Generation Deactivation Notification Update

Transmission Expansion Advisory Committee
May 4, 2017
Generation Deactivation
<table>
<thead>
<tr>
<th>Unit(s)</th>
<th>Transmission Zone</th>
<th>Requested Deactivation Date</th>
<th>PJM Reliability Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stuart 1 (580.6 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td>Reliability analysis complete. Impacts identified. Existing approved baseline upgrades address some of the identified impacts and two new baseline projects have been initiated to address the remaining impacts identified.</td>
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<tr>
<td>Stuart 2 (580 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td></td>
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<tr>
<td>Stuart 3 (580.4 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td></td>
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<tr>
<td>Stuart 4 (577 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td></td>
</tr>
<tr>
<td>Stuart Diesels 1-4 (9.2 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td></td>
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<tr>
<td>Killen 2 (600 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td></td>
</tr>
<tr>
<td>Killen CT (18 MW)</td>
<td>Dayton</td>
<td>6/1/2018</td>
<td></td>
</tr>
</tbody>
</table>
Deactivation Update: Deactivation Notifications

- Dayton Transmission Zone
  - Deactivation date: 06/01/2018
  - Stuart
    - Unit 1 580.6 MW
    - Unit 2 580 MW
    - Unit 3 580.4 MW
    - Unit 4 577 MW
    - Diesels 1-4 9.2 MW
- Killen
  - Unit 2 600 MW
  - CT 18 MW
• Generation Deliverability Outage:
- Clifty Creek – Miami Fort 138 kV line is overloaded for the tower contingency tripping the 2 Clifty Creek – Dearborn 345 kV lines
- Existing Baseline Upgrade (b2828) previously approved by the PJM Board resolves the issue
  - Install 5% reactors at Miami Fort 138 kV to limit current
• Cost estimate: $1M
• Required IS Date: 06/01/2018
• Projected IS Date: 06/01/2021 (TO determining if acceleration is possible)
• Generation Deliverability Outage:
  • Nickel – Warren 138 kV line is overloaded for the tower contingency tripping the Todhunter – Rockies Express 138 kV line and the Foster – Garver 345 kV line
• Existing Baseline Upgrade (b2830) previously approved by the PJM Board resolves the issue
  – Expand Garver 345 kV sub to include 138 kV
• Cost estimate: $18.7M
• Required IS Date: 06/01/2018
• Projected IS Date: 06/01/2021 (TO determining if acceleration is possible)
• Generation Deliverability and Load Deliverability Outage:
• Tanners Creek – Miami Fort 345 kV line is overloaded for the loss of the Terminal – East Bend 345 kV line
• Existing Baseline Upgrade (b2831) previously approved by the PJM Board resolves the issue
  – Upgrade Tanners Creek – Miami Fort 345 kV line
• Cost estimate: $7.8M
• Required IS Date: 06/01/2018
• Projected IS Date: 12/01/2021 (TO determining if acceleration is possible)
• Generation Deliverability Outage:
• Kyger Creek – Sporn 345 kV circuit 2 is overloaded for the loss of the Kyger Creek – Sporn 345 kV circuit 1
• Existing Baseline Upgrade (b2832) previously approved by the PJM Board resolves the issue
  – Combine 2 existing Kyger Creek – Sporn lines into a single six-wire line
• Cost estimate: $0.3M
• Required IS Date: 06/01/2018
• Projected IS Date 06/01/2019
• Generation Deliverability Outage:
  • Jefferson – Clifty Creek 345 kV line is overloaded for the stuck breaker contingency tripping the Greentown – Jefferson 765 kV line and the Hanging Rock – Jefferson 765 kV line
  • New Baseline Upgrade (b2878) increase rating of the Jefferson – Clifty Creek 345 kV line
  • Cost estimate: $0.1M
  • Required IS Date: 06/01/2018
  • Projected IS Date: 06/01/2019
• Generation Deliverability Outage:
  • Spurlock – Stuart 345 kV line is overloaded for the loss of the Silver Grover – Zimmer – Red Bank 345 kV line
• New Baseline Upgrade (b2879) – upgrade Stuart – Spurlock 345 kV line
• Cost estimate: $2.5M
• Required IS Date: 06/01/2018
• Projected IS Date: 12/31/2018
• Ongoing high voltages on the EHV system have been occurring in AEP and surrounding areas under light load conditions
• Existing Baseline Upgrades mitigate high voltage issues
  – B2826.1: Install 300 MVAR reactor at Ohio Central 345 kV substation ($5M)
  – B2826.2: Install 300 MVAR reactor at West Bellaire 345 kV substation ($5M)
• Cost estimate: $10M
• Required IS Date: 06/01/2018
• Projected IS Date: 09/01/2018
Description: baseline upgrade cost and timing

- Immediate Need
  - Due to the timing of the need for the reinforcement an RTEP proposal window is infeasible
  - Due to the immediate need, the local Transmission Owner will be the Designated Entity

- Estimated Project Cost: $39.6M
  - B2828: $1M
  - B2830: $18.7M
  - B2831: $7.8M
  - B2832: $0.3M
  - B2878: $0.1M
  - B2879.1: $0.09M
  - B2879.2: $1.61M
  - B2826: $10M

- PJM is working with affected Transmission Owners to determine what interim operational measures can be taken for the period between the Required In-Service Date and the Projected In-Service Date for those projects that cannot be completed by 06/01/2018

- Projected In-Service
  - B2828: 06/01/2021
  - B2830: 06/01/2021
  - B2831: 12/01/2021
  - B2832: 06/01/2019
  - B2878: 06/01/2019
  - B2879.1: 06/01/2018
  - B2879.2: 12/31/2018
  - B2826: 09/01/2018
• V1 – 5/1/2017 – Original Slides Posted