PJM Steps to Minimize Uplift

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Problem Areas

- Reactive
  - BGE/PEP and APSOUTH
  - Cleveland
  - Seneca area of PN
  - Delmarva

- Thermal
  - Local area(s) within Mid-Atlantic
• **BGE/PEP and APSOUTH**
  – Reliance on uneconomic steam generation throughout 2013
  – *Re-evaluate scheduling methodologies*
  – *Committing less steam generation and relying more on CTs*
  – *Hitting constraints in the area more frequently (BGE/PEP interface) that elevate prices in the area and help reduce uplift*
Cleveland Interface

- Required scheduling protocols for reactive support in the area
- Units are often uneconomic leading to large reactive payments
  - Closed-loop interface
    - Concerns on impacts to FTR
- Planning solutions for June 1, 2014
  - Synchronous condensers being added
  - NEW! Beaver-Davis Besse 345 kV line
- Local scheduling requirements should be eliminated in many occasions therefore reducing uplift
ATSI Transmission Zone Reinforcement

- 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
• **SENECA area of PN**
  
  – Post-contingency low voltages when SENECA is pumping
  
  – *PJM created SENECA closed-loop interface on 2/1/2014*
    
    • Minimal FTR impacts
  
  – *PJM investigated a switching solution with the TO that was implemented at the same time*
    
    • Minimized the need for running additional generation in the area but did not eliminate it
  
  – *Planning solutions for June 1, 2015*
    
    • New Glade-Warren 230kV line
• Seneca pumping low voltages
• There are various low voltage magnitude and voltage drop violations in the Seneca area for various contingencies.
• Proposed Solution: Build a 2nd Glade - Warren 230 kV line (b2180).
• Cost Estimate: $29.6 M
• Required IS Date: 6/1/2015.
• **Delmarva Zone**
  - Actual high voltages during low load conditions
  - **Closed-loop interface**
    • Not a good model for this
  - Merchant solutions being sought in the area
  - **Planning solutions for 2014**
    • 2 more variable reactors scheduled to go in-service by EOY 2014
    • 5 total between 2012 and 2014
Impacts on Reactive Uplift

• Too early to tell
  – Saw reductions in late December
• Extreme cold in Jan/Feb skews results
• May need to look in several months
Emergency Uplift Costs

- Emergency DR
- Emergency purchases

ERPIV tasked with short and long term changes during peak periods

- Better management of interchange
- Scheduling and operating to increased reserve requirements
- Short term discussions underway
  - Mixed feedback
Thermal Uplift Issues

• Closed-loop interfaces and/or binding thermals at levels significantly less than their rating
  – This can create significant (additional) FTR funding problems
  • ATSI interface from 2013 is an example

• ARR allocation methodology requires over-allocation in some cases
  – Binding facilities where there are more FTRs than the flow on the line will create underfunding
  – Stage 1A infeasible facilities
• Some statistics from 2013:
  – DA OR Top 10 = 60% of total DA OR
    • Top 5 are 55% of total
  – BOR Top 10 = 58% of total BOR
    • Top 5 are 46% of total
  – Reactive Top 10 = 62% of total Reactive
Thermal Uplift Issues

• PJM has reviewed problem areas to schedule more optimally

• Several paths
  – Live with the uplift (attempt to minimize)
  – Bind the facilities and live with the underfunding
    • Allocate underfunding on these facilities differently?
  – Change the ARR allocation to limit over-allocating and bind the facilities
    • Allocate underfunding on these facilities differently?