Additional Temporary Bath County
SPS Development
Bath County Pump Storage

- Bath County pump storage has six generating/pumping units totaling approximately 3000 MW
- Existing Bath County/Cloverdale SPS currently in PJM Operations (see Manual 03) to control thermal/voltage
- SPS monitors flow on Lexington to Cloverdale line to determine tripping post contingency
Purpose of Temporary Bath SPS

- Beginning September 2014, the Dooms – Lexington 500 kV line will be outage to complete a wreck and rebuild baseline project (b1908).
- Existing stability restrictions for this outage would administratively restrict generation and pumping at Bath to 2 units (removing about 2000 MW of capacity and energy) for an extended period of time.
- PJM contacted Dominion asking us to explore the possibility of modifying the existing, or creating a new, Bath SPS to address the identified stability issues.
- A new temporary SPS was designed that will allow up to 5 units to operate in the generating or pumping operation.
SPS Operation

- PJM will request SPS to be armed for outage of Lexington to Dooms 500 kV line.
  - The SPS will not be armed if there are any other 500 kV outages in the vicinity.
    - Existing administrative restrictions would be imposed if there are other outages.
- PJM will determine how many units at Bath will be armed for the stability SPS (1 to 3 units).
  - The number of units tripped is determined by the operating status of Bath units (Mode; i.e., pump, generating, synchronous condensing, mVAR output, etc).
Dominion Zone Transmission

Scheme monitors Bath to Valley line.

For outage of Bath to Valley 500 kV line, SPS will trip 1 to 3 units.

Armed when Lexington to Dooms removed from service.
SPS Design Requirements

- Self contained having minimum interface with other protection schemes.
- Redundant with two communication paths
  - Power Line Carrier
  - Microwave
- Provide necessary indications and alarms to determine present scheme status.
- Response time: 10 cycles; Contingent event to Generator trip
- Monitors element statuses at Bath and Valley substations and trips units if prescribed conditions are met.
Temporary Bath County SPS

- SPS will be temporary for the duration of the b1908 baseline project to wreck and rebuild Dooms – Lexington 500 kV Line
  - Target Date June 1, 2016
- Temporary SPS purpose is to control stability for a range of pumping / generating / condensing combinations at Bath County
- Temporary SPS to be added as PJM Baseline Project (b2281)
- Target Date is prior to September 2014 outage