



# EMUSTF Recommendation

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PJM Planning Committee  
June 11, 2015

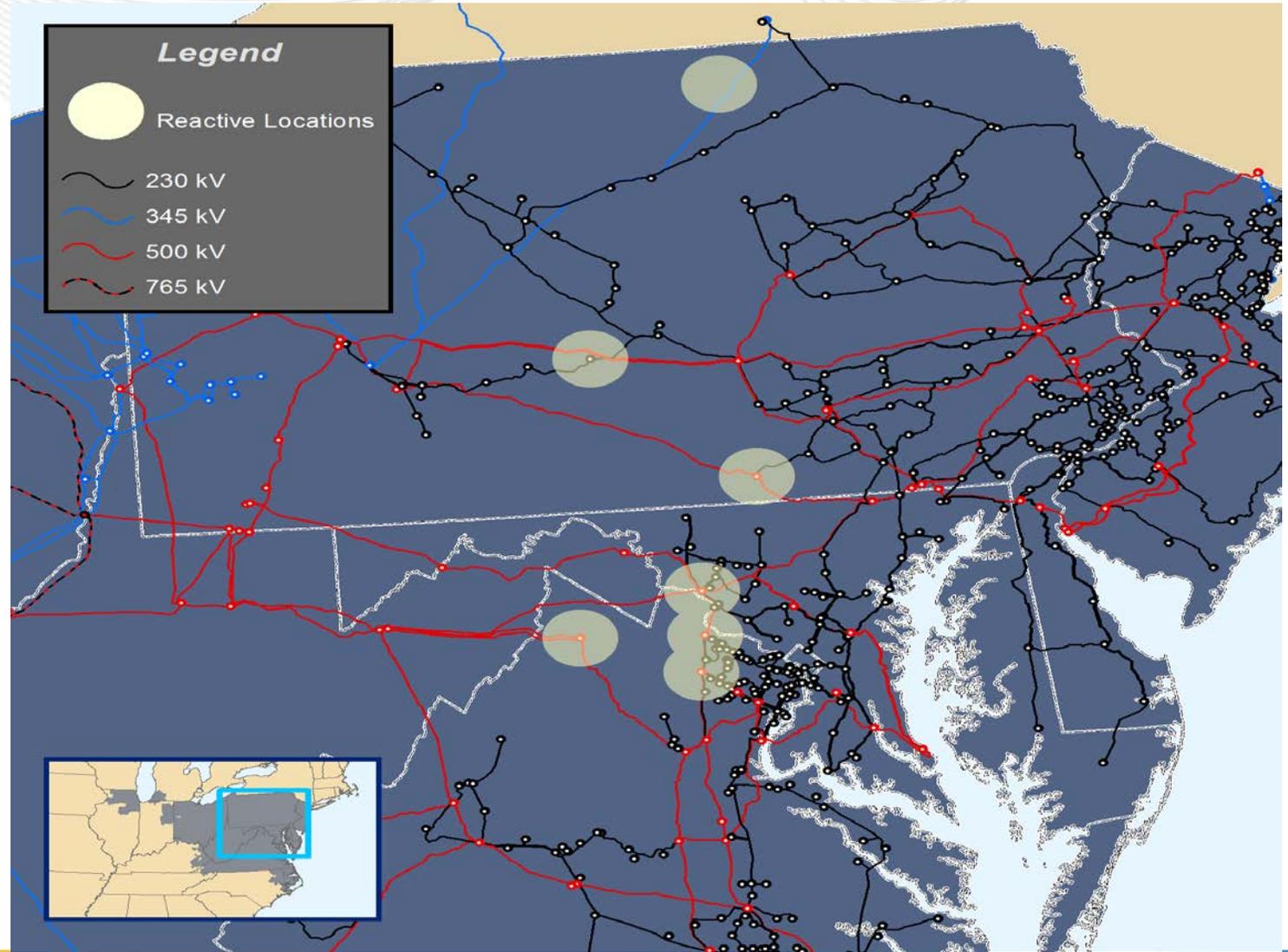
- At their meeting in March, the Markets and Reliability Committee directed the Planning Committee to “develop rules to require that uplift formally be treated as an input to the Regional Transmission Expansion Plan.
- From the EMUSTF recommendation:
  - Add enhancement to operational performance that would allow us to capture contributors to uplift.
  - Provide transparency to triggers for operational performance and market efficiency
  - Add scenario to RTEP modeling process (for high uplift)
  - make sure that we capture the benefits and costs of reactive service devices appropriately

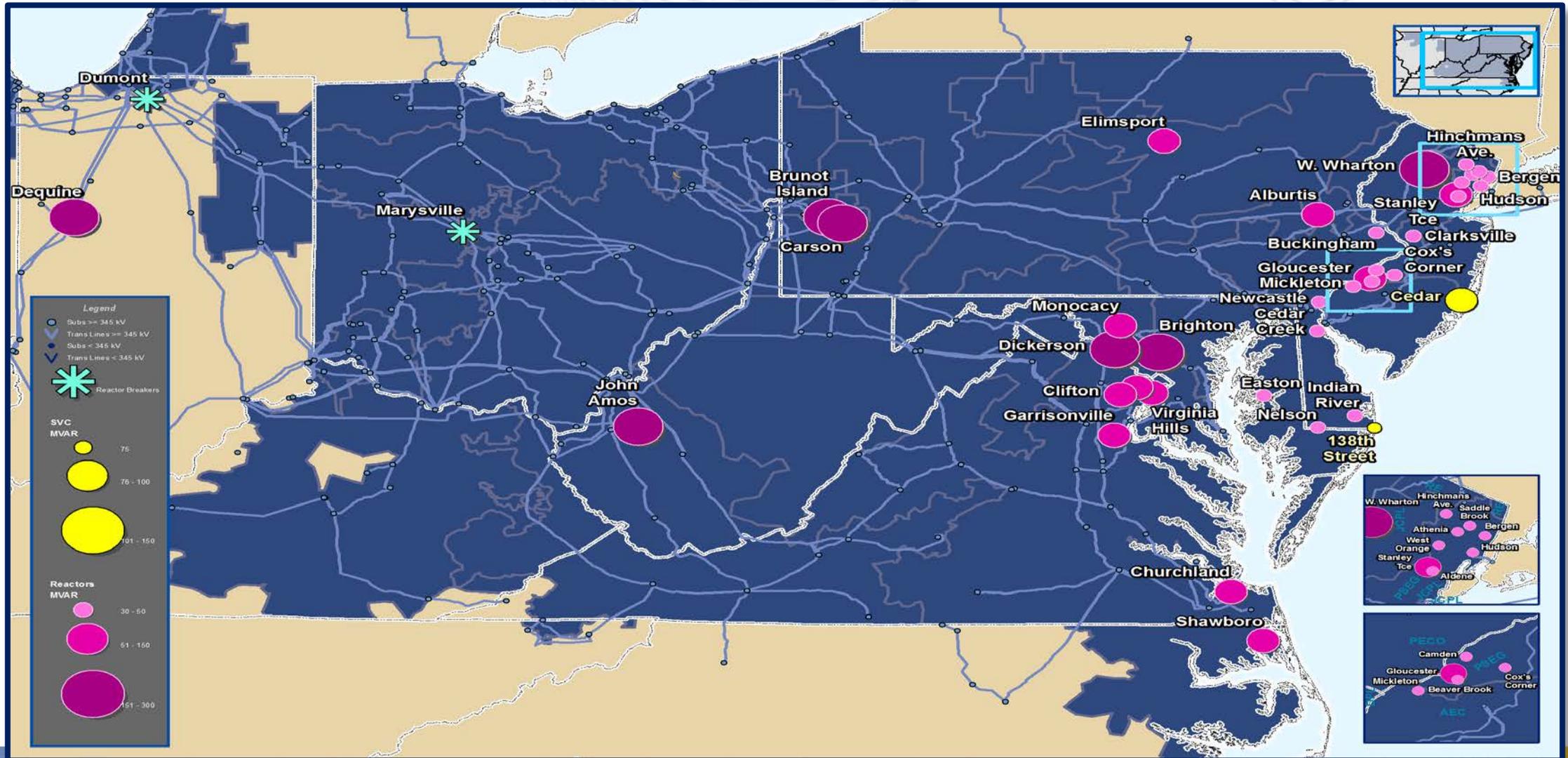
- Evaluation of Operational Performance issues in the RTEP is required under the Operating Agreement and is further defined in Section 2.7 of M14B
  - Typical areas of interest include TLRs, PCLLRW, 500/230 kV PRA and min-gen high voltages
  - Metrics used include 1000 hours or 100 instances of TLR level 3 or higher on an annual basis, and avoided risk for PRA
  - PCLLRWs are evaluated following peak season and compared with planned RTEP upgrades and need for additional upgrades is evaluated
- Recommend adding language to Section 2.7 of M14B to specifically address uplift

- Use dollars of uplift to flag potential issues for further evaluation
- Determine if uplift is a chronic issue or if it was due to an event (i.e. outage)
- If the uplift is considered to be a chronic issue and historic dollars related to a certain issue are significant, should we develop a B/C test?
  - Benefit Metric would be avoided uplift for a certain number of years
  - Expected cost of the upgrade
  - What type of payback period would be appropriate?

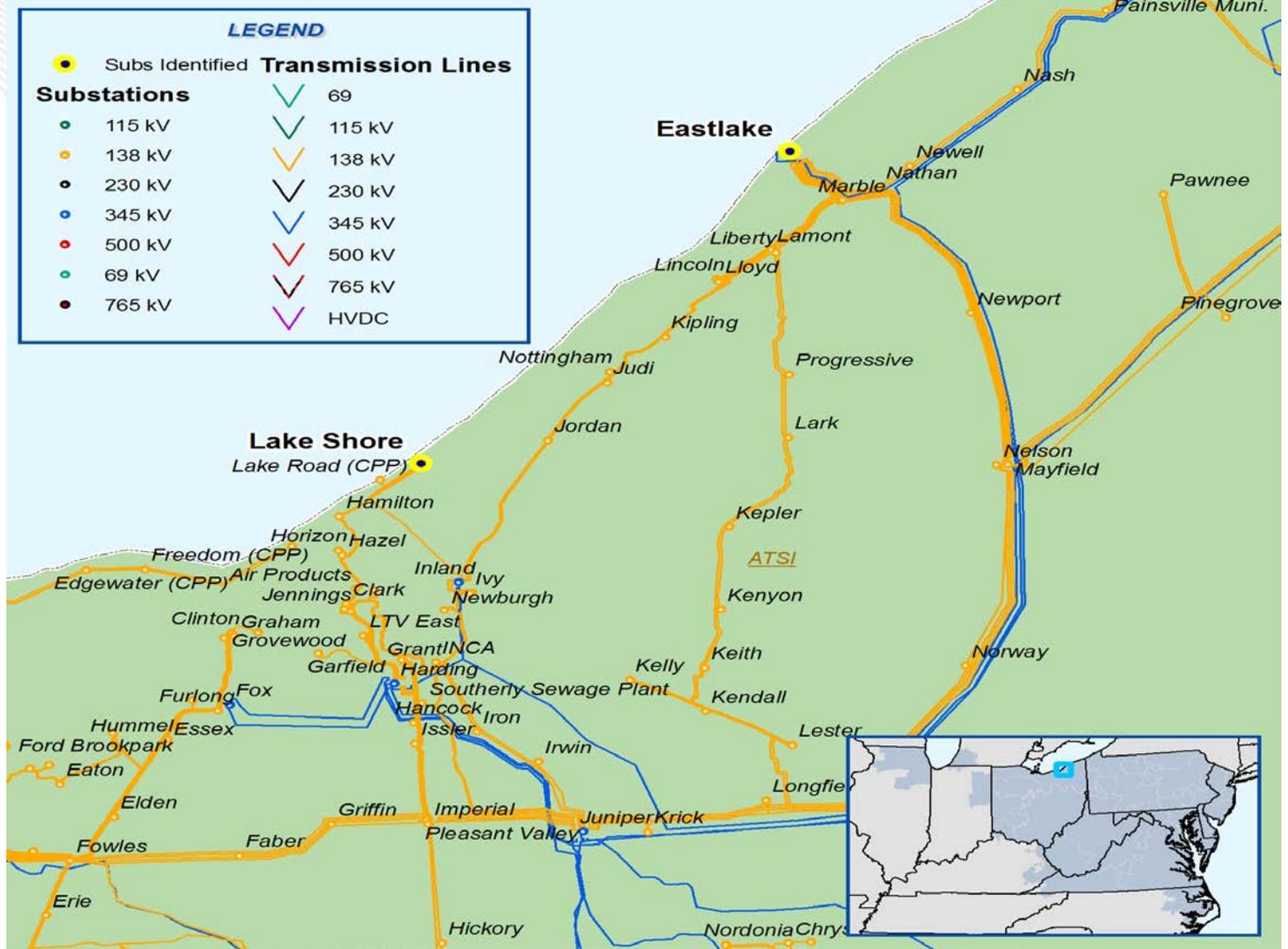
- Historic Reactive Uplift Areas
  - BGE/PEP for AP South and Bedington – BlackOak
  - Delmarva High Voltages
  - Cleveland Interface of ATSI
- Related RTEP upgrades

- Hunterstown 500 kV
- Altoona 230 kV
- Mansfield 345 kV
- Loudoun 500 kV
- Pleasant View 500 kV
- Doubs 500 kV
- Meadow Brook 500 kV





- New Cleveland LDA
- Convert Eastlake units 1, 2, 3, 4 and 5, and Lakeshore unit 18 to a synchronous condenser
- There are also a number of upgrades to address voltage issues including new 345 kV lines, new 345/138 kV substations and transformers, SVCs and capacitors



- The EMUSTF recommended add “high uplift” scenarios to studies done in the RTEP
- A significant amount of the historic uplift (excluding operations around the polar vortex) were driven by reactive issues
  - High voltages during light load (e.g. units called on to absorb vars)
    - Continue to develop light load voltage procedures and criteria
  - Low voltages during shoulder and peak (e.g. unit only called on to support voltage in the area)
    - Would need to address limitation of existing production cost tools and methodology

- Draft M14B changes
- Continue to develop light load procedures (i.e. generator reactive dispatches) that are consistent with conditions observed in real-time operation
- Investigate ways to address limitations with existing production cost simulations
- Stakeholders to provide PJM with feedback related to benefit metrics and B/C test