

# BPA Stakeholder Discussion on PAC/ISO EIM Implementation: Congestion Management

February 20, 2014

Pre-decisional/For Discussion Purposes Only



# Congestion Management

- When actual or projected power flows exceed the System Operating Limit (SOL) of a flowgate or path, BPA must reduce the power flow to a level below the SOL within 30 minutes (TOP-007-WECC-1 R1).
- BPA has dispatcher standing orders (DSOs) that prescribe specific and unique mitigation steps for each path and flowgate. However when near or exceeding a SOL, BPA takes the following general mitigation steps.
  1. Implement impedance changes as defined in the relevant DSOs.
  2. Optionally perform “discretionary” redispatch of federal resources (if available).
  3. Implement curtailments of scheduled transmission service in curtailment priority order. Firm curtailments may involve NT Redispatch.
  4. Emergency Actions (i.e. emergency federal redispatch, load shedding, etc).

# Curtailments

## ■ **Flowgate Curtailments**

- To implement curtailments of transmission schedules, dispatch requests the amount of flow relief desired on a particular flowgate.
- All e-tags having greater than 10% impact (Path Transfer Distribution Factor – PTDF) on the network flowgate being curtailed are identified.
  - The e-tags that impact the flowgate less than 10% are considered *de minimis* and are excluded from the curtailment.
- The e-tags identified as *non de-minimis* are sorted by NERC transmission priority (1-NS, 2-NH, 6-NN, 7-F) and curtailed pro rata by the same percentage in priority order to get the requested relief.
  - If firm transactions are curtailed, the solution may also include NT Redispatch

## ■ **COI Curtailments**

- Tags on the COI are curtailed assuming an impact of 100% and are also curtailed in curtailment priority order.

# Flow Relief

## Flowgate Flow Relief

- Flowgate flow relief is affected by the accuracy of the calculated impacts of scheduled transactions across the congested flowgate and the response actions taken by the curtailed parties.
- Curtailments, especially across certain flowgates, have proven to be ineffective at times due to deficiencies in both of these processes.
  - Current scheduling practices, such as system-to-system scheduling, make it difficult to determine where power is actually being injected into and withdrawn from our system.
  - Current practice of responding to curtailments with generation on response frequently results in little to no reduction in flows and at times has even exacerbated the overloading on some flowgates.

## COI Flow Relief

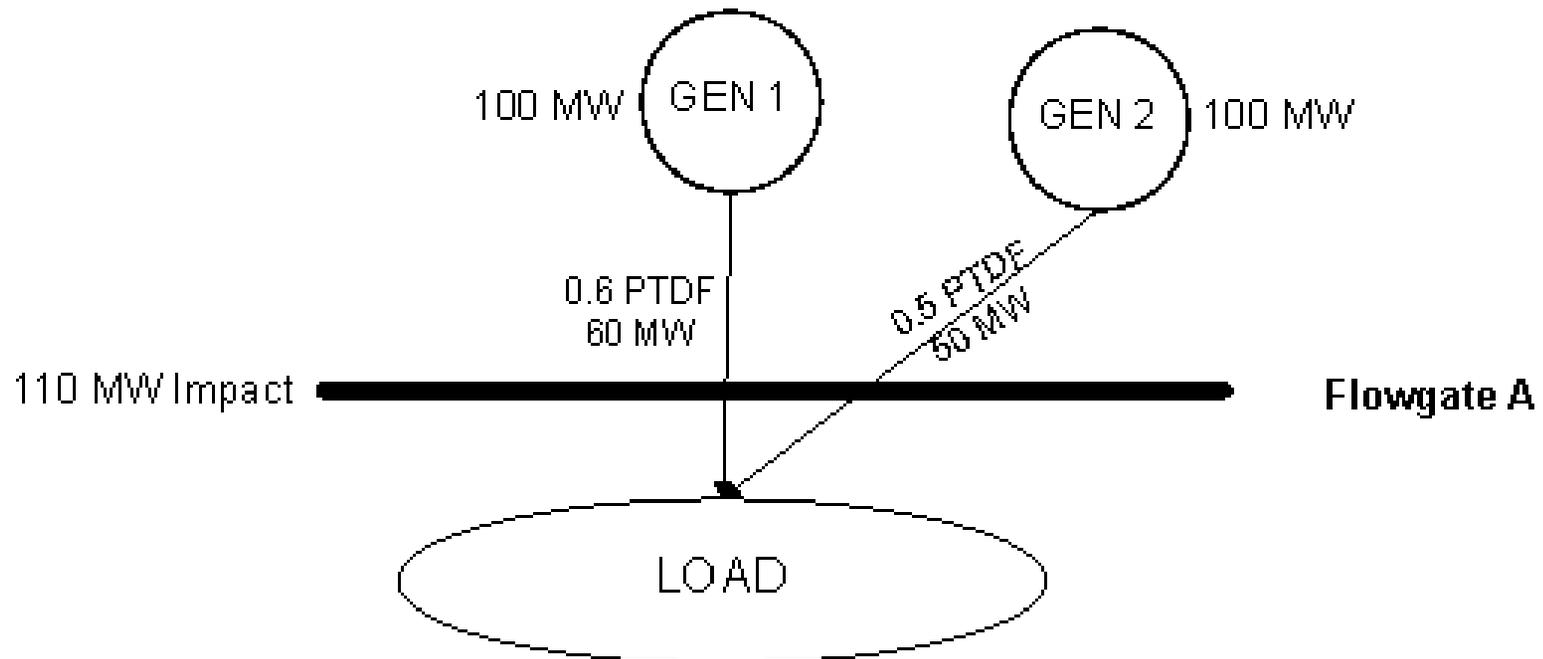
- Curtailments have proven to be effective on the COI because the source Balancing Authority (BA) reduces generation above the constraint and the sink BA resupplies the generation below the constraint.

# Congestion Management for PAC/CAISO EIM

- The Market Operator has committed to respect all of BPA's Path and Flowgate SOLs such that the next 5-minute EIM dispatch will not be the cause of total flow exceeding an SOL.
  - This ensures that congestion management events (i.e. curtailments and other mitigation actions) are not increased due to the PAC-CAISO EIM.
- When curtailed on BPA's internal flowgates, the PAC-CAISO EIM provides some opportunity to achieve the relief needed for tags associated with EIM Participating resources.
  - COI curtailments are effective today and are expected to continue to be with the implementation of the EIM.
- When an e-tag for a resource that is bid into the EIM is curtailed as part of a flowgate curtailment, a resource will be decremented and a relief obligation will be calculated based on the resource's contribution to the flowgate and sent to the Market Operator.
- The output of the resources on the tag will be reduced and the Market Operator will determine what resource(s) to increase in order to achieve the relief obligation

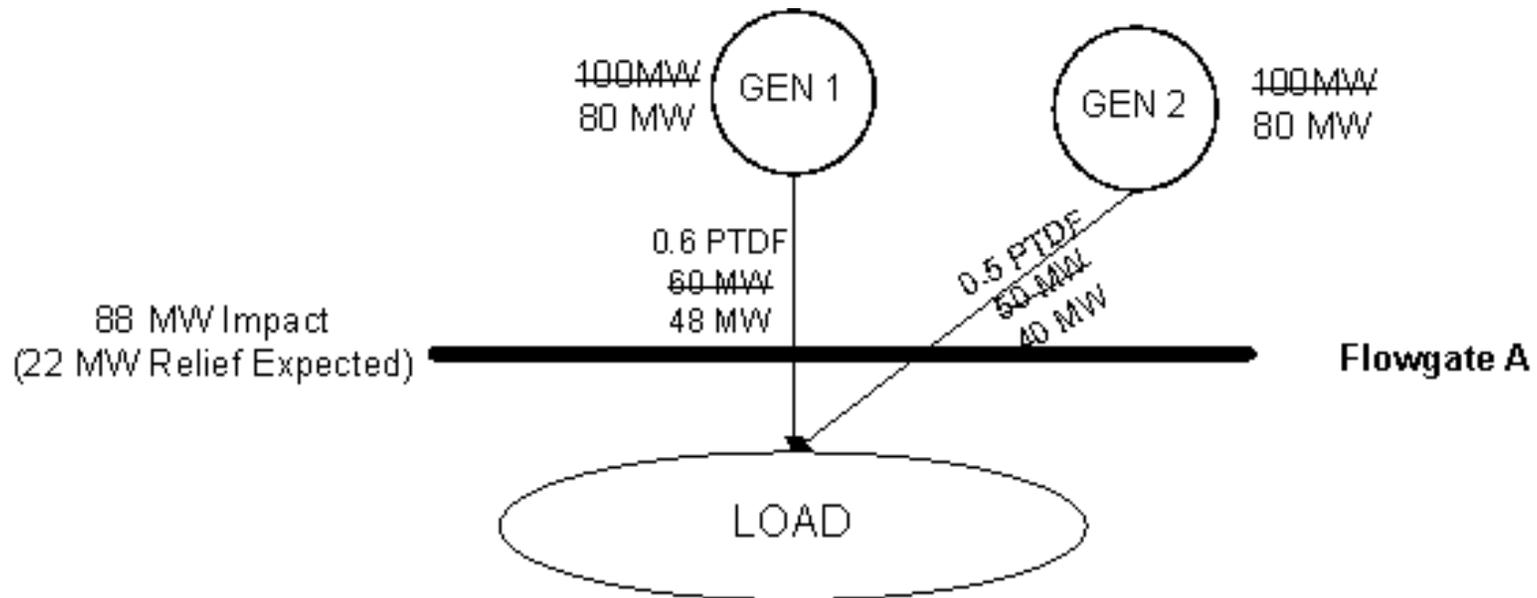
# Flowgate Curtailment Example

- PAC has two EIM Participating Resources (Gen 1 and Gen 2) that impact Flowgate A by more than 10%.
  - Gen 1 has a 60% contribution to Flowgate A
  - Gen 2 has a 50% contribution to Flowgate A.
- Each resource is generating 100 MW.



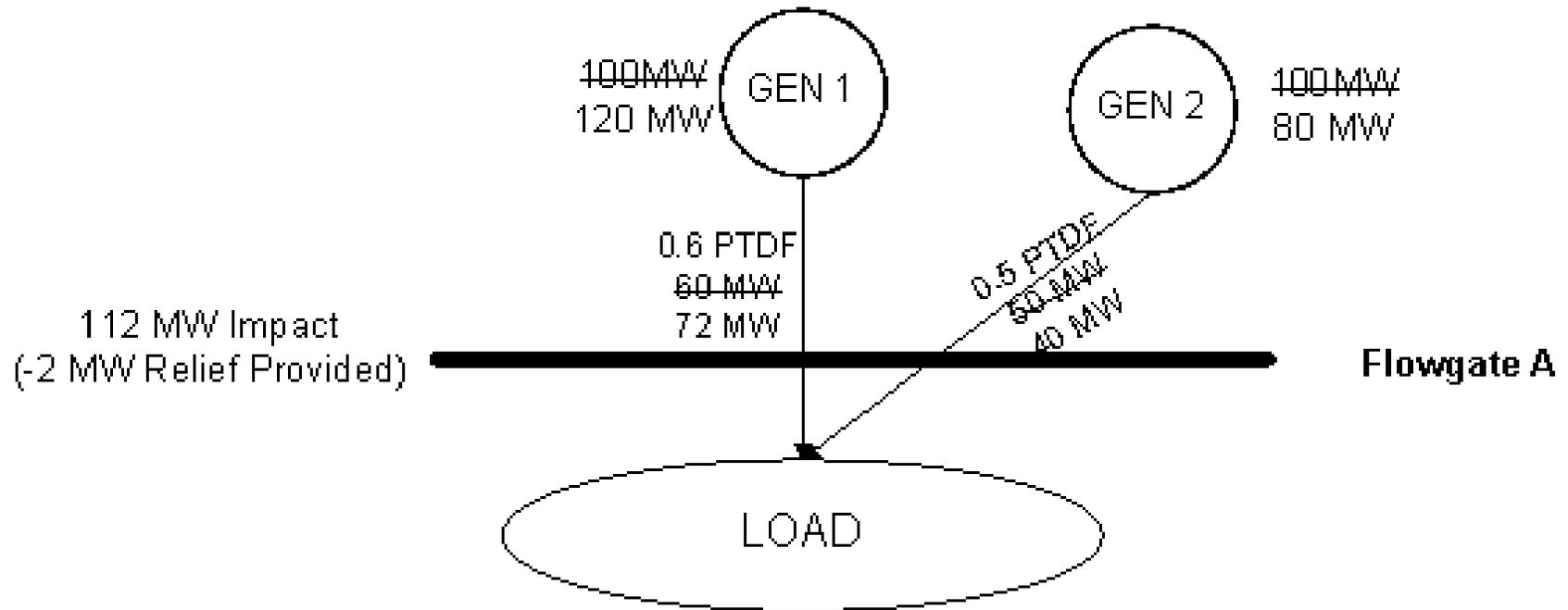
# Flowgate Curtailment Example – Expected Relief

- Flowgate A exceeds its SOL and a curtailment is issued that cuts 20% of all firm tags that have more than a 10% impact on Flowgate A.
- The tags for Gen 1 and Gen 2 get curtailed down to 80 MW each and are expected to provide a total of 22 MW of relief.



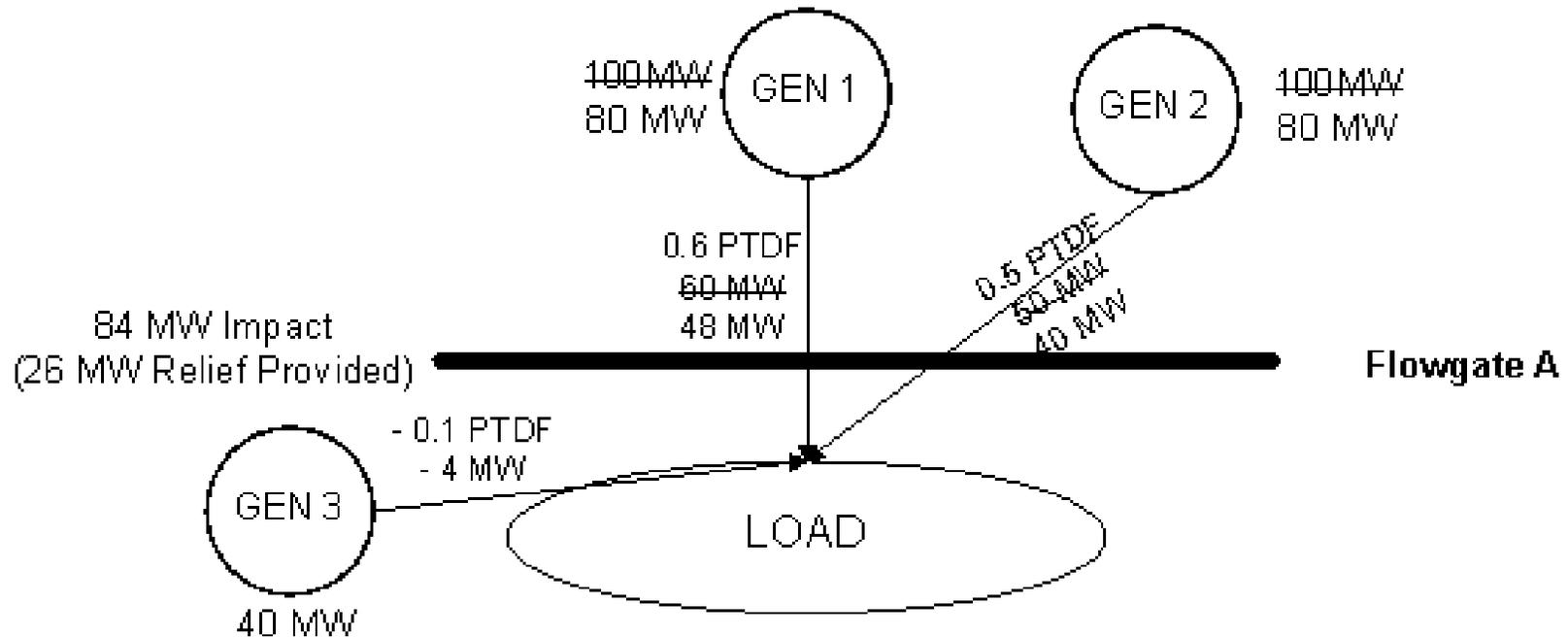
# Flowgate Curtailment Example – Current Situation without EIM

- What happens today is that the generation on response responds to the curtailment. In this example the units on response are part of Gen 1 and its response to the curtailment not only did not provide the relief expected but has even exacerbated the overloading on Flowgate A by 2 MW.



# Flowgate Curtailment Example – With PAC-CAISO EIM

- With the PAC-CAISO EIM, PAC will reduce the output of the curtailed EIM Participating Resources and the Market Operator will determine the next most economic resource(s) to provide the generation resupply that achieves the expected relief of at least 22 MW on Flowgate A.



# Next Steps

- BPA believes this is a reasonable proposal built on existing policies, with potential operational improvements.
- BPA plans to begin implementation of this proposal in order to help meet the October 1, 2014 go live and for testing in Full Market Simulations.
- BPA is also looking at ways to provide better information to all curtailed parties such as:
  - Including relief expected on the tag when curtailed.
  - Providing an online calculator for customers to analyze how their redispatches impact BPA flowgates.
  - Providing a map of zones to customers that identify effective INC and DEC resources for each flowgate.
- BPA welcomes comments by March 7, 2014.
- BPA plans to consider comments as part of its ongoing implementation and stakeholder process.