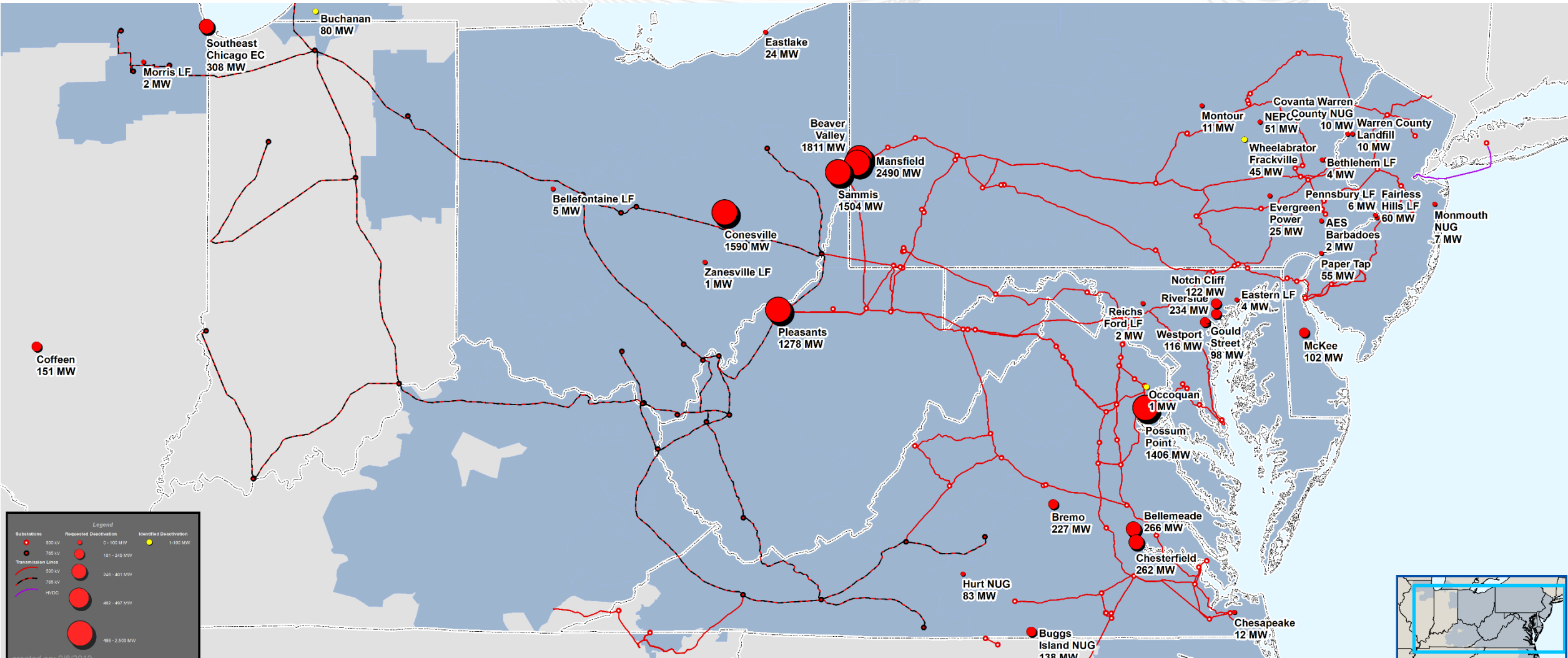




# Generation Deactivation Notification Update

Transmission Expansion Advisory  
Committee

September 12, 2019



Unit(s)	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Frackville Wheelabrator 1 (45.1 MW)	PPL	3/01/2020	Reliability analysis underway
Buchanan 1 and 2 (80 MW)	AEP	06/01/2023	Reliability analysis underway
Occoquan 1 (3.2 MW)	Dominion	11/07/2019	Reliability analysis complete. No violations identified.

# Baseline Justifications Due to FirstEnergy Reinstatements of Davis Besse 1, Perry 1, and Sammis 5-7

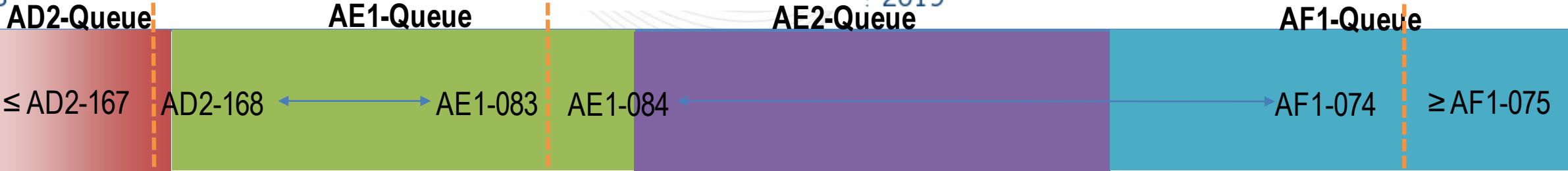


# FirstEnergy Deactivation Timeline

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

2018 2019

Queues



RTEP

<table border="1"> <tr><td>b2965</td></tr> <tr><td>b2967</td></tr> </table>	b2965	b2967	b3005	b3011.1	b3012.2	b3015.5	<table border="1"> <tr><td>b3012.3</td></tr> <tr><td>b3063</td></tr> <tr><td>b3067</td></tr> <tr><td>b3071</td></tr> <tr><td>b3075</td></tr> <tr><td>b3079</td></tr> <tr><td>b3083</td></tr> <tr><td>b3012.4</td></tr> <tr><td>b3064</td></tr> <tr><td>b3068</td></tr> <tr><td>b3072</td></tr> <tr><td>b3076</td></tr> <tr><td>b3080</td></tr> <tr><td>b3084</td></tr> <tr><td>b3061</td></tr> <tr><td>b3065</td></tr> <tr><td>b3069</td></tr> <tr><td>b3073</td></tr> <tr><td>b3077</td></tr> <tr><td>b3081</td></tr> <tr><td>b3085</td></tr> <tr><td>b3062</td></tr> <tr><td>b3066</td></tr> <tr><td>b3070</td></tr> <tr><td>b3074</td></tr> <tr><td>b3078</td></tr> <tr><td>b3082</td></tr> <tr><td></td></tr> </table>	b3012.3	b3063	b3067	b3071	b3075	b3079	b3083	b3012.4	b3064	b3068	b3072	b3076	b3080	b3084	b3061	b3065	b3069	b3073	b3077	b3081	b3085	b3062	b3066	b3070	b3074	b3078	b3082	
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b3082																																			
b3006	b3011.2	b3013	b3015.7																																
b3007.1	b3011.3	b3014	b3016																																
b3007.2	b3011.4	b3015.1	b3017																																
b3008	b3011.5	b3015.2	b3024																																
b3009	b3011.6	b3015.3																																	
b3010	b3012.1	b3015.4																																	

Notices

03/28/2018: First Energy announces deactivation of Davis Besse 1, Perry 1, and Beaver Valley 1-2

08/29/2018 First Energy announces deactivation of Eastlake 6, Sammis 5-7, Sammis Diesel, and Mansfield 1-3

07/29/2019 First Energy announces reinstatement of Davis Besse 1, Perry 1, and Sammis 5-7



# FirstEnergy Reinstatement Impact

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

2018

2019

Queues

AD2-Queue

AE1-Queue

AE2-Queue

AF1-Queue

≤ AD2-167

AD2-168

AE1-083

AE1-084

AF1-074

≥ AF1-075

RTEP

b2965
b2967

b3005	b3011.1	b3012.2	b3015.5
b3006	b3011.2	b3013	b3015.7
b3007.1	b3011.3	b3014	b3015.8
b3007.2	b3011.4	b3015.1	b3016
b3008	b3011.5	b3015.2	b3017
b3009	b3011.6	b3015.3	b3024
b3010	b3012.1	b3015.4	

b3012.3	b3063	b3065	b3069	b3073	b3077	b3081	b3085
b3012.4	b3064.1	b3066	b3070	b3074	b3078	b3082	
b3061	b3064.2	b3067	b3071	b3075	b3079	b3083	
b3062	b3064.3	b3068	b3072	b3076	b3080	b3084	

- Required for remaining deactivations
- New required for remaining deactivations
- Complete due to progress
- Pending resolution

Notices

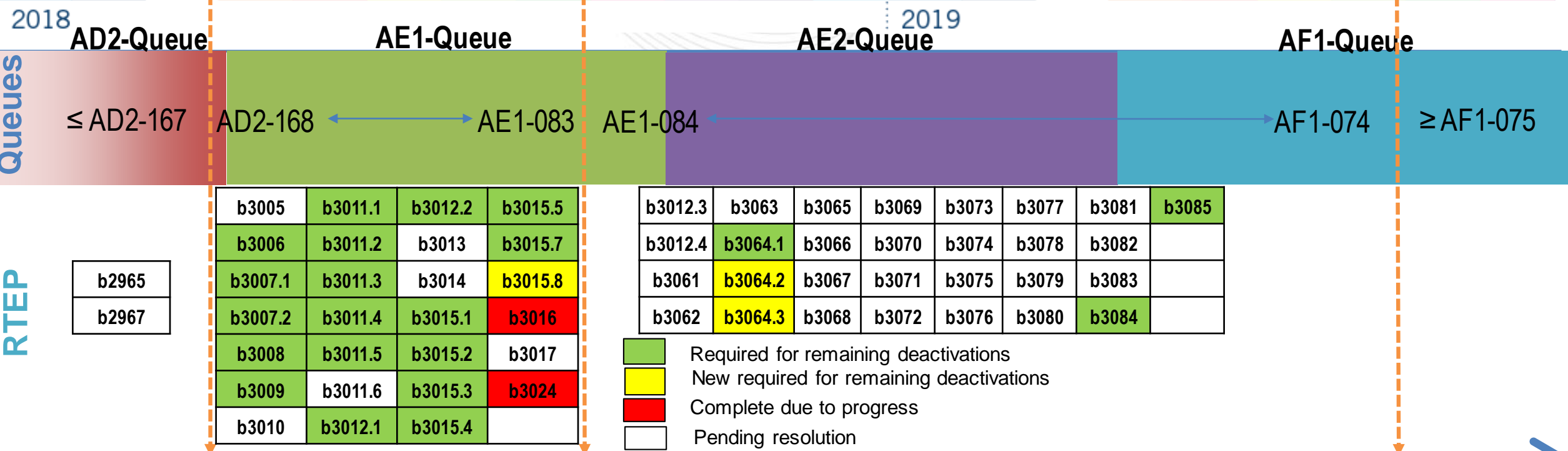
03/28/2018: First Energy announces deactivation of **Davis Besse 1, Perry 1, and Beaver Valley 1-2**

08/29/2018 <sup>or</sup> First Energy announces deactivation of Eastlake 6, **Sammis 5-7**, Sammis Diesel, and Mansfield 1-3

07/29/2019 First Energy announces reinstatement of Davis Besse 1, Perry 1, and Sammis 5-7



Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep



- “Pending resolution” baseline upgrades are not needed by deactivations, but may be required upon completion of baseline re-tools or may be relied on by applicable queue projects :
  - AD2-168 → AE1-083 can gain benefits from baselines upgrades identified prior to 8/29/2018.
  - AE1-084 → AF1-074 can gain benefits from all baseline upgrades identified prior to 7/29/19.
- ISA must be signed to lock “pending resolution” baseline upgrades into base case.
- “Pending resolution” baseline upgrades may not be needed as proposed. If a lesser upgrade mitigates queue projects’ violation up to AF1-074 or baseline needs, then a lesser upgrade will be identified to replace the existing upgrade.

- Status
  - No AD2 projects benefit from any identified baseline upgrades
  - AE1 and AE2 projects were identified as gaining benefit from baselines upgrades
  - AF1 analysis pending
- Schedule
  - AE2 System Impact Study results anticipated February 2020
  - AF1 Feasibility Study results anticipated January 2020



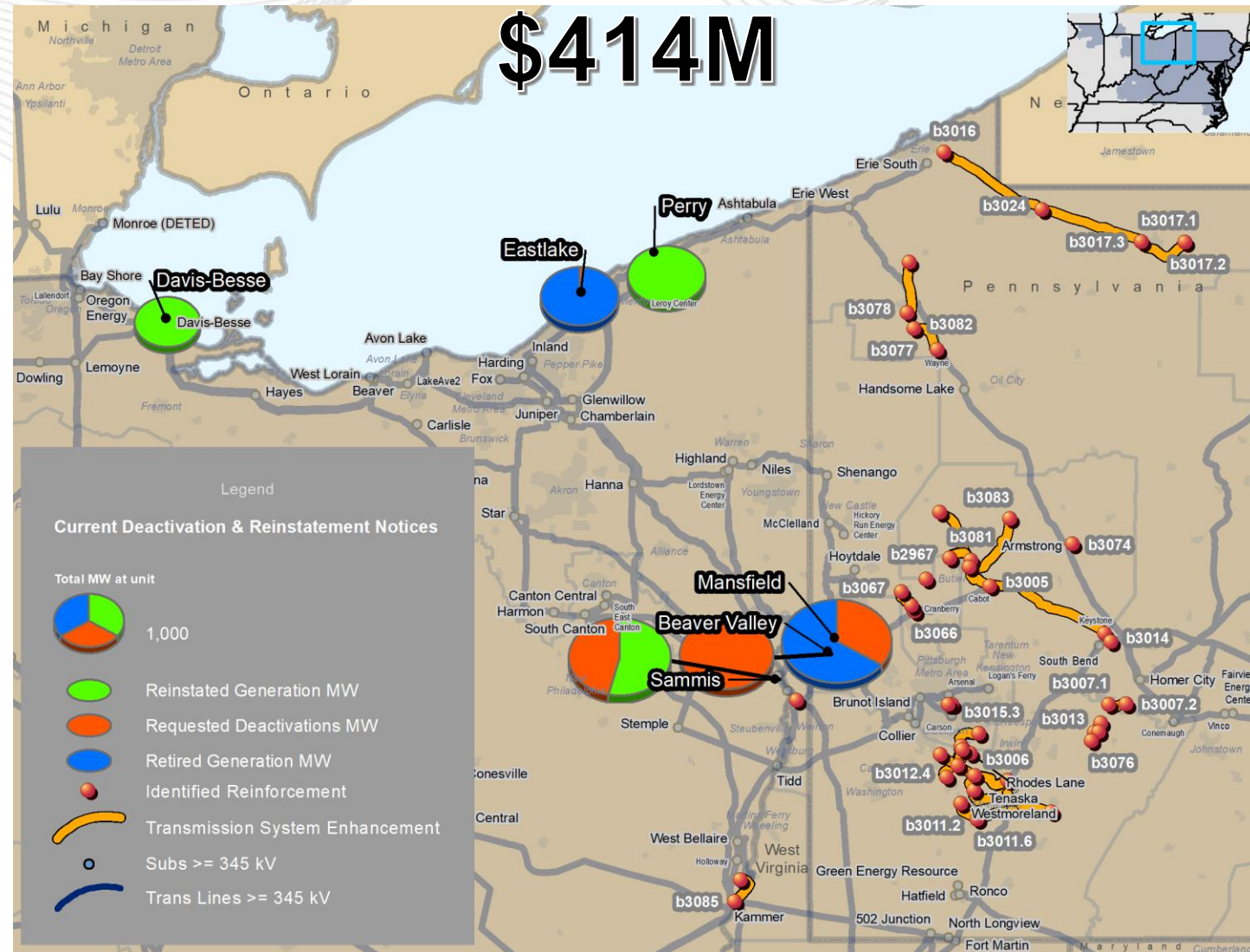
- The impacts and required upgrades were presented on 06/07/2018 and 11/08/2018 for the following deactivations units respectively.

## FE nuclear deactivation

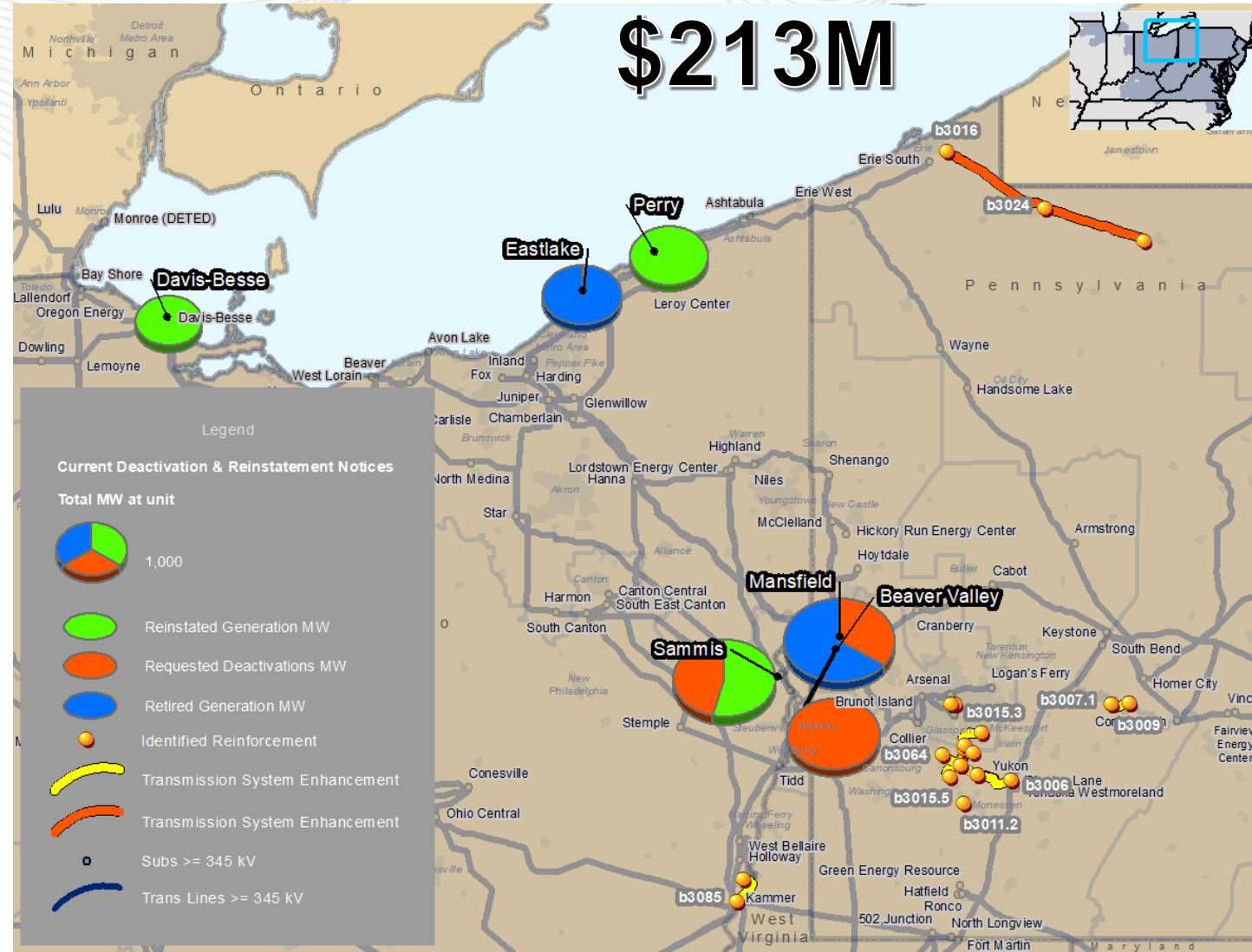
- 05/31/2020: Davis Besse 1 (896 MW)
- 05/31/2021: Perry 1 (1247 MW) and Beaver Valley 1(909 MW)
- 10/31/2021: Beaver Valley 2 (902 MW)

## FE Coal deactivation

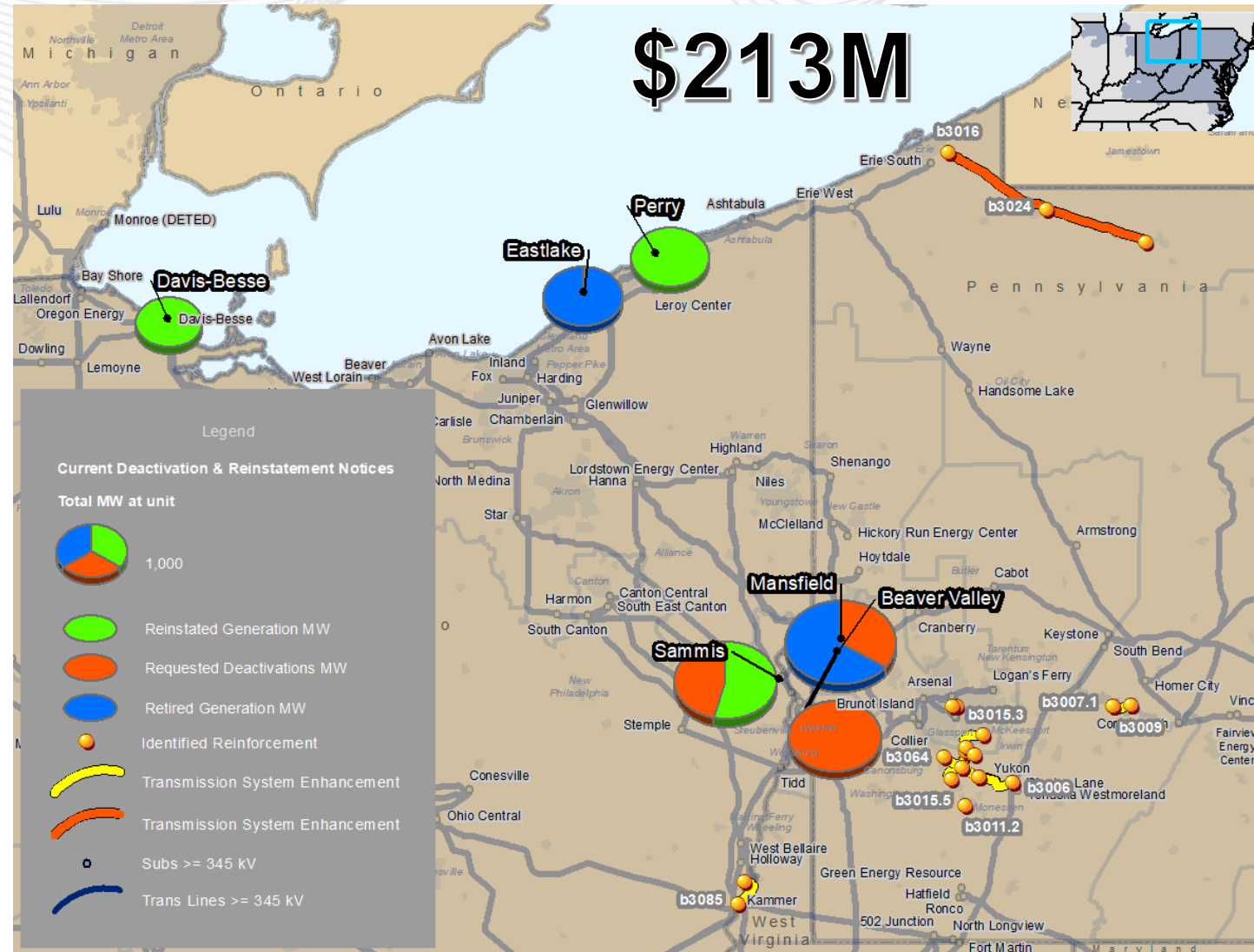
- 06/01/2021: Bruce Mansfield (2490 MW), Sammis Diesel (13 MW), Eastlake 6 (24MW)
  - 06/01/2022: Sammis 5, 6, and 7 (1491 MW)
- The scope change for B3012 was presented on 05/16/2019 for a constructing a new Elarma – Route 51 138 kV #3 line.



- The impacts and required upgrades were re-evaluated due to the reinstatement for the following units.
  - Davis Besse 1 (896 MW)
  - Perry 1 (1247 MW)
  - Sammis 5, 6, 7 (1491 MW)
- The following topology baseline projects remain required for the identified violations -\$183 million.
  - B3011.1 through B3011.5 (APS)
    - Construct new Route 51 substation, and connect 10 138 kV lines into this new substation.
    - Upgrade terminal equipment at Yukon to increase rating on Yukon to Route 51 #1 138 kV line.
    - Upgrade terminal equipment at Yukon to increase rating on Yukon to Route 51 #2 138 kV line.
    - Route 51 - Yukon 138 kV Line Ckt 3 - Upgrade Terminal Equipment.
    - Upgrade terminal equipment at Yukon to increase rating on Yukon to Route 51 #4 138 kV line).

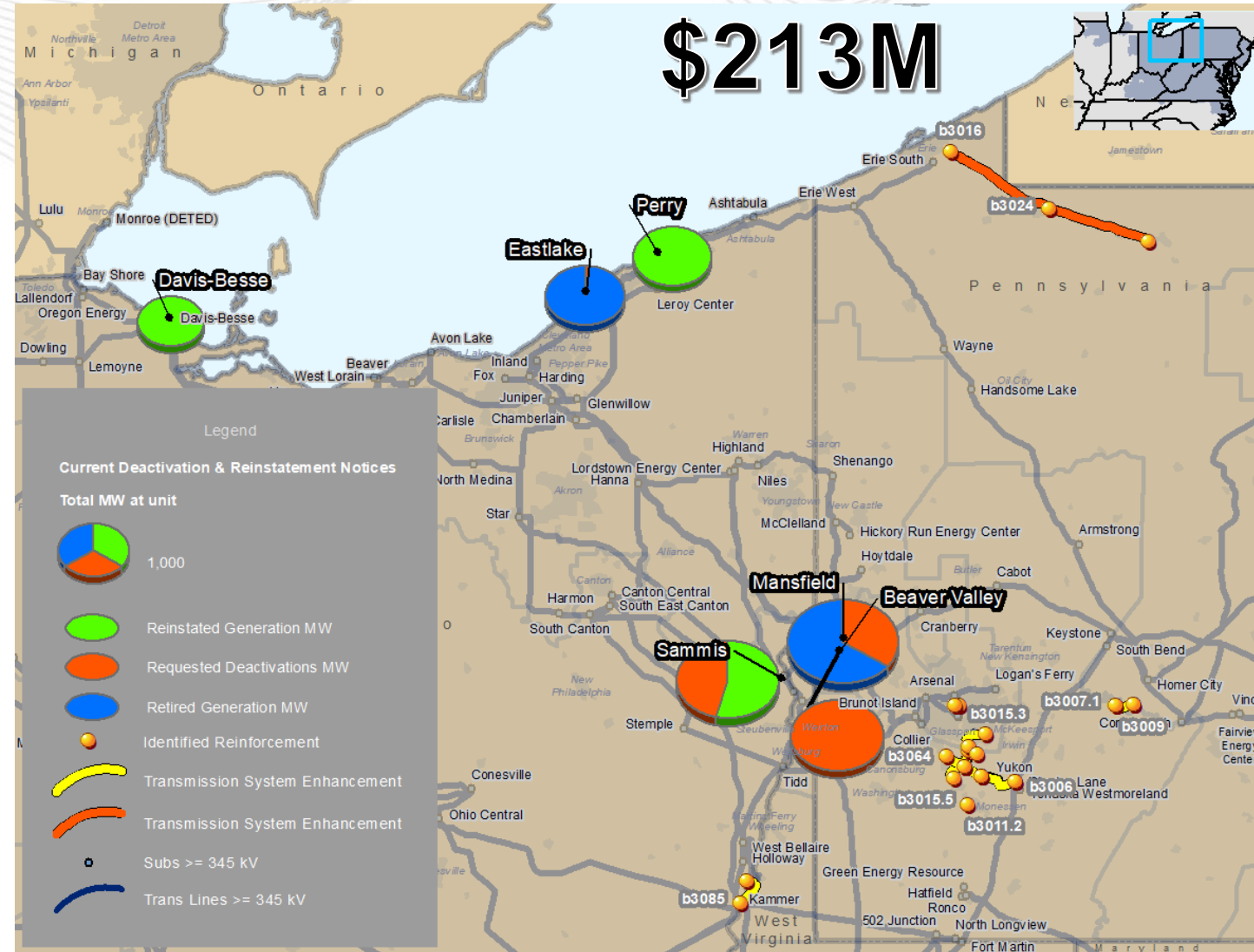


- B3015.1 through B3015.7 (DLCO)
  - Construct new Elrama 138 kV substation and connect 7 138 kV lines to new substation.
  - Reconductor Elrama to Wilson 138 kV line.
  - Reconductor Dravosburg to West Mifflin 138 kV line.
  - Run new conductor on existing tower to establish the new Dravosburg-Elrama (Z-75) circuit.
  - Reconductor Elrama to Mitchell 138 kV line (AP and DLCO).
  - Route 51 - Yukon 138 kV Line Ckt 3 - Upgrade Terminal Equipment.
  - Reconductor Wilson to West Mifflin 138 kV line.
- B3012.1, B3012.2 (APS and DLCO) – Construct two new ties from a new FE substation to a new Duquesne substation by using a common structure.
- B3006 (APS) - Replace four Yukon 500/138 kV transformers with three transformers with higher rating and reconfigure 500 kV bus
- B3064 (DLCO) - Expand Elrama 138 kV substation to loop in the existing USS Steel Clariton - Piney Fork 138 kV line.





- The remaining baseline projects remain required for the identified violations - \$30 million.
- B3007.1, B3007.2 (APS and PENELEC) - Reconductor the Blairsville East to Social Hall 138 kV line and upgrade terminal equipment
- B3008 (PENELEC)- Upgrade Blairsville East 138/115 kV transformer terminals.
- B3009 (PENELEC)- Upgrade Blairsville East 115 kV terminal equipment
- B3084 (DLCO) - Reconductor the Oakland - Panther Hollow 138 kV line.
- B3085 (AEP) - Reconductor Kammer - George Washington 138 kV line (~0.08 miles). Replace the wave trap at Kammer 138 kV.





## Newly Identified baseline projects

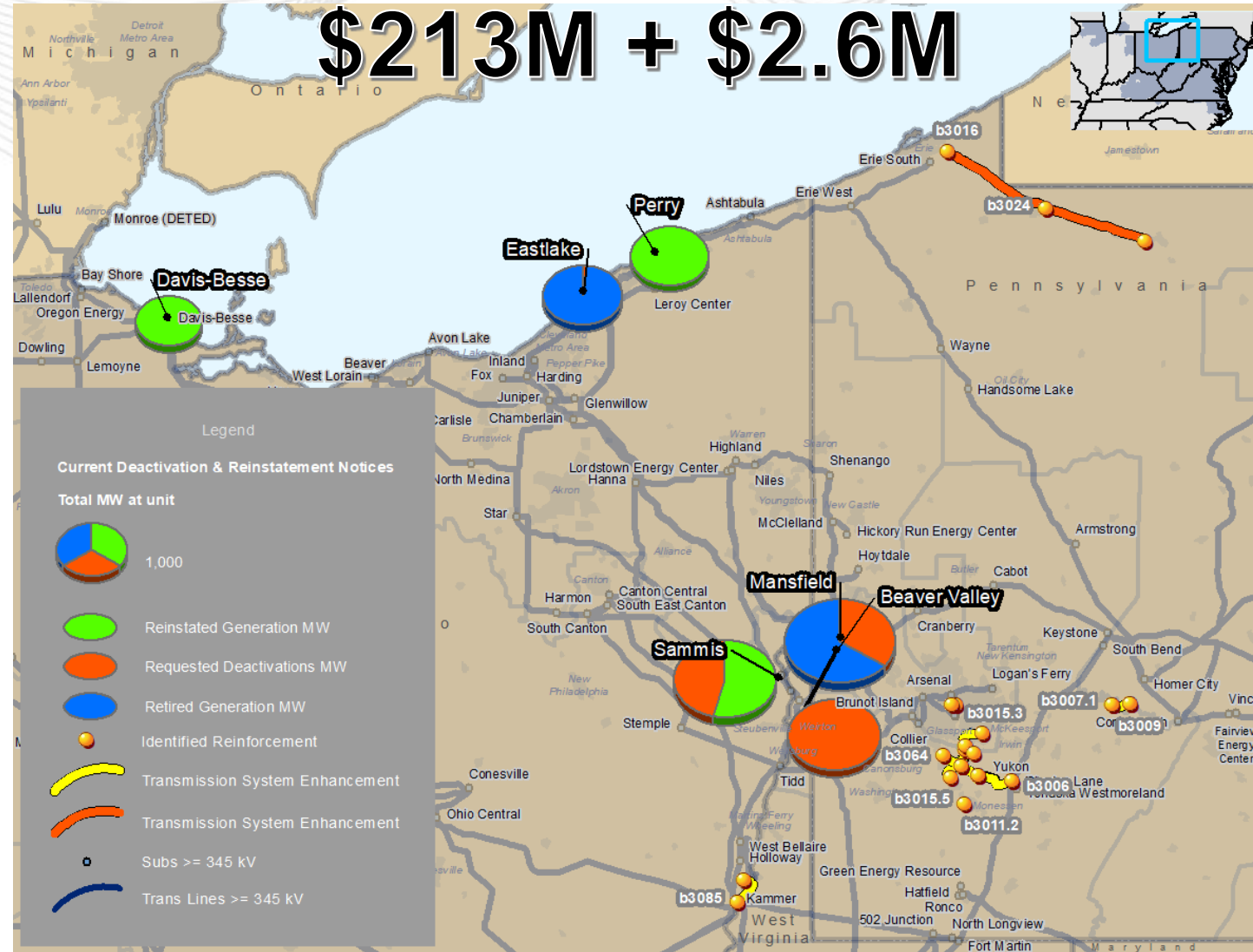
B3064.2, B3064.3 (APS) - Upgrade line relaying at Piney Fork and Bethel Park for Piney Fork – Elrama 138 kV line and Bethel Park – Elrama 138 kV line.

**Estimated Project Cost: \$0.6M**  
**Required IS Date: 06/01/2021**  
**Projected IS Date: 06/01/2021**

B3015.8 (APS) – Re-establish work of B3015.6 (canceled 2/2019) upgrade terminal equipment at Mitchell for Mitchell – Elrama 138 kV line for required circuit breaker replacement.

- Existing Scope Rating: SN 498 MVA / SE 600 MVA
- New Scope Rating: SN 790 MVA / SE 838 MVA

**Estimated Project Cost: \$2M**  
**Required IS Date: 06/01/2021**  
**Projected IS Date: 06/01/2021**



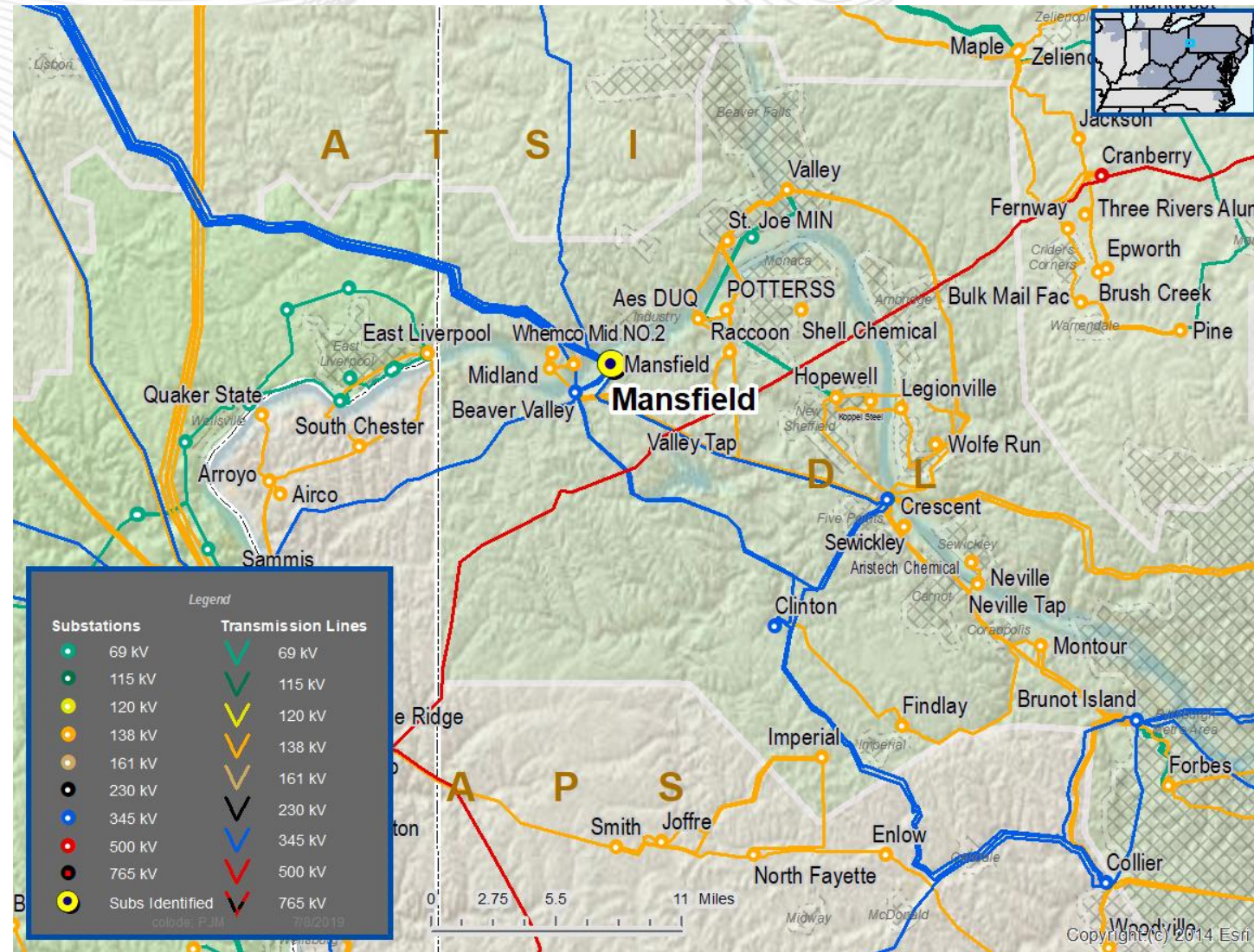


- Baseline projects highlighted in green or red on slide 6-7 remain required.
- Newly identified projects are highlighted in yellow on slide 6-7
- Baseline projects highlighted in white on slide 6-7 are pending.
- All pending baseline projects are on hold.
- Final decision on canceling baseline projects will occur after completion of all required RTEP analysis and execution of ISAs for affected generation queue projects.
- Key Schedule
  - 2024 RTEP retool will be performed in the beginning of October 2020.
  - AE2 System Impact Study results anticipated February 2020.
  - AF1 Feasibility Study results anticipated January 2020.

# Second Read

## Bruce Mansfield – 1491 MW

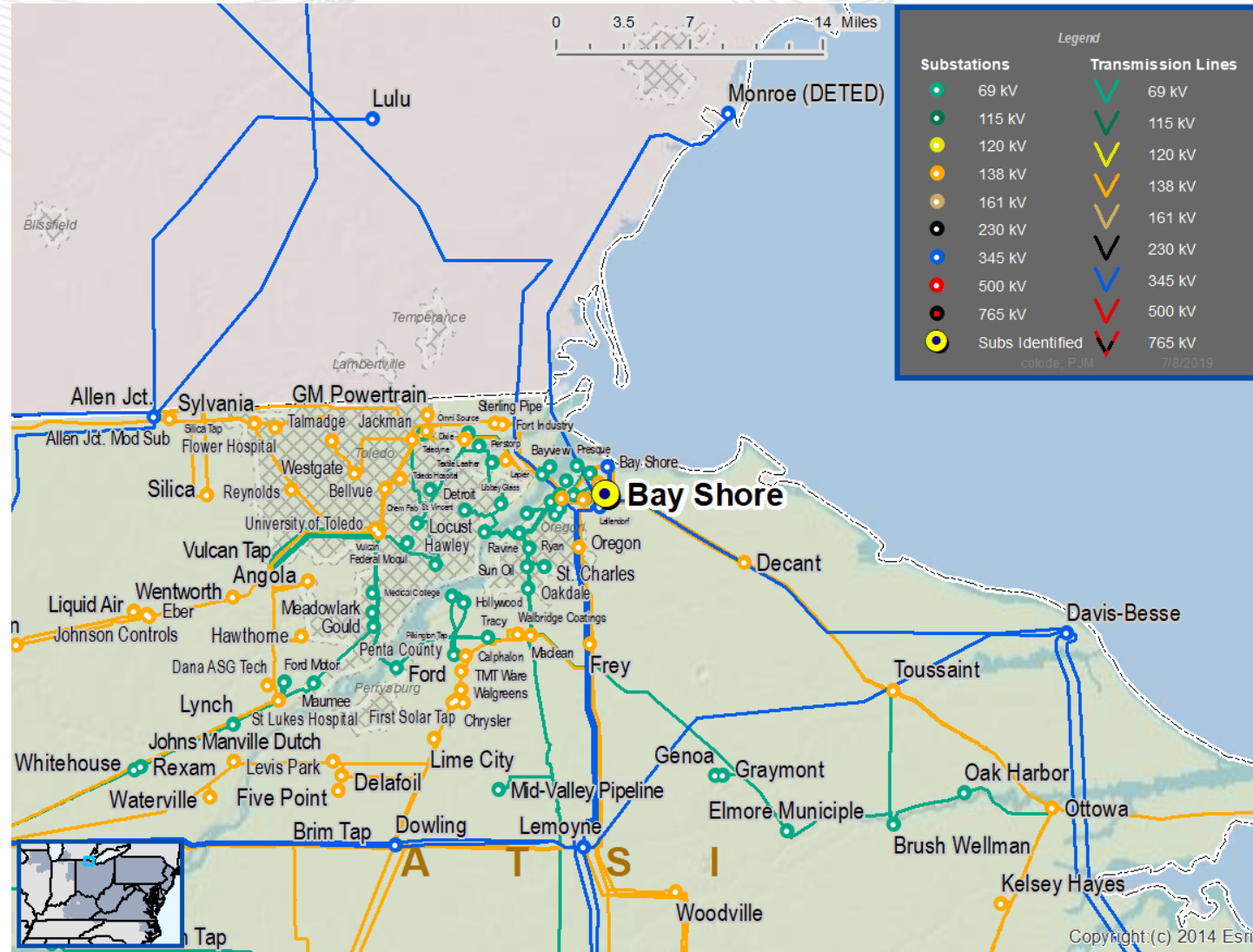
- The projected deactivation date **has changed from 06/01/2021 to 11/07/2019**.
  - All impacts and associated baseline projects were presented on 11/08/2018
  - FE recently informed of the necessary substation work associated with deactivating the unit – B3124 for separating metering, station power, and communication.
- **Estimated Cost: \$0.4M**
  - **Projected IS Date: 12/31/2020**
  - **Original TEAC Date: 07/11/2019**





## Bay Shore 2, 3, and 4 – 495 MW

- The actual deactivation date was 09/01/2012.
  - All impacts and associated baseline projects were initially presented on 09/08/2010.
  - FE recently informed of the necessary substation work associated with deactivating the unit – B3127.
- Install new switchyard power supply to separate from existing generating station power service.
  - Separate all communications circuits.
  - Separate metering circuits from switchyard and generation station.
- **Estimated Cost: \$1.5M**
  - **Projected IS Date: 12/31/2021**
  - **Original TEAC Date: 7/11/2019**

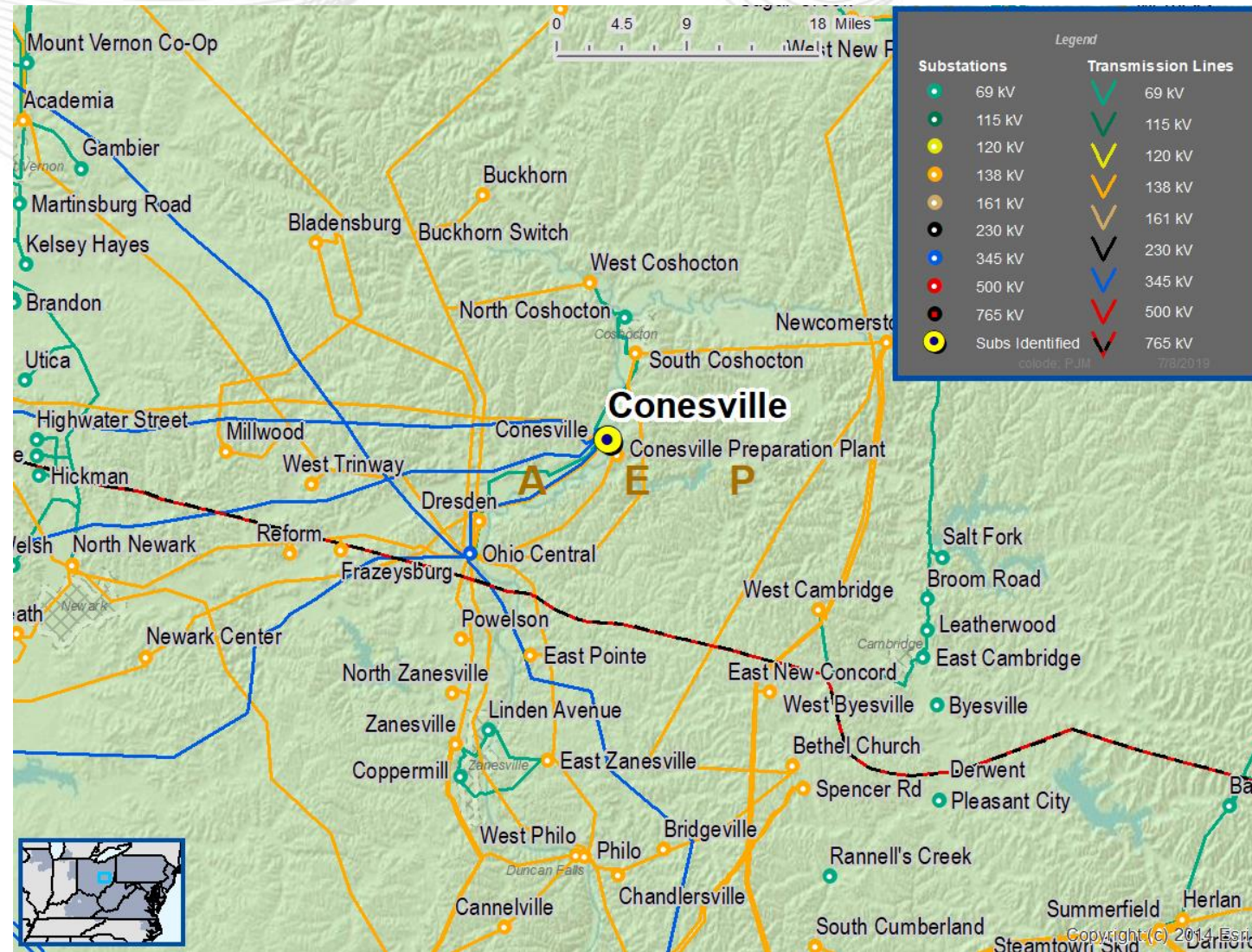






## Conesville 4 – 780 MW

- The projected deactivation date is 09/01/2020.
- All impacts and associated baseline projects were presented on 03/07/2019
- AEP recently informed of the necessary substation work associated with deactivating the unit – B3129
  - Remove line leads to generating units
  - Separate and reconfigure protection schemes.
  - Transfer plant AC service to existing station service feeds in the switchyard.
- **Estimated Cost:** \$1.5M
- **Projected IS Date:** 12/31/2020
- **Original TEAC Date:** 07/11/2020





- V1 - 09/06/2019 - Original slides posted
- V2 - 09/11/2019 – Summary slide #16 added
- V3 – 09/30/2029 – Slides from 5 to 15 for Baseline Justifications Due to FirstEnergy Reinstatements of Davis Besse 1, Perry 1, and Sammis 5-7 replaced for the better clarifications.