Introduction

This document contains individual summaries of the 324 scenarios reported in PJM Interconnection’s Fuel Security Analysis: A PJM Resilience Initiative. These scenarios are being published to offer a closer look into the results for stakeholders and other interested parties and to help inform the stakeholder process for fuel security in PJM.

The scenario summaries can look similar, so they have been labeled numerically for easy reference. Methodology, analysis, explanation of results and conclusions gleaned from these results can be found in the PJM report Fuel Security Analysis: A PJM Resilience Initiative.1

Reading the Scenario Summaries

PJM applied a common overview template to illustrate the differences in operational impact across scenarios. Each scenario summary includes four sections summarizing the results: scenario description, system overview, hourly zonal average locational marginal price (LMP) and oil inventory.

- **Scenario description:** The scenario description in the top right-hand corner describes the input assumptions associated with the scenario.
- **System overview:** The system overview, presented on the left side, provides hourly data for generation and demand, demand response, reserve shortage, voltage reduction, load shed and price.

  - **Generation and demand** summarize the hourly load profile and generation for the entirety of PJM.
  - **Demand response** summarizes hourly demand response deployments. Demand response deployment is a pre-emergency action.
  - **Reserve shortage** summarizes hourly reserve shortage data. An operational reserve shortage is triggered when 10-minute Synchronized Reserves are less than the largest generator in PJM. Depending on system conditions, a reserve shortage will trigger additional emergency procedures such as voltage reduction warnings and manual load shed warnings.
  - **Voltage reduction** summarizes hourly voltage reduction action data. Voltage reduction action enables load reductions by reducing voltages at the distribution level. PJM estimates a 1 to 2 percent load reduction resulting from a 5 percent load reduction in transmission zones capable of performing a voltage reduction.
  - **Load shed** summarizes hourly manual load shed action data. Manual load shed action enables zonal or system-wide load shed. This is the last step of all emergency procedure actions.
  - **Price** summarizes hourly LMP across PJM. Prices are products of the input assumptions and do not represent forecasts of actual prices.

- **Hourly zonal average LMP:** Hourly zonal average LMP data is in the middle of the right side of the model overview. These prices are shown as an indicator for price separation. Prices do not represent forecasts of actual prices.
- **Oil inventory:** Oil inventory statistics are summarized on the bottom right of the model overview. The heat maps indicate, by day, the number of sites where oil inventories were depleted. This site-specific data refers to on-site fuel inventories for individual generating units or shared by a group of generating units.

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2 Ibid.
System Overview

Scenario: 1

Load: Typical
Refueling: Moderate
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 1.21M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 2
Load: Typical
Refueling: Moderate
Disruption: Single 1 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.21M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 3

Load: Typical
Refueling: Moderate
Disruption: Single 1 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.21M

*141 Total Sites

Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Fuel Security Analysis: A PJM Resilience Initiative

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 4

Load: Typical
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 1.21M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Scenario: 5
Load: Typical
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: Oil Barrels Burned: 1.23M

Gas Pipeline Disruption

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 7

Load: Typical
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.21M

*141 Total Sites

Gas Pipeline Disruption
Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**Scenario: 9**

- **Load:** Typical
- **Refueling:** Moderate
- **Disruption:** Looped 2 High
- **Non-Firm Avail:** 62.50%
- **Retirement:** Announced
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil: 141 Total Sites
- Oil Barrels Burned: 1.25M

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**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*Prices shown are products of the input assumptions and do not represent forecasts of actual prices.*
Scenario: 10

Load: Typical
Refueling: Limited
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.46M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
### Scenario: 11

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</table>

#### Hourly Zonal Average LMP [$]

- Sites Out of Oil
- Oil Barrels Burned: 0.45M

*141 Total Sites

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**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**Scenario: 12**

- **Load:** Typical
- **Refueling:** Limited
- **Disruption:** Single 1 High
- **Non-Firm Avail:** 62.50%
- **Retirement:** Announced
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

**Sites Out of Oil**

**Oil Barrels Burned:** 0.46M

*141 Total Sites

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 13

Load: Typical
Refueling: Limited
Disruption: Single 2 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 0.46M

*141 Total Sites

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 14

- Load: Typical
- Refueling: Limited
- Disruption: Single 2 High
- Non-Firm Avail: 62.50%
- Retirement: Announced
- Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 0.46M

*141 Total Sites

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 15

Load: Typical
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.46M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 16

Load: Typical  
Refueling: Limited  
Disruption: Looped 1 High  
Non-Firm Avail: 62.50%  
Retirement: Announced  
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0  
Oil Barrels Burned: 0.49M

*141 Total Sites  

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Legend

Forecasted Demand (MW)  
Deployed Demand Response (MW)  
Reserve Shortage (MW)  
Voltage Reduction (MW)  
Load Shed (MW)  
Price ($)  

Gas Pipeline Disruption  

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 17

Load: Typical
Refueling: Limited
Disruption: Looped 2 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.46M

*141 Total Sites

Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

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Scenario: 19

- Load: Typical
- Refueling: Moderate
- Disruption: None
- Non-Firm Avail: 0%
- Retirement: Announced
- Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.67M

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 22

Load: Typical
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 1.67M

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Day of Event

*141 Total Sites

Day of Event

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 24

Load: Typical
Refueling: Moderate
Disruption: Looped 1 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.67M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 28

Load: Typical
Refueling: Limited
Disruption: None
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 0.66M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 29

Load: Typical
Refueling: Limited
Disruption: Single 1 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.67M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 36

Load: Typical
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.68M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 37

Load: Extreme
Refueling: Moderate
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 4.59M

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 39
Load: Extreme
Refueling: Moderate
Disruption: Single 1 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 4.54M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**System Overview**

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**Scenario: 40**

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Single 2 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Announced
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:** 141 Total Sites
- **Oil Barrels Burned:** 4,440

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**Legend**

- **Blue:** Forecasted Demand (MW)
- **Light Blue:** Deployed Demand Response (MW)
- **Orange:** Reserve Shortage (MW)
- **Red:** Voltage Reduction (MW)
- **Pink:** Load Shed (MW)
- **Gray:** Price ($)

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Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 41

Load: Extreme
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.45M

Legend
Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)

Gas Pipeline Disruption
Day of Event

*141 Total Sites
Price shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 45

Load: Extreme
Refueling: Moderate
Disruption: Loop 2 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.64M

Day of Event

Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 1 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Announced
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:** 141 Total Sites
- **Oil Barrels Burned:** 3.59M

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Looped 2 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Announced
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:** Oil Barrels Burned: 3.48M
- **Gas Pipeline Disruption**

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 59

Load: Extreme
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Gas Pipeline Disruption

Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 61

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 5.22M

*141 Total Sites

Gas Pipeline Disruption

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 62

Load: Extreme
Refueling: Moderate
Disruption: Loop 2 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 5.24M

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Limited
Disruption: Single 1 High
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.12M

*141 Total Sites

Gas Pipeline Disruption

Future Security Analysis: A PJM Resilience Initiative

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 71
Load: Extreme
Refueling: Limited
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 4.13M

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
System Overview

Scenario: 73
Load: Extreme
Refueling: Moderate
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.06M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 75

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Single 1 High
- **Non-Firm Avail:** 62.50%
- **Retirement:** Announced
- **Dispatch:** Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.07M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Legend
- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Legend
- **Blue**: Forecasted
- **Blue**: Demand
- **Green**: Generation (MW)
- **Orange**: Reserve
- **Orange**: Shortage (MW)
- **Orange**: Voltage
- **Orange**: Reduction (MW)
- **Pink**: Load
- **Gray**: Price ($)

*Prices shown are products of the input assumptions and do not represent forecasts of actual prices.*

**System Overview**

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<th>Hourly Zonal Average LMP [$]</th>
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**Scenario: 78**

- **Load**: Extreme
- **Refueling**: Moderate
- **Disruption**: Looped 1 Medium
- **Non-Firm Avail**: 62.50%
- **Retirement**: Announced
- **Dispatch**: Max Emergency

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil
- Oil Barrels Burned: 1.09M

*141 Total Sites*
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Max Emergency

Scenario: 79

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.09M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 81

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil Oil Barrels Burned: 1.10M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 83
Load: Extreme
Refueling: Limited
Disruption: Single 1 Medium
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.47M

Legend
- Forecastsed Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 86

Load: Extreme
Refueling: Limited
Disruption: Single 2 High
Non-Firm Avail: 62.50%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 0.48M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**System Overview**

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** None
- **Non-Firm Avail:** 0%
- **Retirement:** Announced
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:** Oil Barrels Burned: 1.90M

*141 Total Sites*

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 94

Load: Extreme
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.91M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 Medium
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.92M

*141 Total Sites

Gas Pipeline Disruption
Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)

Legend

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 97

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.98M

*141 Total Sites

Gas Pipeline Disruption
Day of Event

Forested Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 99

- Load: Extreme
- Refueling: Moderate
- Disruption: Looped 2 High
- Non-Firm Avail: 0%
- Retirement: Announced
- Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 2.02M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Limited
Disruption: None
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.19M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

- Load: Extreme
- Refueling: Limited
- Disruption: Looped 1 Medium
- Non-Firm Avail: 0%
- Retirement: Announced
- Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 1.19M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.

Fuel Security Analysis: A PJM Resilience Initiative

PJM©2019
System Overview

- Hours: 19.0
- Average MW: 1,022.7

- Hours: 6.0
- Average MW: 63.3

- Hours: 0.0
- Average MW: 0.0

Scenario: 106

- Load: Extreme
- Refueling: Limited
- Disruption: Looped 1 High
- Non-Firm Avail: 0%
- Retirement: Announced
- Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

- Oil Barrels Burned: 1.28M

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Day of Event

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

- Hours: 18.0
- Average MW: 893.2

- Hours: 7.0
- Average MW: 58.1

- Hours: 0.0
- Average MW: 0.0

Scenario: 107

- Load: Extreme
- Refueling: Limited
- Disruption: Looped 2 Medium
- Non-Firm Avail: 0%
- Retirement: Announced
- Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 1.22M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Load: Extreme
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 0%
Retirement: Announced
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 1.32M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 110

Load: Typical
Refueling: Moderate
Disruption: Single 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.58M

Day of Event

Gas Pipeline Disruption

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- Hours: 0.0
- Average MW: 0.0

**Scenario: 113**

- Load: Typical
- Refueling: Moderate
- Disruption: Single 2 High
- Non-Firm Avail: 62.50%
- Retirement: Escalated 1 (32 GW)
- Dispatch: Economic

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil
- Oil Barrels Burned: 1.61M
- Total Sites: 141

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- Load: Typical
- Refueling: Moderate
- Disruption: Looped 1 Medium
- Non-Firm Avail: 62.50%
- Retirement: Escalated 1 (32 GW)
- Dispatch: Economic

**Scenario: 114**

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil
- Oil Barrels Burned: 1.56M

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 115
Load: Typical
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.62M

*141 Total Sites

Gas Pipeline Disruption
Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 118

Load: Typical
Refueling: Limited
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.67M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 120

Load: Typical
Refueling: Limited
Disruption: Single 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.68M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 123

Load: Typical
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.68M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

120,000
100,000
80,000
60,000
40,000
20,000
0

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10,000
80,000
60,00 Scenario: 126
Load: Typical
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.69M

Day of Event

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)

Legend

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.

Fuel Security Analysis: A PJM Resilience Initiative
### Scenario: 127

**Load:** Typical  
**Refueling:** Moderate  
**Disruption:** None  
**Non-Firm Avail:** 0%  
**Retirement:** Escalated 1 (32 GW)  
**Dispatch:** Economic

#### Hourly Zonal Average LMP [$]

![Hourly Zonal Average LMP Map]

- **Sites Out of Oil:**
  - Oil Barrels Burned: 2.12M
  - *141 Total Sites

**Day of Event**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<th>14</th>
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<td>$2,000</td>
</tr>
</tbody>
</table>

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

*Prices shown are products of the input assumptions and do not represent forecasts of actual prices.*
Scenario: 133

Load: Typical
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 2.25M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 135
Load: Typical
Refueling: Moderate
Disruption: Loop 2 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 2.34M

*141 Total Sites

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
System Overview

Scenario: 136
Load: Typical
Refueling: Limited
Disruption: None
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

<table>
<thead>
<tr>
<th>Day of Event</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Oil Barrels Burned: 0.95M

*141 Total Sites

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**Scenario: 138**

- **Load:** Typical
- **Refueling:** Limited
- **Disruption:** Single 1 High
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Economic

---

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:**
  - 1
  - 1
  - 3
  - 4
  - 4
  - 5
  - 8
  - 15
  - 16
  - 16
  - 16
  - 16
  - 16
  - 16
  - 16
- **Oil Barrels Burned:** 1.06M

---

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

---

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 141
Load: Typical
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.00M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Scenario: 143
Load: Typical
Refueling: Limited
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.04M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**System Overview**

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** None
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- Hours: 11.0
- Average MW: 1,068.8
- Hours: 4.0
- Average MW: 465.5
- Hours: 0.0
- Average MW: 0.0

*141 Total Sites

**Sites Out of Oil**

- Oil Barrels Burned: 5.86M

**Day of Event**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 147

Load: Extreme
Refueling: Moderate
Disruption: Single 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 6.05M

*141 Total Sites

Gas Pipeline Disruption

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 148

Load: Extreme
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.93M

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 151

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 6.44M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 153
Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141
Oil Barrels Burned: 6.31M

Gas Pipeline Disruption

Legend
- Blue: Forecasted Demand (MW)
- Green: Generation (MW)
- Yellow: Reserve Shortage (MW)
- Orange: Voltage Reduction (MW)
- Magenta: Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 160
Load: Extreme
Refueling: Limited
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 5.34M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption
Day of Event

*141 Total Sites
Day of Event

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 162

Load: Extreme
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.25M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 163

Load: Extreme
Refueling: Moderate
Disruption: None
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Fuel Security Analysis: A PJM Resilience Initiative
### System Overview

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Single 1 Medium
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Economic

#### Hourly Zonal Average LMP [$]

<table>
<thead>
<tr>
<th>Hours</th>
<th>Average MW</th>
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<tbody>
<tr>
<td>71.0</td>
<td>2,621.8</td>
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<tr>
<td>38.0</td>
<td>488.4</td>
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<tr>
<td>25.0</td>
<td>795.9</td>
</tr>
<tr>
<td>10.0</td>
<td>2,338.8</td>
</tr>
</tbody>
</table>

#### Gas Pipeline Disruption

- **Sites Out of Oil:**
  - 0, 0, 1, 2, 2, 3, 7, 11, 18, 27, 26, 12, 1

#### Oil Barrels Burned: 7.44M

- **Day of Event:**
  - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

### Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

- Load: Extreme
- Refueling: Moderate
- Disruption: Single 1 High
- Non-Firm Avail: 0%
- Retirement: Escalated 1 (32 GW)
- Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 7,48M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

**Load:** Extreme
**Refueling:** Moderate
**Disruption:** Single 2 High
**Non-Firm Avail:** 0%
**Retirement:** Escalated 1 (32 GW)
**Dispatch:** Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: Oil Barrels Burned: 7.49M

Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 168

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 Medium
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 7.45M

*141 Total Sites

Gas Pipeline Disruption

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Looped 1 High
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil
  - Oil Barrels Burned: 7.67M
  - *141 Total Sites

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*Prices shown are products of the input assumptions and do not represent forecasts of actual prices.*
System Overview

Hours: 115.0  
Average MW: 2,005.2

Hours: 36.0  
Average MW: 424.2

Hours: 41.0  
Average MW: 1,029.1

Hours: 22.0  
Average MW: 1,355.1

Scenario: 171

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Fuel Security Analysis: A PJM Resilience Initiative

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
### System Overview

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** None
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Economic

#### Hourly Zonal Average LMP [$]

- **Hours:**
  - 121.0
  - 66.0
  - 72.0
  - 43.0
- **Average MW:**
  - 3,285.0
  - 450.6
  - 1,071.1
  - 2,496.9

#### Sites Out of Oil

- **Total Sites:** 141

#### Oil Barrels Burned

- **Total:** 6.05M

#### Price ($) Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

<table>
<thead>
<tr>
<th></th>
<th>Hours: 143.0</th>
<th>Hours: 73.0</th>
<th>Hours: 83.0</th>
<th>Hours: 56.0</th>
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<tbody>
<tr>
<td></td>
<td>Average MW: 3,108.5</td>
<td>Average MW: 411.0</td>
<td>Average MW: 1,107.3</td>
<td>Average MW: 2,423.0</td>
</tr>
</tbody>
</table>

Scenario: 174

Load: Extreme
Refueling: Limited
Disruption: Single 1 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Gas Pipeline Disruption

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Load: Extreme
Refueling: Limited
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 6.38M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 179

Load: Extreme  
Refueling: Limited  
Disruption: Looped 2 Medium  
Non-Firm Avail: 0%  
Retirement: Escalated 1 (32 GW)  
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 6.24M

*141 Total Sites

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
System Overview

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Scenario: 181
Load: Extreme
Refueling: Moderate
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.89M

Day of Event

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 184

Load: Extreme
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
 Oil Barrels Burned: 1.86M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Scenario: 185
Load: Extreme
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 2.00M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**System Overview**

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Looped 1 High
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

**Sites Out of Oil**

- Oil Barrels Burned: 2.25M

*141 Total Sites

**Day of Event**

- Gas Pipeline Disruption

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 189

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 2.30M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Hours: 42.0
Average MW: 699.0

Hours: 5.0
Average MW: 105.7

Hours: 0.0
Average MW: 0.0

$0
$2,000
$4,000
$6,000

Day of Event

Scenario: 190
Load: Extreme
Refueling: Limited
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.19M

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**Scenario: 194**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 2 High
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil: *141 Total Sites
- Oil Barrels Burned: 1.27M

---

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 195

Load: Extreme
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.30M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Looped 2 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:**
  - 1 1 1 2 3 6 16 17 21 28 31 30 30
  - *141 Total Sites

- **Oil Barrels Burned:** 1.25M

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 200

- Load: Extreme
- Refueling: Moderate
- Disruption: Single 1 Medium
- Non-Firm Avail: 0%
- Retirement: Escalated 1 (32 GW)
- Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Sites Out of Oil

Oil Barrels Burned: 4.80M

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 5.15M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

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Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 1 3 3 1 3 2 4 3 8 10 4 4 2
Oil Barrels Burned: 5.42M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Limited
Disruption: None
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 4.06M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 210

Load: Extreme
Refueling: Limited
Disruption: Single 1 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.42M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 2 Medium
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- **Gas Pipeline Disruption**
- **Day of Event**

*141 Total Sites

**Sites Out of Oil**

- **Oil Barrels Burned:** 4.15M

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 2 High
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 1 (32 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil**
  - 2 5 7 9 12 21 37 57 68 74 90 92 94 84
- **Oil Barrels Burned:** 4.37M

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

- Hours: 148.0
- Average MW: 2,864.5

- Hours: 73.0
- Average MW: 317.6

- Hours: 74.0
- Average MW: 1,091.6

- Hours: 46.0
- Average MW: 1,766.7

Hourly Zonal Average LMP [$]

Scenario: 213

- Load: Extreme
- Refueling: Limited
- Disruption: Looped 1 Medium
- Non-Firm Avail: 0%
- Retirement: Escalated 1 (32 GW)
- Dispatch: Max Emergency

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Load: Extreme
Refueling: Limited
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.57M

Gas Pipeline Disruption

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 215

Load: Extreme
Refueling: Limited
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 1 (32 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 4.33M

*141 Total Sites

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 217

Load: Typical
Refueling: Moderate
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.17M

*141 Total Sites

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**Scenario: 222**

- **Load:** Typical
- **Refueling:** Moderate
- **Disruption:** Looped 1 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:** Moderate
- **Oil Barrels Burned:** 1.17M

---

Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 224

Load: Typical
Refueling: Moderate
Disruption: Looped 2 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.19M

Day of Event

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 225

Load: Typical
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.25M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.

Fuel Security Analysis: A PJM Resilience Initiative
System Overview

Scenario: 227

Load: Typical
Refueling: Limited
Disruption: Single 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.46M

*141 Total Sites

Day of Event

Day of Event

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)

Fuel Security Analysis: A PJM Resilience Initiative

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Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 229

Load: Typical
Refueling: Limited
Disruption: Single 2 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.46M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**System Overview**

Hours: 0.0  
Average MW: 0.0

---

**Scenario: 230**

- **Load:** Typical  
- **Refueling:** Limited  
- **Disruption:** Single 2 High  
- **Non-Firm Avail:** 62.50%  
- **Retirement:** Escalated 2 (16 GW)  
- **Dispatch:** Economic

---

**Hourly Zonal Average LMP [$]**

---

**Sites Out of Oil**

<table>
<thead>
<tr>
<th>Oil Barrels Burned: 0.47M</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0 0 0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

---

---

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

---

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 231
Load: Typical
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 0.46 M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 232
Load: Typical
Refueling: Limited
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.49M

Gas Pipeline Disruption
Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Price ($)
**Scenario: 236**

- **Load:** Typical
- **Refueling:** Moderate
- **Disruption:** Single 1 Medium
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil: 0
- Oil Barrels Burned: 1.72M

*141 Total Sites

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Typical
Refueling: Moderate
Disruption: Single 1 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Scenario: 237

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.76M

*141 Total Sites

Day of Event

* Forecasted Demand (MW)
* Deployed Demand Response (MW)
* Reserve Shortage (MW)
* Voltage Reduction (MW)
* Load Shed (MW)
* Price ($)
System Overview

Scenario: 238
Load: Typical
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 1.73M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Scenario: 239
Load: Typical
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: Oil Barrels Burned: 1.75M

Legend:
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 241
Load: Typical
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 

Oil Barrels Burned: 1.77M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

<table>
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<tr>
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<th>Average MW</th>
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<tbody>
<tr>
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<td>0.0</td>
</tr>
<tr>
<td>0.0</td>
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</tr>
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</tbody>
</table>

Scenario: 242

Load: Typical
Refueling: Moderate
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.76M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)  

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Typical
Refueling: Limited
Disruption: None
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.71M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 245

Load: Typical
Refueling: Limited
Disruption: Single 1 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.72M

*141 Total Sites

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 248

Load: Typical
Refueling: Limited
Disruption: Single 2 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.76M

*141 Total Sites

Day of Event

Gas Pipeline Disruption

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Scenario: 249

Load: Typical
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.74M

Gas Pipeline Disruption
Day of Event

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
System Overview

Scenario: 250
Load: Typical
Refueling: Limited
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.77M

Gas Pipeline Disruption
Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*141 Total Sites
Day of Event

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 251
- Load: Typical
- Refueling: Limited
- Disruption: Looped 2 Medium
- Non-Firm Avail: 0%
- Retirement: Escalated 2 (16 GW)
- Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 0.78M

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 253

Load: Extreme
Refueling: Moderate
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

$0 $2,000

Oil Barrels Burned: 5.10M

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 255

Load: Extreme
Refueling: Moderate
Disruption: Single 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.12M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Scenario: 259
Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.29M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Legend

<table>
<thead>
<tr>
<th>Forecasted Demand (MW)</th>
<th>Deployed Demand Response (MW)</th>
<th>Reserve Shortage (MW)</th>
<th>Voltage Reduction (MW)</th>
<th>Load Shed (MW)</th>
<th>Price ($)</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- Load: Extreme
- Refueling: Moderate
- Disruption: Looped 2 Medium
- Non-Firm Avail: 62.50%
- Retirement: Escalated 2 (16 GW)
- Dispatch: Economic

**Hourly Zonal Average LMP [$]**

- Sites Out of Oil: 141 Total Sites
- Oil Barrels Burned: 5.16M

**Gas Pipeline Disruption**

**Day of Event**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Scenario: 261

Hours: 9.0
Average MW: 1,134.6

Hours: 6.0
Average MW: 368.6

Hours: 0.0
Average MW: 0.0

Hours: 0.0
Average MW: 0.0

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.31M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Day of Event

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 1 Medium
- **Non-Firm Avail.:** 62.50%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Economic

**Scenario: 263**

*Hourly Zonal Average LMP [$]*

- **Sites Out of Oil**
  - Oil Barrels Burned: 4.13M

*Legend*

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

*Gas Pipeline Disruption*
Scenario: 264

Load: Extreme
Refueling: Limited
Disruption: Single 1 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 4.18M

Legend:
- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Gas Pipeline Disruption

*Prices shown are products of the input assumptions and do not represent forecasts of actual prices.*
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Looped 2 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Economic

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil**
- **Oil Barrels Burned:** 4.17M

Legend:

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 270

Load: Extreme
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil: Oil Barrels Burned: 4.75M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Day of Event

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Scenario: 275

Load: Extreme
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 6.77M

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Gas Pipeline Disruption
Day of Event

Sites Out of Oil

Oil Barrels Burned: 6.76M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
**Scenario: 279**

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Looped 2 High
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Economic

---

### Hourly Zonal Average LMP [$]

- **Sites Out of Oil**
- **Oil Barrels Burned:** 7.05M

---

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

*Prices shown are products of the input assumptions and do not represent forecasts of actual prices.*
System Overview

140,000
120,000
100,000

10,000
5,000
0

Hours: 83.0
Average MW: 4,701.7

Hours: 83.0
Average MW: 551.2

Hours: 29.0
Average MW: 1,112.2

Hours: 19.0
Average MW: 3,514.3

Load: Extreme
Refueling: Limited
Disruption: Single 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.55M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Forested Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)

Legend

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Limited
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.63M

Legend

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
System Overview

<table>
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<tr>
<th>Hours</th>
<th>Average MW</th>
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<td>111.0</td>
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Scenario: 288

Load: Extreme
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Economic

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 5.83M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

140,000
120,000
100,000

Hours: 24.0
Average MW: 1,200.2

10,000
5,000
0

Hours: 7.0
Average MW: 106.7

10,000
5,000
0

Hours: 0.0
Average MW: 0.0

10,000
5,000
0

Hours: 0.0
Average MW: 0.0

$4,000
$2,000
$0

$2,000

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)
Scenario: 293

Load: Extreme
Refueling: Moderate
Disruption: Single 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 1.45M

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

- **Load:** Extreme
- **Refueling:** Moderate
- **Disruption:** Looped 1 Medium
- **Non-Firm Avail:** 62.50%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Max Emergency

Hourly Zonal Average LMP [$]

- **Sites Out of Oil**: 141 Total Sites
- **Oil Barrels Burned:** 1.35M

Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.

Fuel Security Analysis: A PJM Resilience Initiative

PJM©2019 294
Scenario: 296

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 1.36M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
System Overview

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 1.50M

*141 Total Sites

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
System Overview

Hours: 28.0
Average MW: 1424.2

Hours: 8.0
Average MW: 155.8

Hours: 0.0
Average MW: 0.0

Scenario: 298
Load: Extreme
Refueling: Limited
Disruption: None
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.82M

Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 299
Load: Extreme
Refueling: Limited
Disruption: Single 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: Oil Barrels Burned: 0.82M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 301
Load: Extreme
Refueling: Limited
Disruption: Single 2 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.82M

Gas Pipeline Disruption
Day of Event

*141 Total Sites
Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 303

Load: Extreme
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.82M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Gas Pipeline Disruption

Day of Event

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 306

Load: Extreme
Refueling: Limited
Disruption: Looped 2 High
Non-Firm Avail: 62.50%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 0.95M

Gas Pipeline Disruption
Day of Event

*141 Total Sites

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 307

Load: Extreme
Refueling: Moderate
Disruption: None
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 3.97M

*141 Total Sites

Day of Event

<table>
<thead>
<tr>
<th>Day of Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14</td>
</tr>
</tbody>
</table>

Legend

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 308
Load: Extreme
Refueling: Moderate
Disruption: Single 1 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 0
Oil Barrels Burned: 4.01M

*141 Total Sites

Gas Pipeline Disruption
Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 309

Load: Extreme
Refueling: Moderate
Disruption: Single 1 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.13M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 310

Load: Extreme
Refueling: Moderate
Disruption: Single 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 4.05M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Forecasted Demand (MW) Deployed Demand Response (MW) Reserve Shortage (MW) Voltage Reduction (MW) Load Shed (MW) Price ($)
Scenario: 313

Load: Extreme
Refueling: Moderate
Disruption: Looped 1 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil
Oil Barrels Burned: 4.22M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 314

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 3
Oil Barrels Burned: 4.12M

*141 Total Sites
System Overview

Scenario: 315

Load: Extreme
Refueling: Moderate
Disruption: Looped 2 High
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil

Oil Barrels Burned: 4.50M

*141 Total Sites

Gas Pipeline Disruption

Day of Event

Legend

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)
Scenario: 316
Load: Extreme
Refueling: Limited
Disruption: None
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 3.41M

Legend
- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

*141 Total Sites

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 1 Medium
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:**
  - Oil Barrels Burned: 3.45M

**Legend**

- Forecasted Demand (MW)
- Deployed Demand Response (MW)
- Reserve Shortage (MW)
- Voltage Reduction (MW)
- Load Shed (MW)
- Price ($)

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
**System Overview**

- **Load:** Extreme
- **Refueling:** Limited
- **Disruption:** Single 1 High
- **Non-Firm Avail:** 0%
- **Retirement:** Escalated 2 (16 GW)
- **Dispatch:** Max Emergency

**Hourly Zonal Average LMP [$]**

- **Sites Out of Oil:** Oil Barrels Burned: 3.56M

**Legend**

- **Forecasted Demand (MW)**
- **Deployed Demand Response (MW)**
- **Reserve Shortage (MW)**
- **Voltage Reduction (MW)**
- **Load Shed (MW)**
- **Price ($)**

Prices shown are products of the input assumptions and do not represent forecasts of actual prices.
Scenario: 321
Load: Extreme
Refueling: Limited
Disruption: Looped 1 Medium
Non-Firm Avail: 0%
Retirement: Escalated 2 (16 GW)
Dispatch: Max Emergency

Hourly Zonal Average LMP [$]

Sites Out of Oil: 141 Total Sites
Oil Barrels Burned: 3.50M

Gas Pipeline Disruption
Day of Event

Forecasted Demand (MW)
Deployed Demand Response (MW)
Reserve Shortage (MW)
Voltage Reduction (MW)
Load Shed (MW)
Price ($)