

# July 4<sup>th</sup> Heat Wave

MIC

September 9, 2026

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Monitoring Analytics

## July 4<sup>th</sup> Heat Wave

- Between June 29 and July 5, the region experienced very high temperatures.

| City         | 29-Jun | 30-Jun | 1-Jul | 2-Jul | 3-Jul | 4-Jul | 5-Jul |
|--------------|--------|--------|-------|-------|-------|-------|-------|
| Chicago      | 92     | 94     | 95    | 94    | 86    | 83    | 76    |
| Columbus     | 90     | 92     | 95    | 95    | 97    | 94    | 89    |
| Newark       | 89     | 90     | 96    | 104   | 102   | 98    | 84    |
| Philadelphia | 89     | 90     | 97    | 102   | 102   | 101   | 93    |
| Richmond     | 85     | 88     | 93    | 96    | 98    | 99    | 95    |
| Average      | 89     | 91     | 95    | 98    | 97    | 95    | 87    |

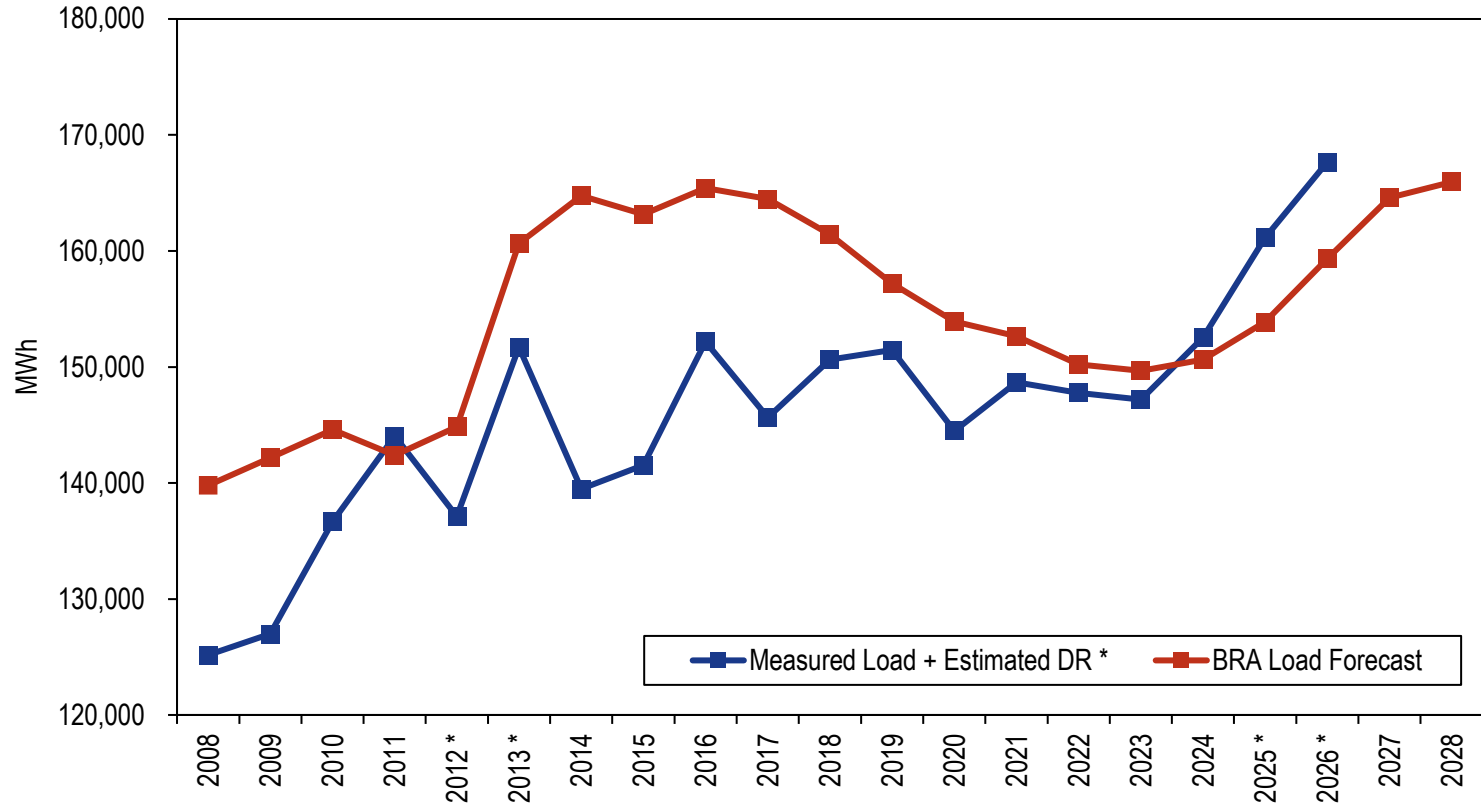
# July 4<sup>th</sup> Heat Wave

- This event had two of the top 20 highest temperatures in PJM since 2009.
- Measured as the average of temperatures in five PJM cities: Chicago, Columbus, Newark, Philadelphia and Richmond.

| Rank     | Date            | °F          |
|----------|-----------------|-------------|
| 1        | 7-Jul-12        | 100.4       |
| 2        | 22-Jul-11       | 99.2        |
| 3        | 5-Jul-12        | 98.8        |
| 3        | 6-Jul-12        | 98.8        |
| 5        | 21-Jul-11       | 98.2        |
| 5        | 4-Jul-12        | 98.2        |
| <b>5</b> | <b>2-Jul-26</b> | <b>98.2</b> |
| 8        | 24-Jun-25       | 98.0        |
| 9        | 6-Jul-10        | 97.8        |
| 10       | 7-Jul-10        | 97.6        |

| Rank      | Date            | °F          |
|-----------|-----------------|-------------|
| 10        | 17-Jul-12       | 97.6        |
| 12        | 18-Jul-12       | 97.0        |
| 12        | 23-Jun-25       | 97.0        |
| <b>12</b> | <b>3-Jul-26</b> | <b>97.0</b> |
| 15        | 23-Jul-10       | 96.4        |
| 16        | 29-Jun-12       | 96.2        |
| 16        | 20-Jul-19       | 96.2        |
| 18        | 5-Jul-10        | 96.0        |
| 19        | 24-Jul-10       | 95.8        |
| 20        | 8-Jun-11        | 95.6        |

# PJM Yearly Peak Load



# Highlights

- **Highest load ever served by PJM: 162,221 MWh.**
  - **Exceeded 2025 record of 160,158 MWh.**
  - **Caveats:**
    - Metered load settled in the PJM market.
    - Not instantaneous.
    - Not adding integrations retroactively.
- **RPM/FRR Committed Capacity failed to meet all the demand.**
  - **Demand could have not been met without uncommitted capacity.**

# Emergency Procedures

| Procedure                                                                               | 29-Jun  | 30-Jun  | 1-Jul   | 2-Jul                     | 3-Jul                   | 4-Jul                   | 5-Jul                     |
|-----------------------------------------------------------------------------------------|---------|---------|---------|---------------------------|-------------------------|-------------------------|---------------------------|
| Hot Weather Alert                                                                       | Western | PJM RTO |         |                           |                         | PJM RTO                 | Mid-Atlantic,<br>Dominion |
| Maximum Generation Emergency/Load Management Alert - Capacity<br>Emergency - NERC EEA 1 |         |         | PJM RTO | PJM RTO                   | PJM RTO                 |                         |                           |
| Pre-Emergency Mandatory Load Management Reduction                                       |         |         |         | PJM RTO                   | PJM RTO                 |                         |                           |
| Emergency Mandatory Load Management Reduction - NERC EEA2                               |         |         |         | PJM RTO                   | PJM RTO                 |                         |                           |
| Maximum Generation Emergency Action - Capacity Emergency                                |         |         |         | Mid-Atlantic,<br>Dominion |                         |                         |                           |
| Low Voltage Alert                                                                       |         |         | PJM RTO | PJM RTO                   | PJM RTO                 | PJM RTO                 |                           |
| Heavy Load Voltage (HLV) Schedule Warning                                               |         |         | PJM RTO | PJM RTO                   | PJM RTO                 |                         |                           |
| Heavy Load Voltage (HLV) Schedule Action                                                |         |         |         | PJM RTO                   | PJM RTO                 |                         |                           |
| Transmission Security - Load Management Alert                                           |         |         |         |                           |                         | Dominion,<br>BGE, PEPCO |                           |
| Transmission Security - Emergency Use of Back-Up Generator<br>Warning                   |         |         |         | Mid-Atlantic,<br>Dominion | Dominion                |                         |                           |
| Transmission Security - Local Maximum Generation Emergency<br>Action                    |         |         |         |                           | Dominion,<br>BGE, PEPCO |                         |                           |
| Transmission Security - Deploy All Resources Action                                     |         |         |         | Dominion,<br>BGE, PEPCO   |                         |                         |                           |
| Maintenance Outage Recall                                                               | PJM RTO | PJM RTO | PJM RTO | PJM RTO                   | PJM RTO                 | PJM RTO                 | PJM RTO                   |



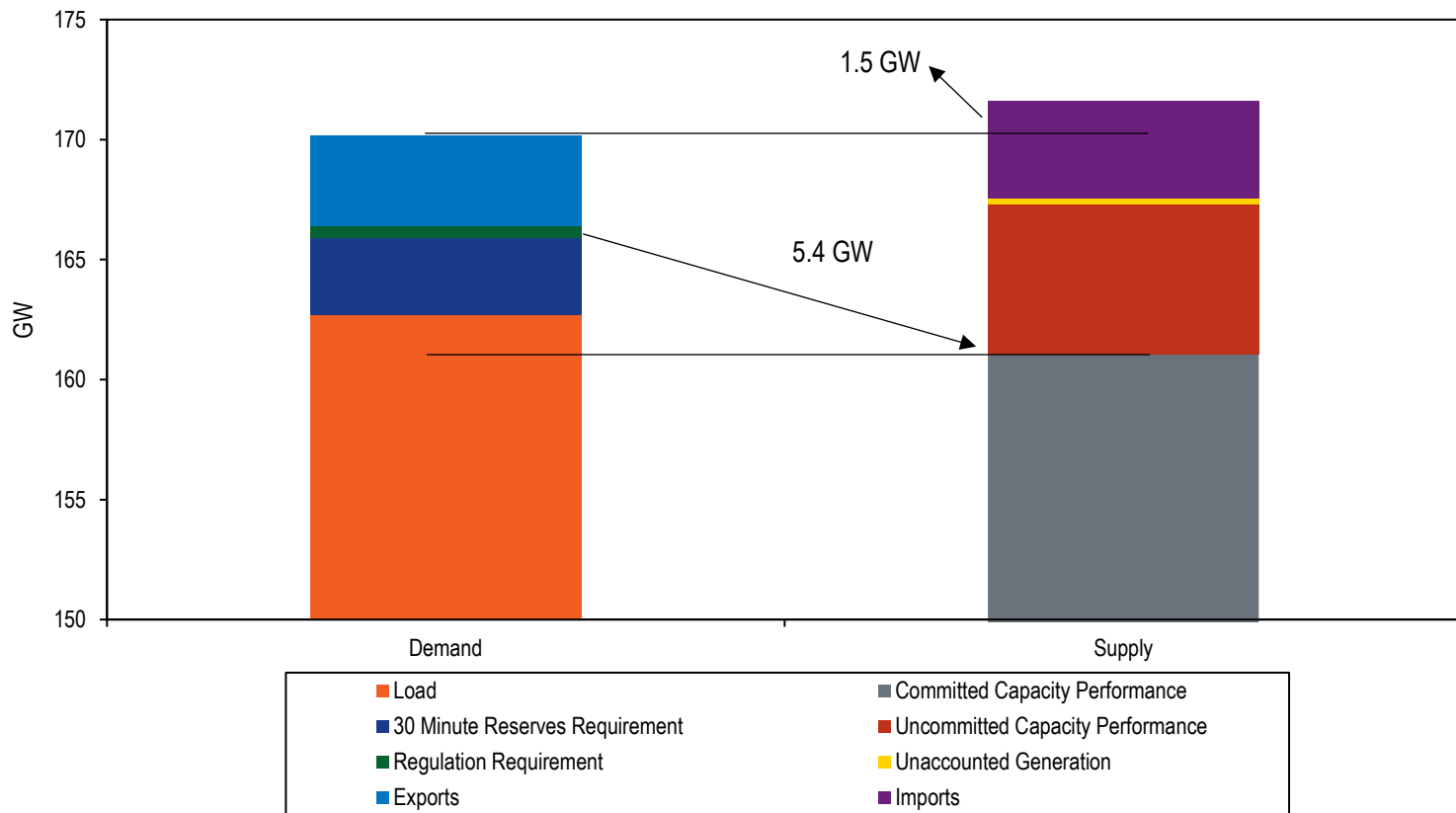
## July 4<sup>th</sup> Heat Wave

- **July 2:**
  - **Peak load forecast at 17:00: 164,906 MWh (10:00 day prior) 165,094 MWh (18:00 day prior)**
  - **Actual peak hourly AGC load: 162,555 MWh at 17:00.**
  - **Actual peak instantaneous AGC load: 162,713 MW at 17:55.**
- **RTO DA LMP averaged:**
  - **Jun 20 – Jul 5: \$160/MWh / Jul 1 – Jul 3: \$268/MWh**
- **RTO RT LMP averaged:**
  - **Jun 20 – Jul 5: \$215/MWh / Jul 1 – Jul 3: \$396/MWh**
- **Uplift costs were \$65.5 million for the 7 day period.**

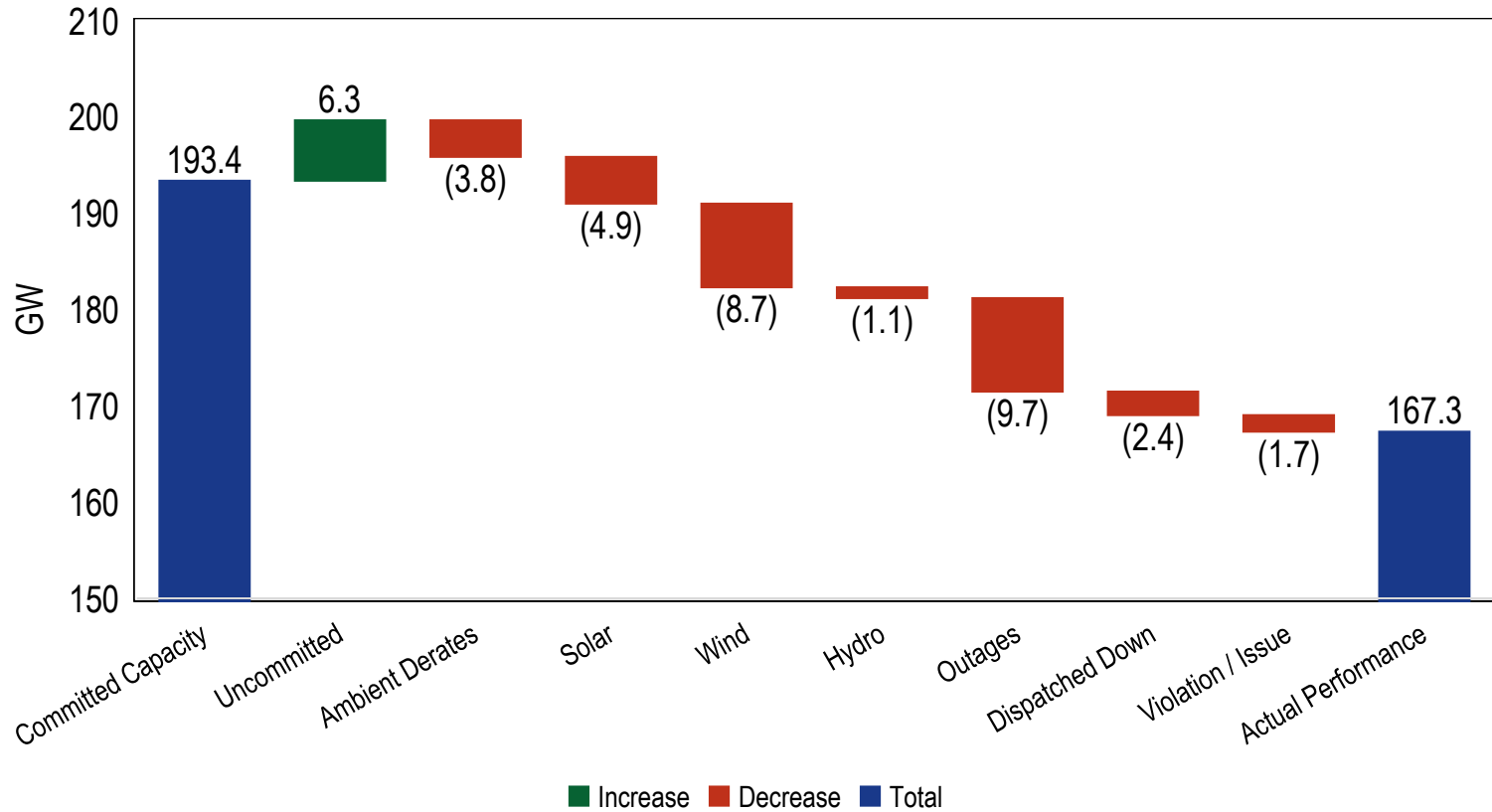
# Capacity Performance

- **For a second year, the capacity MW committed by PJM via RPM/FRR were not enough to cover PJM needs (load plus reserves).**
- **The next figures show two distinct intervals on Jul 2.**
  - **Highest peak load (17:45)**
  - **Lowest 30 minute reserves (19:25)**
- **Absent uncommitted capacity, PJM did not have enough resources to meet load plus reserves.**

# Supply and Demand (17:45)



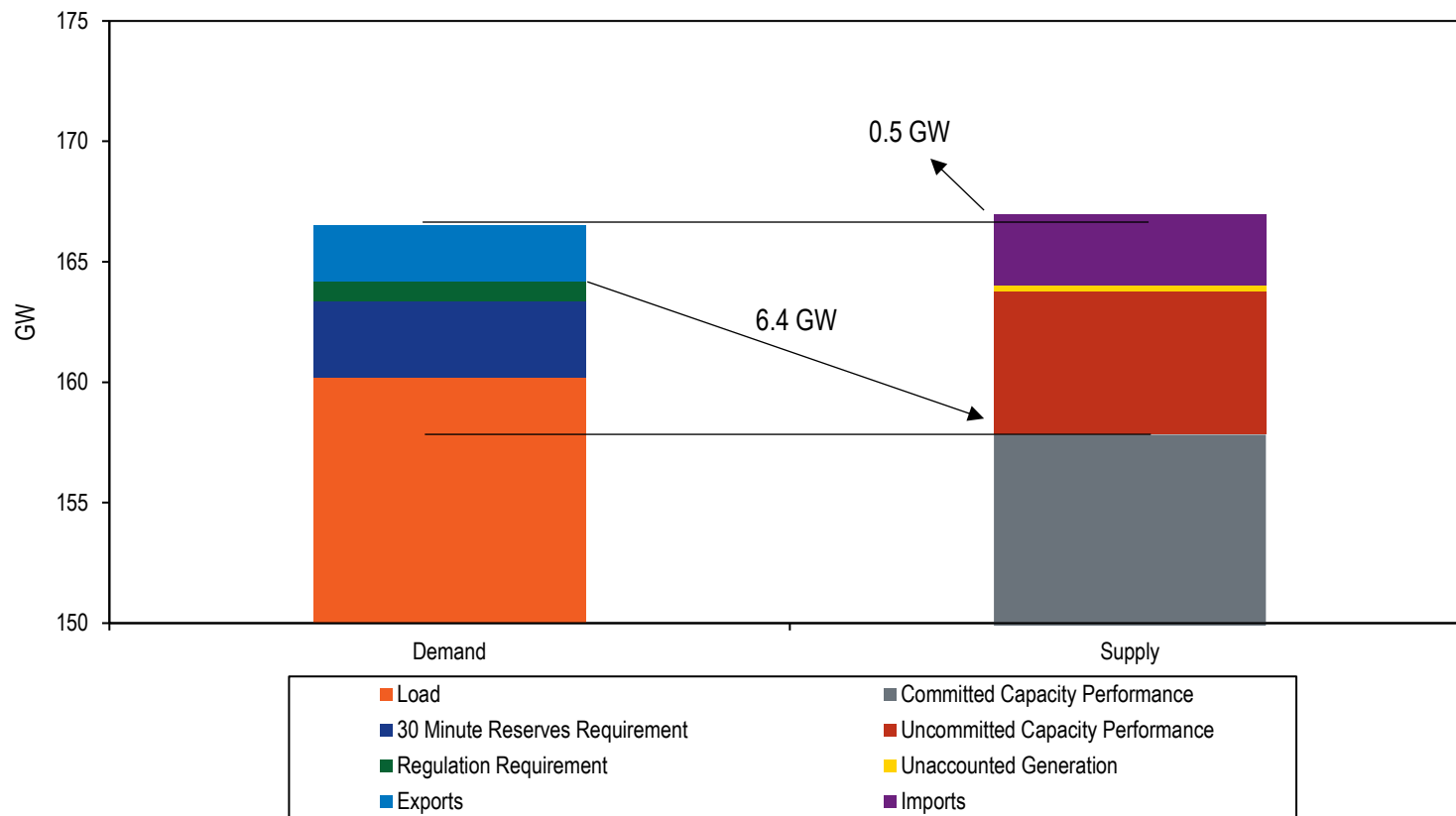
# Performance (17:45)



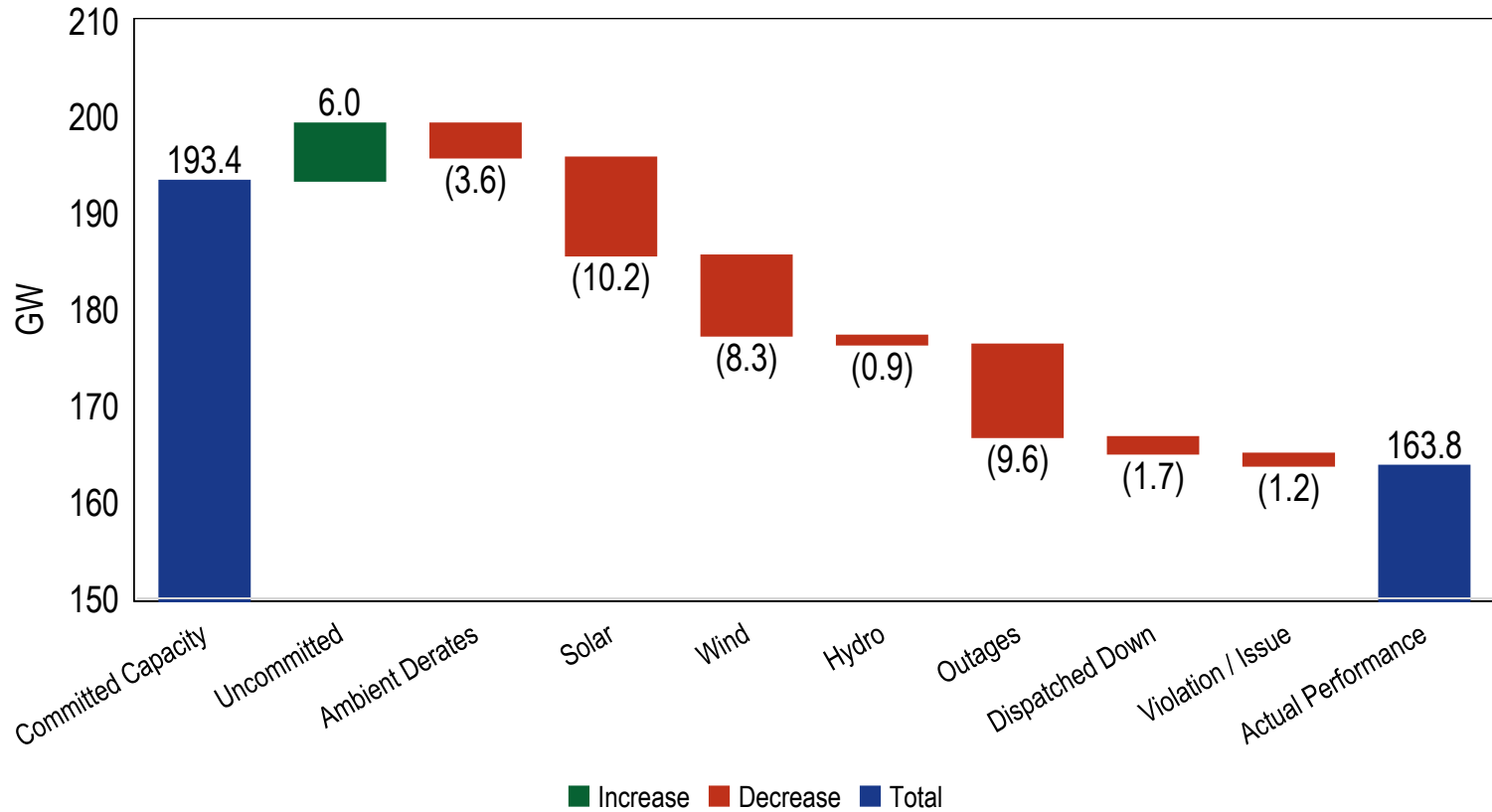
# Uncommitted Resources Performance by Type (17:45)

| Unit Type      | Energy Only | DOE 202c | Exported Capacity | Not Committed Capacity | Total |
|----------------|-------------|----------|-------------------|------------------------|-------|
| Coal           | 0           | 0        | 741               | 115                    | 856   |
| Combined Cycle | 7           | 0        | 1,193             | 316                    | 1,516 |
| ESR            | 203         | 0        | 0                 | 229                    | 432   |
| Gas CT         | 2           | 0        | 466               | 665                    | 1,133 |
| Hydro          | 0           | 0        | 51                | 0                      | 52    |
| Nuclear        | 0           | 0        | 435               | 31                     | 466   |
| Oil CT         | 0           | 0        | 0                 | 23                     | 23    |
| Oil/Gas ST     | 4           | 734      | 0                 | 12                     | 749   |
| Other          | 5           | 0        | 0                 | 32                     | 37    |
| Solar          | 465         | 0        | 0                 | 174                    | 639   |
| Wind           | 83          | 0        | 0                 | 283                    | 365   |
| Total          | 768         | 734      | 2,885             | 1,881                  | 6,268 |

# Supply and Demand (19:25)



# Performance (19:25)



# Uncommitted Resources Performance by Type (19:25)

| Unit Type      | Energy Only | DOE 202c | Exported Capacity | Not Committed Capacity | Total |
|----------------|-------------|----------|-------------------|------------------------|-------|
| Coal           | 0           | 0        | 803               | 112                    | 915   |
| Combined Cycle | 7           | 0        | 1,198             | 308                    | 1,513 |
| ESR            | 176         | 0        | 0                 | 231                    | 407   |
| Gas CT         | 3           | 0        | 468               | 701                    | 1,172 |
| Hydro          | 0           | 0        | 50                | 12                     | 62    |
| Nuclear        | 0           | 0        | 434               | 32                     | 466   |
| Oil CT         | 0           | 0        | 0                 | 25                     | 25    |
| Oil/Gas ST     | 5           | 756      | 0                 | 13                     | 774   |
| Other          | 5           | 0        | 0                 | 37                     | 42    |
| Solar          | 194         | 0        | 0                 | 89                     | 283   |
| Wind           | 111         | 0        | 0                 | 193                    | 303   |
| Total          | 500         | 756      | 2,953             | 1,753                  | 5,961 |

# Uncommitted Resources Performance by Type

• 17:45

| Category          | Unit Type      | Performance (MW) |
|-------------------|----------------|------------------|
| Energy Only       | ESR            | 203              |
|                   | Solar          | 465              |
|                   | Other          | 834              |
| Exported Capacity | Total          | 2,885            |
| Not Committed     | Coal           | 115              |
|                   | Combined Cycle | 316              |
|                   | Gas CT         | 665              |
|                   | Oil CT         | 23               |
|                   | Solar          | 171              |
|                   | Other          | 587              |
| Total             |                | 6,265            |

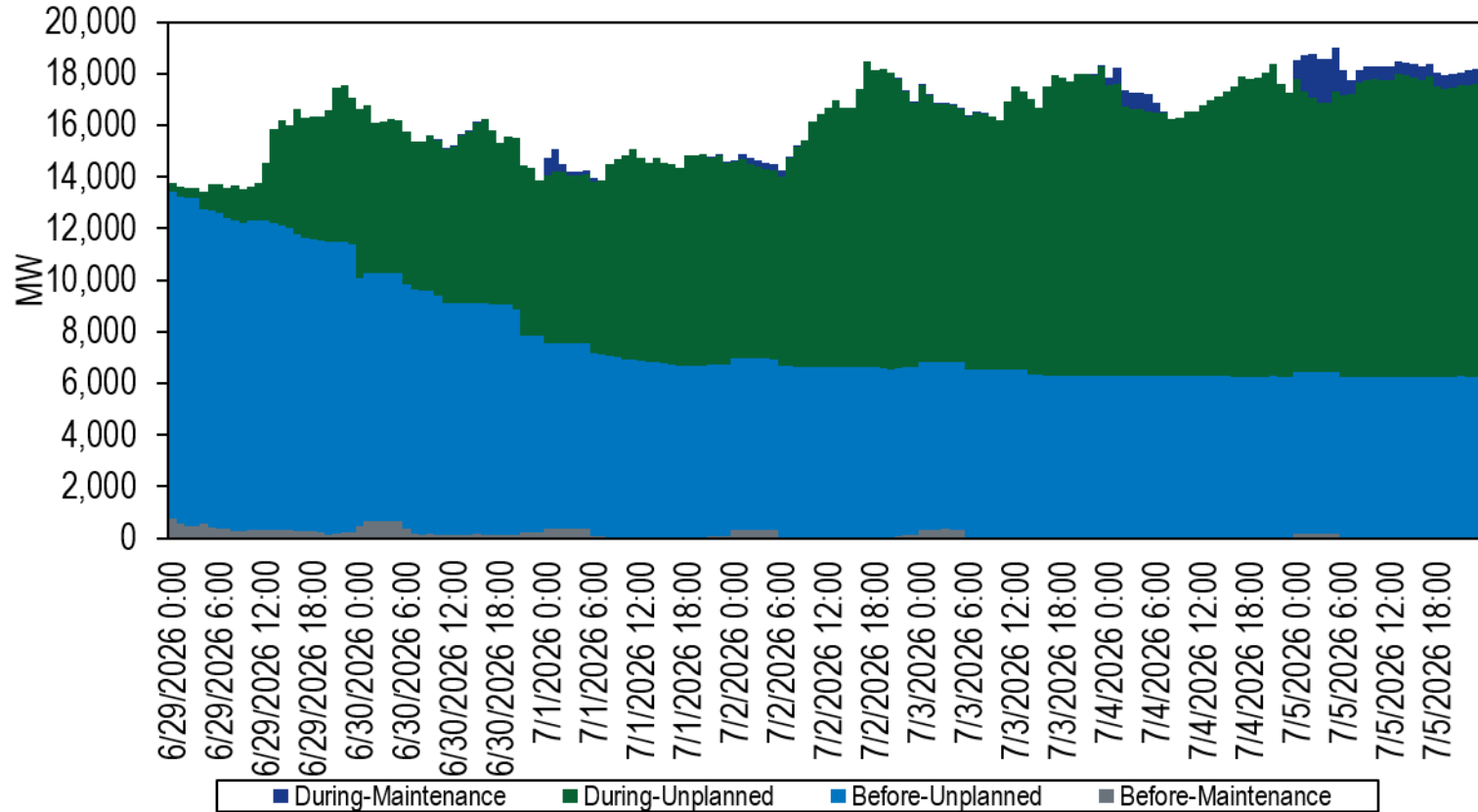
• 19:25

| Category          | Unit Type      | Performance (MW) |
|-------------------|----------------|------------------|
| Energy Only       | ESR            | 176              |
|                   | Solar          | 194              |
|                   | Other          | 886              |
| Exported Capacity | Total          | 2,953            |
| Not Committed     | Coal           | 112              |
|                   | Combined Cycle | 308              |
|                   | Gas CT         | 701              |
|                   | Oil CT         | 25               |
|                   | Solar          | 89               |
|                   | Other          | 518              |
| Total             |                | 5,961            |

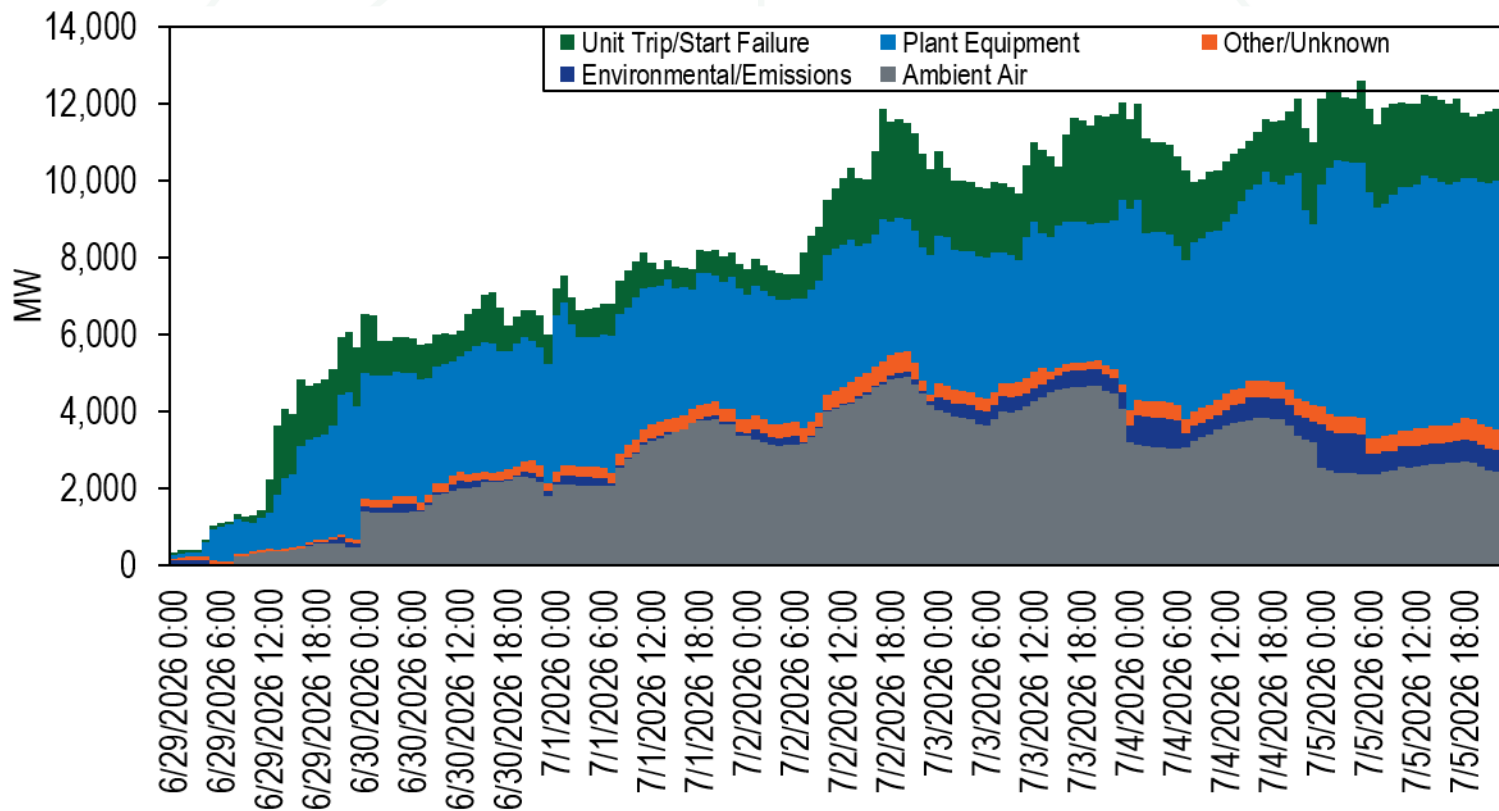
**Data confidentiality rules do not allow disclosing more granular performance and do not allow providing more detail about MW from exported capacity that was exported or not as energy during this event.**



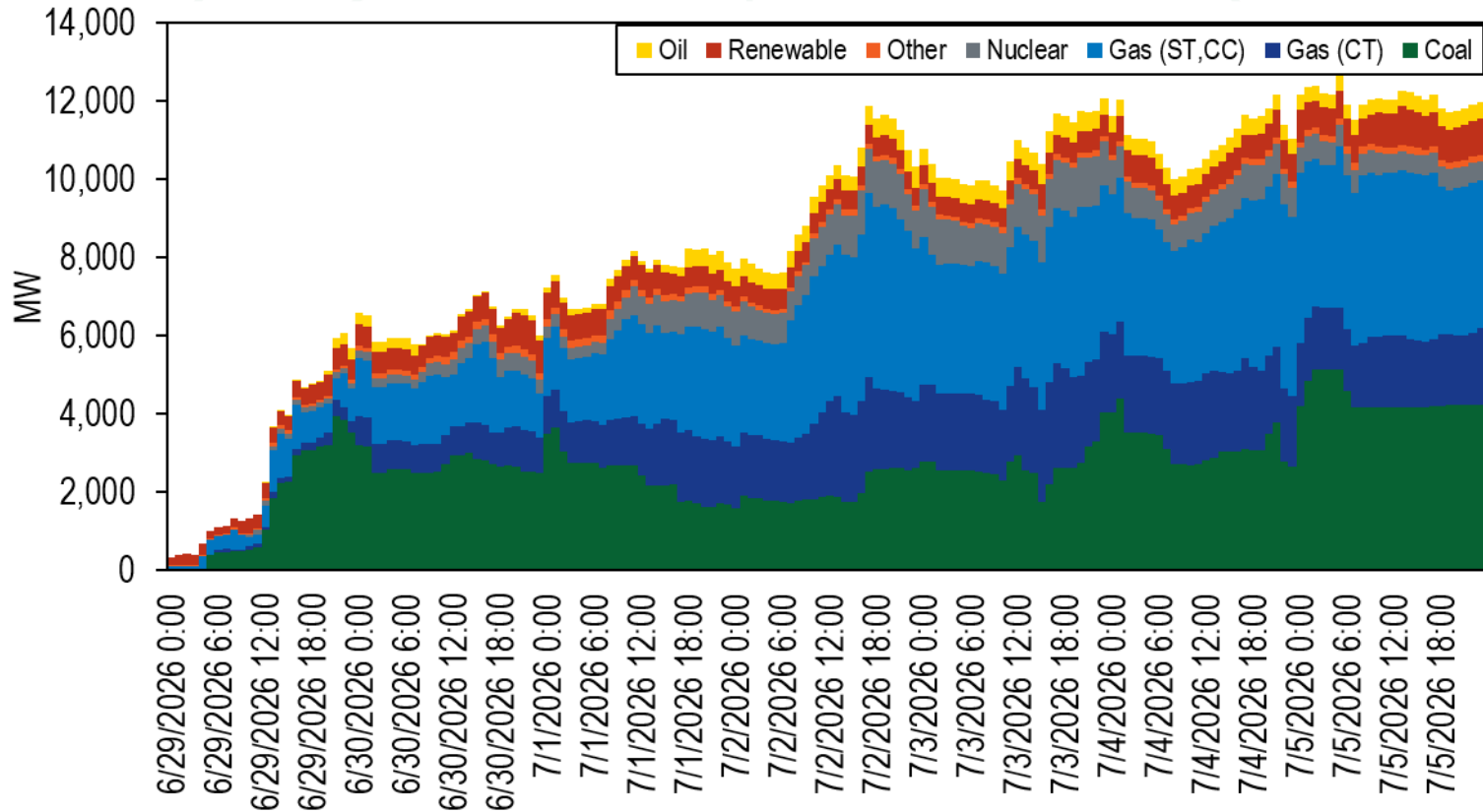
# Outages Submitted Before/During the Heat Wave



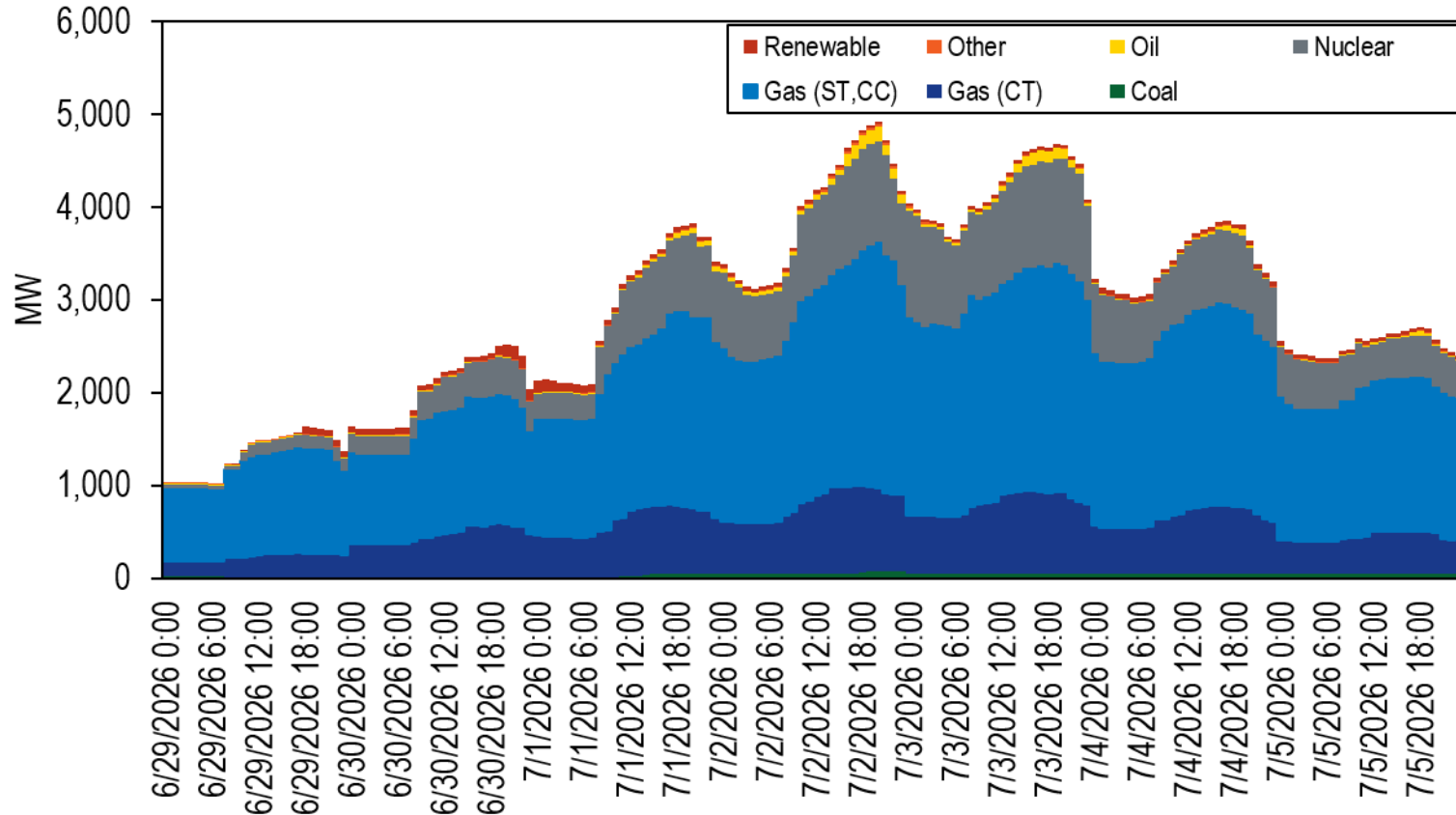
# Outage Causes Submitted During Heat Wave



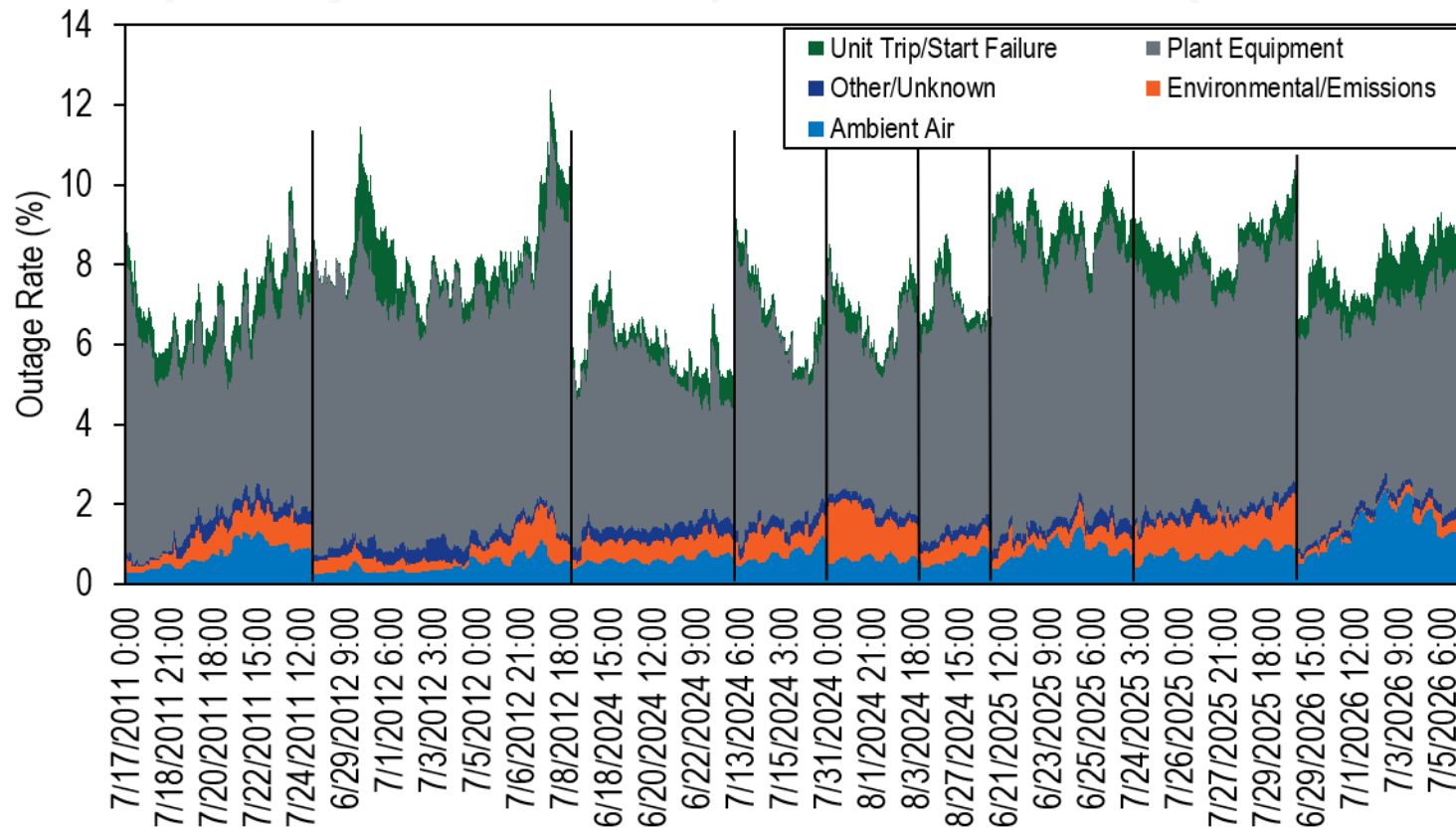
# Outages Submitted During Heat Wave Unit Types



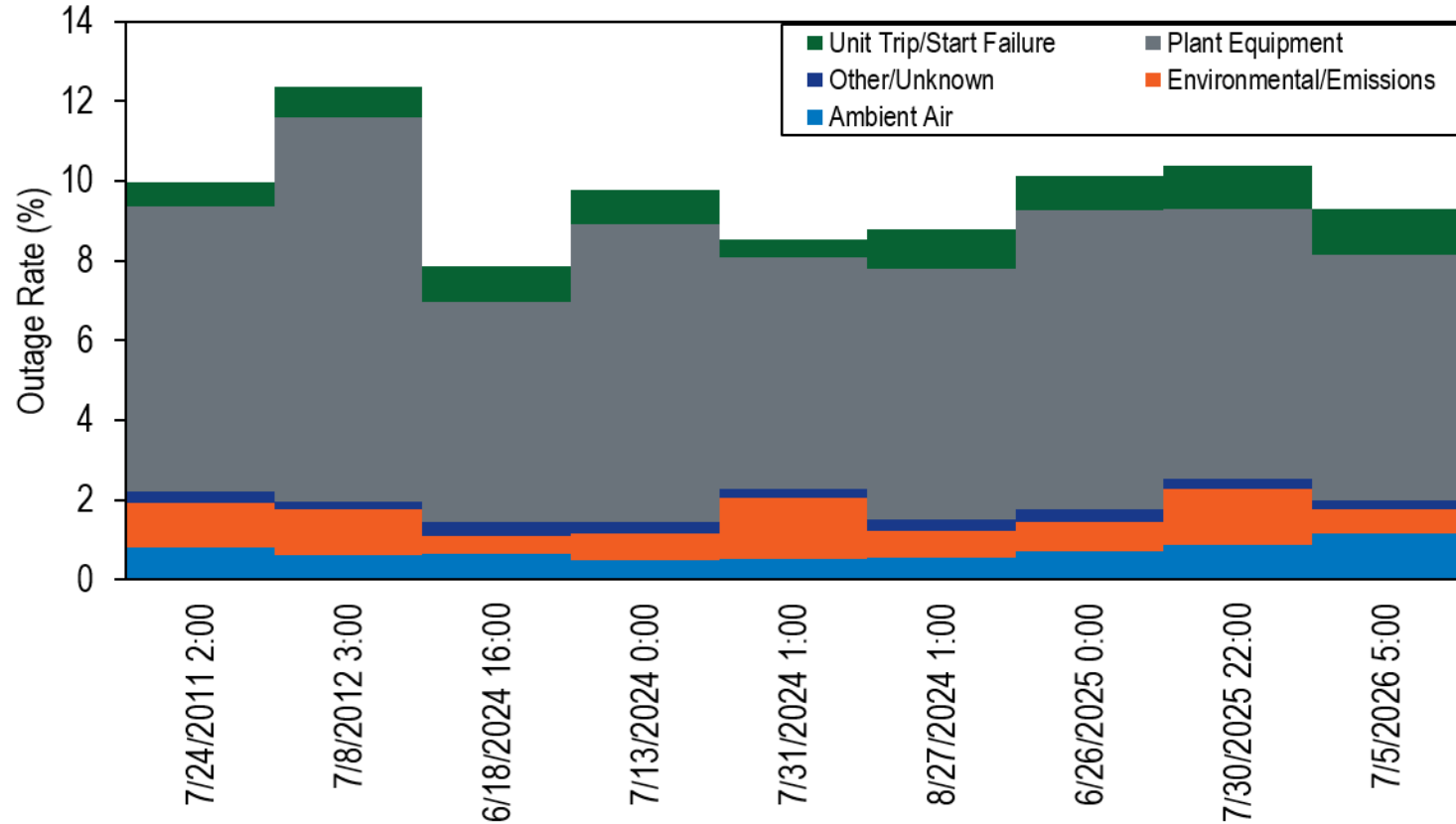
# Heat Wave Ambient Derates



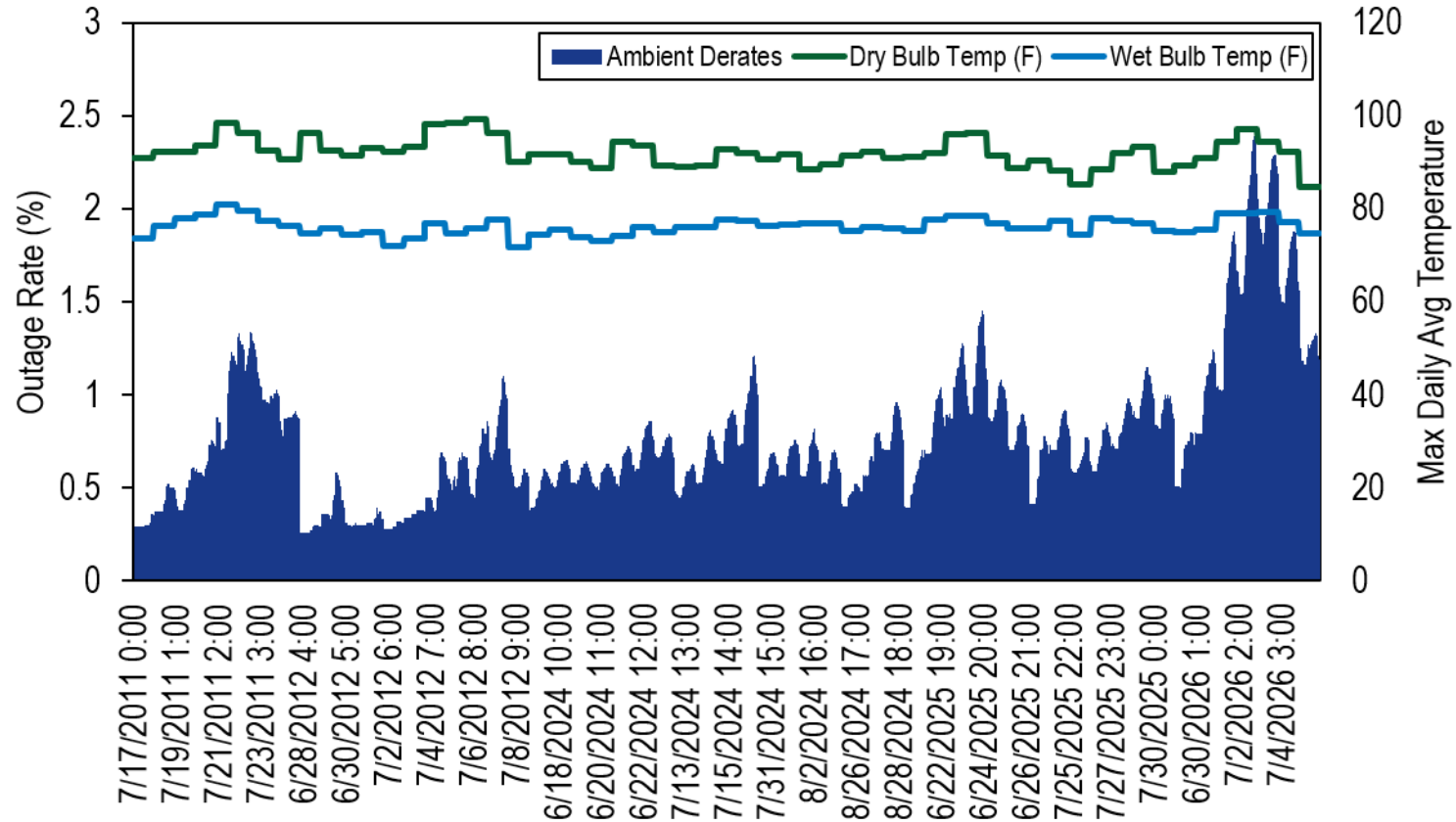
# Prior Heat Wave Outage Causes



# Peak Outage Hour Outage Causes



# Prior Heat Wave Ambient Derates



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