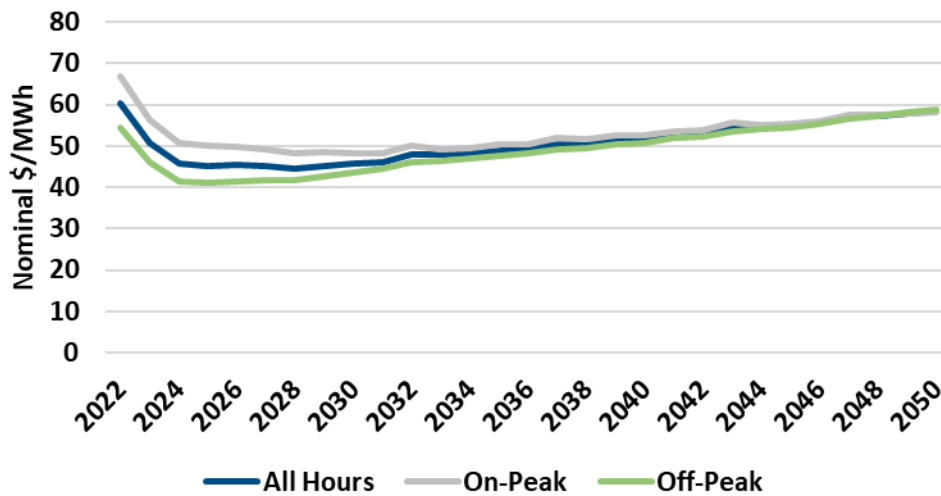
#### *Energy Prices*

FRCC-Florida energy prices reflect the cost of the marginal unit plus a bid adder reflecting the “tightness” of supply and demand. Horizons utilized the 8,760 hourly prices to assess the cost of energy purchases for LWBEU. The EnCompass model optimizes which hours the project will operate to reflect the highest level of revenues assuming perfect knowledge.

The more traditional portrayal of energy prices is annual all hour and on- and off-peak prices as shown in Figure 26. Post-2030 the impact of solar and the duck curve becomes pronounced enough that off-peak prices are higher than on-peak prices

Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 26  
FRCC-Florida Base Annual Energy Prices



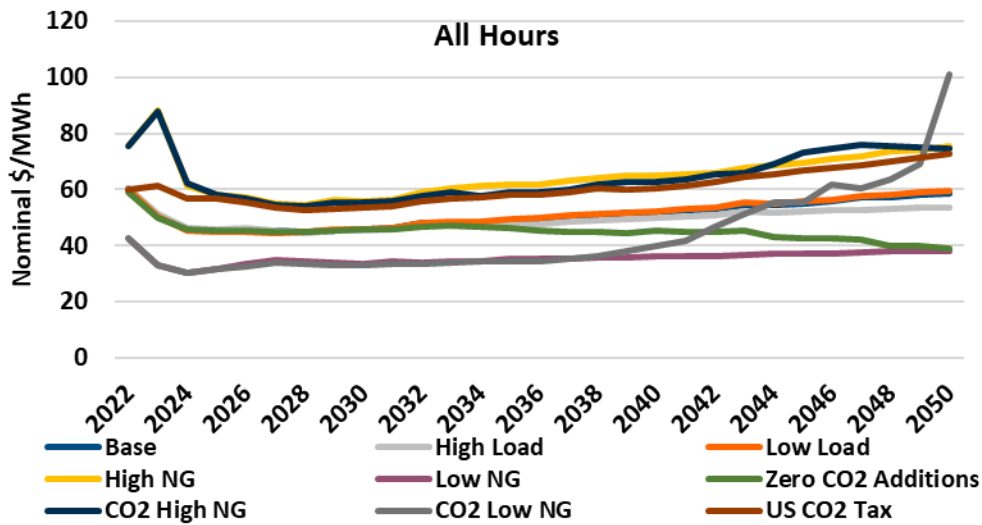
(Source: Horizons Energy)

The nine scenarios result in different trajectories with up- and down-side potential

The resulting all hour energy prices for FRCC-Florida are shown in Figure 27. The Zero Carbon Additions scenario generates the lowest prices by the end of the forecast horizon due to the penetration of wind and solar as well as increased energy efficiency. The fluctuation in the CO<sub>2</sub> low natural gas scenario is driven by the carbon price (see Figure 22) to comply with 80 percent reduction limit and by the end of the forecast all coal generation is retired and compliance with natural gas resources emitting carbon applies upward pressure on the carbon price due to an inability to comply. As discussed, natural gas is a major driver of energy prices and as shown, high natural gas accompanied with carbon limits generates the highest energy prices through 2044 when carbon prices jump in the CO<sub>2</sub> Low NG.

Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 27  
FRCC-Florida All Hour Scenario Energy Prices

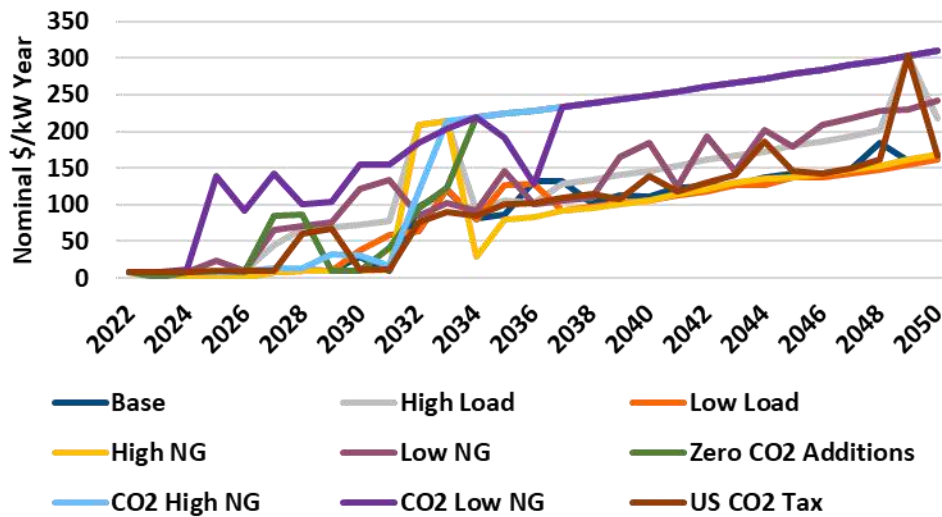


(Source: Horizons Energy)

Capacity Prices

Horizons develops capacity prices for the FRCC-Florida market area utilizing the marginal unit’s residual revenue deficit to determine the capacity price within the EnCompass model. The average capacity price for 2023-2031 for the base case averages less than \$12/kW year which is less than the current prices paid by FMPA for a recent contract. Fluctuations occur annually based on the revenue deficit requirement.

Figure 28  
FRCC-Florida Capacity Prices



(Source: Horizons Energy)

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Horizons made the following assumptions in developing the forecast which resulted in energy prices as shown in Figure 27 and capacity prices in Figure 28.

### Inflation

Inflation is assumed to be 2.2 percent per year through 2050. This is consistent with the AEO 2022 Outlook where inflation was 2.3 percent and other sources where the expectation was slightly lower. All results presented are in nominal dollars.

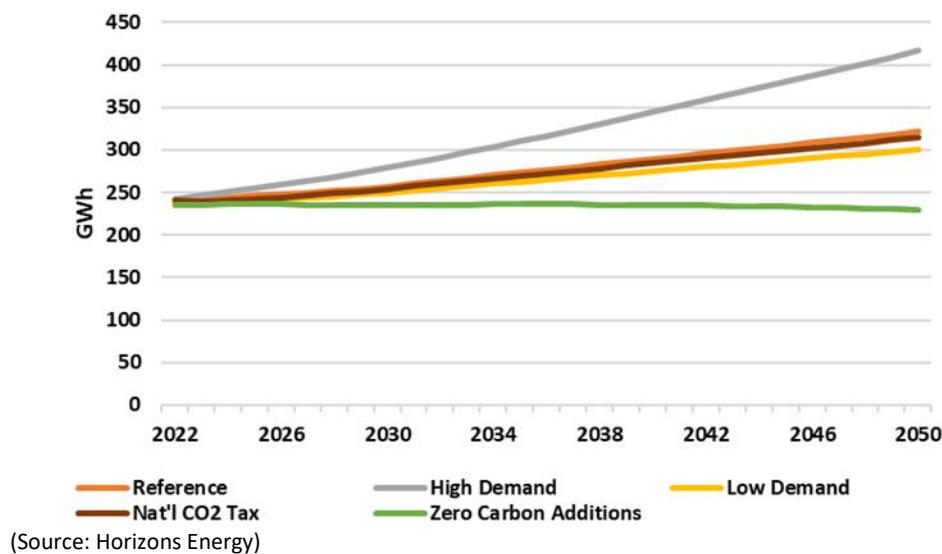
### Demand

The Horizons forecast for Florida demand was developed using the ten-year NERC LTRA. Beyond the forecast period Horizons applied the compound annual growth rate to extend the forecast to 2050. Figure 29 portrays the demand forecast across scenarios for FRCC-Florida.

The Compound Annual Growth Rate (CAGR) for the scenarios range from a low of -0.29 percent in the Zero Carbon Additions scenario to an increase in demand of 1.75 percent in the high load scenario. The Zero Carbon Additions scenario reflects increased penetration of energy efficiency to reduce demand and attain higher penetration levels.

Higher demand typically results in upward pressure on energy prices and conversely lower demand applies downward pressure on energy prices. This is a result of changes in the dispatch and the next available resource that serves that incremental/decremental demand.

Figure 29  
FRCC-Florida Demand Forecast



### Natural Gas

To develop its Henry Hub forecast, Horizons utilizes a variety of sources, forward prices through the year 2031 were provided by Natural Gas Intelligence (NGI). Horizons Energy then trended the series thereafter. The near-term forecasted Henry Hub price contains a gradual backwardation, or reduction,

## Lake Worth Beach Electric Utilities Integrated Resource Plan

through 2025 and then an upward trend thereafter. The NGI Henry Hub forecast corresponds closely to published Henry Hub Monthly Futures contracts for the corresponding time frame.

For FRCC-Florida there is a delivery adder included to reflect the transportation cost and basis differential of the geographic region as compared to Henry Hub plus an additional adder to reflect the delivered market natural gas price. Regional markets differentials are located at liquid market centers (LMC) disbursed at significant points throughout the pipeline system. The market price differential represents the difference in market price between Henry Hub and the liquid market center. The FRCC-Florida liquid market center is assumed to be Florida Gas Zone 3 and the delivered market is FGT Citygate. FGT Citygate on an annual basis reflects a nearly \$1.75/MMBtu adder to Henry Hub prices as shown in Figure 20.

Figure 30  
Natural Gas Liquid Market Centers



(Source: Horizons Energy)

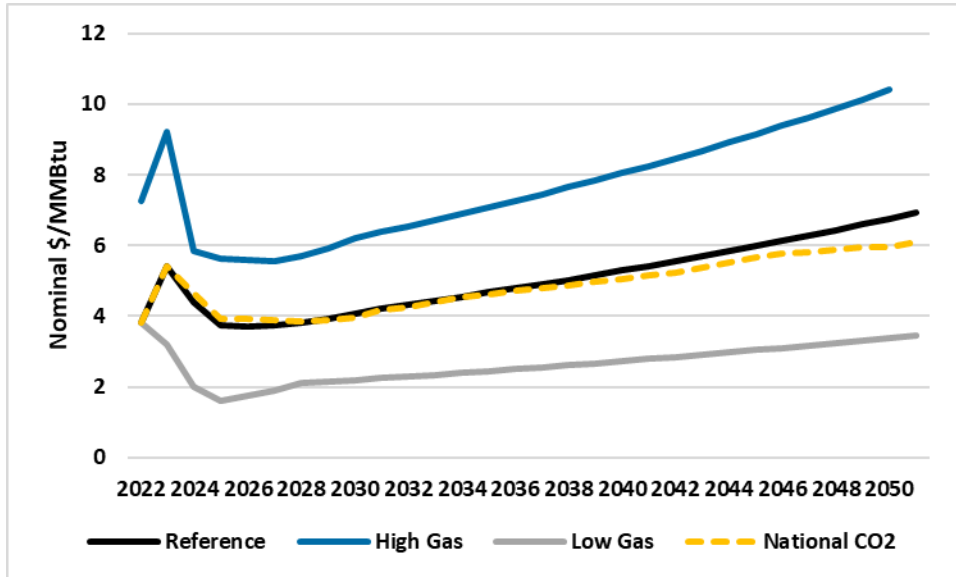
Natural gas prices within the forecast vary by day and month to reflect volatility. The FGT Citygate LMC does not vary across scenarios.

Natural gas prices have played a role in the energy markets as a driver of the incremental cost of generating electricity and therefore a major driver of the energy prices. Henry Hub prices have historically been volatile reaching high prices in the mid- to late-2000s and recent activity displaying volatility associated with supply constraints.

As discussed, Horizons develops Henry Hub prices for the scenarios as shown in Figure 31.

Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 31  
Henry Hub Scenario Prices



(Source: Horizons Energy)

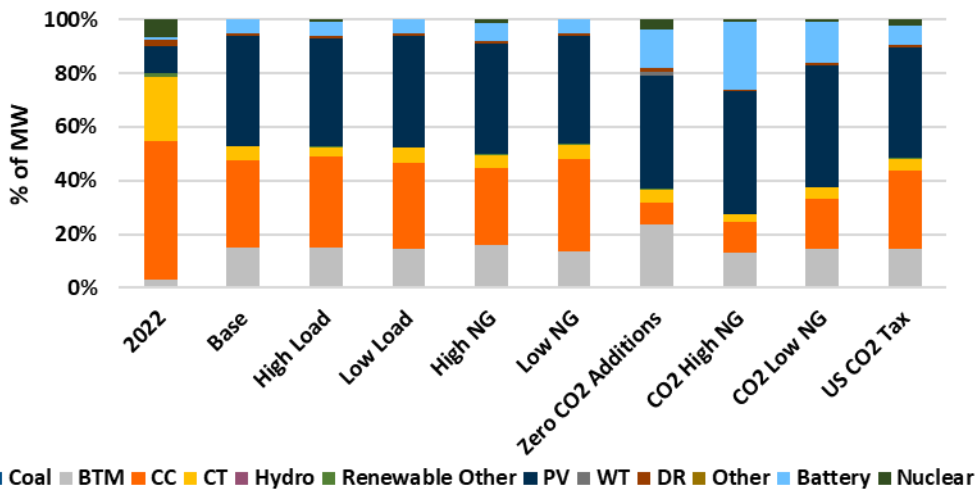
Coal and oil prices do not meaningfully impact the FRCC-Florida market because of negligible in-state generation of these technologies.

Renewable Portfolio Standard (RPS) Requirements

Florida does not have a renewable energy portfolio standard or a voluntary renewable energy target.

Resource Mix

Figure 32  
FRCC-Florida 2050 Resource Mix



(Source: Horizons Energy)

## Planning Supply/Demand Balance

A 15 percent planning reserve margin based upon a 97 MW peak demand implies a planning requirement for LWBEU of 112 MW in 2023. In other words, in this year LWBEU should maintain firm capacity of at least 112 MW in order to meet the planning needs of the City.

The firm resources available to meet that requirement include:

- 80.5 MW from the Tom G. Smith power plant
- 33 MW from partial ownership shares of St. Lucie and Stanton resources
- 0.9 MW of LW Solar 1 – based upon a 51 percent capacity planning factor for solar resources
- 1.0 MW of rooftop solar

The sum of these resources is 115 MW, more than the planning requirement of 112 MW. In addition, LWBEU is scheduled to acquire a 20-year PPA for 13.275 MW (5.5 MW of firm capacity) from FMPA starting in December of 2023 which increases to 26.55 MW in December 2024.

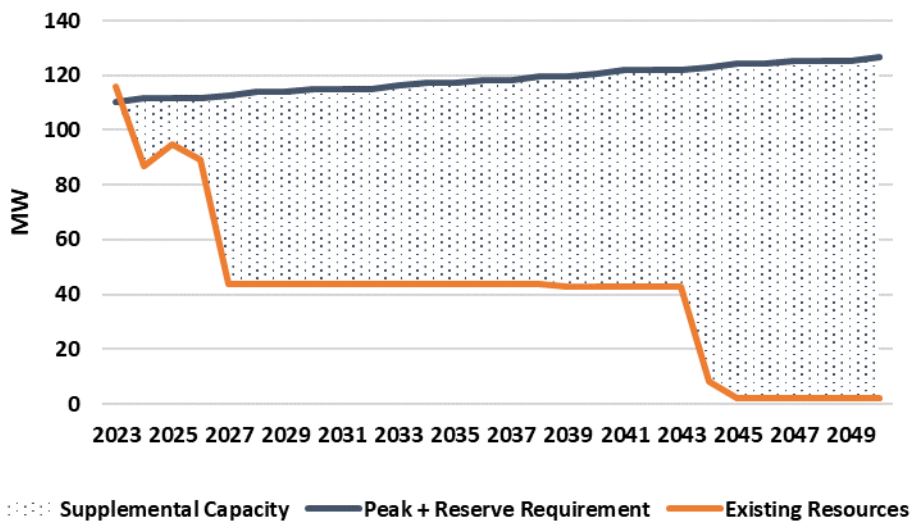
This study additionally assumes the following:

- Retirement of Stanton in December 2025
- Partial ownership shares of St. Lucie will be available until December 2043
- Lake Worth will be able to contract supplemental power for both energy and firm capacity needs and deliver to the city based upon market prices of energy and \$60 and \$18/kW year for capacity
- Lake Worth will have the flexibility to displace portions of the supplemental contract if more economic resources can be developed

Comparing the resource capacity with the base peak demand forecast implies that the City has the need of 24 MW of supplemental capacity in 2024 growing to 124 MW by the end of the forecast horizon, as shown in Figure 33. If LWBEU's demand for power grows faster (slower) than the base forecast there will be greater (lesser) need for supplemental.

# Lake Worth Beach Electric Utilities Integrated Resource Plan

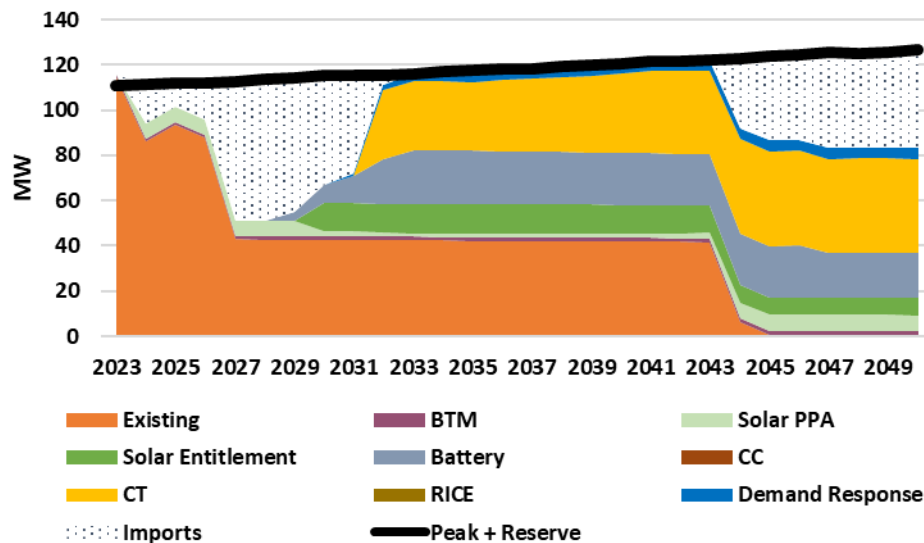
Figure 33  
Reference Case Planning Requirement versus Existing Capacity



(Source: Horizons Energy)

Across all scenarios, alternative resources may displace the supplemental contract if they provide energy and capacity at a lower total cost. The imports in Figure 34 do not represent a supplemental contract but the amount of imports needed at time of peak.

Figure 34  
Reference Capacity Price Supply Demand Balance

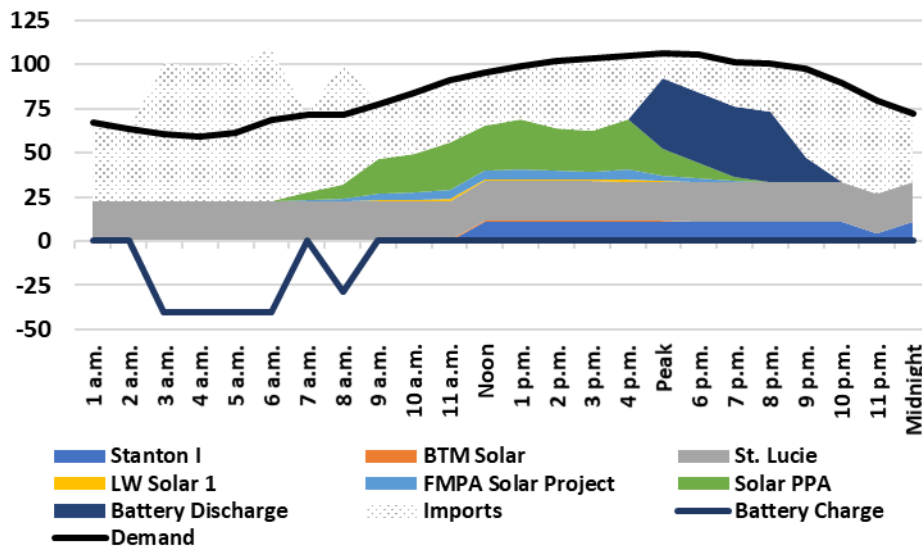


(Source: Horizons Energy)

Let's take it a step further and look at the peak day in 2030 for the Base Case. Note that the batteries charge when prices are low during off-peak hours.

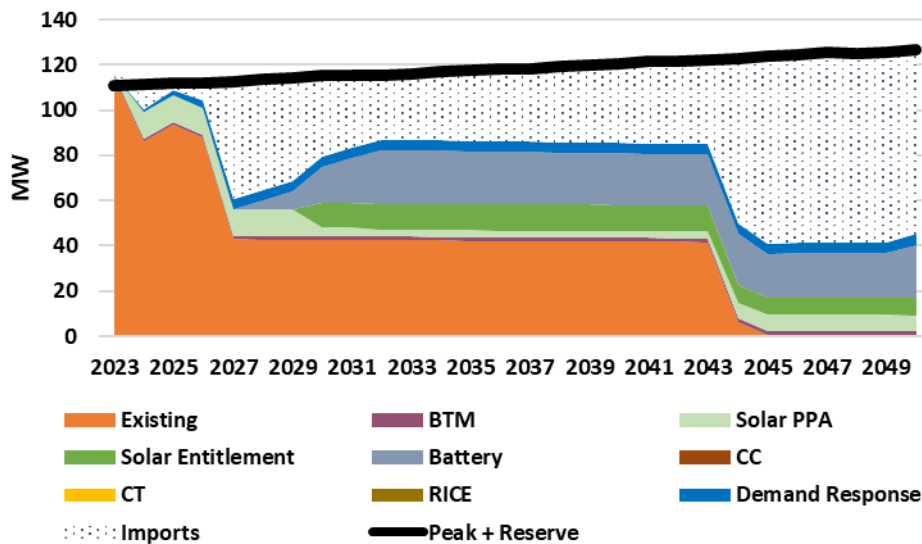
Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 35  
2030 Peak Day Supply Demand Balance Example



(Source: Horizons Energy)

Figure 36  
\$60/kW year Capacity Price Supply Demand Balance



(Source: Horizons Energy)

Figure 34 reflects the outlook of the Reference case which includes the addition of a Solar PPA and 4-hour batteries with a heavy reliance on firm imports. Compare this to the \$60/kW year capacity price with greater reliance on firm imports in Figure 36. At this level of capacity price, CC and CTs are not economic.

## Lake Worth Beach Electric Utilities Integrated Resource Plan

The supply/demand graphics for the remaining scenarios are in the Scenario Figures section. The Portfolio Evaluation section summarizes that analysis.

### Portfolio Evaluation

The resulting resource plans of each scenario are based upon EnCompass optimization runs for each of the Horizons Advisory nine Scenarios and for two distinct capacity price assumptions. Table 6 summarizes the resource plans across all scenarios and sensitivities. It summarizes the type, timing and size of the resource additions chosen by the EnCompass simulation. Most of the focus is generally on the early years of the resource plan, reflecting the time-critical nature of making these decisions.

### Analysis

Solar PPAs and/or owned solar dominate across the scenarios and sensitivities. Horizons conducted 84 scenarios and sensitivities and 50 MW of solar PPA was selected by 2030 for 44 scenarios. 50 MW of utility-scale solar was selected by 2030 for all scenarios. In addition to utility-scale solar, utility-scale solar hybrid was added up to 10 MW across all scenarios as well.

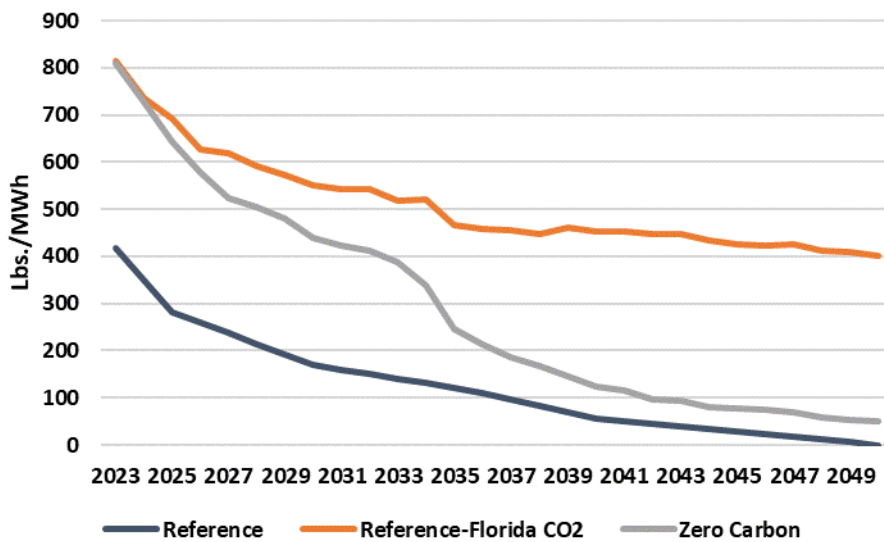
### Sensitivities

In addition to scenario uncertainty Horizons also introduced sensitivities to:

- Capacity cost where it is assumed LWBEU continues at \$60/kW year
- Capacity cost where LWBEU may be able to procure supplemental capacity at the low range of the recent FMPA bids. FMPA's CEO stated: *The FMPA Team was able to identify a few very valuable units and capacity opportunities as result of the bidding process we conducted a year ago. These opportunities were at a very attractive cost of \$1.50 - \$4.50/kW-month starting in 2024 to fill the gaps created by the Stanton 1 unit retirement and the loss of Stanton A ownership. The future-use optionality embedded at the two permitted, fully functioning combined-cycle sites near Bartow was a significant bonus for resources in the Duke system, where we have growing needs.*
- Extension of the St. Lucie nuclear license from 2043 to 2063. *In the 3rd Quarter of 2021, FPL applied to the NRC for an SLR for its existing St. Lucie nuclear Units 1 & 2. If approved by the NRC, the SLRs for St. Lucie Units 1 & 2 will extend the licenses for those facilities for an additional 20 years; until 2056 and 2063, respectively. The NRC is currently scheduled to make a decision on FPL's SLR request for the St. Lucie units by mid-2023, but those dates are likely to be delayed somewhat as the NRC revises its generic EIS for license renewal.*
- Solar PPA pricing at \$35/MWh compared to \$40/MWh
- Fifty percent reduction in demand response costs
- CO<sub>2</sub> import emission rate. The base assumption assumes a trajectory on Florida utilities meeting their carbon reduction goals. The sensitivities are based on the CO<sub>2</sub> emission rate from the Spring 2022 Advisory, where Figure 37 provides an example of the differences.
- Force Ocean Current resource to be built in 2030 at a cost of \$7,200/kW. These costs are consistent with the assumptions provided in 2018 when LWBEU first evaluated this option.

Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 37  
Carbon Import Emission Rate



For the Reference Scenario additional sensitivities were conducted for in-city solar, GT 2 extension and the inability to export surplus solar back to the grid for sale to other entities. The in-city solar sensitivity assumes that 6.52 MW of solar is added to the existing LWB solar facility in 2024 at a cost of \$62.40/MWh escalating at 2 percent. The GT 2 extension assumes the life may be extended by 5 years with a \$500,000 investment. The base assumption for export is 15 MW/hour is reduced to zero for the export sensitivity.

The St. Lucie 2 extension would mean that LWBEU would not have to plan for replacement capacity in 2043. See Figure 39 for the supply/demand balance.

## Addenda

### The EnCompass Power Planning Model

Horizons Energy utilizes the state-of-the-art power simulation engine, EnCompass, developed by Anchor Power Solutions. EnCompass was first released in 2016 as a simulation engine that performs advanced Mixed Integer Linear Programming (MILP) algorithms, capable of addressing a wide range of planning problems within a single database, including market price forecasting, generation resource expansion optimization and power operations.

EnCompass is the premier software and the industry standard solution for making optimal power supply decisions from short-term scheduling and trading to long-term capital investment. By combining the full operational details of power plants and complex contracts with the ability to simplify and relax constraints for long-term simulations, that previous generations of similar software do not incorporate. EnCompass is the only model needed for all facets of power planning and forecasting and can determine not only the best way to utilize resources, but also which technologies should be added in the future or existing resources that should be converted or retired.

Traditional long-term planning models are often overly simplistic and ignore ancillary services, ramp rates, and startup costs. Most short-term models are data-intensive making it difficult to manage scenarios and uncertainties around prices, demand and availability. EnCompass overcomes these drawbacks by combining an extensible Time Series data model with performance options for managing runtime and complexity, while always maintaining chronological constraints, depicted in Figure 1 below.

Applications include:

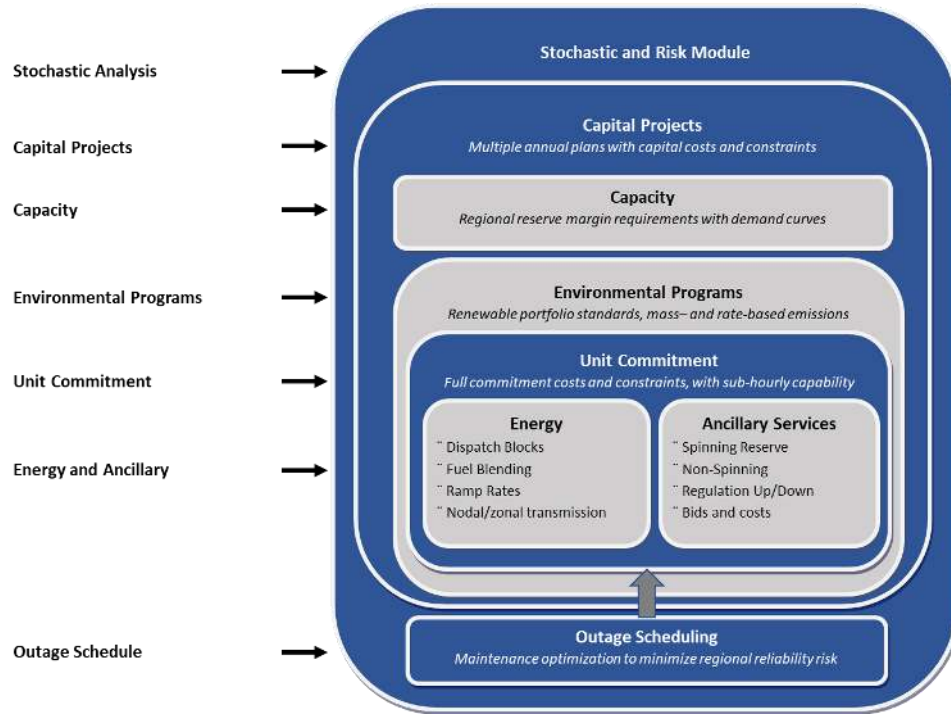
- Integrated Resource Planning
- Asset Valuation
- Budgeting & Rates
- Risk Analysis
- Scheduling & Trading Support
- Market Price Forecasting
- Congestion Analysis

Key features consisting of:

- Produces Ranked Capacity Plans
- Enforces Environmental Constraints
- Monte Carlo with Grid Computing
- Chronological with Sub-Hourly Detail
- DC Powerflow with Contingencies
- Income Statements, Capital Balances and Cash Flows

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 38  
EnCompass Software



Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure Tables

Figure 21

Carbon Price Trajectories

Year	Reference	CO2 Tax (nominal USD \$/Ton)		
		CO2 Tax	CO2 High NG	CO2 Low NG
2022	0.00	0.00	0.00	0.00
2023	0.00	15.67	0.00	0.00
2024	0.00	16.81	2.68	0.00
2025	0.00	18.04	0.00	0.00
2026	0.00	19.36	0.00	0.00
2027	0.00	20.78	0.00	0.00
2028	0.00	22.29	0.00	0.00
2029	0.00	23.92	0.00	0.00
2030	0.00	25.67	0.00	0.00
2031	0.00	26.89	0.00	0.00
2032	0.00	28.17	0.00	0.00
2033	0.00	29.51	0.00	0.00
2034	0.00	30.92	0.00	0.00
2035	0.00	32.39	0.00	0.00
2036	0.00	33.93	0.00	0.00
2037	0.00	35.54	0.00	0.00
2038	0.00	37.23	0.00	0.00
2039	0.00	39.00	0.00	2.97
2040	0.00	40.85	0.00	7.14
2041	0.00	42.80	0.00	9.07
2042	0.00	44.83	0.00	21.66
2043	0.00	46.96	0.00	30.51
2044	0.00	49.20	4.41	41.44
2045	0.00	51.53	15.08	40.68
2046	0.00	53.98	18.90	59.12
2047	0.00	56.55	27.26	57.03
2048	0.00	59.24	31.56	64.42
2049	0.00	62.06	42.41	78.73
2050	0.00	65.01	51.92	162.77

Figure 26

FRCC-Florida Base Annual Energy Prices

Nominal \$/MWh	FRCC-Florida		
	All Hour	On-Peak	Off-Peak
2022	60.34	66.93	54.60
2023	50.83	56.35	46.06
2024	45.72	50.72	41.36
2025	45.24	50.06	41.03
2026	45.33	49.80	41.40
2027	45.12	49.06	41.66
2028	44.66	48.15	41.62
2029	45.27	48.41	42.54
2030	45.66	48.16	43.47
2031	46.19	48.27	44.38
2032	47.90	49.95	46.10
2033	47.80	49.31	46.49
2034	48.18	49.61	46.94
2035	48.93	50.27	47.75

FRCC-Florida			
Nominal \$/MWh	All Hour	On-Peak	Off-Peak
2036	49.39	50.53	48.39
2037	50.42	51.82	49.19
2038	50.55	51.72	49.53
2039	51.50	52.60	50.54
2040	51.68	52.63	50.85
2041	52.67	53.59	51.86
2042	53.06	53.86	52.35
2043	54.57	55.77	53.52
2044	54.58	55.19	54.06
2045	54.95	55.43	54.53
2046	55.75	56.03	55.51
2047	57.13	57.61	56.72
2048	57.29	57.43	57.17
2049	57.95	57.86	58.03
2050	58.49	58.09	58.84

Figure 27  
FRCC-Florida All Hour Scenario Energy Prices

Nominal \$/MWh	Reference	High Load	Low Load	High NG	Low NG	Zero CO2 Additions	CO2 High NG	CO2 Low NG	US CO2 Tax
2022	60.34	60.52	59.99	75.23	42.74	59.17	75.23	42.74	59.92
2023	50.83	51.21	50.57	88.07	32.93	50.06	87.98	32.90	61.42
2024	45.72	46.20	45.38	61.20	30.11	45.67	62.29	30.33	56.55
2025	45.24	45.76	44.83	58.16	31.62	45.23	58.04	31.74	56.60
2026	45.33	46.13	44.76	57.04	33.30	45.23	56.71	32.60	55.54
2027	45.12	45.40	44.56	55.02	34.64	44.81	54.66	33.90	53.70
2028	44.66	44.31	44.98	54.62	34.21	44.80	54.10	33.24	52.64
2029	45.27	45.28	45.69	56.22	33.79	45.38	55.28	33.20	52.87
2030	45.66	45.38	45.96	55.94	33.44	45.59	55.28	32.89	53.61
2031	46.19	45.70	46.40	56.34	34.43	45.58	55.93	33.24	54.10
2032	47.90	47.09	48.22	58.85	34.13	46.67	57.67	33.41	55.78
2033	47.80	47.10	48.30	60.42	34.29	47.33	58.82	34.14	56.59
2034	48.18	46.89	48.36	61.34	34.48	46.92	57.76	34.37	57.03
2035	48.93	47.51	49.28	61.84	35.18	46.02	59.15	34.57	58.08
2036	49.39	47.60	49.98	61.89	35.26	45.47	58.90	34.38	57.95
2037	50.42	48.58	50.65	63.13	35.29	44.82	60.12	35.34	59.05
2038	50.55	49.07	51.36	64.23	35.57	44.66	61.68	36.25	60.32
2039	51.50	49.44	51.80	64.92	35.91	44.56	62.61	37.89	59.77
2040	51.68	49.68	52.35	64.88	36.26	45.43	62.79	39.75	60.51
2041	52.67	50.51	52.93	65.42	36.12	45.06	63.78	41.53	61.25
2042	53.06	50.74	53.65	65.74	36.35	44.67	65.57	46.92	62.61
2043	54.57	52.02	55.28	67.84	36.59	45.12	65.93	51.39	64.32
2044	54.58	51.71	55.14	68.65	36.93	42.88	68.99	55.30	65.33
2045	54.95	52.15	55.65	69.45	37.01	42.62	72.99	55.23	66.62
2046	55.75	52.47	56.26	70.74	37.06	42.42	74.39	61.71	67.54
2047	57.13	52.66	57.80	71.79	37.54	42.17	76.09	60.31	68.45
2048	57.29	53.26	58.02	73.65	37.91	39.92	75.49	63.67	70.09
2049	57.95	53.38	58.95	74.20	38.20	39.72	74.77	69.19	71.25
2050	58.49	53.49	59.42	75.36	38.19	38.90	74.72	101.10	72.86

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Figure 28  
FRCC-Florida Capacity Prices

Nominal \$/kW						Zero CO2	CO2 High	CO2 Low	US CO2
Yr	Reference	High Load	Low Load	High NG	Low NG	Additions	NG	NG	Tax
2022	8.45	8.48	8.47	8.44	8.46	7.38	8.44	8.46	8.45
2023	7.54	7.54	7.54	7.54	7.54	0.57	7.54	7.54	8.64
2024	7.71	8.07	0.58	0.58	8.76	7.71	7.71	10.89	8.65
2025	7.88	9.06	0.59	0.59	23.12	7.88	7.88	138.46	9.06
2026	8.05	9.26	0.60	0.60	10.66	8.62	9.26	91.27	9.26
2027	9.47	44.58	8.23	8.23	65.45	84.83	12.93	143.04	9.47
2028	10.73	67.40	9.75	9.67	70.90	86.69	14.05	100.07	60.71
2029	10.00	69.04	9.89	9.89	75.55	9.89	32.84	104.60	67.80
2030	28.89	73.47	38.16	10.10	120.92	10.10	31.47	155.03	11.77
2031	10.33	77.74	58.77	11.08	134.17	40.73	16.27	155.25	12.39
2032	97.41	209.68	63.99	209.68	84.23	94.58	118.22	184.43	76.81
2033	120.65	214.29	120.82	214.29	102.87	123.48	214.29	202.98	90.23
2034	82.13	92.10	79.10	29.03	92.74	219.01	219.01	219.01	84.06
2035	86.00	105.74	126.20	79.23	145.17	223.82	223.82	191.81	99.86
2036	131.81	102.30	128.97	83.61	100.40	228.75	228.75	128.14	102.67
2037	131.81	128.99	91.63	91.73	105.14	233.78	233.78	233.78	109.30
2038	101.83	133.97	96.71	95.35	109.55	238.92	238.92	238.92	114.20
2039	112.76	140.31	101.89	101.38	165.21	244.18	244.18	244.18	107.34
2040	111.38	146.57	105.99	106.08	184.98	249.55	249.55	249.55	139.56
2041	122.60	153.13	113.18	115.00	124.37	255.04	255.04	255.04	117.69
2042	125.37	160.85	118.49	120.69	193.20	260.65	260.65	260.65	130.19
2043	126.78	166.31	126.93	130.86	145.63	266.39	266.39	266.39	141.53
2044	137.97	173.01	127.23	135.14	202.62	272.25	272.25	272.25	185.38
2045	141.66	180.69	137.45	137.57	178.65	278.24	278.24	278.24	146.27
2046	142.36	186.64	138.05	142.27	208.14	284.36	284.36	284.36	143.25
2047	147.94	193.92	142.04	147.13	217.44	290.61	290.61	290.61	148.66
2048	184.58	201.47	147.41	153.27	227.24	297.01	297.01	297.01	162.45
2049	160.45	303.54	154.79	161.28	230.31	303.54	303.54	303.54	303.54
2050	167.33	217.38	161.65	169.06	241.26	310.22	310.22	310.22	166.82

Figure 31  
Henry Hub Scenario Prices

Nominal \$/MMBTu	Reference	High Gas	Low Gas	US CO2 Tax
2022	5.41	7.26	3.19	5.41
2023	4.39	9.21	2.00	4.64
2024	3.72	5.85	1.60	3.93
2025	3.69	5.64	1.75	3.92
2026	3.75	5.60	1.90	3.88
2027	3.82	5.54	2.10	3.86
2028	3.92	5.70	2.15	3.89
2029	4.06	5.93	2.19	3.96
2030	4.22	6.21	2.24	4.17
2031	4.33	6.38	2.29	4.25
2032	4.44	6.54	2.34	4.38
2033	4.55	6.72	2.39	4.53
2034	4.67	6.89	2.45	4.62
2035	4.78	7.07	2.50	4.71
2036	4.90	7.25	2.55	4.79
2037	5.03	7.44	2.61	4.88

Lake Worth Beach Electric Utilities Integrated Resource Plan

Nominal \$/MMBTu	Reference	High Gas	Low Gas	US CO2 Tax
2038	5.15	7.64	2.67	4.96
2039	5.28	7.84	2.73	5.06
2040	5.41	8.04	2.79	5.15
2041	5.55	8.25	2.85	5.24
2042	5.69	8.46	2.91	5.36
2043	5.83	8.68	2.97	5.51
2044	5.97	8.91	3.04	5.65
2045	6.12	9.14	3.11	5.75
2046	6.28	9.38	3.17	5.79
2047	6.43	9.62	3.24	5.88
2048	6.59	9.87	3.31	5.94
2049	6.76	10.13	3.39	5.96
2050	6.93	10.40	3.46	6.08

Lake Worth Beach Electric Utilities Integrated Resource Plan

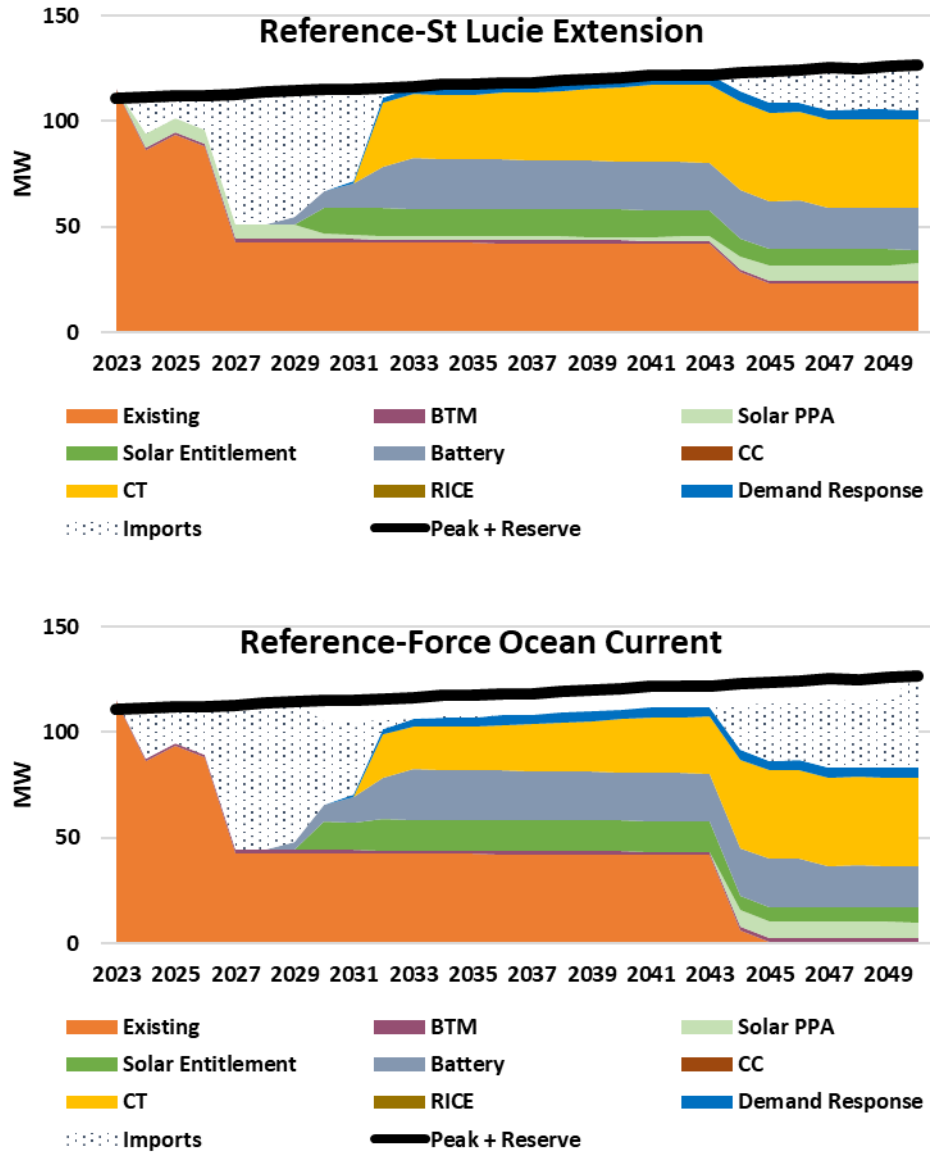
Scenario Figures

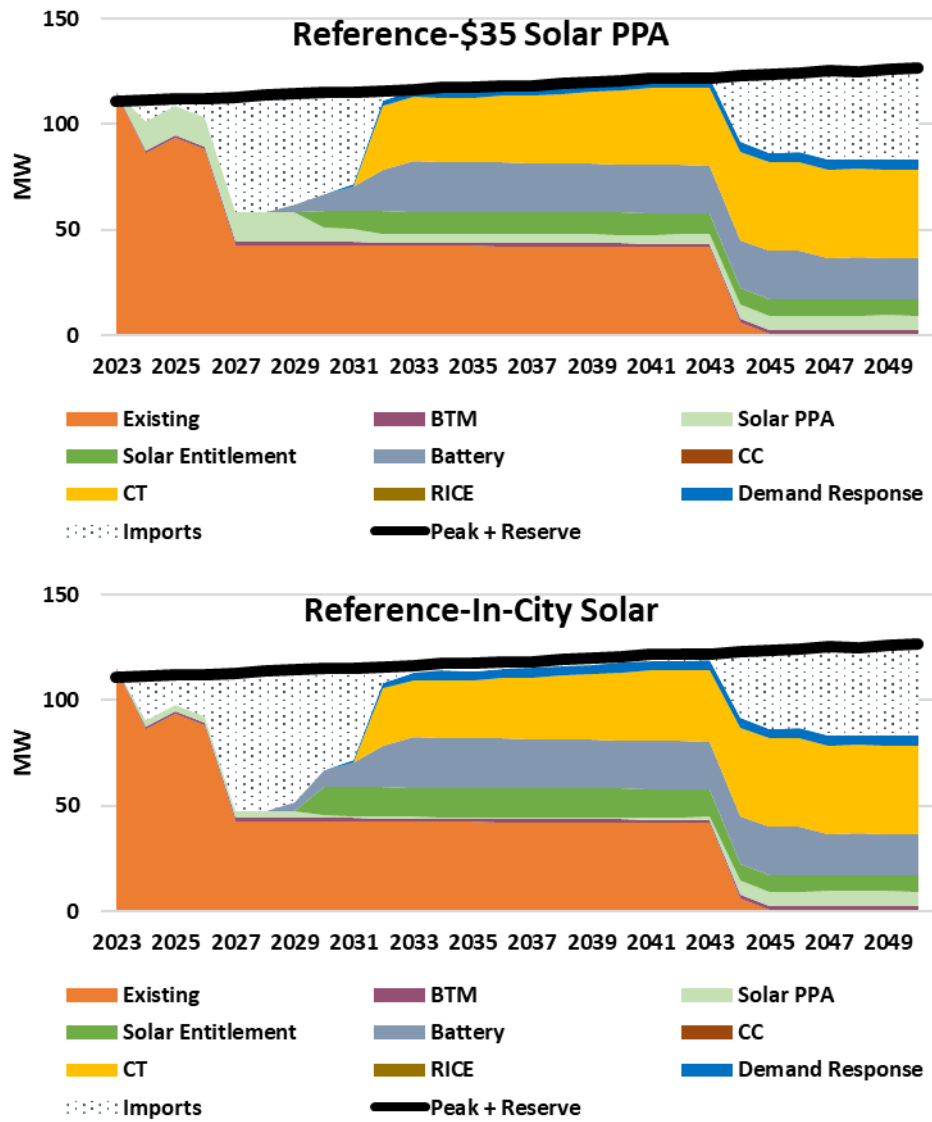
Supply and Demand Balance

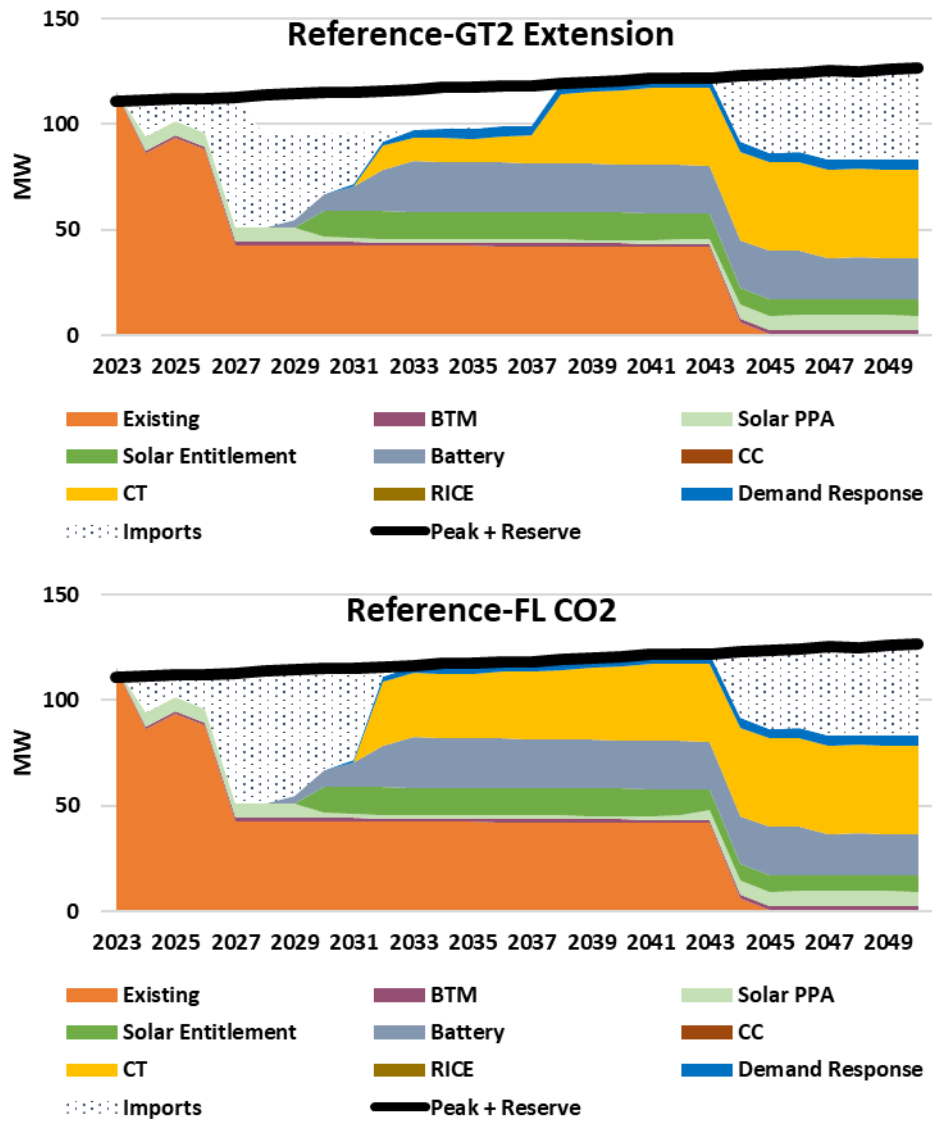
Reference Scenario

Figure 39

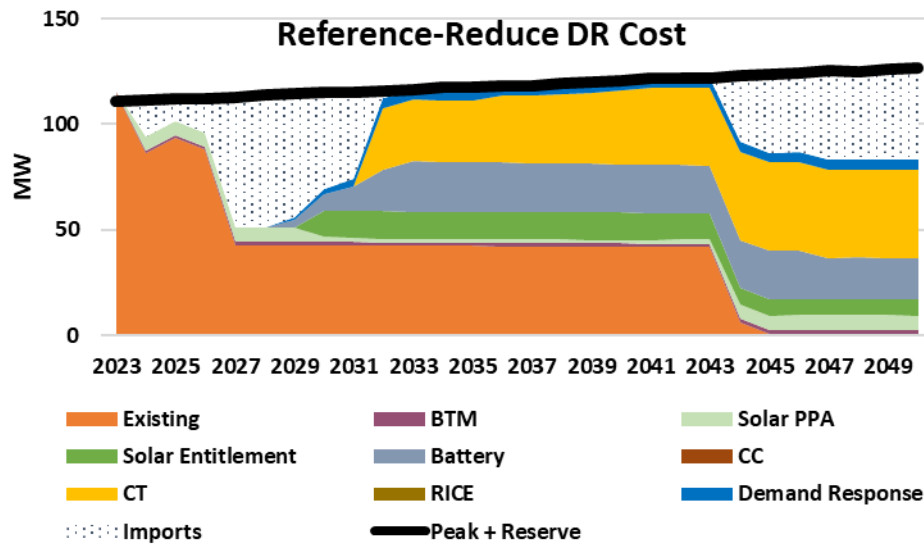
Reference Supply Demand Balance Sensitivities







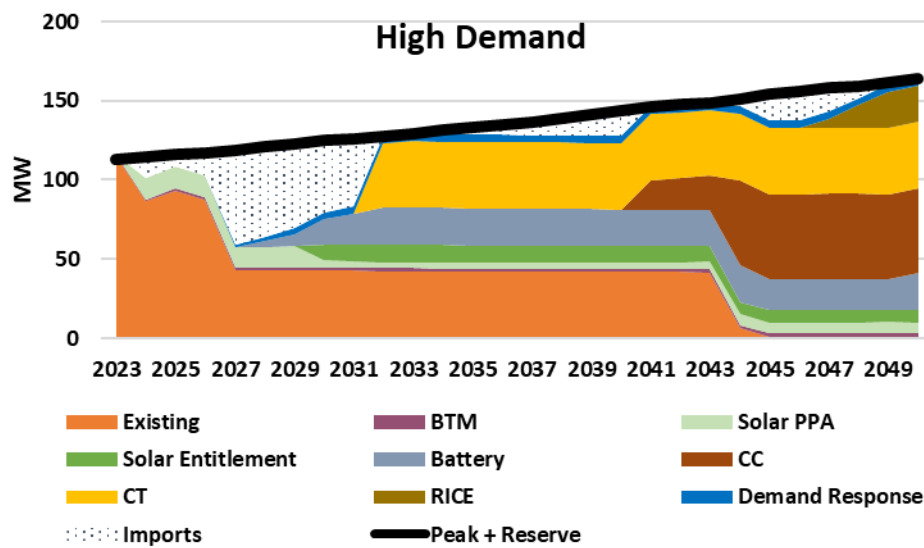
Lake Worth Beach Electric Utilities Integrated Resource Plan

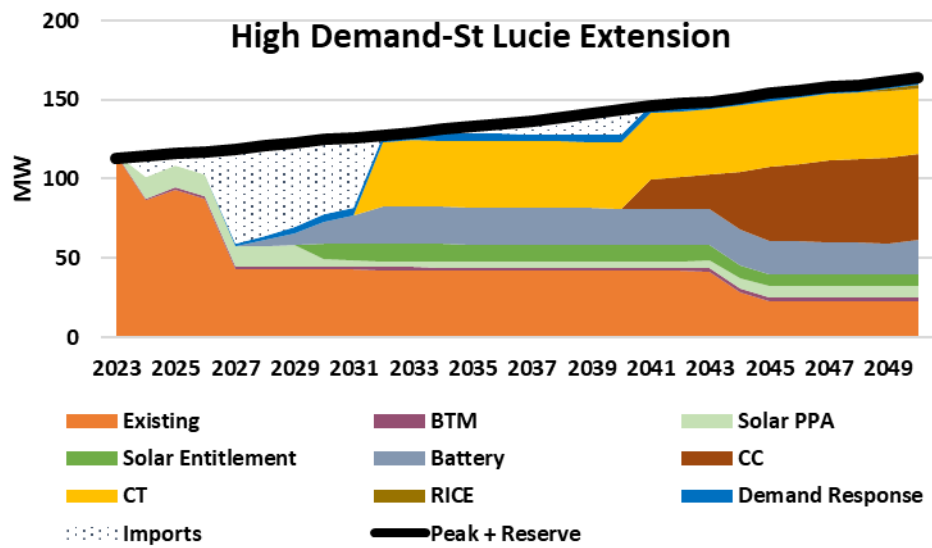
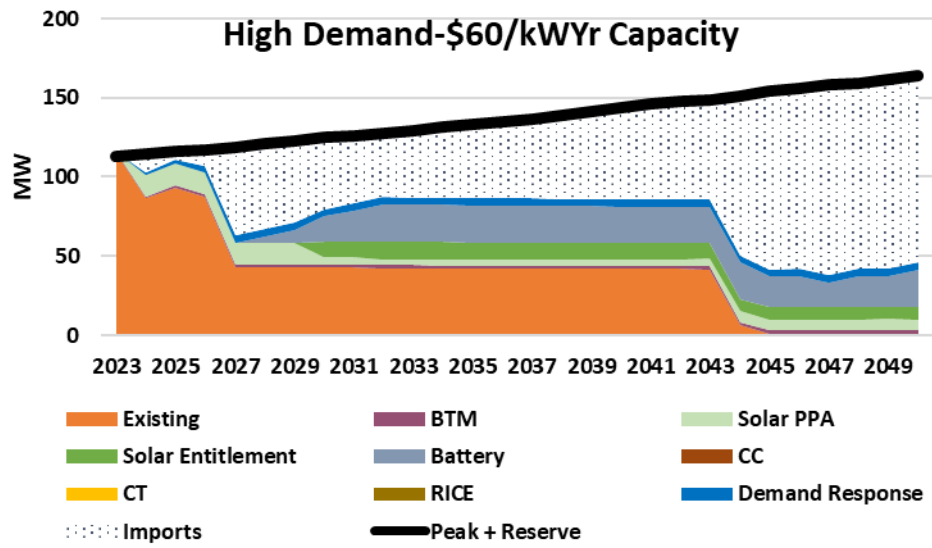


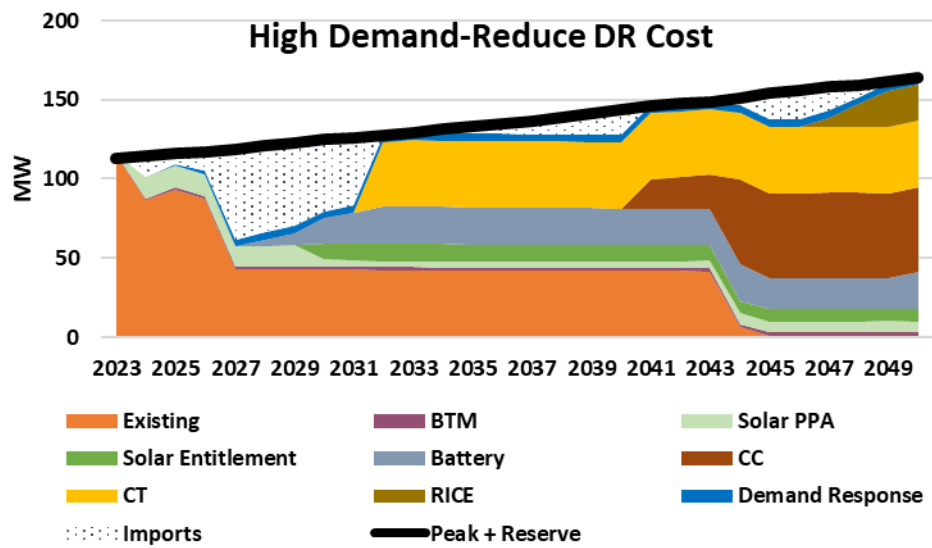
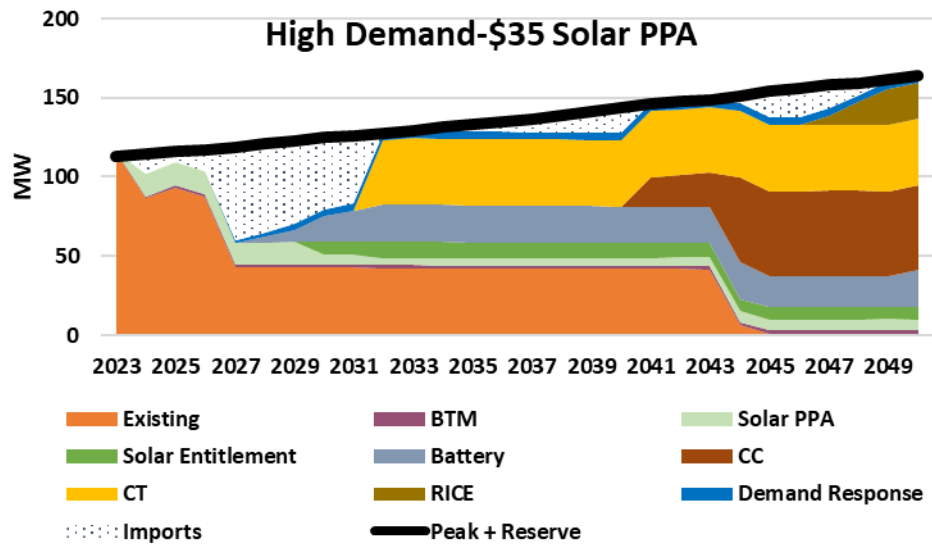
*High Demand Scenario*

Figure 40

*High Demand Supply Demand Balance Sensitivities*





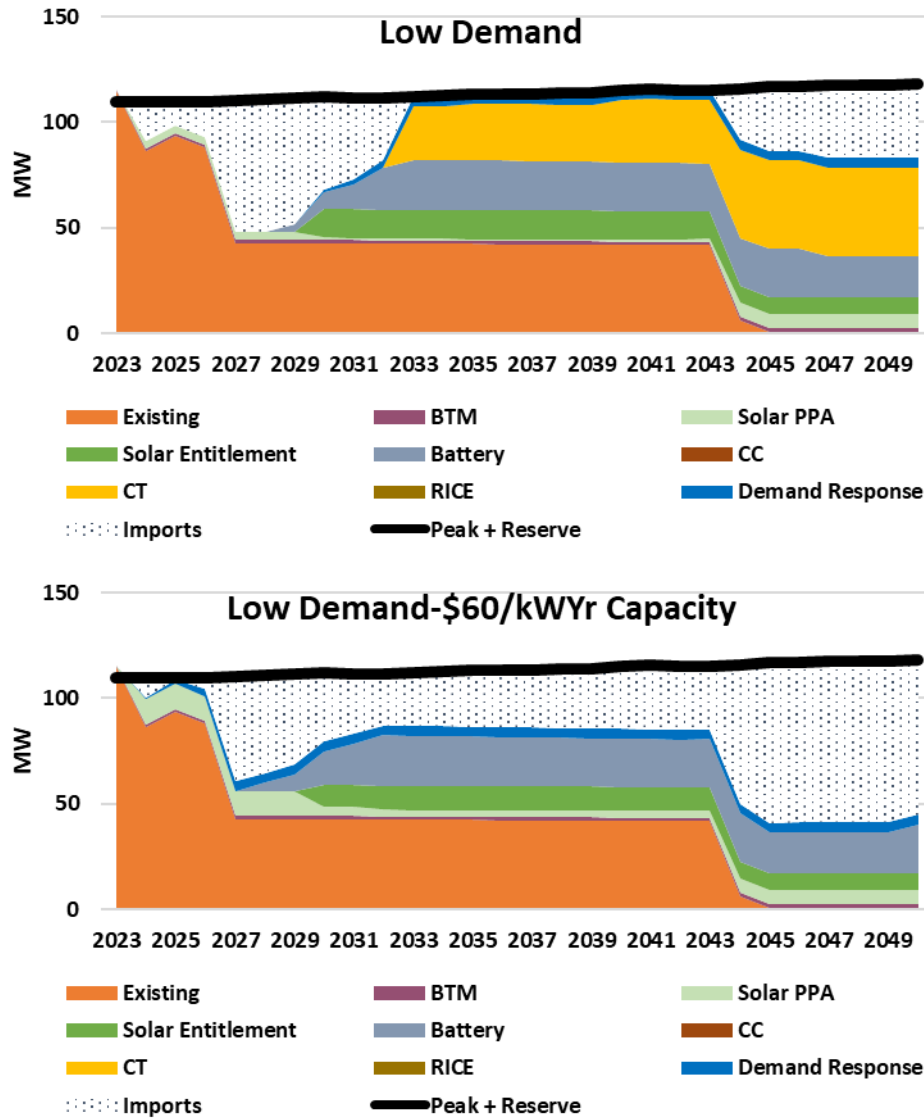


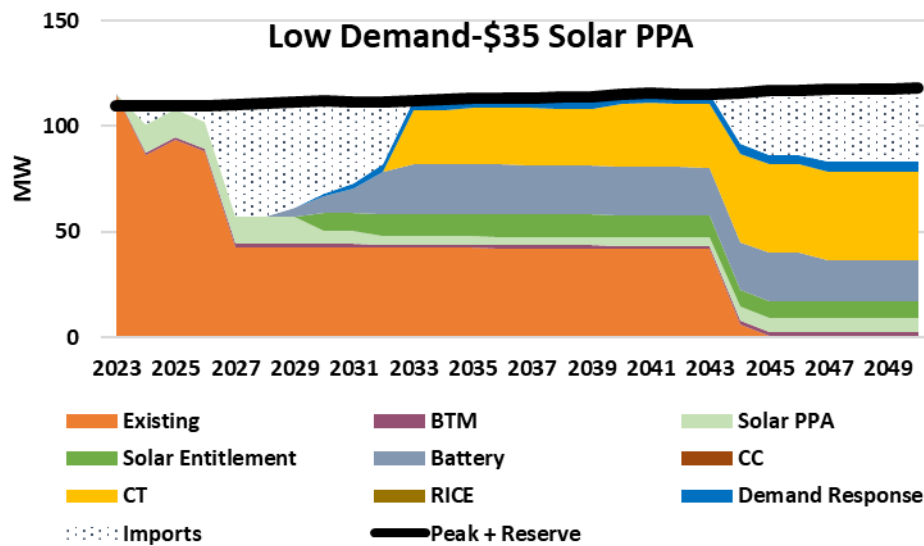
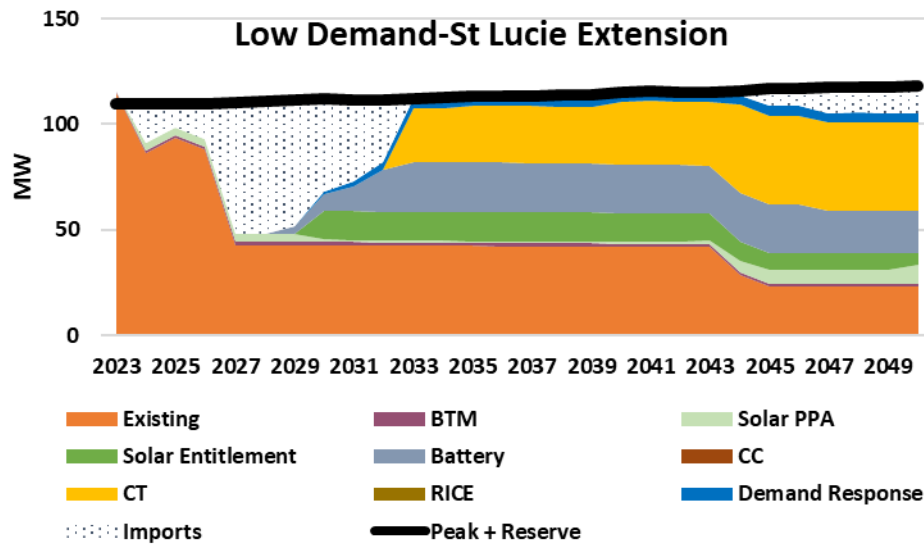
Lake Worth Beach Electric Utilities Integrated Resource Plan

Low Demand Scenario

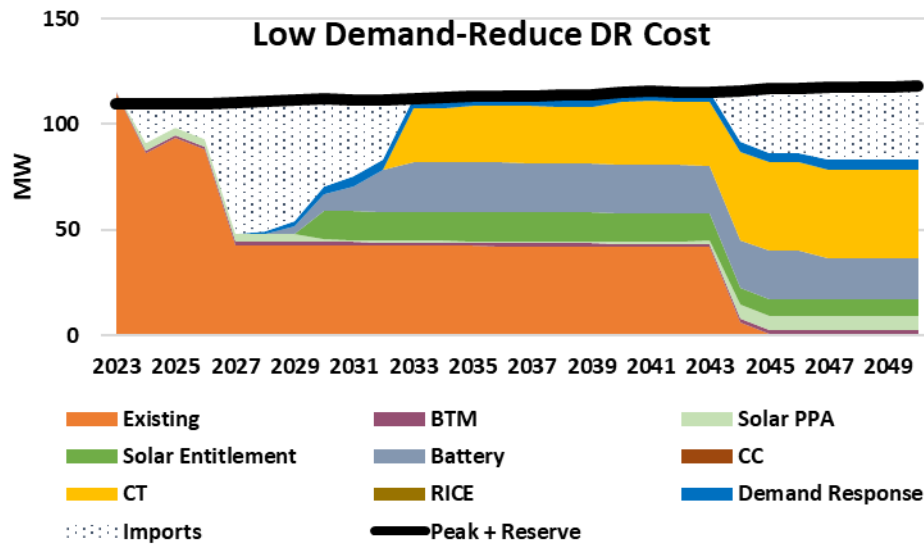
Figure 41

Low Demand Supply Demand Balance Sensitivities





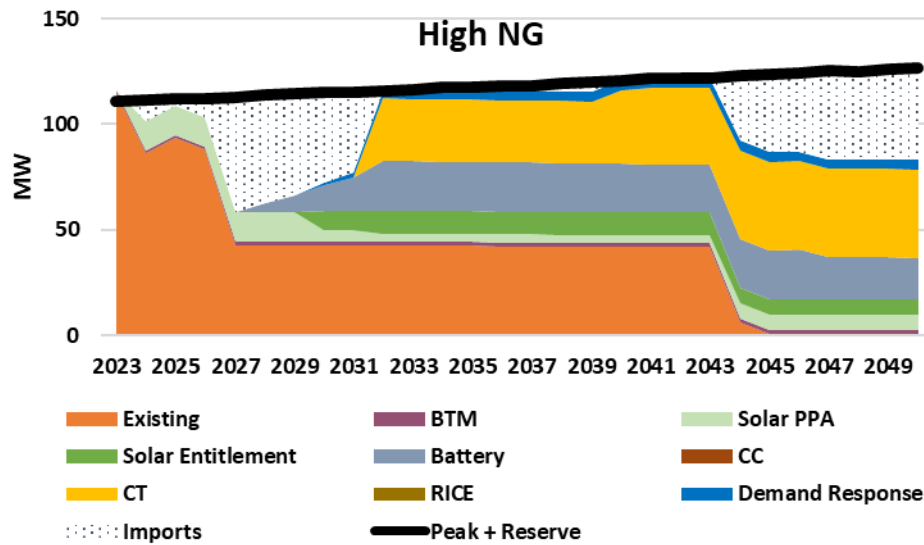
Lake Worth Beach Electric Utilities Integrated Resource Plan

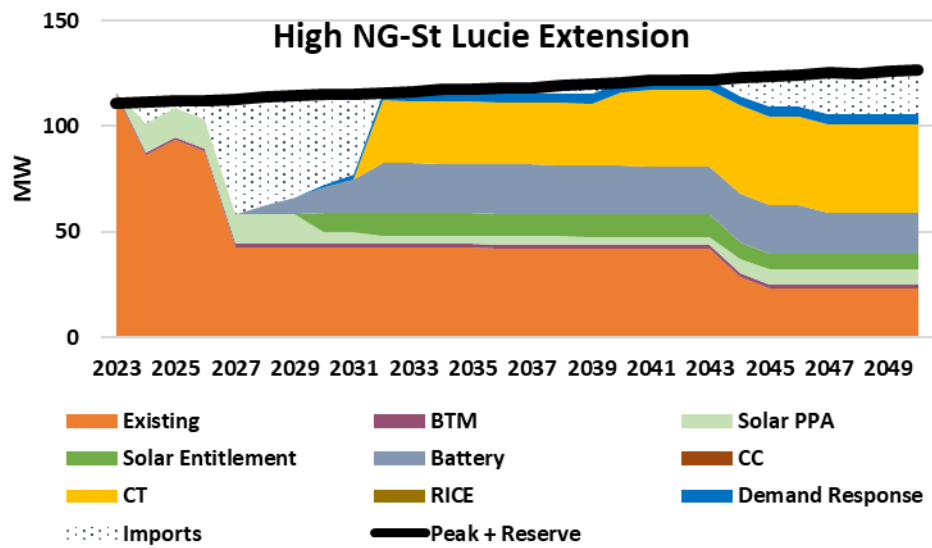
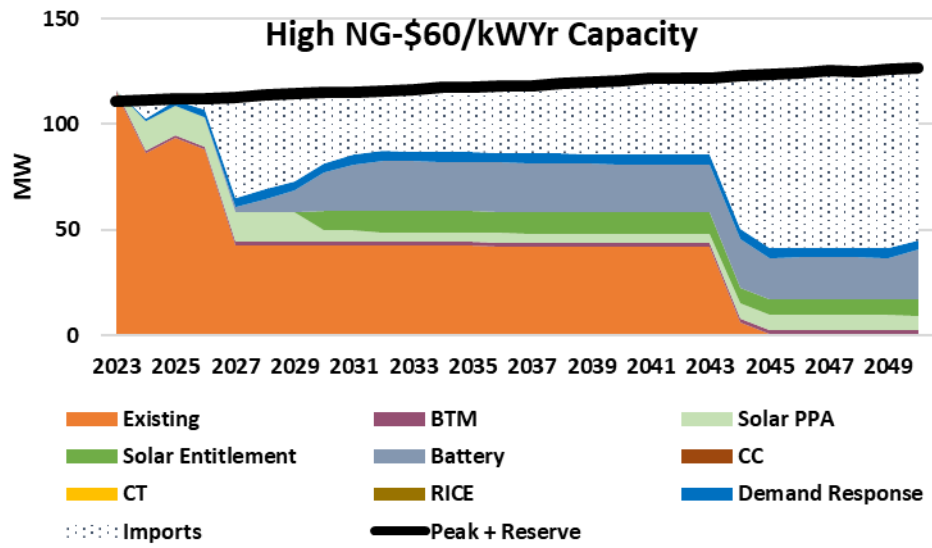


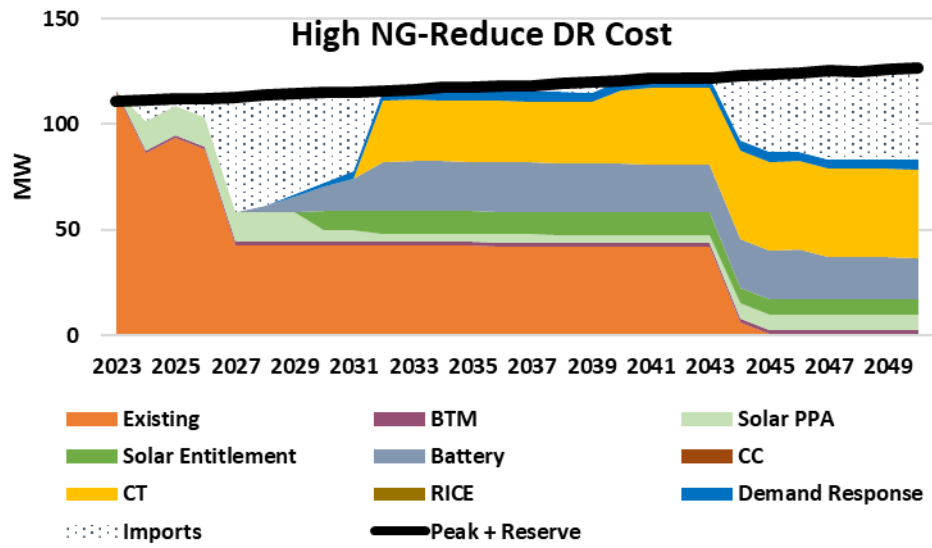
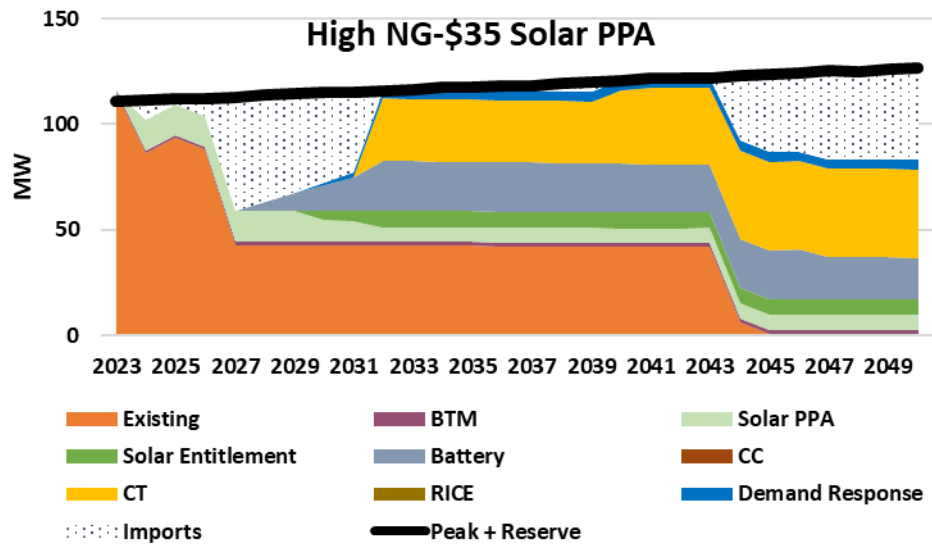
*High Natural Gas*

Figure 42

*High Natural Gas Supply Demand Balance Sensitivities*





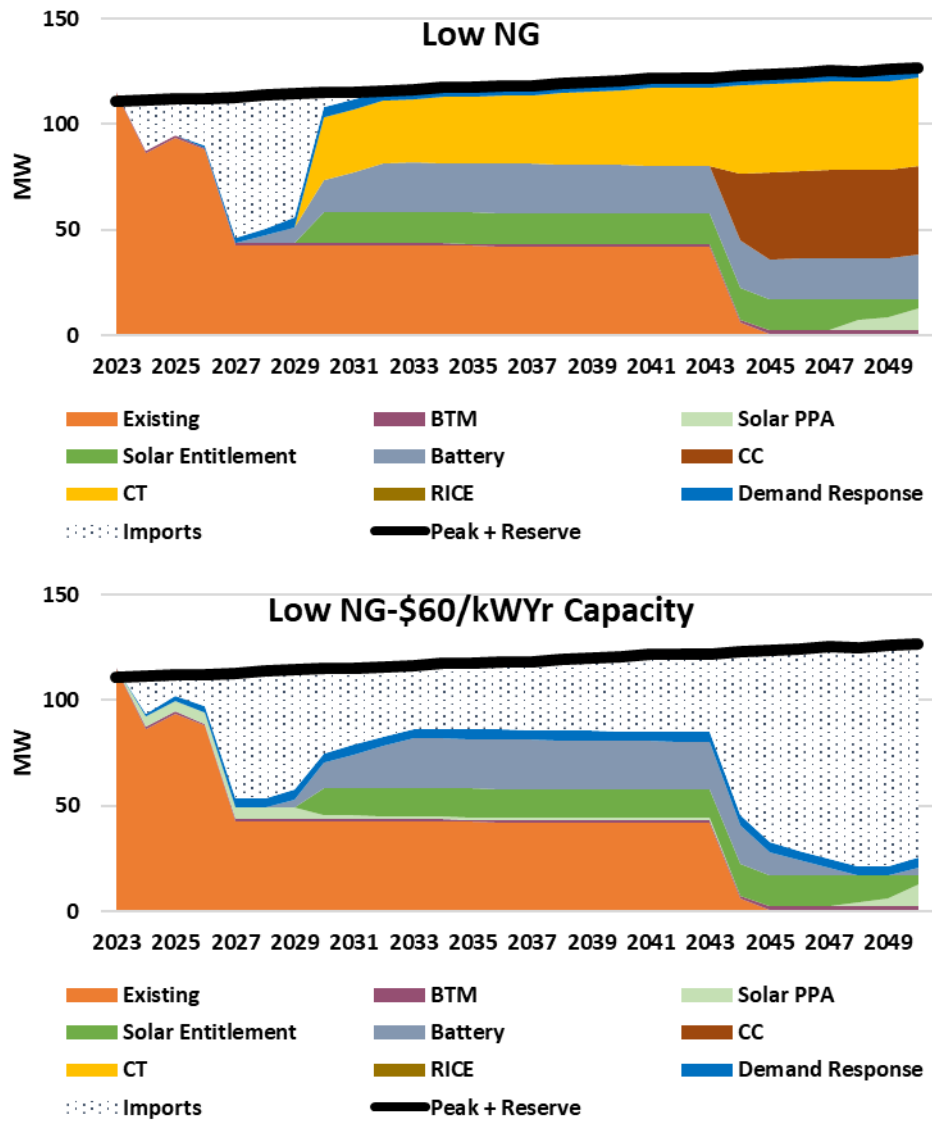


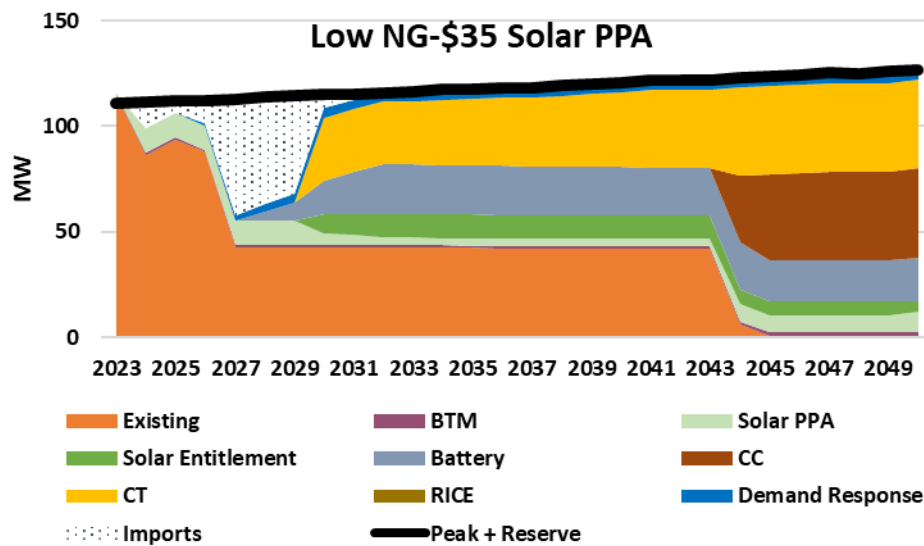
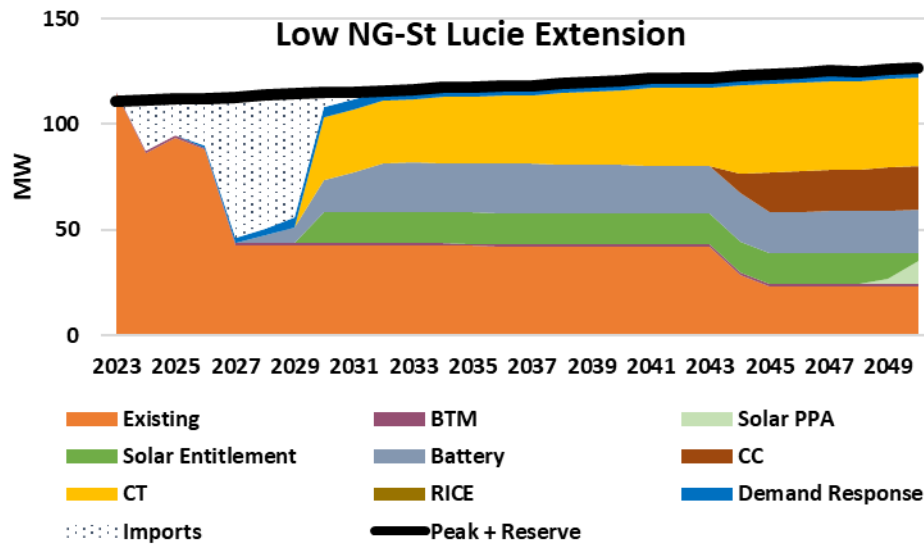
Lake Worth Beach Electric Utilities Integrated Resource Plan

Low Natural Gas Scenarios

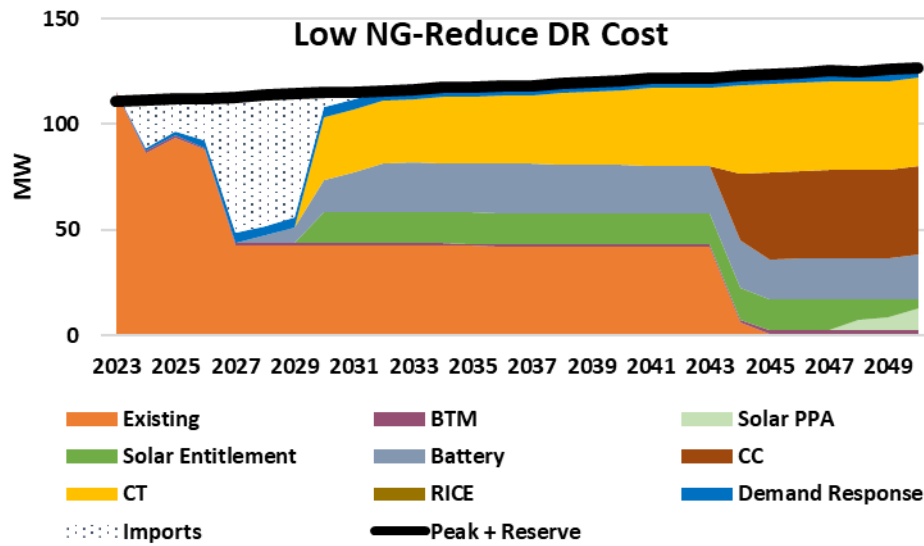
Figure 43

Low Natural Gas Supply Demand Balance Sensitivities





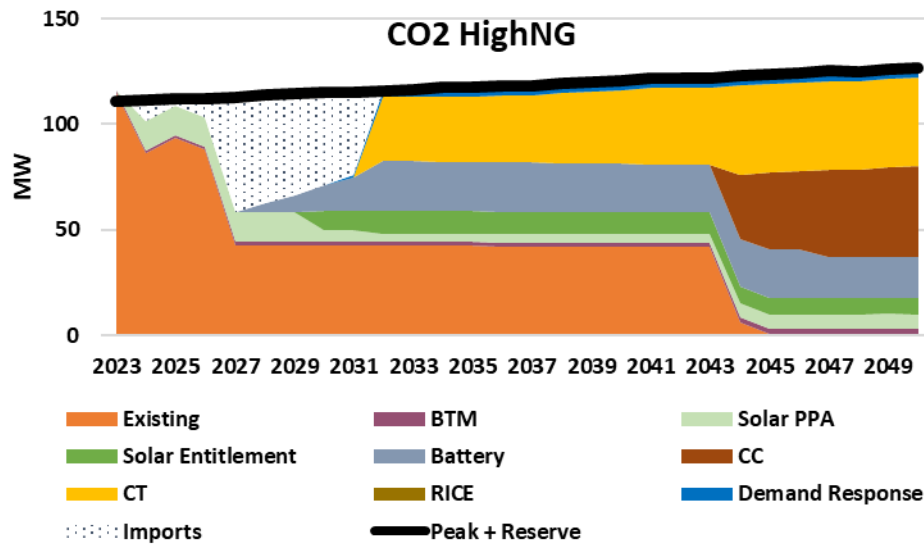
Lake Worth Beach Electric Utilities Integrated Resource Plan

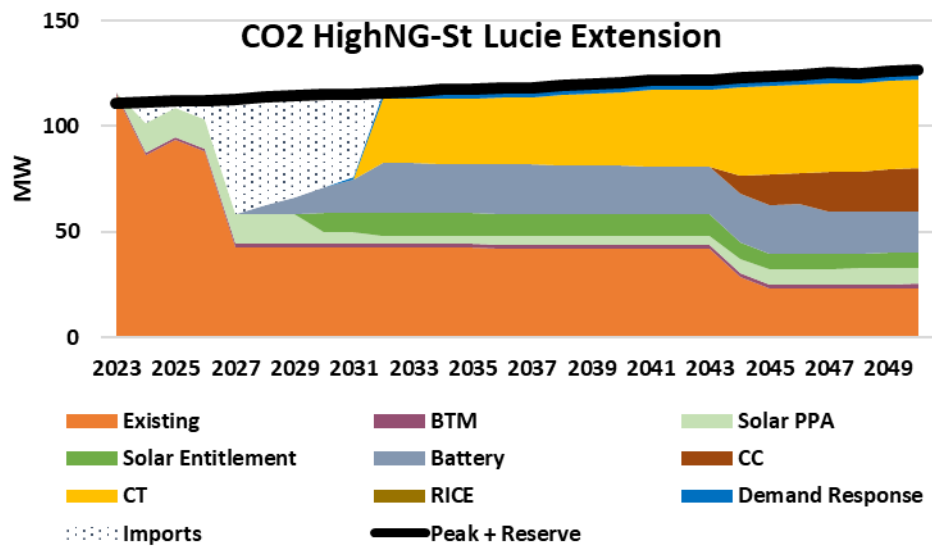
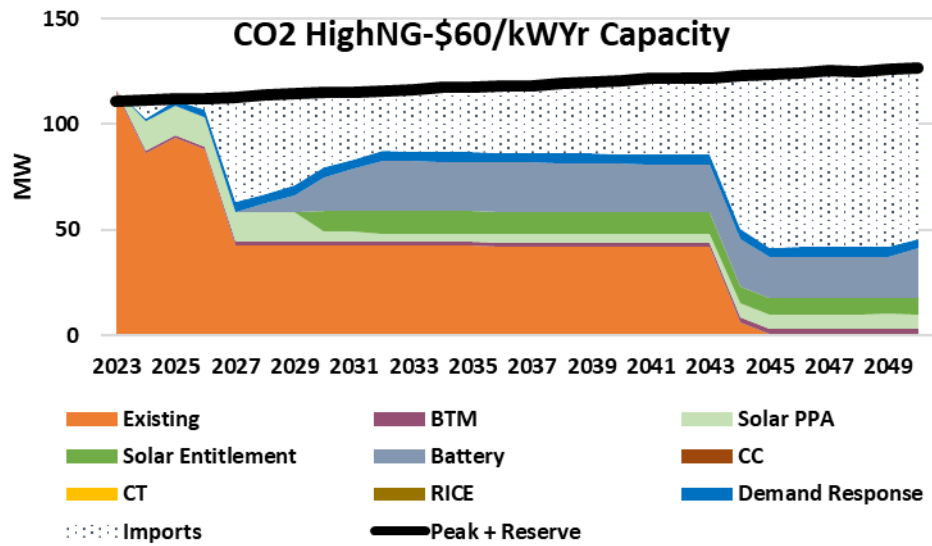


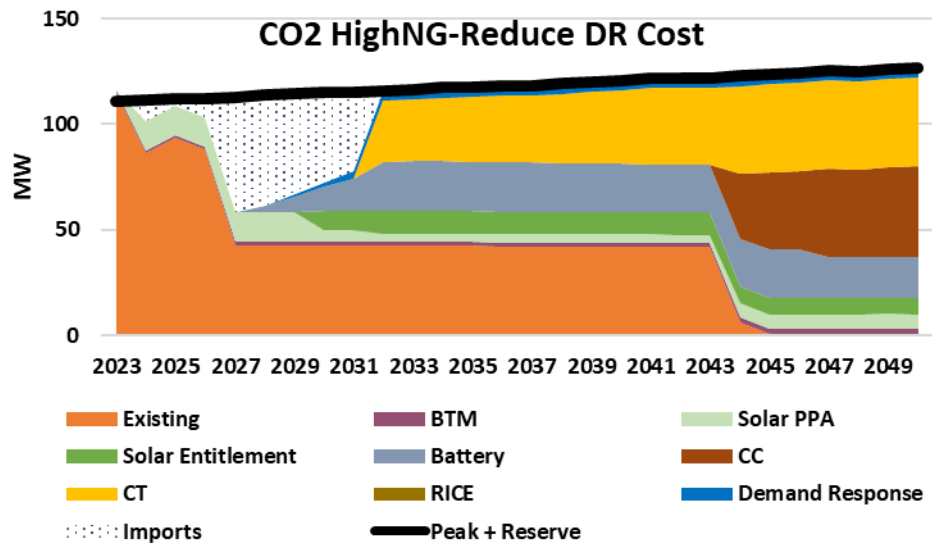
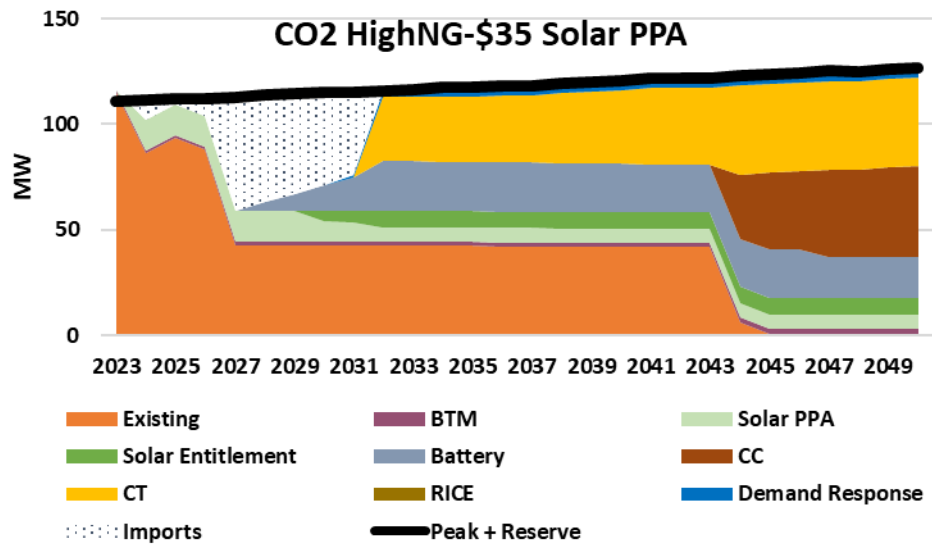
*CO<sub>2</sub> High Natural Gas Scenario*

Figure 44

*CO<sub>2</sub> High Natural Gas Supply Demand Balance Sensitivities*





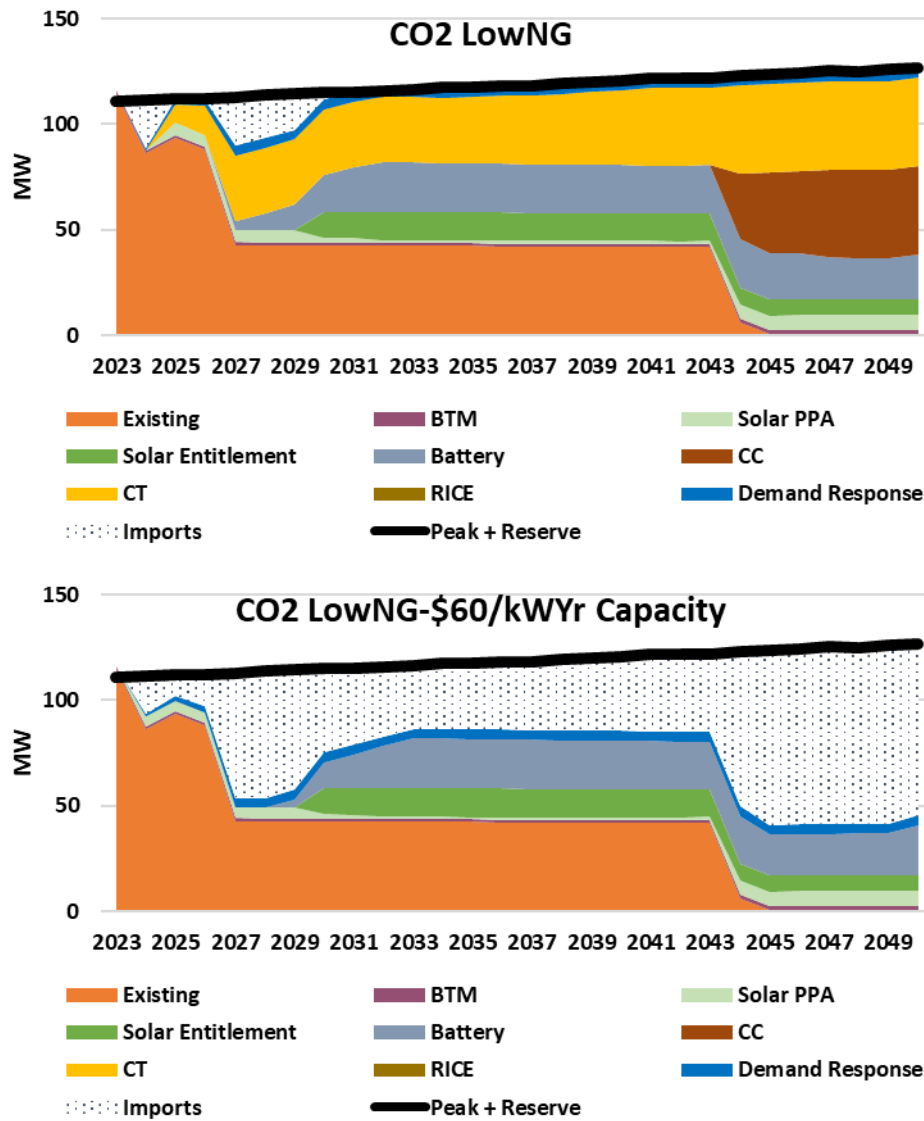


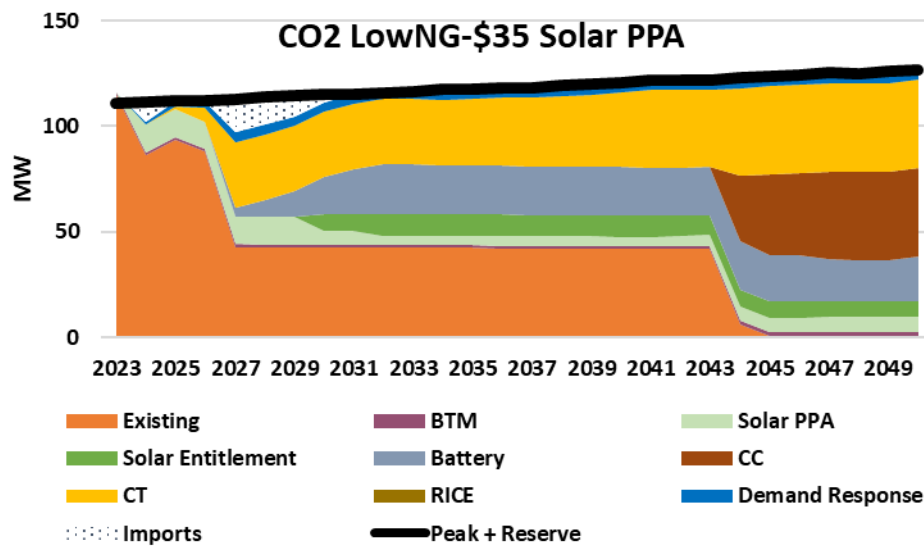
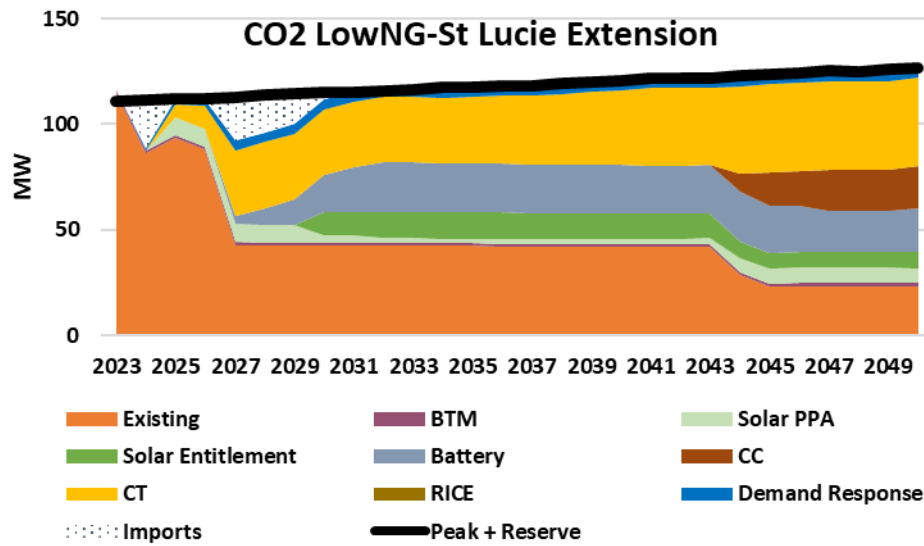
Lake Worth Beach Electric Utilities Integrated Resource Plan

*CO<sub>2</sub> Low Natural Gas Scenario*

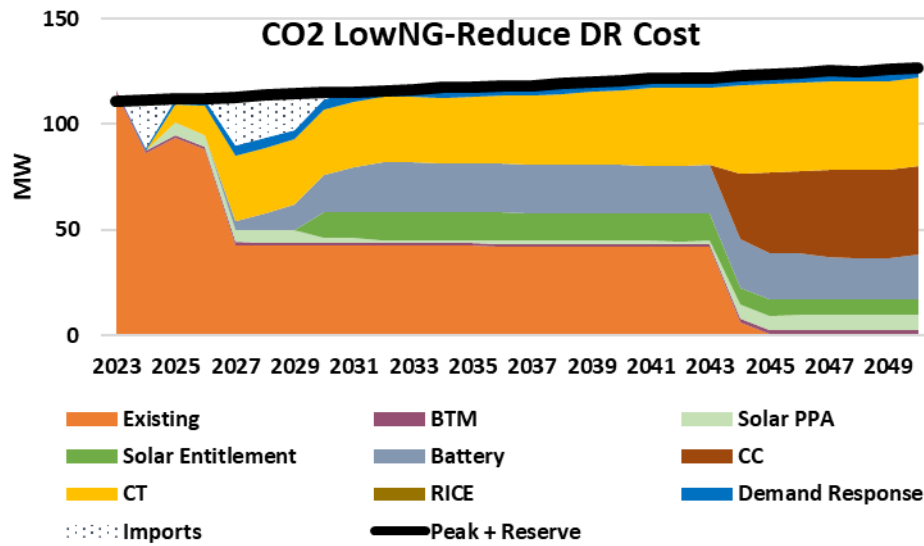
Figure 45

CO<sub>2</sub> Low Natural Gas Supply Demand Balance Sensitivities





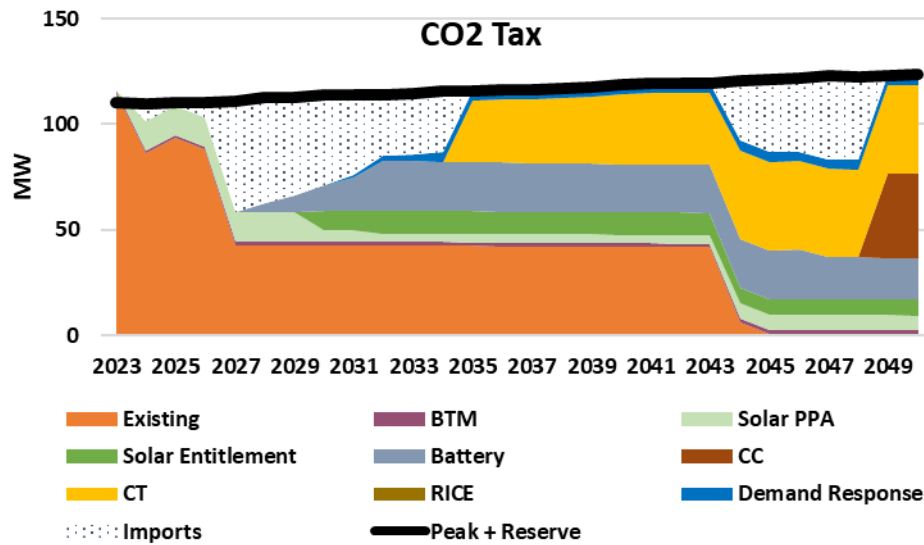
Lake Worth Beach Electric Utilities Integrated Resource Plan

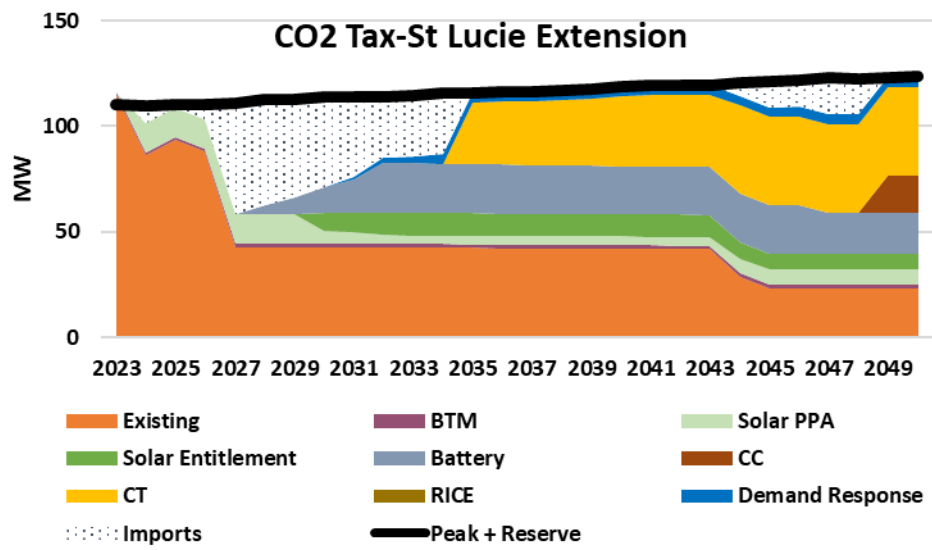
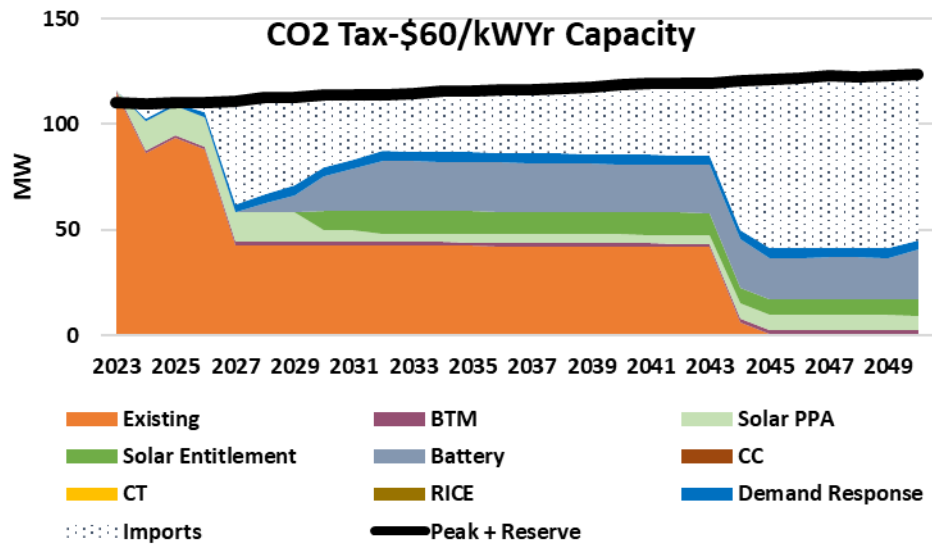


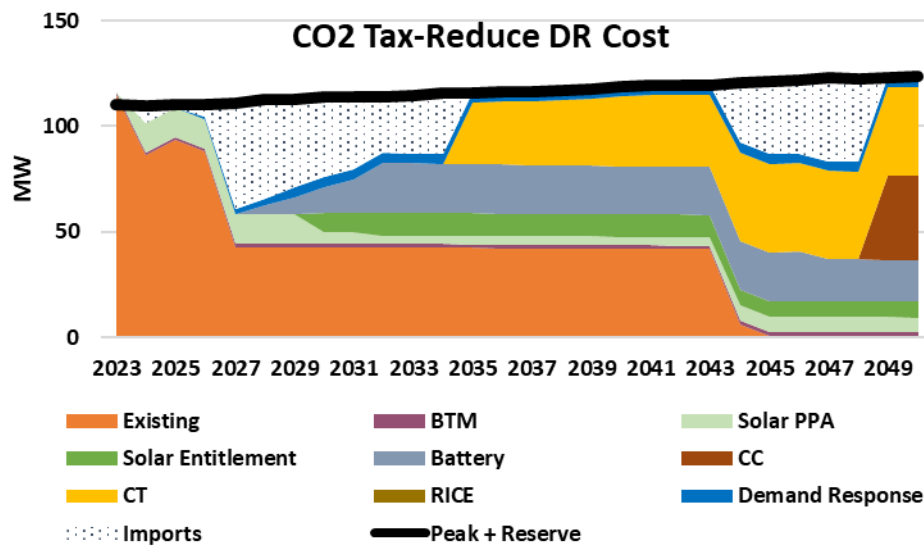
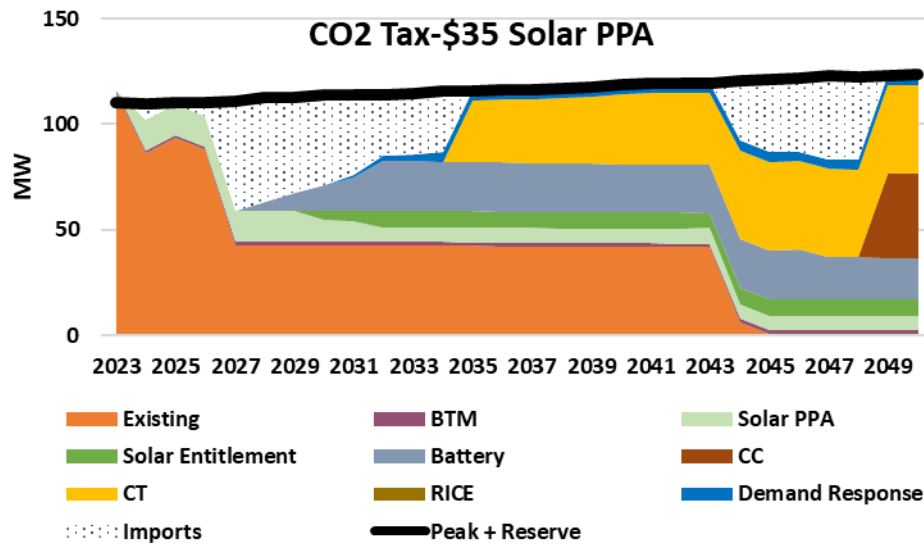
*Carbon Tax Scenario*

Figure 46

*Carbon Tax Scenario Supply Demand Balance Sensitivities*





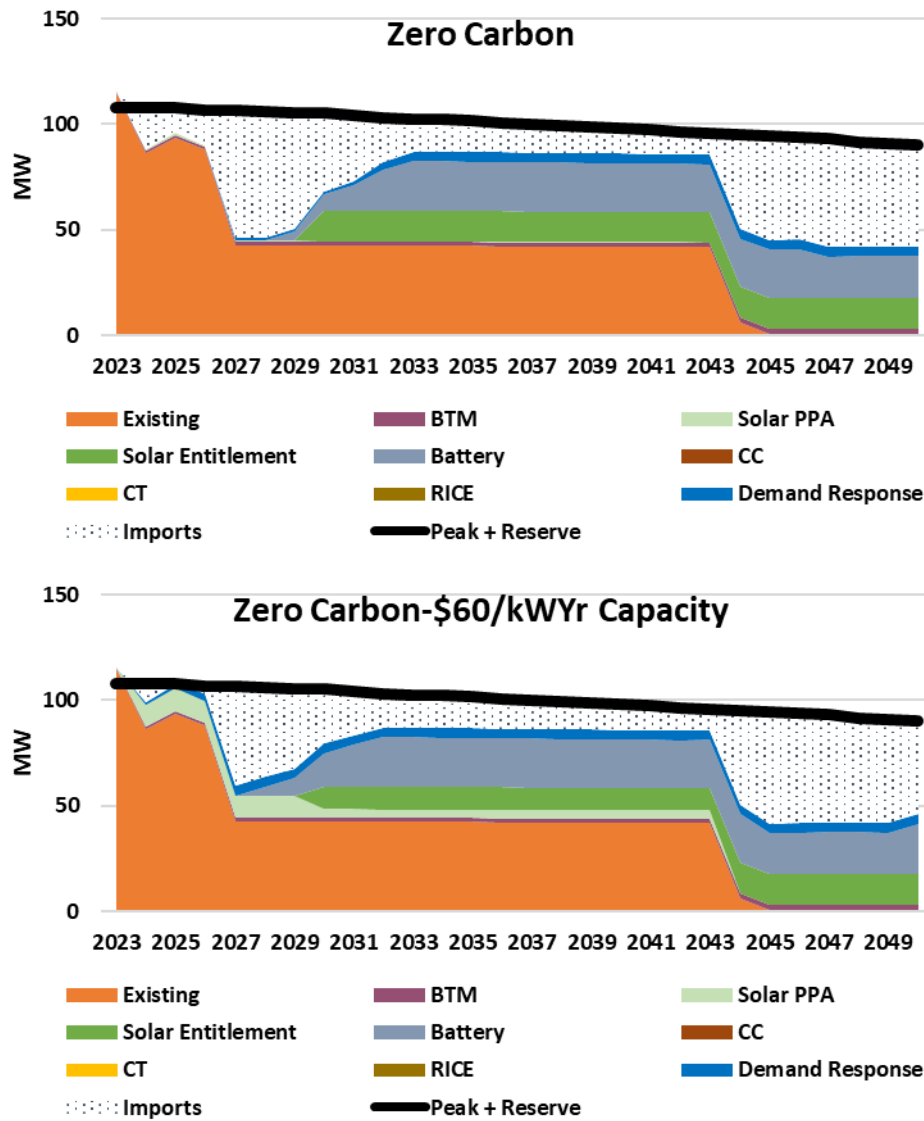


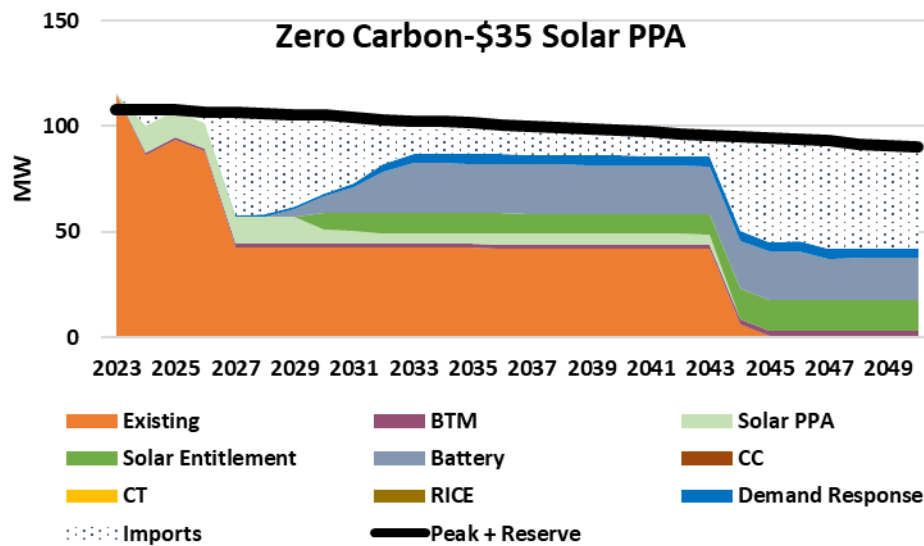
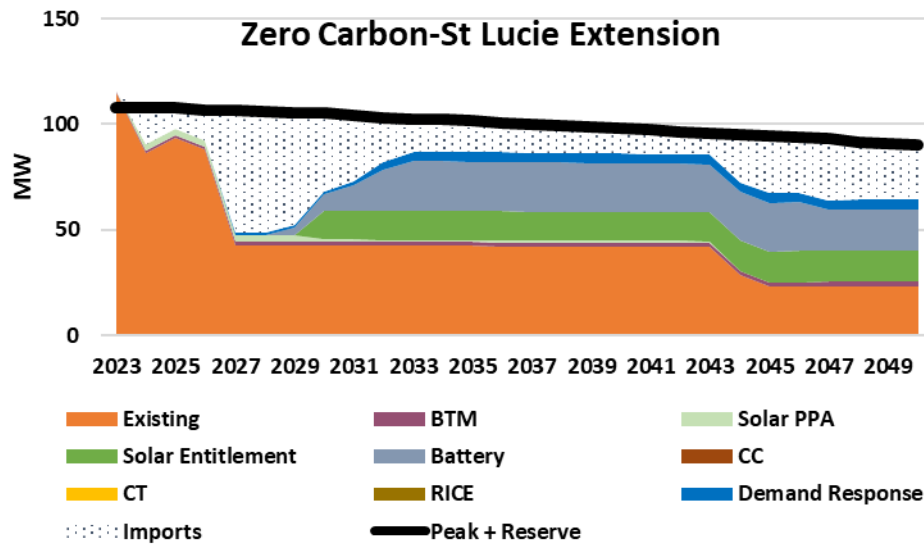
Lake Worth Beach Electric Utilities Integrated Resource Plan

Zero Carbon Additions Scenario

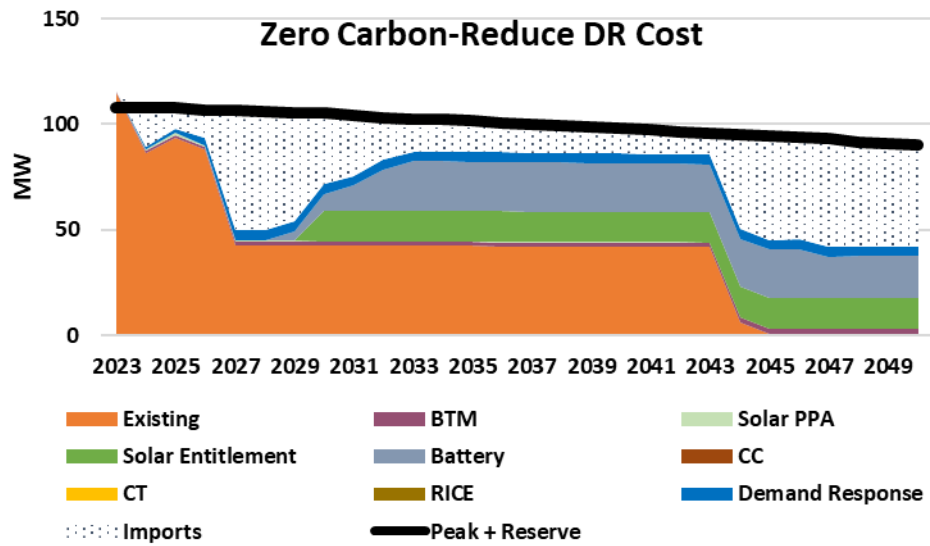
Figure 47

Zero Carbon Additions Supply Demand Balance Sensitivities



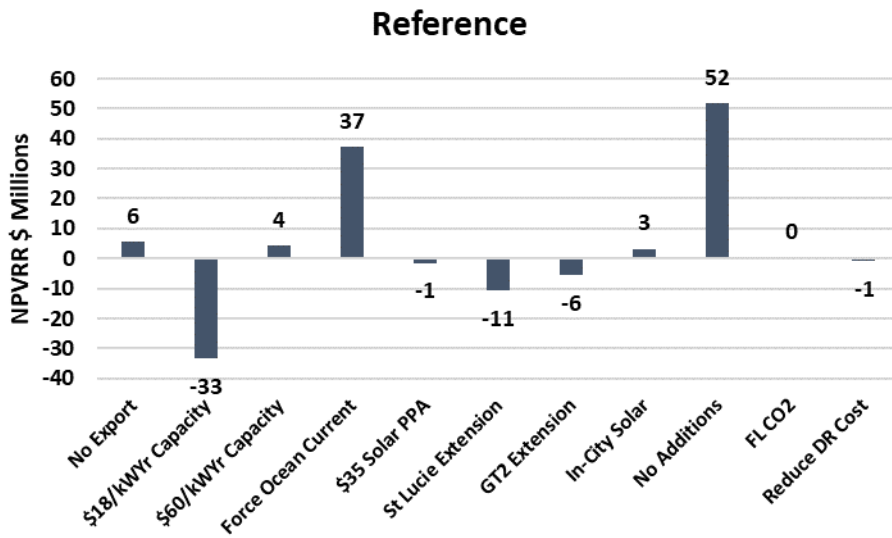


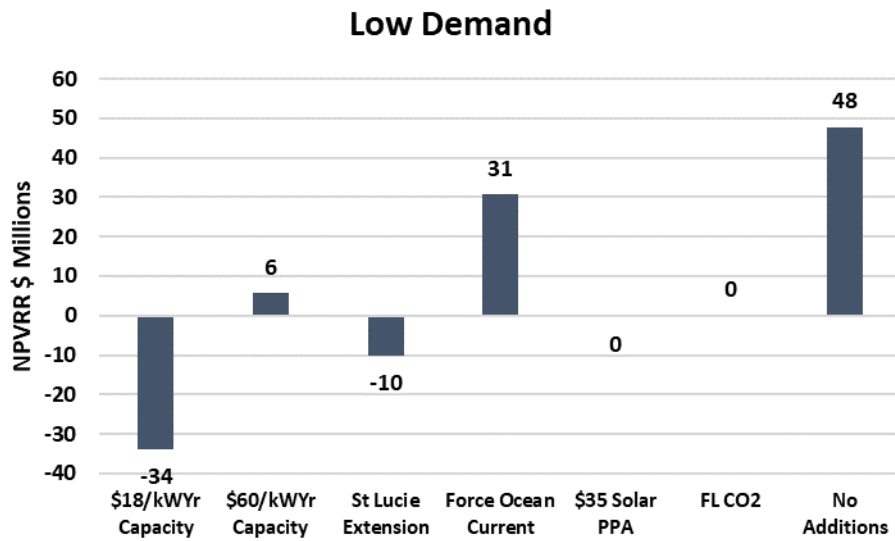
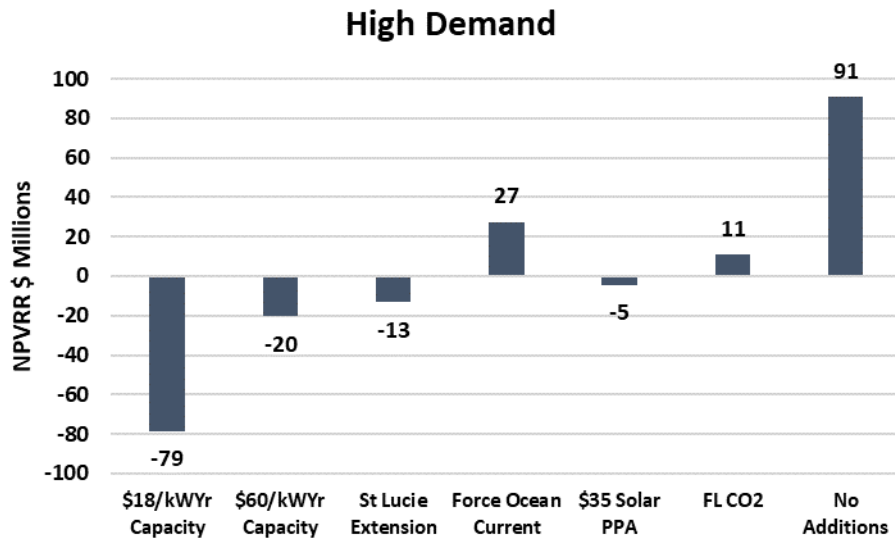
Lake Worth Beach Electric Utilities Integrated Resource Plan

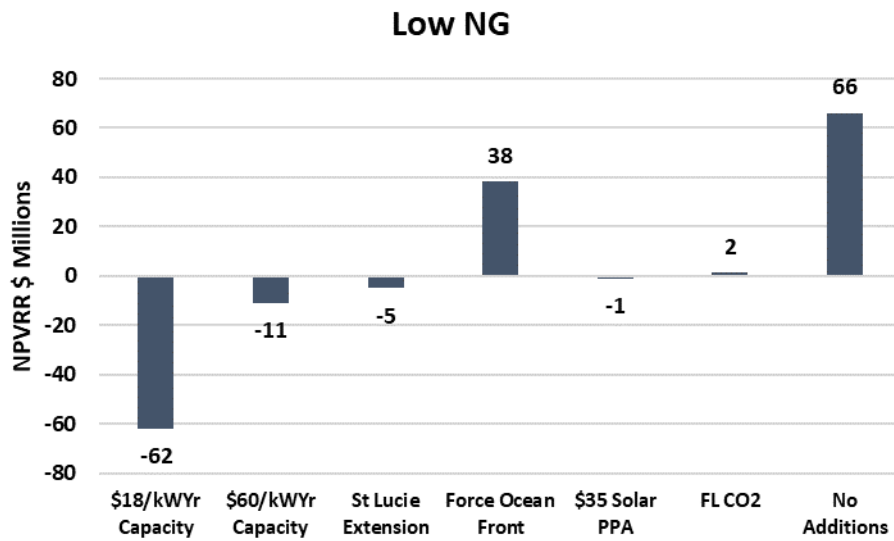
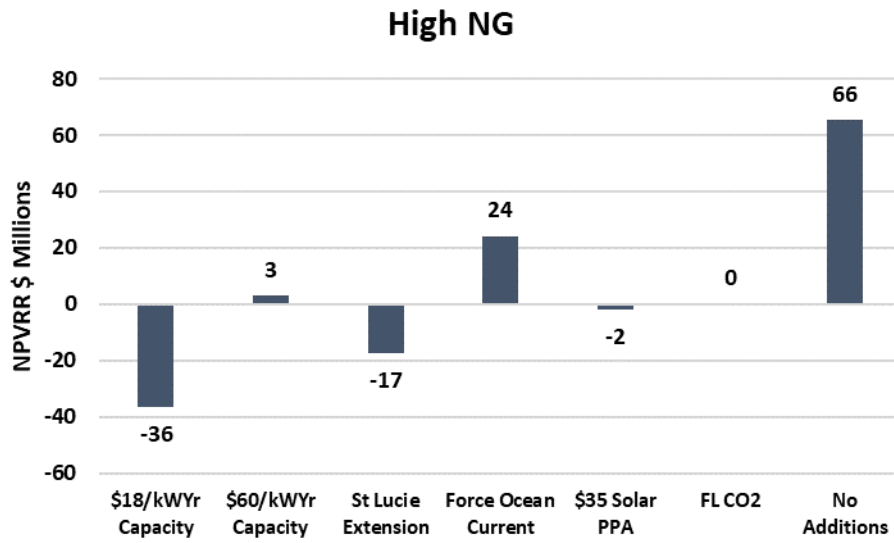


Net Present Value Revenue Requirements (Savings)/Cost

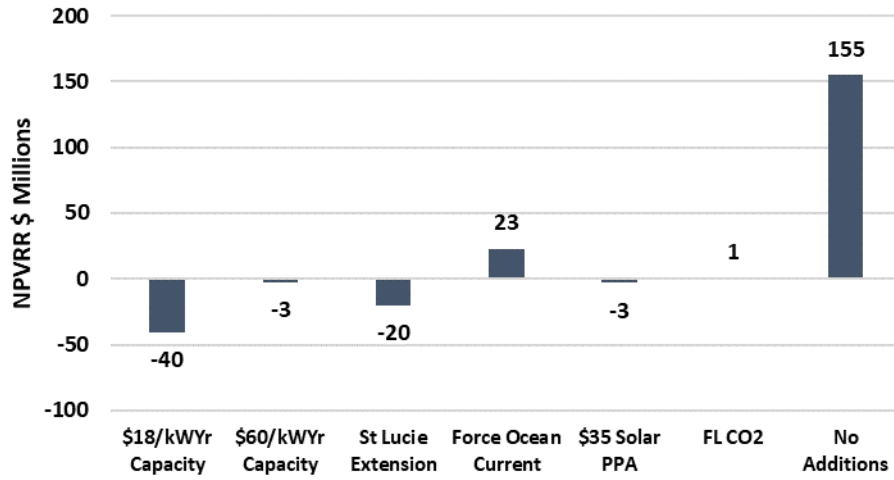
Figure 48  
NPVRR Sensitivities



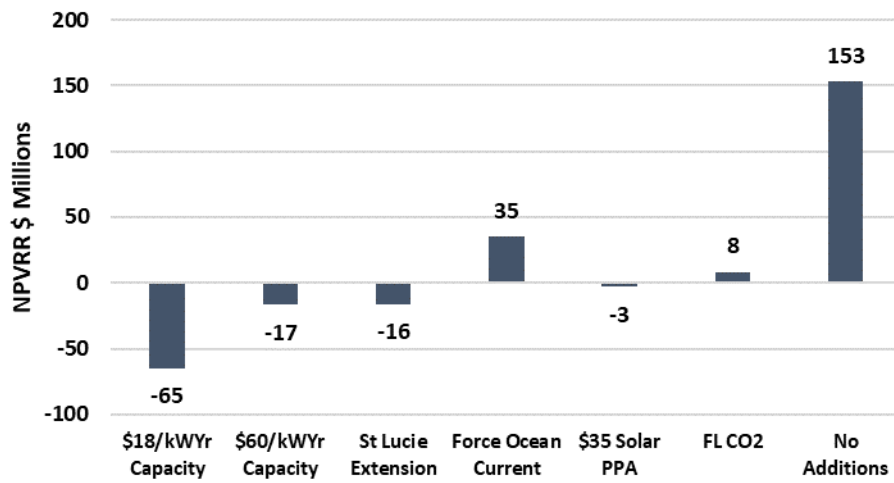


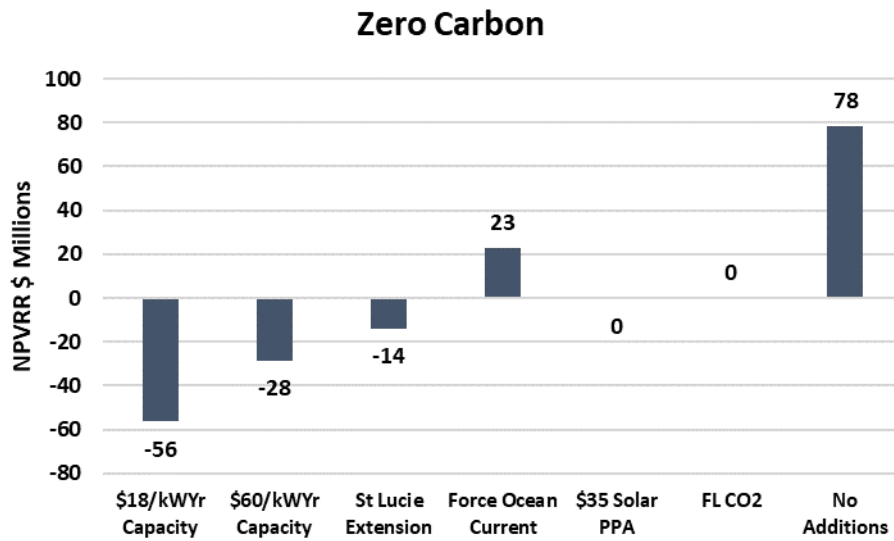
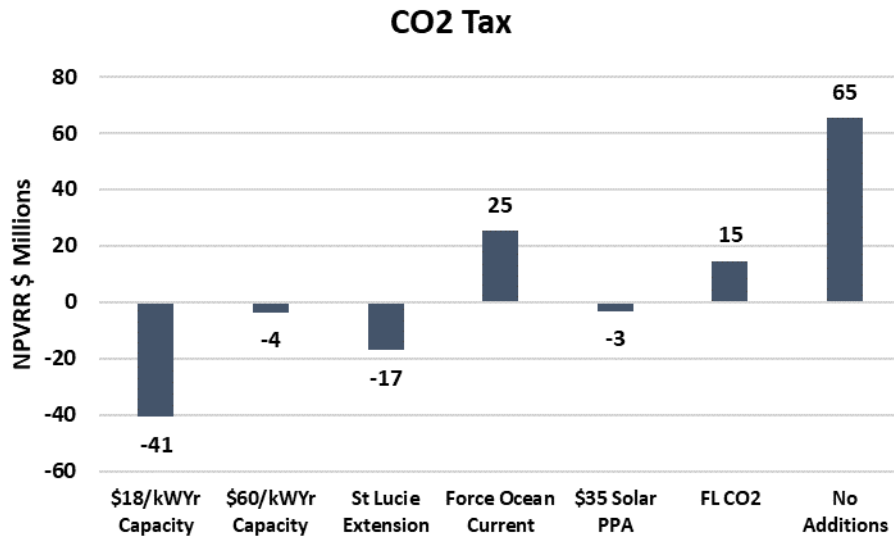


### CO2 HighNG



### CO2 LowNG





# Lake Worth Beach Electric Utilities Integrated Resource Plan

## Builds by Sensitivity

Table 6

Builds through 2030 by Sensitivity (Cumulative MW)

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Reference	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	38.58
Reference	Solar PPA	7.38	7.38	7.38	7.38	7.38	7.38	7.38
Reference	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	23.66
Reference-No Export	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-No Export	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-No Export	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	12.49
Reference-\$18/kWYr Capacity	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Reference-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Reference-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Reference-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	26.88
Reference-\$60/kWYr Capacity	Solar PPA	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Reference-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
Reference-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Reference-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Reference-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Reference-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	18.42
Reference-Force Ocean Current	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00

Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Reference-Force Ocean Current	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	23.27
Reference-\$35 Solar PPA	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Reference-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	38.58
Reference-St Lucie Extension	Solar PPA	7.38	7.38	7.38	7.38	7.38	7.38	7.38
Reference-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-St Lucie Extension	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	38.58
Reference-GT2 Extension	In-City Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	Solar PPA	7.38	7.38	7.38	7.38	7.38	7.38	7.38
Reference-GT2 Extension	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-GT2 Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-GT2 Extension	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	36.34
Reference-In-City Solar	Solar PPA	3.12	3.12	3.12	3.12	3.12	3.12	3.12
Reference-In-City Solar	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-In-City Solar	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-In-City Solar	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	39.32
Reference-FL CO2	Solar PPA	7.34	7.34	7.34	7.34	7.34	7.34	7.34
Reference-FL CO2	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Reference-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-FL CO2	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	38.58
Reference-Reduce DR Cost	Solar PPA	7.38	7.38	7.38	7.38	7.38	7.38	7.38
Reference-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Reference-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference-Reduce DR Cost	Demand Response	0.00	0.00	0.00	0.00	0.00	1.00	2.00
High Demand	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	29.69
High Demand	Solar PPA	18.97	18.97	18.97	18.97	18.97	18.97	18.97
High Demand	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand	Demand Response	0.00	0.00	0.00	1.00	2.00	3.00	4.00
High Demand-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	30.87
High Demand-\$18/kWYr Capacity	Solar PPA	7.85	7.85	7.85	7.85	7.85	7.85	7.85
High Demand-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	28.08
High Demand-\$60/kWYr Capacity	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
High Demand-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
High Demand-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.27

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
High Demand-St Lucie Extension	Solar PPA	18.97	18.97	18.97	18.97	18.97	18.97	18.97
High Demand-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	5.85
High Demand-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	2.34
High Demand-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-St Lucie Extension	Demand Response	0.00	0.00	0.00	1.00	2.00	3.00	4.00
High Demand-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	29.69
High Demand-Reduce DR Cost	Solar PPA	18.97	18.97	18.97	18.97	18.97	18.97	18.97
High Demand-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Reduce DR Cost	Demand Response	0.00	1.00	2.00	3.00	4.00	4.00	4.00
High Demand-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	22.82
High Demand-Force Ocean Current	Solar PPA	15.00	15.00	15.00	15.00	15.00	15.00	15.00
High Demand-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand-Force Ocean Current	Demand Response	0.00	0.00	0.00	1.00	2.00	3.00	4.00
High Demand-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	22.00
High Demand-\$35 Solar PPA	Solar PPA	25.78	25.78	25.78	25.78	25.78	25.78	25.78
High Demand-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High Demand-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	1.00	2.00	3.00	4.00
High Demand-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	31.59
High Demand-FL CO2	Solar PPA	18.88	18.88	18.88	18.88	18.88	18.88	18.88
High Demand-FL CO2	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High Demand-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
High Demand-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High Demand-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High Demand-FL CO2	Demand Response	0.00	0.00	0.00	1.00	2.00	3.00	4.00
Low Demand	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	40.54
Low Demand	Solar PPA	3.63	3.63	3.63	3.63	3.63	3.63	3.63
Low Demand	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low Demand	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Low Demand-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	31.51
Low Demand-\$18/kWYr Capacity	Solar PPA	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Low Demand-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low Demand-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	5.98
Low Demand-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	2.39
Low Demand-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	24.21
Low Demand-\$60/kWYr Capacity	Solar PPA	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Low Demand-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
Low Demand-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low Demand-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low Demand-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Low Demand-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	40.60
Low Demand-St Lucie Extension	Solar PPA	3.59	3.59	3.59	3.59	3.59	3.59	3.59
Low Demand-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low Demand-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Low Demand-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-St Lucie Extension	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Low Demand-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	40.54
Low Demand-Reduce DR Cost	Solar PPA	3.63	3.63	3.63	3.63	3.63	3.63	3.63
Low Demand-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low Demand-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Reduce DR Cost	Demand Response	0.00	0.00	0.00	0.00	1.00	2.00	3.00
Low Demand-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.85
Low Demand-Force Ocean Current	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low Demand-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low Demand-Force Ocean Current	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Low Demand-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	23.42
Low Demand-\$35 Solar PPA	Solar PPA	18.24	18.24	18.24	18.24	18.24	18.24	18.24
Low Demand-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low Demand-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Low Demand-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	40.89
Low Demand-FL CO2	Solar PPA	3.56	3.56	3.56	3.56	3.56	3.56	3.56
Low Demand-FL CO2	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low Demand-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Demand-FL CO2	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
High NG	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	33.28
High NG	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
High NG	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High NG	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
High NG-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	24.84
High NG-\$18/kWYr Capacity	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
High NG-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	1.87	5.87	9.87
High NG-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High NG-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High NG-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	26.81
High NG-\$60/kWYr Capacity	Solar PPA	22.55	22.55	22.55	22.55	22.55	22.55	22.55
High NG-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	2.03	6.03	10.03	14.03
High NG-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High NG-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
High NG-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
High NG-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.66
High NG-St Lucie Extension	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
High NG-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High NG-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-St Lucie Extension	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
High NG-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.29
High NG-Reduce DR Cost	Solar PPA	19.94	19.94	19.94	19.94	19.94	19.94	19.94
High NG-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	3.17	7.17	11.17

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
High NG-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Reduce DR Cost	Demand Response	0.00	0.00	0.00	0.00	0.00	1.00	2.00
High NG-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	23.64
High NG-Force Ocean Current	Solar PPA	17.98	17.98	17.98	17.98	17.98	17.98	17.98
High NG-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High NG-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
High NG-Force Ocean Current	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
High NG-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	15.10
High NG-\$35 Solar PPA	Solar PPA	34.24	34.24	34.24	34.24	34.24	34.24	34.24
High NG-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High NG-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
High NG-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.39
High NG-FL CO2	Solar PPA	20.98	20.98	20.98	20.98	20.98	20.98	20.98
High NG-FL CO2	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
High NG-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High NG-FL CO2	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Low NG	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	31.36
Low NG	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG	Battery	0.00	0.00	0.00	0.00	3.18	7.18	11.18
Low NG	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low NG	CT	0.00	0.00	0.00	0.00	0.00	0.00	29.75

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Low NG	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG	Demand Response	0.00	0.00	1.00	2.00	3.00	4.00	4.00
Low NG-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	26.40
Low NG-\$18/kWYr Capacity	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	24.90
Low NG-\$60/kWYr Capacity	Solar PPA	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Low NG-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Low NG-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low NG-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Low NG-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.67
Low NG-St Lucie Extension	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	3.18	7.18	11.18
Low NG-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low NG-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	29.75
Low NG-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-St Lucie Extension	Demand Response	0.00	0.00	1.00	2.00	3.00	4.00	4.00
Low NG-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	31.36
Low NG-Reduce DR Cost	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	3.18	7.18	11.18
Low NG-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low NG-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	29.75
Low NG-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Low NG-Reduce DR Cost	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Low NG-Force Ocean Front	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	20.23
Low NG-Force Ocean Front	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-Force Ocean Front	Battery	0.00	0.00	0.00	0.00	3.18	7.18	11.18
Low NG-Force Ocean Front	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG-Force Ocean Front	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low NG-Force Ocean Front	CT	0.00	0.00	0.00	0.00	0.00	0.00	19.73
Low NG-Force Ocean Front	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-Force Ocean Front	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-Force Ocean Front	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG-Force Ocean Front	Demand Response	0.00	0.00	1.00	2.00	3.00	4.00	4.00
Low NG-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	16.33
Low NG-\$35 Solar PPA	Solar PPA	14.55	14.55	14.55	14.55	14.55	14.55	14.55
Low NG-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
Low NG-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Low NG-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Low NG-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	29.75
Low NG-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-\$35 Solar PPA	Demand Response	0.00	0.00	1.00	2.00	3.00	4.00	4.00
Low NG-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.02
Low NG-FL CO2	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-FL CO2	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
Low NG-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	6.97
Low NG-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	2.79
Low NG-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	29.75
Low NG-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low NG-FL CO2	Demand Response	0.00	0.00	0.00	1.00	2.00	3.00	4.00
CO2 HighNG	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	33.57
CO2 HighNG	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 HighNG	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 HighNG	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	23.07
CO2 HighNG-\$18/kWYr Capacity	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00

## Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
CO2 HighNG-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
CO2 HighNG-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 HighNG-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
CO2 HighNG-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	28.18
CO2 HighNG-\$60/kWYr Capacity	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 HighNG-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 HighNG-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 HighNG-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
CO2 HighNG-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 HighNG-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	33.02
CO2 HighNG-St Lucie Extension	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 HighNG-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 HighNG-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-St Lucie Extension	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.79
CO2 HighNG-Reduce DR Cost	Solar PPA	19.74	19.74	19.74	19.74	19.74	19.74	19.74
CO2 HighNG-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	3.18	7.18	11.18
CO2 HighNG-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Reduce DR Cost	Demand Response	0.00	0.00	0.00	0.00	0.00	1.00	2.00
CO2 HighNG-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	23.91
CO2 HighNG-Force Ocean Current	Solar PPA	17.90	17.90	17.90	17.90	17.90	17.90	17.90
CO2 HighNG-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 HighNG-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
CO2 HighNG-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 HighNG-Force Ocean Current	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	17.32
CO2 HighNG-\$35 Solar PPA	Solar PPA	32.92	32.92	32.92	32.92	32.92	32.92	32.92
CO2 HighNG-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 HighNG-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	33.79
CO2 HighNG-FL CO2	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 HighNG-FL CO2	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 HighNG-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 HighNG-FL CO2	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	30.85
CO2 LowNG	Solar PPA	0.00	6.37	6.37	6.37	6.37	6.37	6.37
CO2 LowNG	Battery	0.00	0.00	0.00	4.00	7.91	11.88	15.88
CO2 LowNG	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	3.93
CO2 LowNG	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	1.57
CO2 LowNG	CT	0.00	8.80	13.58	31.09	31.09	31.09	31.09
CO2 LowNG	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 LowNG-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	24.62
CO2 LowNG-\$18/kWYr Capacity	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
CO2 LowNG-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	20.59
CO2 LowNG-\$60/kWYr Capacity	Solar PPA	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CO2 LowNG-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
CO2 LowNG-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 LowNG-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
CO2 LowNG-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 LowNG-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	25.68
CO2 LowNG-St Lucie Extension	Solar PPA	0.00	10.00	10.00	10.00	10.00	10.00	10.00
CO2 LowNG-St Lucie Extension	Battery	0.00	0.00	0.00	4.00	7.91	11.88	15.88
CO2 LowNG-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	3.93
CO2 LowNG-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	1.57
CO2 LowNG-St Lucie Extension	CT	0.00	6.24	11.02	31.09	31.09	31.09	31.09
CO2 LowNG-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-St Lucie Extension	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 LowNG-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	30.85
CO2 LowNG-Reduce DR Cost	Solar PPA	0.00	6.37	6.37	6.37	6.37	6.37	6.37
CO2 LowNG-Reduce DR Cost	Battery	0.00	0.00	0.00	4.00	7.91	11.88	15.88
CO2 LowNG-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	3.93
CO2 LowNG-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	1.57
CO2 LowNG-Reduce DR Cost	CT	0.00	8.80	13.58	31.09	31.09	31.09	31.09
CO2 LowNG-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-Reduce DR Cost	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 LowNG-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	15.54
CO2 LowNG-Force Ocean Current	Solar PPA	0.00	5.00	5.00	5.00	5.00	5.00	5.00
CO2 LowNG-Force Ocean Current	Battery	0.00	0.00	0.00	4.00	7.91	11.88	15.88
CO2 LowNG-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 LowNG-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
CO2 LowNG-Force Ocean Current	CT	0.00	9.76	14.54	21.12	21.12	21.12	21.12
CO2 LowNG-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 LowNG-Force Ocean Current	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 LowNG-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	17.63

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
CO2 LowNG-\$35 Solar PPA	Solar PPA	18.22	18.22	18.22	18.22	18.22	18.22	18.22
CO2 LowNG-\$35 Solar PPA	Battery	0.00	0.00	0.00	4.00	7.91	11.88	15.88
CO2 LowNG-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	3.93
CO2 LowNG-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	1.57
CO2 LowNG-\$35 Solar PPA	CT	0.00	1.55	6.33	31.05	31.05	31.05	31.05
CO2 LowNG-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-\$35 Solar PPA	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 LowNG-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	27.15
CO2 LowNG-FL CO2	Solar PPA	0.00	10.00	10.00	10.00	10.00	10.00	10.00
CO2 LowNG-FL CO2	Battery	0.00	0.00	0.00	4.00	7.91	11.88	15.88
CO2 LowNG-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	3.69
CO2 LowNG-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	1.48
CO2 LowNG-FL CO2	CT	0.00	6.24	11.02	31.09	31.09	31.09	31.09
CO2 LowNG-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 LowNG-FL CO2	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
CO2 Tax	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.07
CO2 Tax	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 Tax	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$18/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	21.78
CO2 Tax-\$18/kWYr Capacity	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 Tax-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
CO2 Tax-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 Tax-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
CO2 Tax-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$60/kWYr Capacity	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	26.47
CO2 Tax-\$60/kWYr Capacity	Solar PPA	20.34	20.34	20.34	20.34	20.34	20.34	20.34
CO2 Tax-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
CO2 Tax-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
CO2 Tax-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$60/kWYr Capacity	Demand Response	0.94	0.94	1.94	2.94	3.94	4.00	4.00
CO2 Tax-St Lucie Extension	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	31.47
CO2 Tax-St Lucie Extension	Solar PPA	20.20	20.20	20.20	20.20	20.20	20.20	20.20
CO2 Tax-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-St Lucie Extension	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	32.07
CO2 Tax-Reduce DR Cost	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 Tax-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Reduce DR Cost	Demand Response	0.00	0.00	1.00	2.00	3.00	4.00	4.00
CO2 Tax-Force Ocean Current	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	19.30
CO2 Tax-Force Ocean Current	Solar PPA	20.00	20.00	20.00	20.00	20.00	20.00	20.00
CO2 Tax-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
CO2 Tax-Force Ocean Current	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$35 Solar PPA	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	15.30
CO2 Tax-\$35 Solar PPA	Solar PPA	33.06	33.06	33.06	33.06	33.06	33.06	33.06
CO2 Tax-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
CO2 Tax-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	29.92
CO2 Tax-FL CO2	Solar PPA	22.35	22.35	22.35	22.35	22.35	22.35	22.35
CO2 Tax-FL CO2	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
CO2 Tax-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	GT-2 Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 Tax-FL CO2	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	Utility-Scale Solar Project	0.00	0.00	0.00	0.00	0.00	0.00	40.29
Zero Carbon	Solar PPA	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Zero Carbon	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Zero Carbon	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$18/kWYr Capacity	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$18/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Zero Carbon-\$18/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Zero Carbon-\$18/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Zero Carbon-\$18/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$18/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$18/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$18/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$18/kWYr Capacity	Demand Response	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Zero Carbon-\$60/kWYr Capacity	Solar PPA	13.13	13.13	13.13	13.13	13.13	13.13	13.13
Zero Carbon-\$60/kWYr Capacity	Battery	0.00	0.00	0.00	0.00	4.00	8.00	12.00
Zero Carbon-\$60/kWYr Capacity	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Zero Carbon-\$60/kWYr Capacity	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Zero Carbon-\$60/kWYr Capacity	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$60/kWYr Capacity	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$60/kWYr Capacity	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$60/kWYr Capacity	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Zero Carbon-\$60/kWYr Capacity	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Zero Carbon-St Lucie Extension	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-St Lucie Extension	Solar PPA	2.97	2.97	2.97	2.97	2.97	2.97	2.97
Zero Carbon-St Lucie Extension	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Zero Carbon-St Lucie Extension	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-St Lucie Extension	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-St Lucie Extension	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-St Lucie Extension	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-St Lucie Extension	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-St Lucie Extension	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-St Lucie Extension	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-Reduce DR Cost	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Zero Carbon-Reduce DR Cost	Solar PPA	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Zero Carbon-Reduce DR Cost	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Zero Carbon-Reduce DR Cost	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Reduce DR Cost	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Reduce DR Cost	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Reduce DR Cost	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Reduce DR Cost	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Reduce DR Cost	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Reduce DR Cost	Demand Response	1.00	2.00	3.00	4.00	4.00	4.00	4.00
Zero Carbon-Force Ocean Current	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-Force Ocean Current	Solar PPA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Force Ocean Current	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Zero Carbon-Force Ocean Current	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Force Ocean Current	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Force Ocean Current	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Force Ocean Current	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Force Ocean Current	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-Force Ocean Current	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Zero Carbon-Force Ocean Current	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-\$35 Solar PPA	Solar PPA	16.80	16.80	16.80	16.80	16.80	16.80	16.80
Zero Carbon-\$35 Solar PPA	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Zero Carbon-\$35 Solar PPA	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$35 Solar PPA	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$35 Solar PPA	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$35 Solar PPA	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$35 Solar PPA	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$35 Solar PPA	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-\$35 Solar PPA	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-FL CO2	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Zero Carbon-FL CO2	Solar PPA	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Lake Worth Beach Electric Utilities Integrated Resource Plan

Scenario	Cumulative MW Added	2024	2025	2026	2027	2028	2029	2030
Zero Carbon-FL CO2	Battery	0.00	0.00	0.00	0.00	0.00	4.00	8.00
Zero Carbon-FL CO2	Solar Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-FL CO2	Battery Hybrid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-FL CO2	CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-FL CO2	RICE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-FL CO2	CC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-FL CO2	Ocean Current Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zero Carbon-FL CO2	Demand Response	0.00	0.00	0.00	1.00	1.00	1.00	1.00

## List of Acronyms

<b>Abbreviation</b>	<b>Description</b>
AC	Alternating current
AEO	Annual Energy Outlook
b/d	Barrels per day
Bcf	Billion cubic feet
BPS	Bulk power system
BTM	Behind the meter
CAGR	Compound annual growth rate
CC	Combined Cycle
CEO	Chief Executive Officer
CO <sub>2</sub>	Carbon dioxide
CPI	Consumer price index
CT	Combustion Turbine
DC	Direct current
DOE	Department of Energy
DSM	Demand Side Management
ECC	Economic Carrying Charge
EERE	Office of Energy Efficiency and Renewable Energy
EIA	Energy Information Administration
EIS	Environmental impact statement
EPA	Environmental Protection Agency
FAU	Florida Atlantic University
FERC	Federal Energy Regulatory Commission
FGT	Florida Gas Transmission
FGU	Florida Gas Utility
FMPA	Florida Municipal Power Agency
FMPP	Florida Municipal Power Pool
FPL	Florida Power & Light Company
FRCC	Florida Reliability Coordinating Council
GDP	Gross domestic product
GHG	Greenhouse gas
GWh	Gigawatt hour
HE	Horizons Energy
HORIZONS	Horizons Energy
IOU	Investor-owned utility
IPP	Independent power producer
IRA	Inflation Reduction Act
IRP	Integrated resource plan
ISO	Independent system operator
ITC	Investment tax credit
kV	Kilovolt
kW	Kilowatt
kWh	Kilowatt hour

## Lake Worth Beach Electric Utilities Integrated Resource Plan

LCOE	Levelized cost of energy
LCOS	Levelized cost of storage
LMC	Liquid market center
LNG	Liquified natural gas
LTRA	Long-term reliability assessment
LWB	Lake Worth Beach
LWBEU	Lake Worth Beach Electric Utilities
MILP	Mixed Integer Linear Programming
Mmbtu	One million British Thermal Units
MOR	Maintenance Outage Rate
MW	Megawatt
MWh	Megawatt hour
NDB	National database
NEE	Next Era Energy
NERC	North American Electric Reliability Corporation
NGI	Natural Gas Intelligence
NOX	Oxides of nitrogen
NPVRR	Net Present Value of Revenue Requirements
NRC	Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NYMEX	New York Mercantile Exchange
O&M	Operating and maintenance
OUC	Orlando Utilities Commission
PPA	Purchased Power Agreement
PTC	Production tax credit
PTO	Power take off
RE	Regional Entity
RICE	Reciprocating Internal Combustion Engine
RPS	Renewable Portfolio Standard
RTO	Regional transmission organization
SEC	Seminole Electric Cooperative
SLR	Subsequent License Renewal
SNMREC	Southeast National Marine Renewable Energy Centre
SO <sub>2</sub>	Sulfur dioxide
Tcf	Trillion cubic feet
TECO	Tampa Electric Company