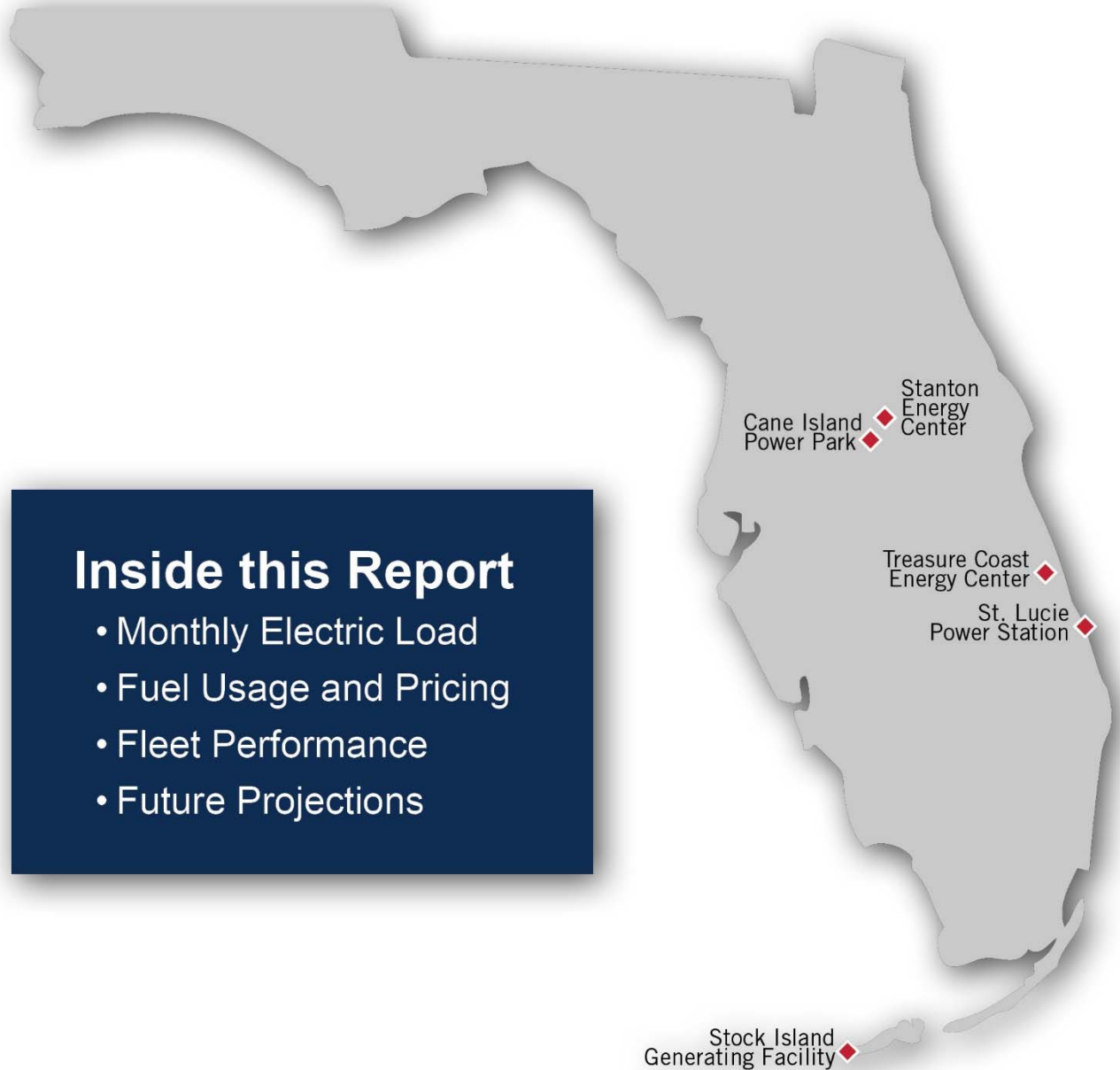


3 Phase Times



Inside this Report

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

FMPA Power Resources
Operations Performance Report
May 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 System Operations Manager, Joe McKinney at joe.mckinney@fmpa.com or 407-355-7767.

EXECUTIVE SUMMARY

Load		Natural Gas	Fleet Dispatch	Fleet Performance (Base Load)	
ARP Peak MW	Load Factor	Average Daily Price per MMBtu	Average Energy Costs per MWh*	EAF	NCF
1,210	63%	\$2.63	\$23.94	100%	80%

*Does not include fixed costs included in FMPPA's ARP demand rate.

May Highlights

- ARP delivered Net Energy for Load was 570 GWhs, which was 14% above the forecast due to warmer weather. Average temperatures were above normal in Orlando and across most of Florida, which in a spring month increases cooling load.
- The average ARP natural gas price was \$2.63 per MMBtu, which was \$0.07 (2.6%) above the budget price. The average energy cost of ARP generation excluding nuclear and purchases was \$23.94 /MWh and the average heat rate of the ARP's generating units (gas, coal and oil) was 7,518 Btu/kWh.
- The ARP's generation mix to supply ARP load and all sales was 80.8% natural gas, 13.9% coal, 4.5% nuclear¹ and 0.9% FMPP purchases. Natural gas-fired generation (MWhs) produced 29% more output than budgeted, due to the TECO sale, pool sales and the St Lucie 1 forced outage.
- The ARP gas fleet heat rate (7,311 Btu/kWh) and the ARP energy generation cost (2.82 cents/kWh or \$28.24/MWh) are among the lowest in the state for the calendar year to date through April (one-month data lag).
- The ARP sold 14% of its generation to the FMPP whereas the budget forecast 11%. This was due to higher loads. McIntosh 3 was offline most of the month. The Pool sales helped the ARP to offset production costs by \$0.40 / MWh.
- The ARP's base load units FYTD EAF is 92.8%. Stanton A was on a planned outage for 10 days. St Lucie 1 was offline and the cause TBD.
- The ARP supplied 1,886 MWhs to Bartow, 7,424 MWhs to Winter Park, and 29,760 MWhs to TECO. The non-coincident Peak (NCP) supply for Bartow was 18 MWs.

¹Nuclear 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 May were above normal in Orlando and across most of the state. ARP delivered Net Energy for Load was approximately 14% above the forecast due to the warmer spring temperatures.

The All-Requirements Project (ARP) hourly peak load was 1,210 MW, which was 10.1% above the budget forecast. The ARP coincident peak occurred on May 28th, and was a cooling (afternoon) peak.

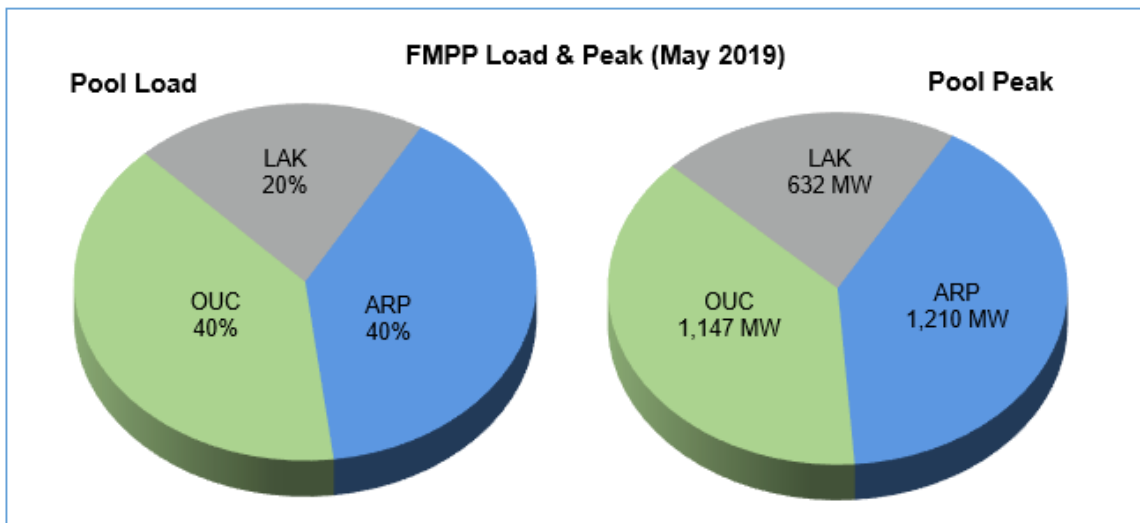
Table 1: ARP Actual and Budget Load

	Budget	Actual	Actual
	May-19	May-19	May-18
ARP Load (GWhs)	514	570	496
ARP Peak (MW)	1,099	1,210	1,034
Load Factor	63%	63%	64%

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 \$2.94 /MMBtu in May, which represents the market price for delivered gas (Table 2). The actual average natural gas price for the ARP was \$2.63 /MMBtu, which was \$0.07 or 2.6% above budget (Table 3). Natural gas burn/usage was 22% more than budgeted due to higher loads, increased sales and the St Lucie 1 forced outage.

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

	Henry Hub	FGT Zone 3	FMPP Dispatch
Natural Gas Market Prices	\$2.59	\$2.60	\$2.94

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 May

	Budget May 2019	Actual May 2019	Actual May 2018
Natural Gas Cost (\$/MMBTU)	\$2.56	\$2.63	\$2.86
Natural Gas usage (MMBTU)	3,310,418	4,023,732	2,893,071

Table 4: ARP Natural Gas Price Comparison CY 2019 through End of April

CY 2019 through April	FMPA	FPL	DUKE	TECO
Natural Gas Cost (\$)	\$50,035,100	\$848,056,782	\$342,806,037	\$157,820,244
Generation from NG(MWH)	1,771,649	25,924,211	10,173,266	5,146,610
Gas Burned (MMBtu)	12,951,685	186,680,088	75,347,842	41,814,685
Gas cost (\$/MCF)	\$3.94	\$4.63	\$4.63	\$3.85
Gas cost (\$/MMBtu)	\$3.86	\$4.54	\$4.55	\$3.77
Heat Rate (Btu/kWh)	7,311	7,201	7,406	8,125
Generated Cost(cents/kWh)	2.82	3.27	3.37	3.07
Savings compared to Others		\$7,920,721.88	\$9,663,719.91	\$4,292,326.90

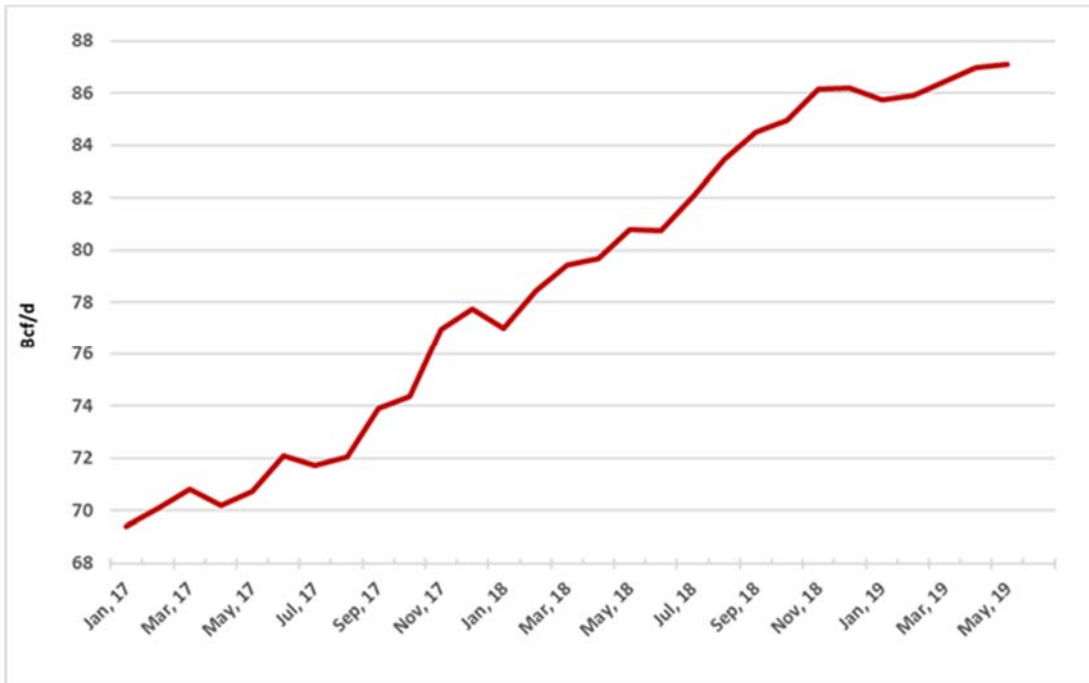
Source: IOUs data from Public Service Commission (PSC) filing

- FMPA's ARP gas fleet heat rate of 7,311 Btu/kWh is among the lowest in the state for the calendar year to date through April (one-month data lag).
- The ARP's energy cost (including pipeline capacity costs) of 2.82 cents/kWh is the lowest in the state for the calendar year to date through April.
- FMPA's Natural gas cost includes the ARP gas cost and the gas cost of OUC assets as allocated to the ARP.

Natural Gas production average

The following chart shows natural gas production in the U.S. over the past several years through May 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 \$2.85/MMBtu through the summer and top out at \$3.10/MMBtu during the coming winter 2019/20 due to impending LNG exports. FGU is projecting monthly average delivered Natural Gas pricing of around \$2.88 /MMBtu for the next three months.

Chart 2: Natural Gas Production Average



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

Natural Gas Pipeline Alerts

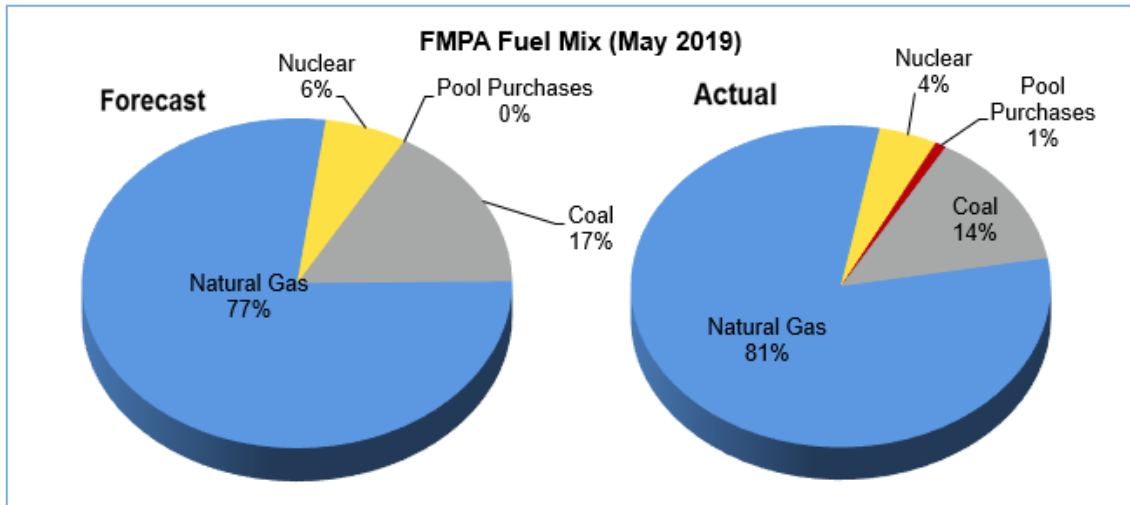
There were three alerts on the Florida Gas Transmission (FGT) pipeline on three of the last four days in May. There were none on the Gulfstream pipeline. This means there were some restrictions or constraints on the flow of natural gas to generation facilities. Pipeline alerts typically result from high gas demand caused by hot or cold weather in Florida and usually coincide with higher gas prices.

FLEET DISPATCH AND POOL OPERATIONS

Fuel Mix

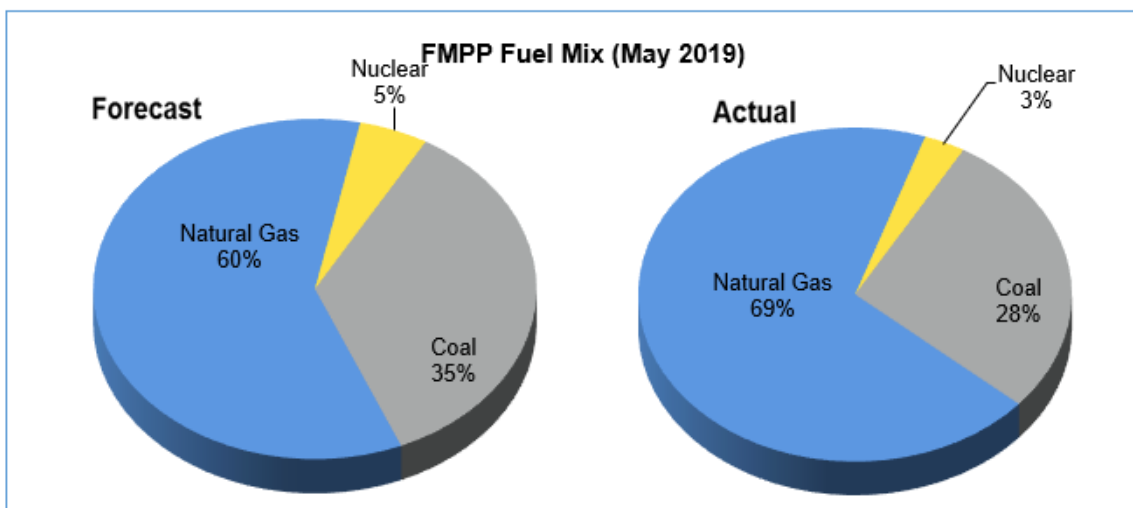
The ARP's natural gas-fired generation (MWh) was 29% more than budgeted due to reduced coal generation, increased sales and the St Lucie 1 forced outage. The budget forecast sales of 11% of the ARP's generation to the FMPP; the actual sales were 14% which provided a production cost offset to the ARP of about \$0.40 /MWh. The Pool generated 14% less from coal-fired units than budgeted.

Chart 3: FMPP Fuel Mix and Purchases for May 2019



NOTE: FMPP'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 FMPP.

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



FMPA Fleet Dispatch and Costs

Gas Fuel Burned in all FMPA ARP gas fueled resources is based on FMPP CHP data. Coal Fuel Burned represents the total fuel burned in operating Stanton 1 and 2 including the use of natural gas.

Table 5. ARP Fleet Dispatch Costs per MWh in May 2019

Fleet Operations	Fuel Burned (MMBtu)	Power Produced (MWh)	Heat Rate (Btu/kWh)	Fuel Cost (\$/MWh)	Variable O&M Cost (\$/MWh)	Variable Gen Cost (\$/MWh)
Gas	4,134,288	584,284	7,076	\$20.81	\$2.50	\$23.31
Coal	1,032,525	102,962	10,028	\$26.07	\$0.50	\$26.57
Oil	106	7	15,143	\$261.06	\$5.70	\$266.76
Nuclear	--	18,492	--	--	--	\$10.00
Purchases	--	6,195	--	--	--	\$54.14
Total/Ave Gen	5,166,919	711,940	--	--	--	\$23.94

Power Pool Transactions

Net Generation to ARP includes all FMPA ARP fleet generation, plus pool purchases minus pool sales. Net generation, plus nuclear resources comprises all generation and resources necessary to supply ARP load, losses, and the Bartow, Winter Park and TECO obligations.

Table 6. ARP Pool Transactions for May 2019

Pool Transactions	Cost	Volume (MWh)	Average Price (\$/MWh)	Offset to ARP Costs	Offset to ARP Cost (\$/MWh)
FMPA Fleet Generation	\$16,450,094	687,253	\$23.94	--	--
Sales to FMPP*	\$2,225,392	94,562	\$23.53	\$240,516	--
Purchases from FMPP	\$335,415	6,195	\$54.14	--	--
Net Generation to ARP	\$14,560,116	598,886	\$24.31	\$240,516	\$0.40

*Sales to FMPP include sales to Pool participants and third parties - Revenues are shown in red.

POWER GENERATION FLEET PERFORMANCE

FMPA Fleet Performance

Cane Island 1 was forced out for several hours due to a failure on the cables feeding an Auxiliary Power System transformer. Stanton A had a planned outage. Stanton 1 was de-rated for a deaerator level control valve issue and a main boiler feedwater pump oil leak. The unit tripped due to a DC power relay failure. St. Lucie 1 was unavailable due to a forced outage and the cause is to be determined.

Table 7. FMPA ARP Generating Fleet Performance – May 2019

Unit	Capacity* (MW)	Heat Rate (Btu/kWh)	Equivalent Availability Factor	Capacity Factor	Notes
Treasure Coast	300	7,220	100.0%	78.2%	
Cane Island Unit 4	300	7,449	100.0%	79.0%	
Cane Island Unit 3	240	7,215	100.0%	83.8%	
Cane Island Unit 2	109	8,049	100.0%	63.9%	
Stanton A	122	7,446	79.2%	46.2%	Outage
Stanton 1	112	10,454	91.4%	62.4%	De-rate
Stanton 2	102	9,514	100.0%	66.8%	
St. Lucie	48	10,250	96.8%	50.1%	Outage
Peaking Units**	386	10,583	99.6%	11.5%	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

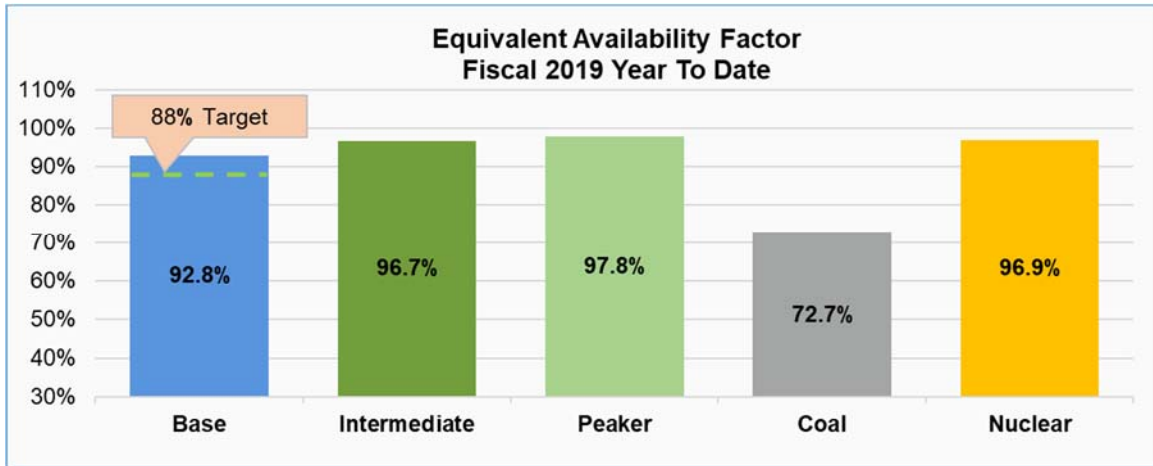
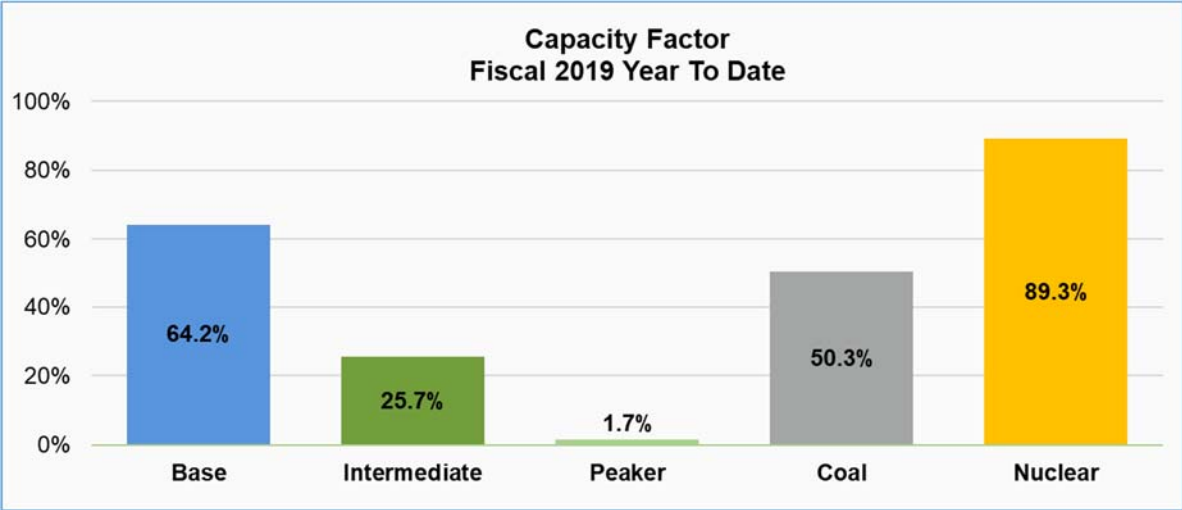


Chart 6: Capacity Factor – FY 2019 YTD



MONTHLY WEATHER

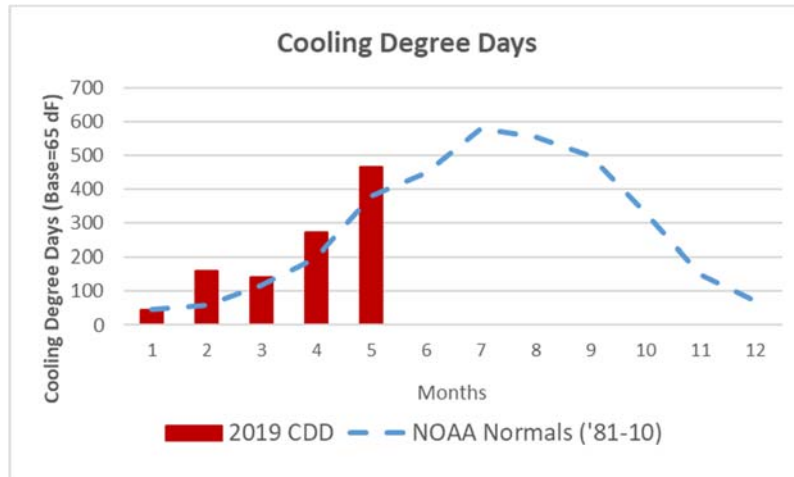
The average temperatures in May were above normal in Orlando (Table 8). Rainfall across most parts of the state was mixed. It was above normal in the Orlando area. The cooling degree days were above normal in Orlando (Chart 8). There were no heating degree days.

Table 8: Temperatures in Central Florida

Month	Average Temperature	Avg. High	Avg. Low
May-19	79.8	90	69.5
May-18	76.9	85.5	68.4
Historical Average*	77.3	88.1	66.4

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

Chart 8: 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 June and about normal in July. ARP natural gas usage is expected to be higher than the annual ARP budget projections due to off system sales.

Deviation from normal scale (°F)



Chart 9: Weather Forecast – June 2019

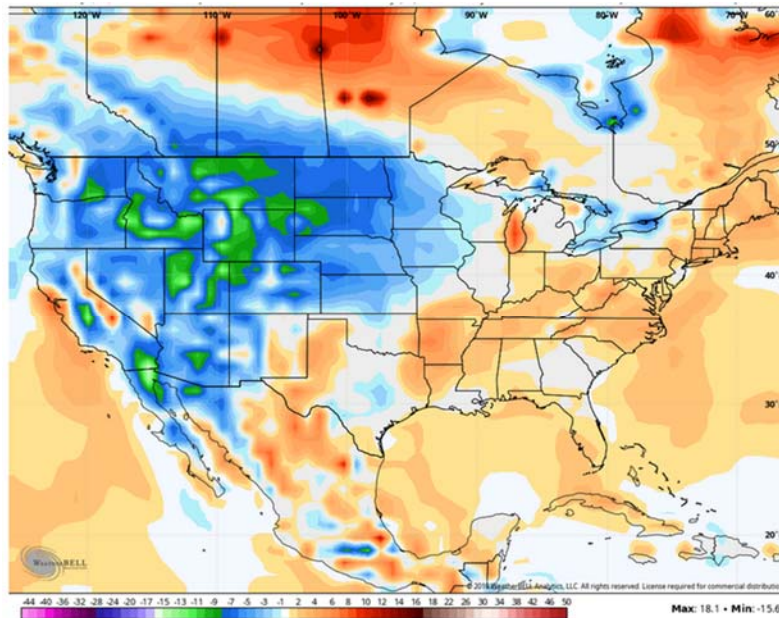
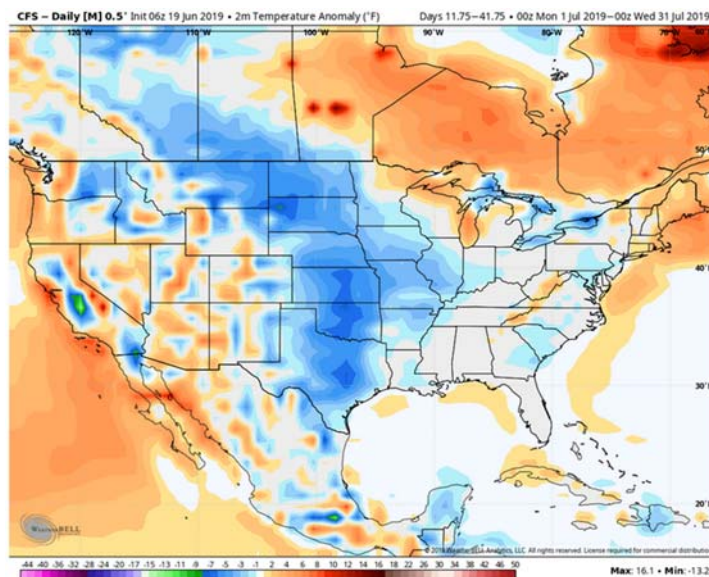


Chart 10: Weather Forecast – July 2019



Source: National Centers for Environmental Prediction (NCEP)

Load Projections

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

Table 9. Load Projections

	June		July	
	Peak (MW)	Load (MWhs)	Peak (MW)	Load (MWhs)
FMPA	1,202	565,243	1,203	607,909
FMP	3,256	1,619,598	3,388	1,730,502

Natural Gas Usage Projections

Natural gas usage and pricing projections are shown in Table 10. We are expecting the actual natural gas prices to be lower than the ARP budget forecast.

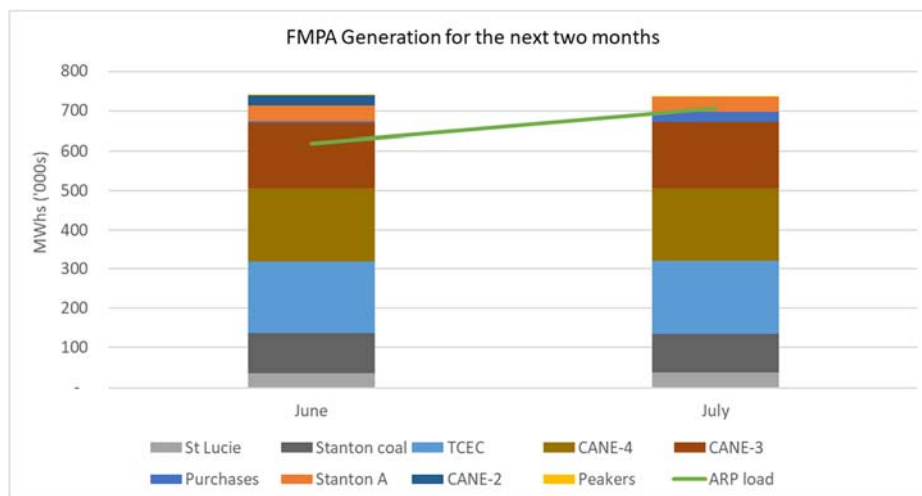
Table 10. Natural Gas Uses & Prices Projections

Projected Florida City Gate Natural Gas Prices and FMPA Volumes		
	June	July
\$/MMBTU (latest projection)	\$3.02	\$3.07
\$/MMBTU (budget projection)	\$3.25	\$3.59
MMBTUs required (latest projection)	4,294,899	4,130,434
MMBTUs required (budget projection)	3,667,978	3,914,504

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

Fleet Dispatch Projections (Based on current fuel price projections)

Chart 11: FMPA ARP Fleet Dispatch Projections



FMPP Generator Planned Outages

Table 11. FMPP Scheduled Generator Outages (June 2019 – July 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
Indian River CT D	108 MWs	5/28/2019	6/3/2019
McIntosh 5 (LAK)	338 MWs	6/1/2019	6/23/2019

*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