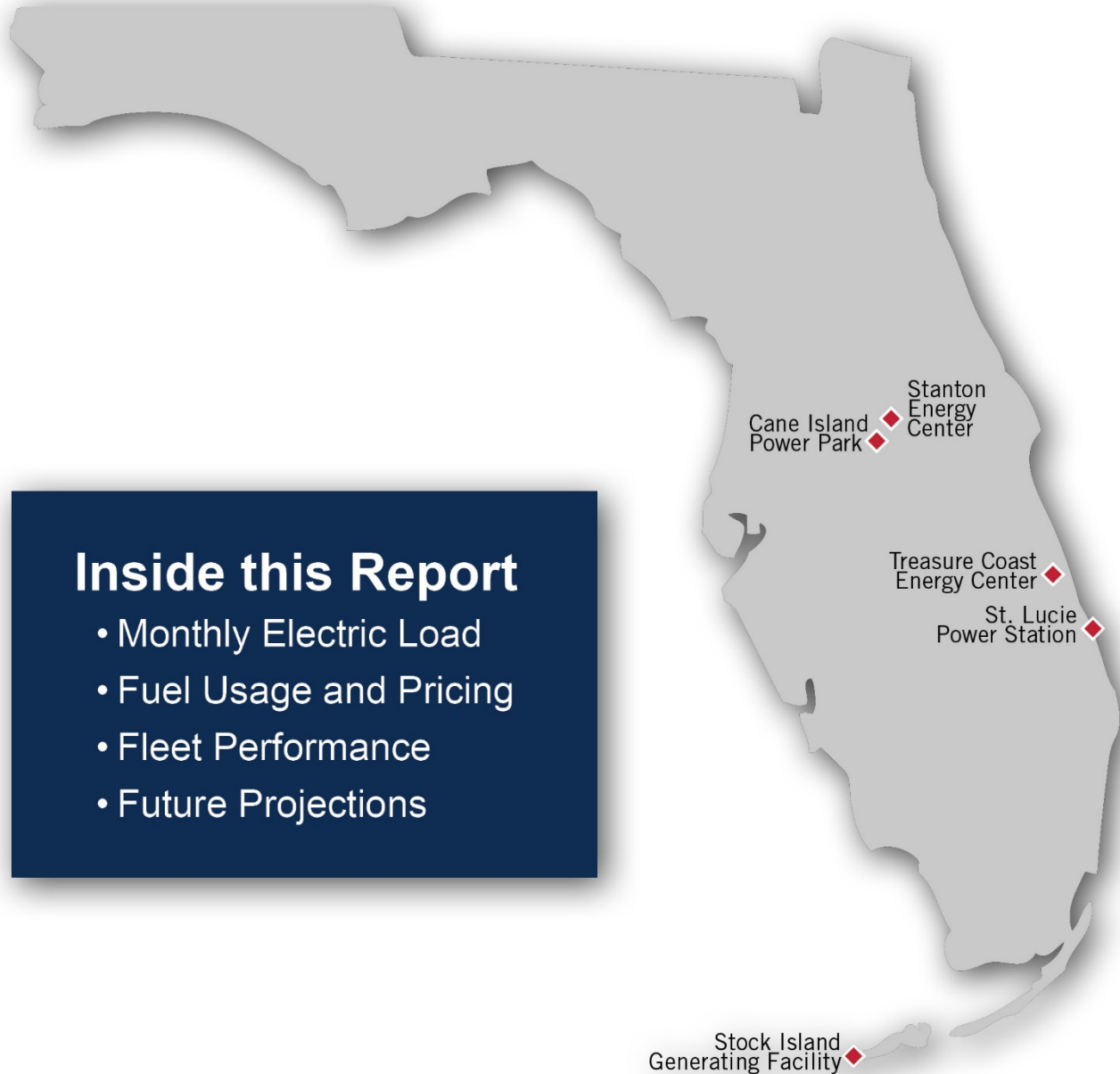


# 3 Phase Times



## Inside this Report

- Monthly Electric Load
- Fuel Usage and Pricing
- Fleet Performance
- Future Projections

FMPA Power Resources  
Operations Performance Report  
August 2019



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## **About this Report**

This monthly report provides information about the All-Requirements Project's (ARP) system peak, hourly loads, resource fuel mix, natural gas usage, natural gas pricing and more performance information. For analysis purposes, results are a comparison of the actual and the budgeted data.

Questions about this report may be directed to FMPA's Chief Operating Officer, Ken Rutter at [Ken.Rutter@fmpa.com](mailto:Ken.Rutter@fmpa.com) or 407-355-7767.

# EXECUTIVE SUMMARY

Load		Natural Gas	Fleet Performance (Base Load)	
ARP Peak MW	Load Factor	Average Daily Price per MMBtu	EAF	NCF
1,209	69%	\$2.20	100%	82%

\*Does not include fixed costs included in FMPA’s ARP demand rate.

## August Highlights

- ARP delivered Net Energy for Load was 618 GWhs, which was very close to the forecast. Average temperatures were about normal in Orlando and across most of Florida.
- The average ARP natural gas price was \$2.20 per MMBtu, which was \$0.70 (24%) below the budget price.
- The ARP’s generation mix to supply ARP load and all sales was 78.5% natural gas, 14% coal, 4.9% nuclear<sup>1</sup> and 2.6% FMPP purchases. Natural gas-fired generation (MWhs) produced 3% more output than budgeted, due to off system and pool sales.
- The ARP sold 6% of its generation to the FMPP whereas the budget forecast 5%.
- The ARP’s base load units FYTD EAF is 94.8%. Stanton A tripped due to a position fault switch. Stanton 1 was de-rated for deaerator level control issues and was offline for boiler tube leak. Stanton 2 tripped due to auxiliary electrical power issues and was de-rated for air heater pressure issues.
- The ARP supplied 2,214 MWhs to Bartow, 7,440 MWhs to Winter Park, 29,760 MWhs to TECO and 39,432 MWhs to Reedy Creek. The non-coincident Peak (NCP) supply for Bartow was 19 MWs. The rate impact of all sales (including FMPP) was \$0.08/MWh.

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<sup>1</sup>Nuclear is an Excluded Resource; therefore, from an operations perspective in meeting the ARP total load, a portion of the energy to serve load was from nuclear. However, from a rates perspective, there is no nuclear rate determinant in the ARP.

# ELECTRIC LOAD

The average temperatures in August were about normal in Orlando and across most of the state. ARP delivered Net Energy for Load was very close to the forecast.

The All-Requirements Project (ARP) peak load was 1,209 MW, which was 3% below the budget forecast. The ARP coincident peak occurred on August 26th.

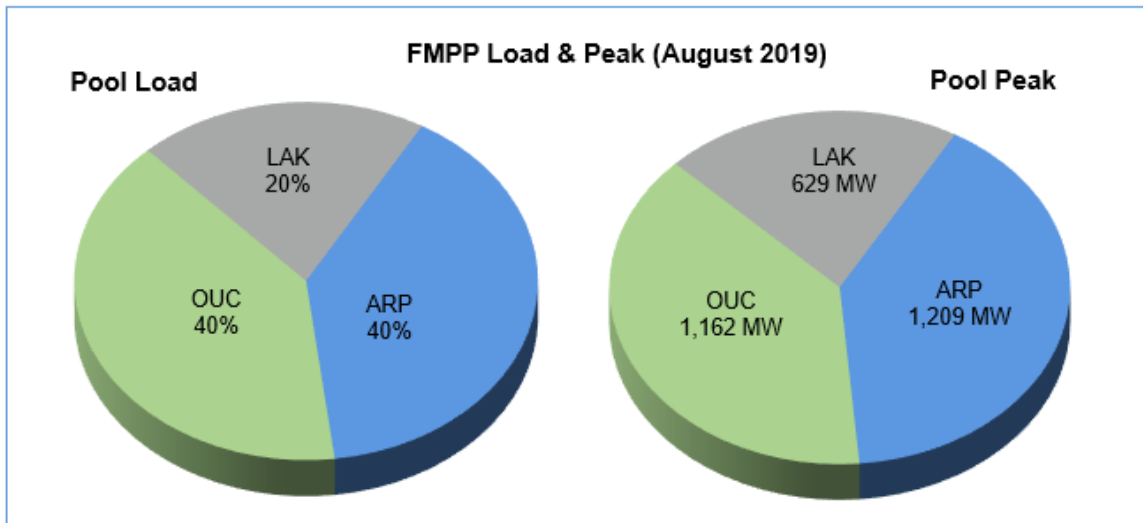
Table 1: ARP Actual and Budget Load

	Budget	Actual	Actual
	Aug-19	Aug-19	Aug-18
ARP Load (GWhs)	617	618	618
ARP Peak (MW)	1,245	1,209	1,239
Load Factor	67%	69%	67%

## Florida Municipal Power Pool Load

The chart below shows the ARP Net Energy for Load (NEL) and peak hourly load in relation to other FMPP member loads and peaks.

Chart 1: FMPP Member Loads and Peaks



Note: Network transmission losses are not included in the Pool load.

# NATURAL GAS

## Natural Gas Market Pricing

The average natural gas price for the FMPP dispatch was \$2.41 /MMBtu in August, which represents the market price for delivered gas (Table 2). The actual average natural gas price for the ARP was \$2.20 /MMBtu, which was \$0.70 or 24.1% below budget (Table 3). Natural gas burn/usage was 1% less than budgeted.

Table 2: Monthly Average Platt's Gas Daily Index Prices

	Henry Hub Index	FGT Zone 3 Index	FMPP Dispatch
Natural Gas Market Prices	\$2.17	\$2.23	\$2.41

## Natural Gas Usage and Prices

Natural gas usage is the gas burned at Treasure Coast, Cane Island Units 1 – 4, Oleander 5 and FMPP's share of the Indian River CTs. The natural gas is delivered by FGU and reported by FGU.

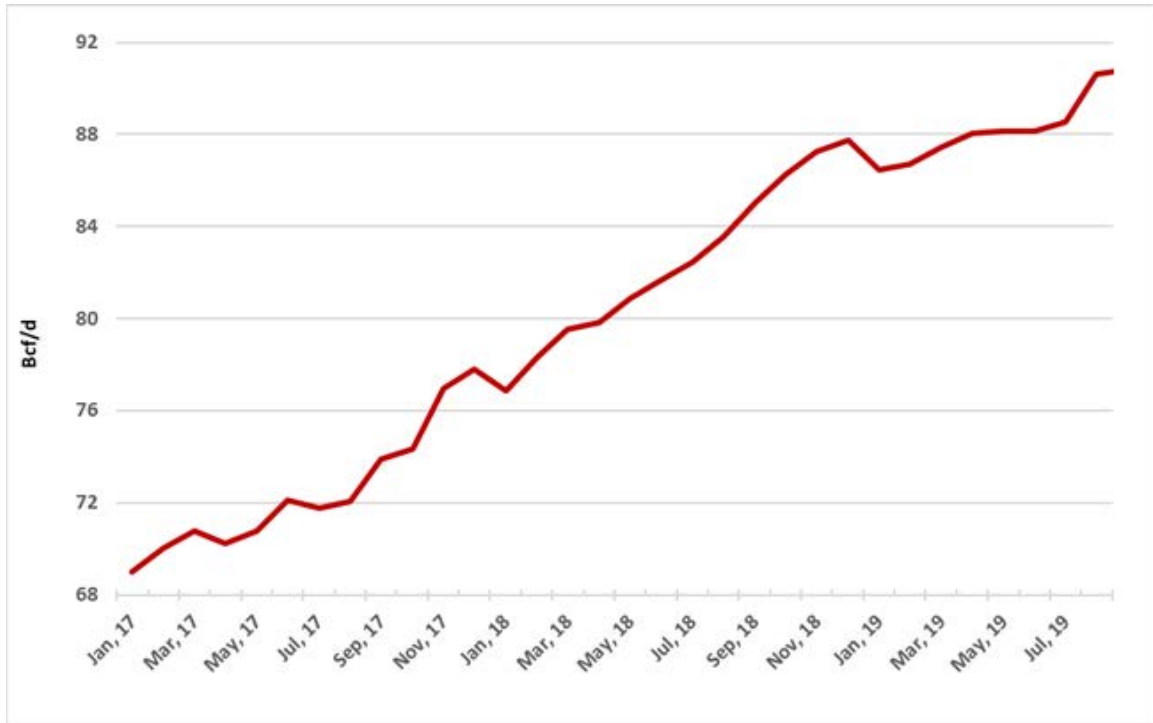
Table 3: Natural Gas Price and Usage in August

	Budget August 2019	Actual August 2019	Actual August 2018
Natural Gas Cost (\$/MMBTU)	\$2.90	\$2.20	\$2.97
Natural Gas usage (MMBTU)	4,052,116	4,017,319	3,806,916

## Natural Gas production average

The following chart shows natural gas production in the U.S. over the past several years through August 2019. The total US natural gas production has increased significantly since the middle of 2017, with some levelling off over the past few months. This has been offsetting below average gas storage levels and had helped stabilize pricing. Based on the current forward NYMEX curve, prices are expected to remain below \$3.00/MMBtu through the fall outage season and top out at \$3.50/MMBtu during the coming winter 2019/20 due to impending LNG exports. FGU is projecting monthly average delivered Natural Gas pricing of around \$2.84 /MMBtu for the next three months.

Chart 2: Natural Gas Production Average



Source: U.S. Energy Information Administration (EIA)

## Natural Gas Pipeline Alerts

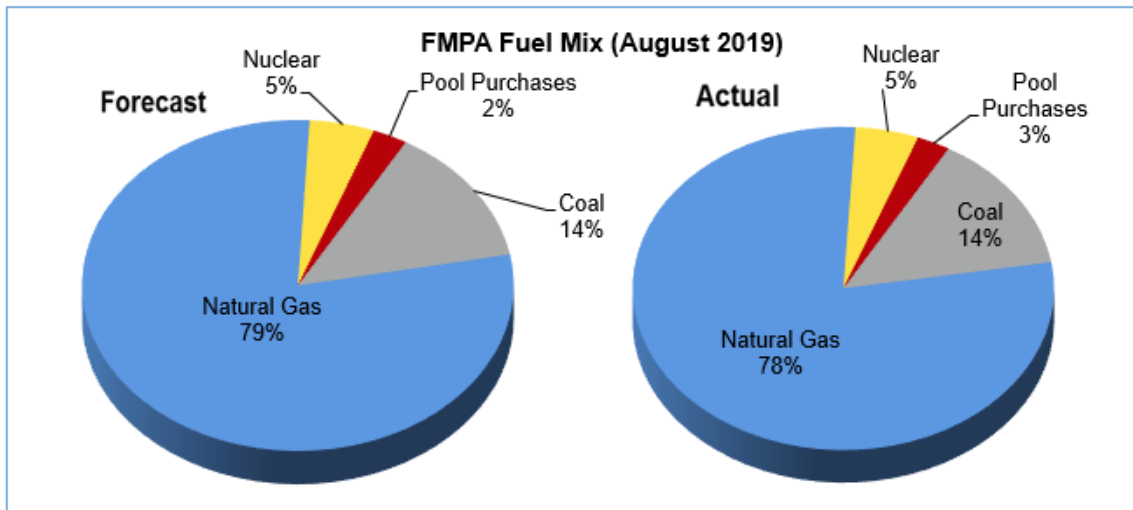
There was one 25% overage alert on the Florida Gas Transmission (FGT) pipeline in August. There were none on the Gulfstream pipeline. This means there was a restriction or constraint on the flow of natural gas to generation facilities. Pipeline alerts typically result from high gas demand caused by hot or cold weather in Florida and usually coincide with higher gas prices.

# FLEET DISPATCH AND POOL OPERATIONS

## Fuel Mix

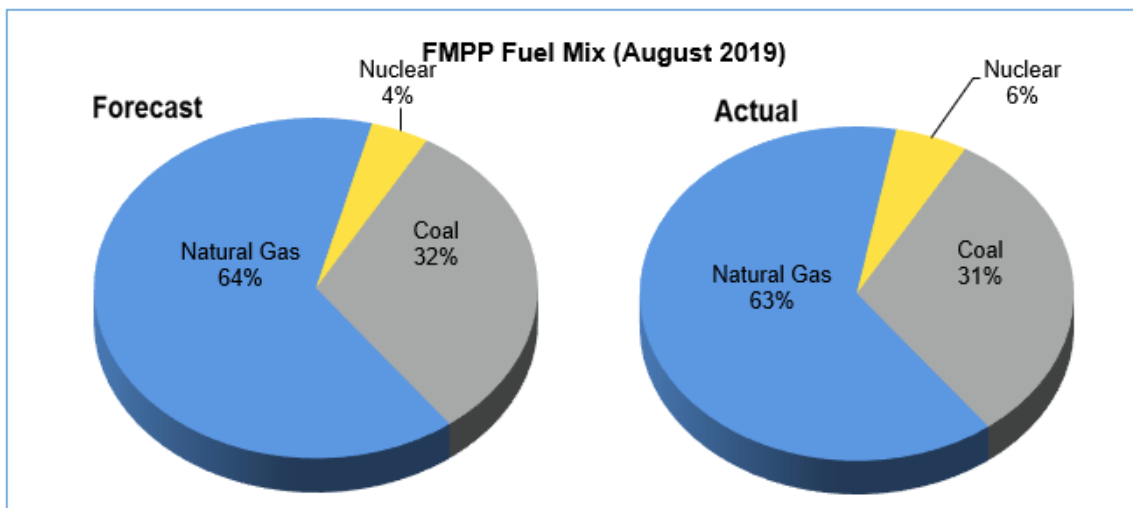
The ARP's natural gas-fired generation (MWhs) was 3% more than budgeted due to warmer weather and increased external sales. The budget forecast sales of 5% of the ARP's generation to the FMPP; the actual sales were 6%. The Pool generated 5% more from coal-fired units than budgeted.

Chart 3: FMPA Fuel Mix and Purchases for August 2019



NOTE: FMPA's fuel mix represents ARP generation and purchases to serve native load, losses, obligations and sales to the FMPP. Forecasted pool purchases are based on the 4-month forecast prepared by FMPA.

Chart 4: FMPP Fuel Mix for August 2019 (excludes purchases)



# POWER GENERATION FLEET PERFORMANCE

## FMPA Fleet Performance

Stanton A tripped due to a position fault switch. Stanton 1 was de-rated for deaerator level control issues and was offline for boiler tube leak. Stanton 2 tripped due to auxiliary electrical power issues and de-rated for air heater pressure issues.

Table 4. FMPA ARP Generating Fleet Performance – August 2019

Unit	Capacity* (MW)	Heat Rate (Btu/kWh)	Equivalent Availability Factor	Capacity Factor	Notes
Treasure Coast	300	7,311	100.0%	80.3%	
Cane Island Unit 4	300	7,356	100.0%	83.4%	
Cane Island Unit 3	240	7,259	100.0%	83.0%	
Cane Island Unit 2	109	8,080	100.0%	43.2%	
Stanton A	122	7,287	99.9%	55.0%	Trip
Stanton 1	112	11,175	87.4%	59.0%	De-rate
Stanton 2	102	9,514	97.1%	76.2%	Trip/De-rate
St. Lucie	48	10,250	100.0%	100.0%	
Peaking Units**	386	14,422	99.2%	0.5%	Outage

\*Capacity is Net Summer Capacity from the FMPA 10 Year Site Plan. \*\*Peaking Units include Cane 1, FMPA’s share of Indian River CTs, Keys generation and Oleander 5.

Chart 5: Equivalent Availability Factor – FY 2019 YTD

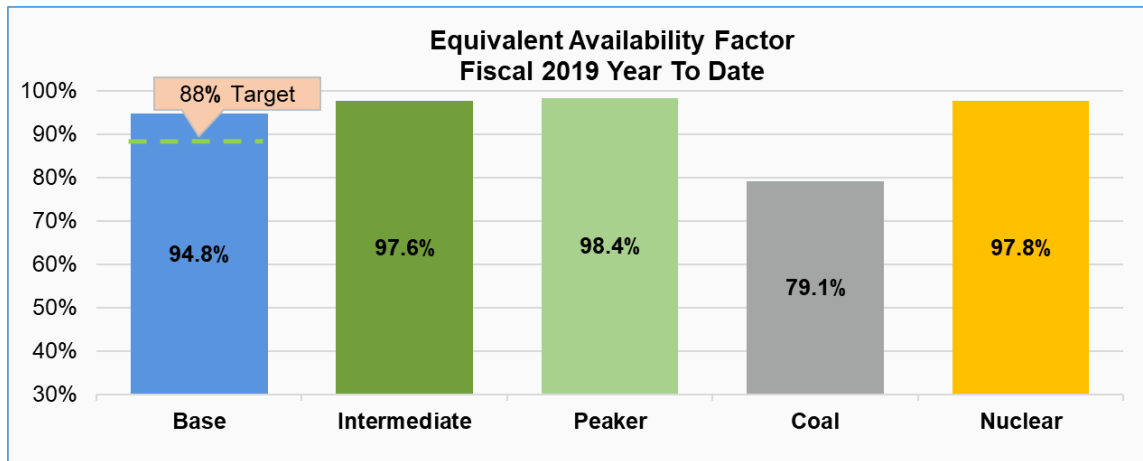
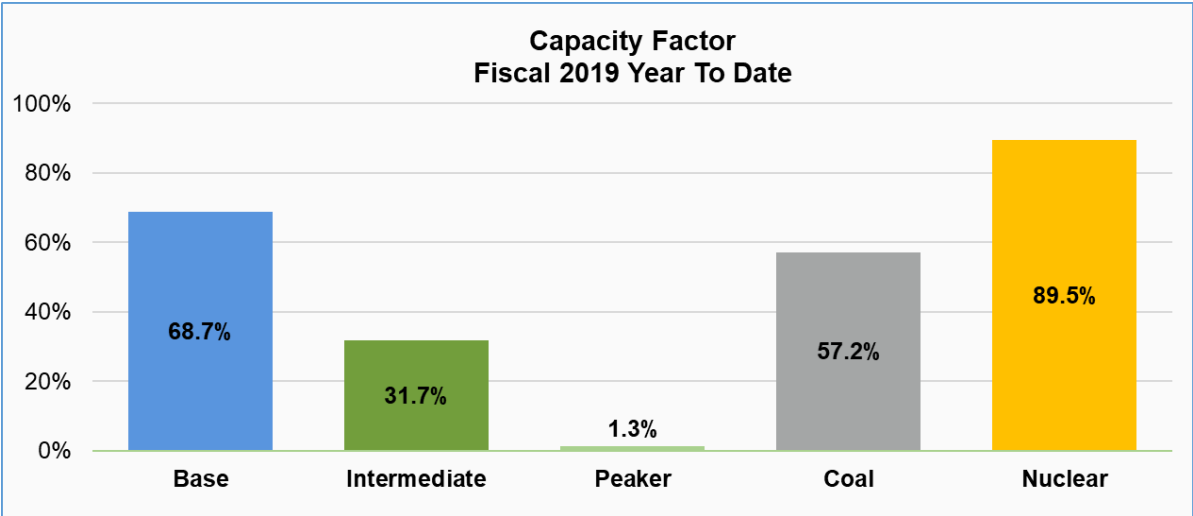




Chart 6: Capacity Factor – FY 2019 YTD



# MONTHLY WEATHER

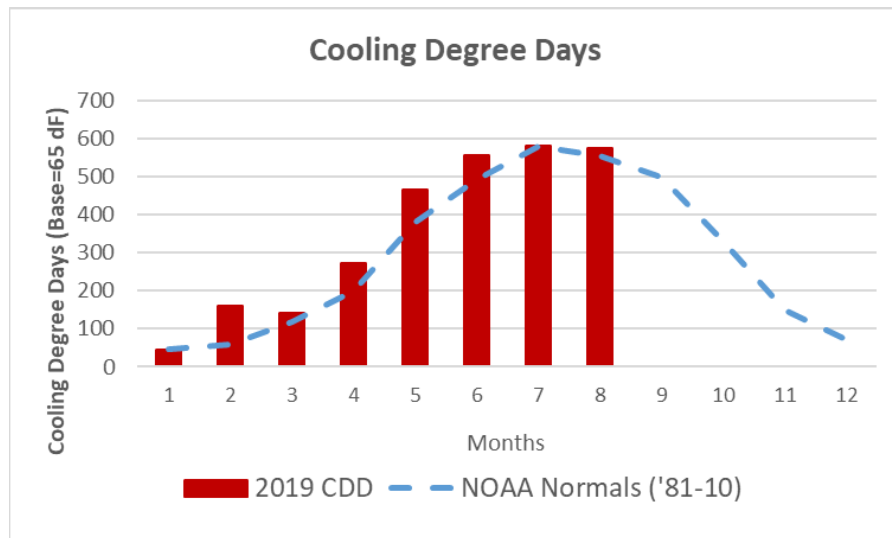
The average temperatures in August were about normal in Orlando (Table 5). Rainfall across most of the state was mostly above normal. It was slightly above normal in the Orlando area. The cooling degree days were slightly above normal in Orlando (Chart 7).

Table 5: Temperatures in Central Florida

Month	Average Temperature	Avg. High	Avg. Low
August-19	83.2	91.1	75.2
August-18	82.8	91.3	74.4
Historical Average*	82.8	91.6	74.1

\*Historical Average (30 years) Normal data from the National Oceanic and Atmospheric Administration (NOAA) monthly climate report for Orlando.

Chart 7: Cooling Degree Days in the Orlando Area (MCO)



Source: National Weather Service (NWS)

# PROJECTIONS FOR NEXT TWO MONTHS

## Weather Forecast

Temperatures in Florida are expected to be above normal in September and October. ARP natural gas usage is expected to be higher than the annual ARP budget projections due to off system sales.

Probability of Deviation from normal scale (%)

Chart 8: Weather Forecast – September 2019

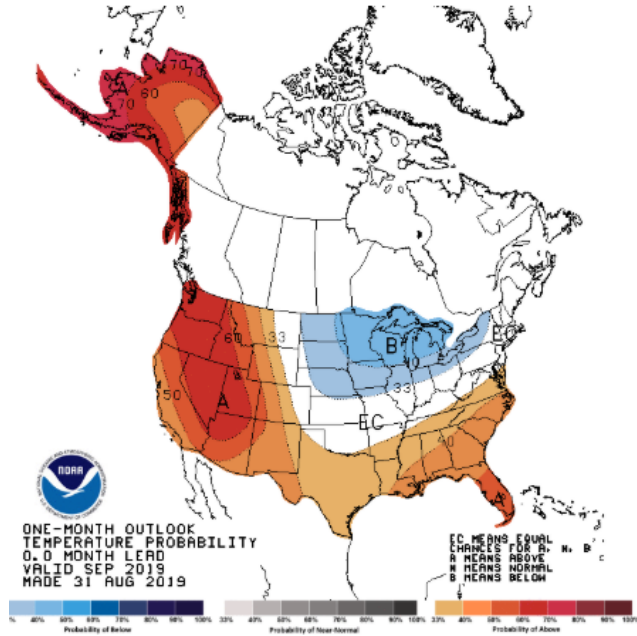
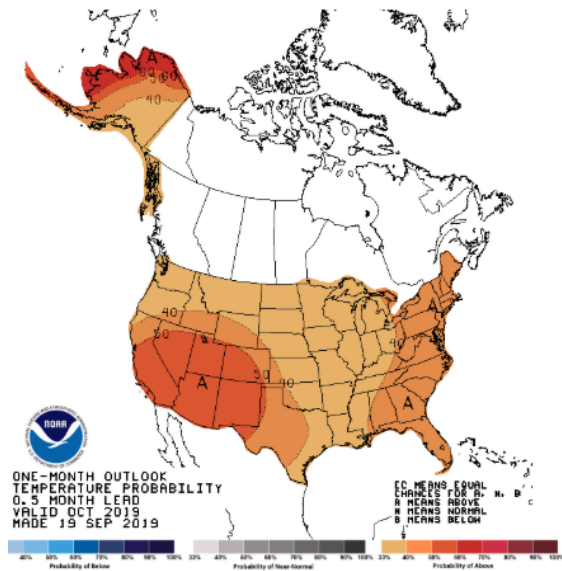


Chart 9: Weather Forecast – October 2019



Source: National Centers for Environmental Prediction (NCEP)

## Load Projections

All load projections are based on the FY 2019 ARP budget load forecast.

Table 6. Load Projections

	September		October	
	Peak (MW)	Load (MWhs)	Peak (MW)	Load (MWhs)
FMPA	1,142	548,247	1,066	495,775
FMP	3,166	1,585,474	2,991	1,527,255

## Natural Gas Usage Projections

Natural gas usage and pricing projections are shown in Table 7. We are expecting the actual natural gas prices to be lower than the ARP budget forecast.

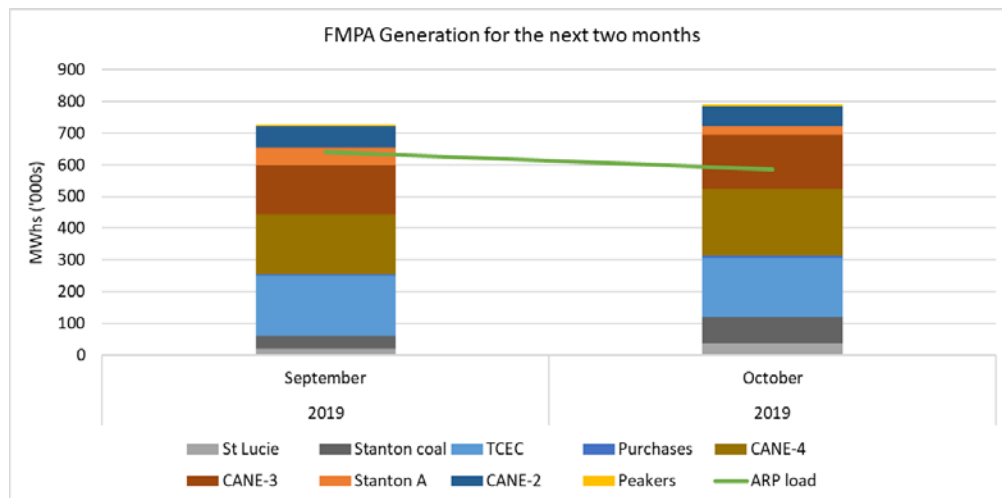
Table 7. Natural Gas Uses & Prices Projections

Projected Florida City Gate Natural Gas Prices and FMPA Volumes		
	September	October
<b>\$/MMBTU (latest projection)</b>	\$2.60	\$2.87
<b>\$/MMBTU (budget projection)</b>	\$3.31	\$3.22
<b>MMBTUs required (latest projection)</b>	4,937,259	4,991,418
<b>MMBTUs required (budget projection)</b>	3,876,441	3,710,453

Note: Natural gas requirement includes gas burned in FMPA shared units, including coal units.

## Fleet Dispatch Projections (Based on current fuel price projections)

Chart 10: FMPA ARP Fleet Dispatch Projections



## FMPP Generator Planned Outages

Table 8. FMPP Scheduled Generator Outages (September – October 2019)

Generating Unit	Unavailable Capacity	Start Date	End Date
*McIntosh 2 (LAK)	112 MW	04/26/2017	12/31/2019
Larsen 2 (LAK)	14 MWs	1/1/2019	12/31/2019
Stanton 2	453 MWs	9/11/2019	9/28/2019
Indian River CT A	31 MWs	9/30/2019	10/6/2019
Stanton B (OUC)	300 MWs	9/30/2019	10/15/2019
Indian River CT B	31 MWs	10/7/2019	10/13/2019
St Lucie 1	65 MWs	10/14/2019	11/12/2019
Larsen 8 (LAK)	105 MWs	10/16/2019	12/15/2019
McIntosh 5 (LAK)	338 MWs	10/24/2019	10/31/2019

\*McIntosh 2 most likely will not return

## GLOSSARY AND ACRONYMS

**Capacity Factor** – Measures asset utilization. Calculated by taking the average hourly output over a time period and dividing it by the capacity of the unit during that time period. A capacity factor in the 80% range indicates a base load unit, less than 10% range a peaking unit, and in between would be indicative of an intermediate unit.

**CHP** - The Clearinghouse Price (CHP50) is a Member agreed to methodology to price energy that FMPP Members buy and sell to each other. The hourly CHP price is the weighted average of the incremental energy cost of the Pool's highest cost resource/s online subject to exclusions as agreed by the FMPP, that are able to ramp down by 50 MWs in a given hour. CHP 50 may or may not be comprised of more than one unit or transaction.

**Cooling degree days** - Degree-days are derived by comparing the average daily temperature and a base temperature, typically 65 degrees Fahrenheit, the base relied on herein. To the extent the average daily temperature exceeds the base, the difference between that average temperature and the base is the number of cooling degree days for the day in question.

**EIA** – U.S. Energy Information Administration

**Equivalent Availability Factor (EAF):** Measures reliability. Calculated by the amount of time that it is able to produce electricity over a certain period, divided by the amount of the time in the period. As a frame of reference, industry average EAF for combined cycle units has been about 83% on an annual basis.

**FGU** – Florida Gas Utility is a non-profit joint action agency that provides natural gas management services to its municipal utility members.

**FMPP** – Florida Municipal Power Pool, or the Pool for short. FMPP members are FMPA, OUC and Lakeland.

**GWh** – Gigawatt-hour; one billion watt hours.

**Heating degree days** – Degree-days are derived by comparing the average daily temperature and a base temperature, typically 65 degrees Fahrenheit, the base relied on herein. To the extent the average daily temperature is below the base, the difference between that average temperature and the base is the number of heating degree days for the day in question.

**Heat Rate** – Measures the efficiency of the generator. The lower the heat rate, the better. For comparison, a typical heat rate for an automobile is 14,000 BTUs/kWh. FMPA's base load combined cycle fleet is twice as efficient with a heat rate of approximately 7,000 BTUs/KWh.

**Load Factor** – Measures how variable the load is. Calculated by taking the average hourly energy use over a time period (in this report monthly) and dividing it by the peak hourly usage over that time period.

**MMBTU** – One million British Thermal Units, a measure of energy in the form of heat.

**MW** – Megawatt; one million watts, a measure of electrical power, 1MW = 1,341 horsepower.

**MWh** – Megawatt-hour; one million watt hours, a measure of electrical energy, a typical household uses between 1 and 2 MWhs per month.

**TCEC** – Treasure Coast Energy Center