



2017  
AFEC  
REPORT

# AMP Fremont Energy Center

AMERICAN MUNICIPAL POWER, INC.



# AMP Fremont Energy Center



The AMP Fremont Energy Center (AFEC) is a nominal 700-MW natural gas combined cycle facility located in Fremont, Ohio. Commercial operation began in January 2012 and the facility supplies power to 86 AMP member communities as well as the Delaware Municipal Electric Corporation, Michigan Public Power Agency and the Central Virginia Electric Cooperative.

AFEC is currently staffed by 24 NAES and two AMP full-time personnel that support maintenance and operations. AFEC was awarded the NAES Zero Recordable Accidents Award for no lost-time accidents or recordable incidents.

AFEC proved a valuable resource for participating members in 2017. The plant's net generation was up from the previous year – 3,132,105 net MWh in 2017 compared to 2,683,617 net MWh in 2016 – which is reflected in an increased capacity factor – 51.73 percent compared to 45.39 percent in 2016. Additionally, plant availability was up – 87.10 percent in 2017 compared to 64.44 percent in 2016.

The long term agreement (LTA) with Power Systems Manufacturing (PSM) for major maintenance on the turbines was utilized during the fall outage to complete the scheduled combustion inspection on Combustion Turbine 1 (CT1).

2017 TOTALS	CT1	CT2	STG	Facility
Gross MW Produced	960,031	923,920	1,248,154	3,132,105
Auxiliary Load Consumption	36,828	36,592		73,420
Net Produced (MWh)	923,203	887,328	1,248,154	3,058,685
Forced Outage Rate	0.33%	0.30%	0.33%	0.32%
Utilization Factor				72.41%
Capacity Factor				51.73%
NERC Availability				87.10%
Gas Consumption (MMBTU's)				22,579,808
Average Heat Rate (MMBTU's/KW)				7,382

# Operations



AFEC staff successfully managed the operation and maintenance of the facility and maintained a high availability. The plant held two scheduled outages during the year, completing many maintenance items and capital improvements including the combustion inspection on CT1 and installation of the high-pressure heat recovery steam generator (HRSG) isolation valves.

A winter Demonstrated Maximum Net Capacity (DMNC) test was performed on Feb. 8, which met the interconnection agreement limit of 703 MW. A summer DMNC test was performed on July 19, which resulted in a corrected summer capacity of 665.4 MW.

## Maintenance

### **COMBUSTION TURBINES:**

CT1 combustion inspection was completed during the fall outage. During this inspection, PSM also completed the scheduled replacement on the Row 5 compressor diaphragms and performed an inspection on the compressor through bolts.

### **HEAT RECOVERY STEAM GENERATORS AND HIGH-ENERGY PIPING:**

HRST, Inc., an industry expert service company, performed steam drum crawl through inspections on Unit 1 and Unit 2 during the spring outage and performed the inspections during the fall outage.

### **STEAM TURBINE:**

PSM performed an inspection on the L-0 blades on the steam turbine with no findings.

# Safety

AFEC finished 2017 with 2,316 days (over six years) with no lost-time accidents or recordable incidents. Each near-miss incident was investigated and findings were shared with all personnel. To avoid reoccurrence, corrective actions were developed and implemented for each incident.

Continuing the incorporation of the NAES Safe™ program within the strong safety culture at AFEC, personnel completed nearly double the safety observations required throughout the year, completed required facility inspections and attended annually required training. Additionally, the AFEC Safety Committee met monthly to emphasize safety and other concerns, while focusing on the following NAES Safe™ core elements: employee engagement in safety, pre-work planning for safety, contractor safety management, and incident reporting and investigation.

## 2017 AFEC SAFETY LEADING INDICATORS

Indicator	Target	Completed
Safety Observations	300	626
Housekeeping Inspections	48	53
Safety Training	297	297

*Days Worked with No  
Lost Time or Recordable  
Accidents: 2,316*





# Environmental

AFEC had no notice of violations during 2017. Compliance with the AFEC Storm Water Permit (NPDES) was accomplished through appropriate storage of hazardous chemicals, prompt response to minor spills and thorough inspections to protect the environment. Requirements set forth in the Waste Water Permit were met and compliance was achieved including extensive waste water monitoring and partnering with the City of Fremont Water Reclamation Center, formerly the Fremont Water Pollution Control Center. The parameters of the AFEC Title V Air Permit were met with no excess emissions reported. All quarterly, semi-annual reports, Linearities and Relative Accuracy Test Audits were submitted accurately and on time.

## 2017 AFEC ENVIRONMENTAL FACTOR LEADING INDICATORS

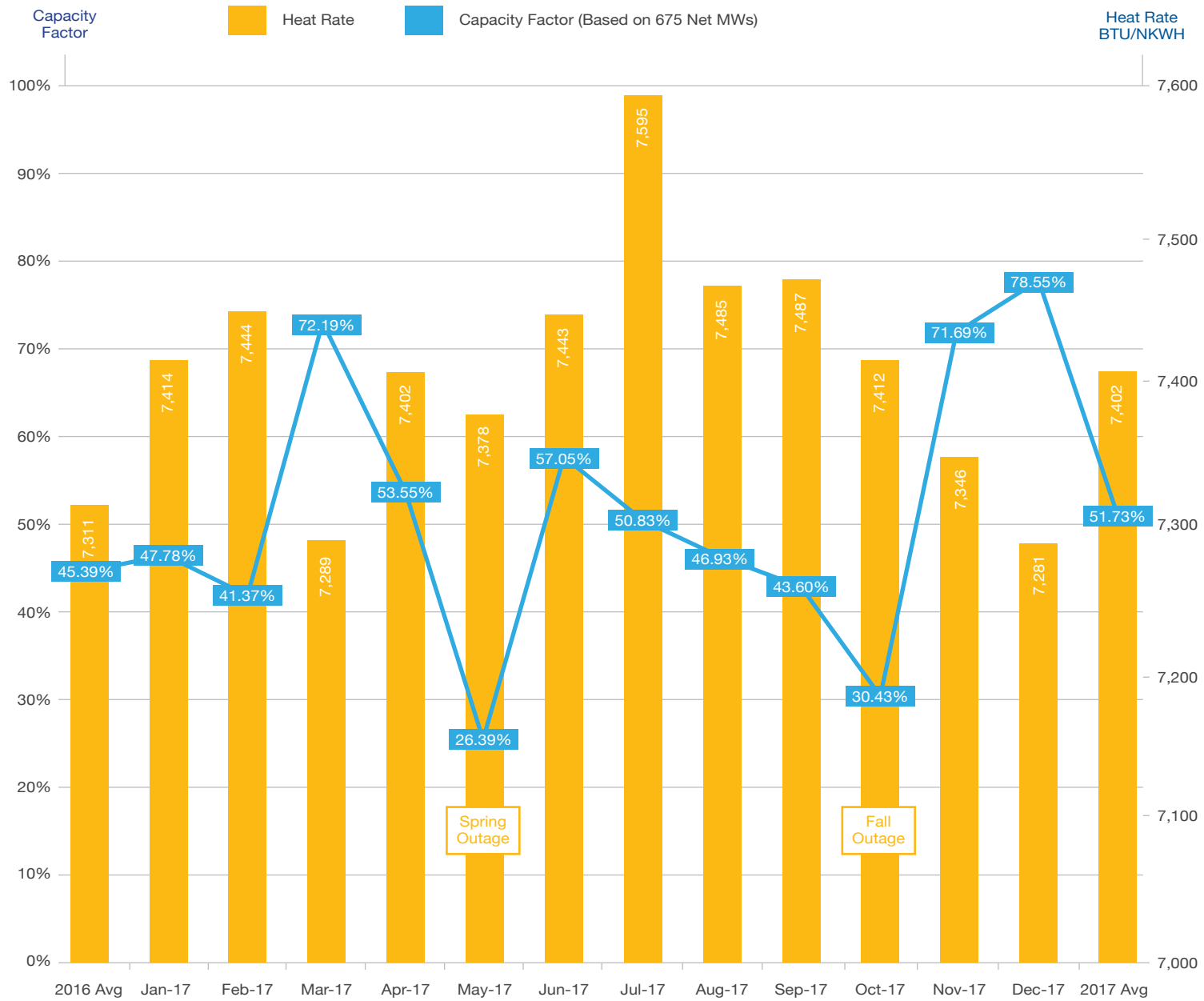
Notices of Violations: 0

NOx Hours Exceeding Limits:

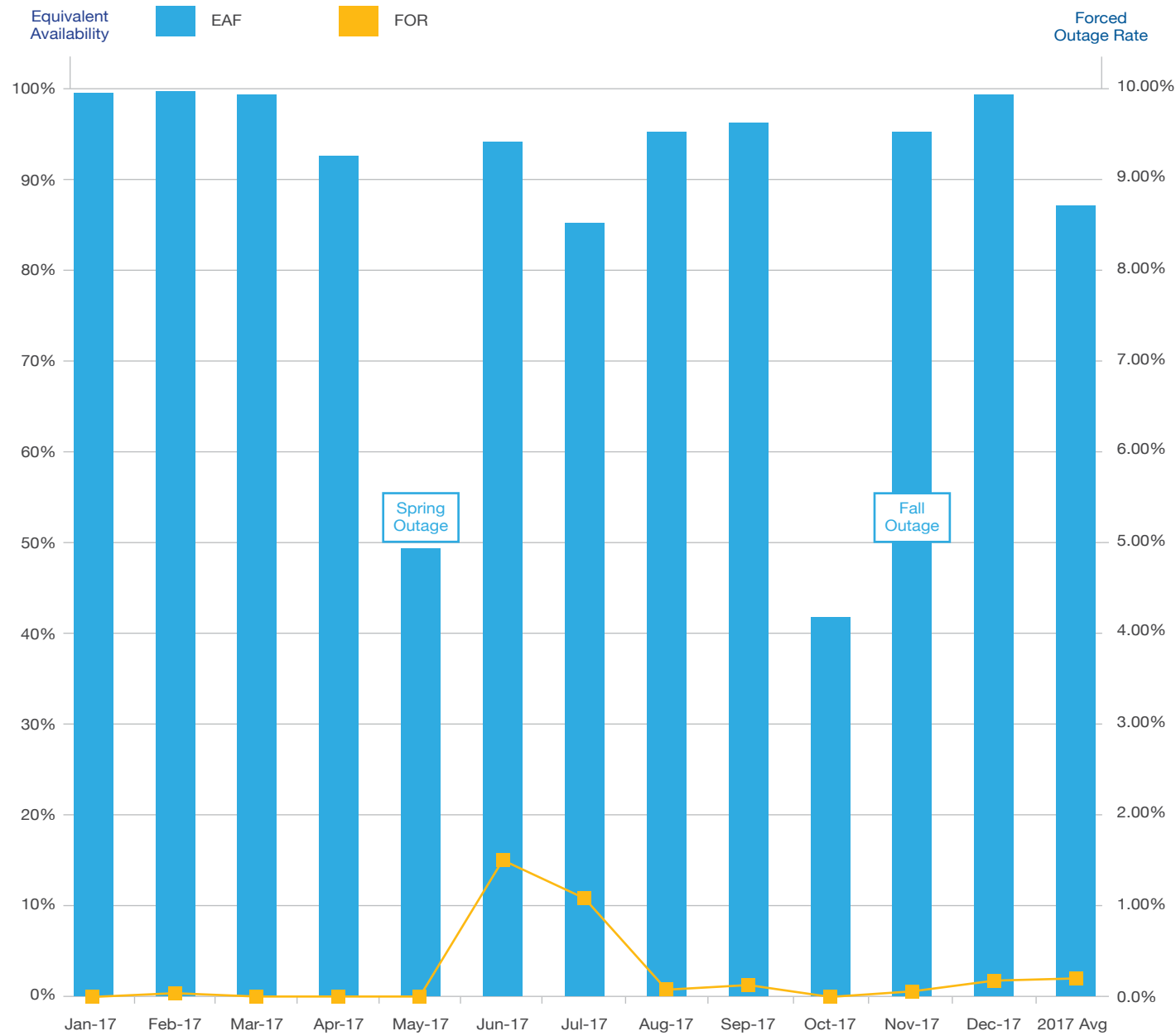


**Total:** 0/12,687 operating hours excluding SU/SD/calibration/maintenance

# AMP FREMONT ENERGY CENTER 2017 HEAT RATE AND CAPACITY FACTOR

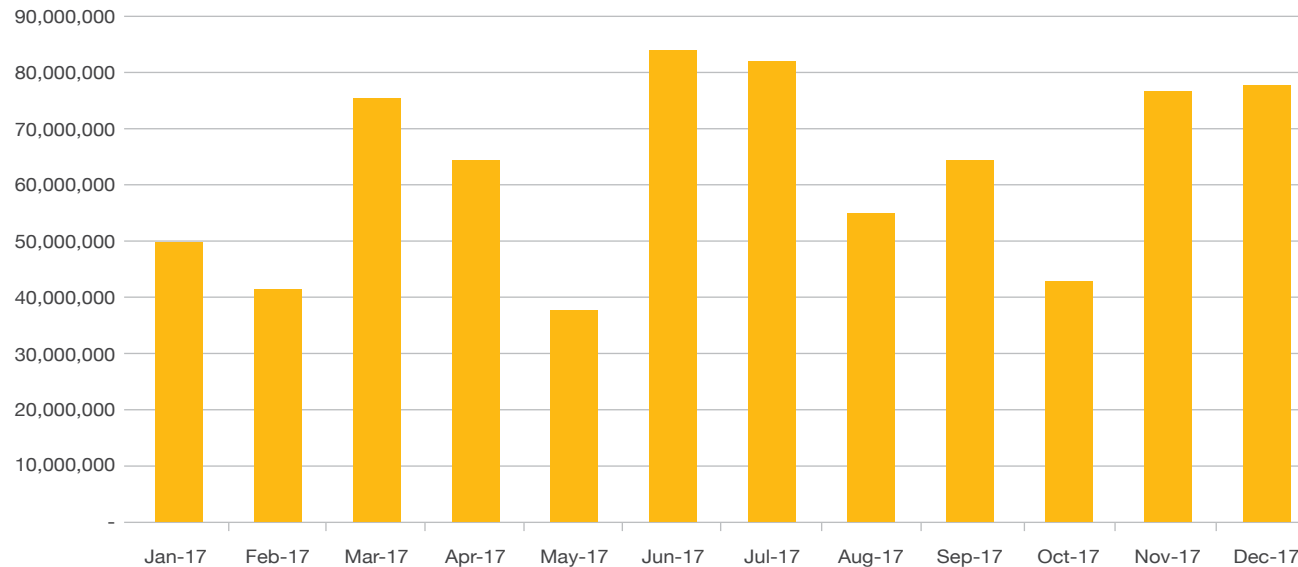


# AMP FREMONT ENERGY CENTER 2017 AVAILABILITY AND FORCED OUTAGE RATE





## AMP FREMONT ENERGY CENTER 2017 WATER USAGE



AFEC continued to provide PJM Installed Capacity (RPM) benefits to the participants this year. More than \$29 million of capacity benefits for 2017 were credited to participants on a monthly basis; proportional to each participant's contractual allocation in the AFEC project.

## Plant Improvements

- **HRSG ISOLATION** – Installed the high-pressure valves for the HRSG isolation project. The project provides complete steam isolation between the two HRSGs in order to perform maintenance on one unit while the other is in operation.
- **NEUTRALIZATION TANK CONTAINMENT** – Completed installation of the concrete containment around the neutralization tank.
- **SYSTEM 1** – Installed the Bentley Nevada System 1 vibration monitoring system, which provides plant staff with high resolution, detailed vibration information on all three turbines and all four boiler feedpumps to assist in troubleshooting operational issues and planning maintenance items.
- **COMBUSTION TURBINE UPGRADES** –
  - Bolted inlet strut modification** – Completed installation of an improvement on both combustion turbine inlets by modifying the inlet struts to reduce risk of weld cracking.
  - Exhaust rake thermocouple modification** – Upgraded the combustion turbine exhaust rake system to reduce wear and fretting that can cause thermocouple failures.
  - Inlet guide vane spring pin modification** – Installed a modification to the inlet guide vane system to eliminate the risk of the spring pin migrating out.
  - Air separator inspection modification** – PSM installed a modification to the torque tube on CT1 during the combustion inspection to be able to inspect the air separator.



American Municipal Power, Inc.  
1111 Schrock Road, Suite 100  
Columbus, Ohio 43229  
614.540.1111  
[www.amppartners.org](http://www.amppartners.org)

For more information contact:  
Holly Karg  
Director of Media Relations  
and Communications  
[hkarg@amppartners.org](mailto:hkarg@amppartners.org)

