Additional Details on PJM’s Proposed Solutions for Locational Reserves

Emily Barrett
Principal Market Design Specialist
Reserve Certainty Senior Task Force
February 11, 2026

Summary of PJM's Perspective on Reserve Location Procurement

Synchronized and Primary Reserves	Nodal procurement where PJM models the same reserve congestion constraints that we use today or reserve constraints of similar reliability concern for SR deployment in the future.
Ramp/Uncertainty Reserves *(both 10-Min and 30-Min)*	Nodal procurement where the reserve congestion constraints reflect that Ramp/Uncertainty Reserves must be deliverable under normal operating conditions along with energy.
30-Min Reserves	Nodal procurement where the reserve congestion constraints reflect transmission facilities or interfaces of heightened reliability risk, particularly under post-contingency conditions.
Day-Ahead Reserves *(DASR and Energy Gap)*	Procured at a system level

Synchronized Reserve Locational Procurement

- The procurement of Synchronized Reserves would be very similar to the design used today in the existing reserve sub-zone construct in that PJM would only model deliverability over the sub-set of interfaces or network constraints that present a reliability risk for SR deployment.
- PJM would no longer define a “sub-zone” but would use the actual distribution factors for each generation resource to reflect its impact on the congestion on the Interconnection Reliability Operating Limit (IROL) or relevant network constraints.
- If a deliverability constraint binds, this would lead to reserve price separation between nodes. These reserve prices would reflect each resource’s individual impact on the congestion on that constraint.

Ramp/Uncertainty Reserve Locational Procurement

- The procurement of Ramp/Uncertainty Reserves is to serve *expected* net-load in future intervals, recognizing uncertainty in the net-load forecast. Because these services are provisioned to serve system energy needs in the near-term, the same network constraints used for energy would be modeled to ensure the deliverability of these services.

- The expected change in net-load and the uncertainty associated with that net-load forecast would be modeled at the load, wind and solar buses, proportional to the net-load forecast. This would ensure that the Ramp/Uncertainty Reserves procured could be distributed to those buses.

- If provisioned reserves would cause network constraints to bind, this would lead to nodal reserve prices. If there is no congestion on the network that requires a change in dispatch to ensure reserve deliverability, then prices would be the same across the system, and the same as if the reserves had been procured at a system-level.

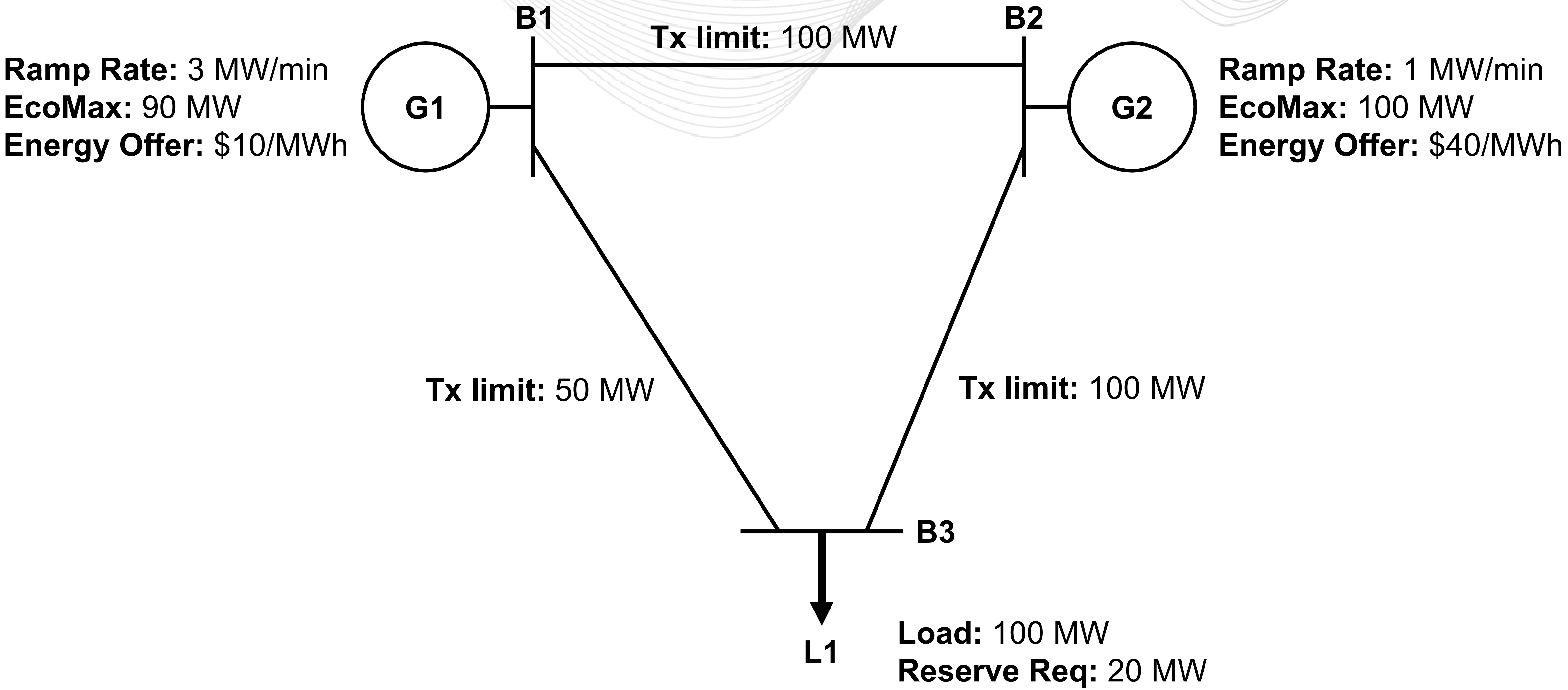
30-Min Reserve Locational Procurement

- The procurement of 30-Min Reserves would be conceptually similar to the procurement of Synchronized Reserves in that a set of deliverability constraints would be modeled, which reflect significant reliability concerns or cascade risk.

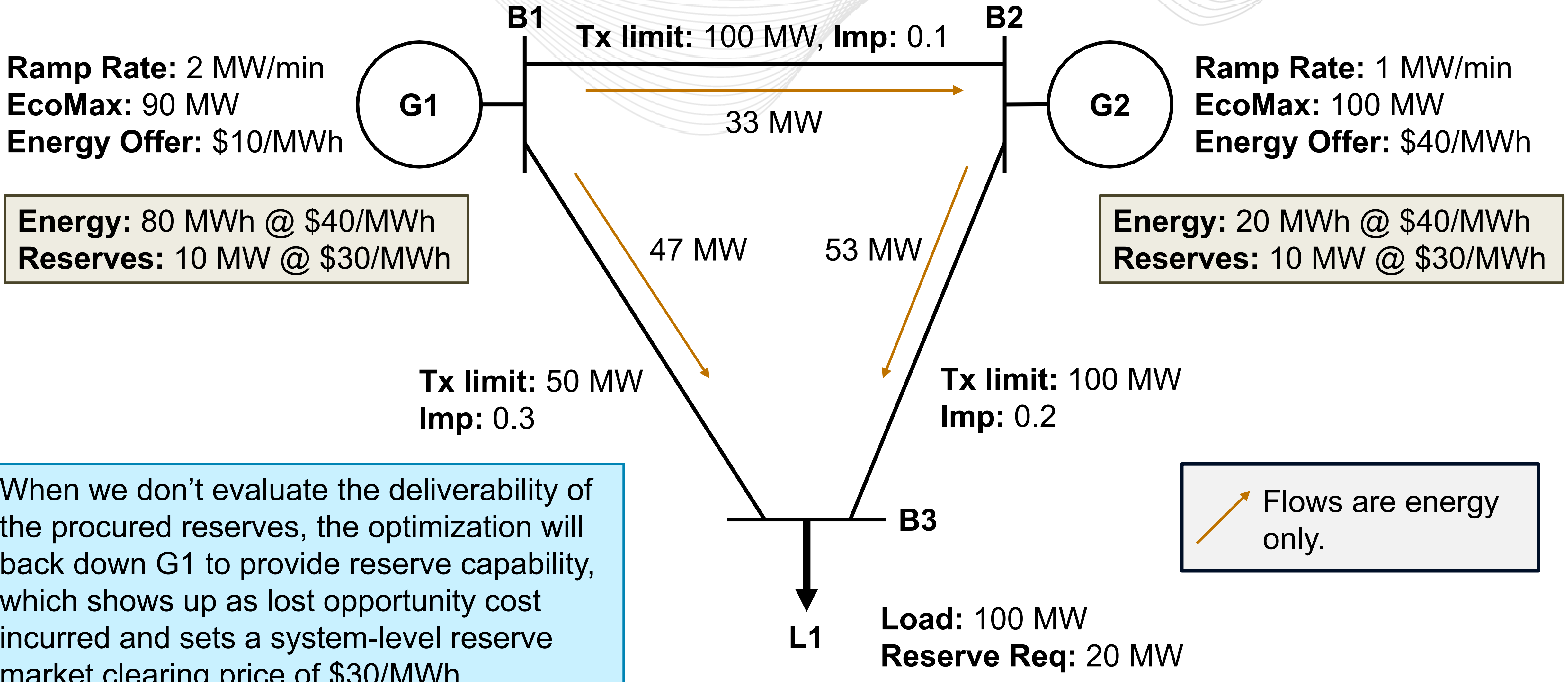
- The interfaces or network constraints of reliability concern might be different for the 30-Min Reserve service than for the Synchronized Reserve service given how the services are used. Synchronized Reserve deployment occurs immediately and for a limited amount of time during an emergency. 30-Min Reserve are deployed to rebalance the system and return to a stable operating posture.

- If provisioned reserves would cause network constraints to bind, this would lead to nodal reserve prices. If there is no congestion on the network that requires a change in dispatch to ensure reserve deliverability, then prices would be the same across the system, and the same as if the reserves had been procured at a system-level.

3-Bus Example 1: Set-Up

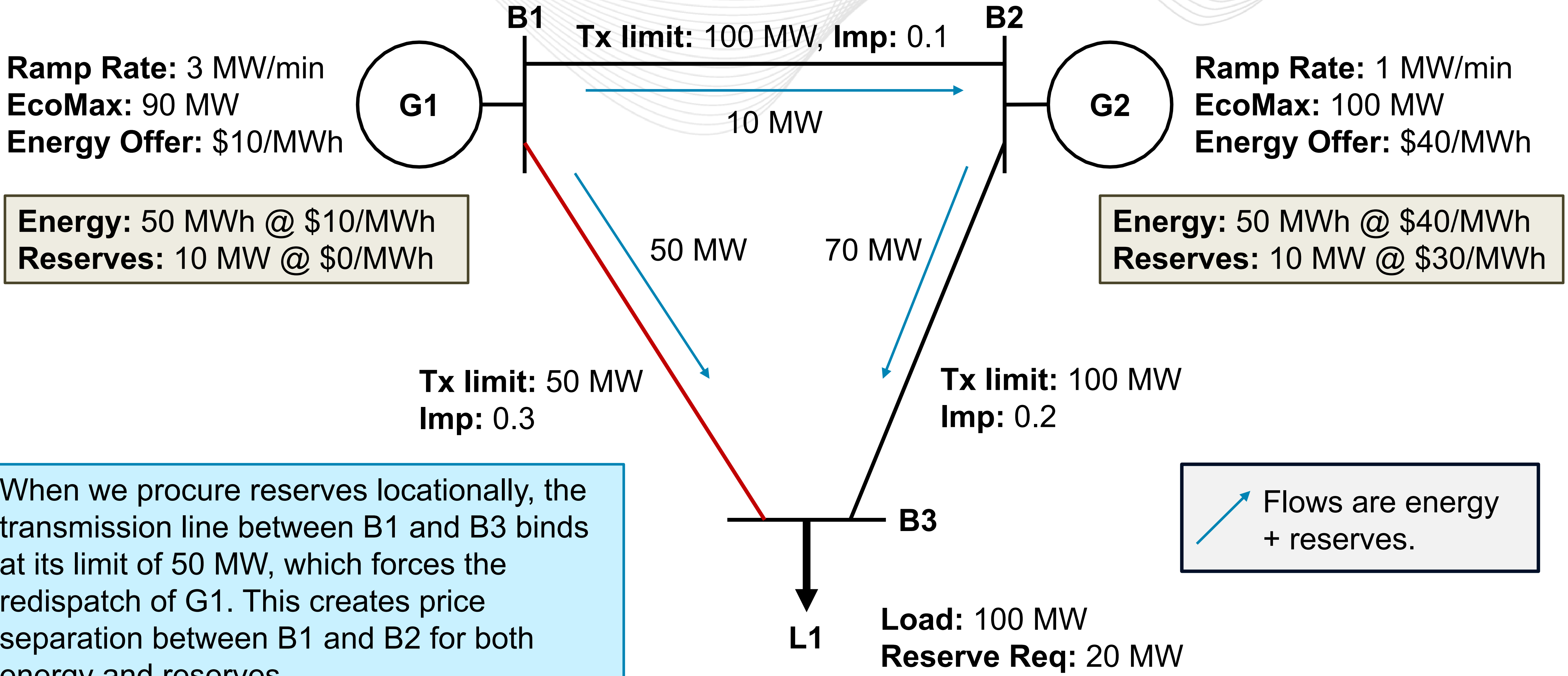


3-Bus Example 1: No Locational Constraint on Reserves



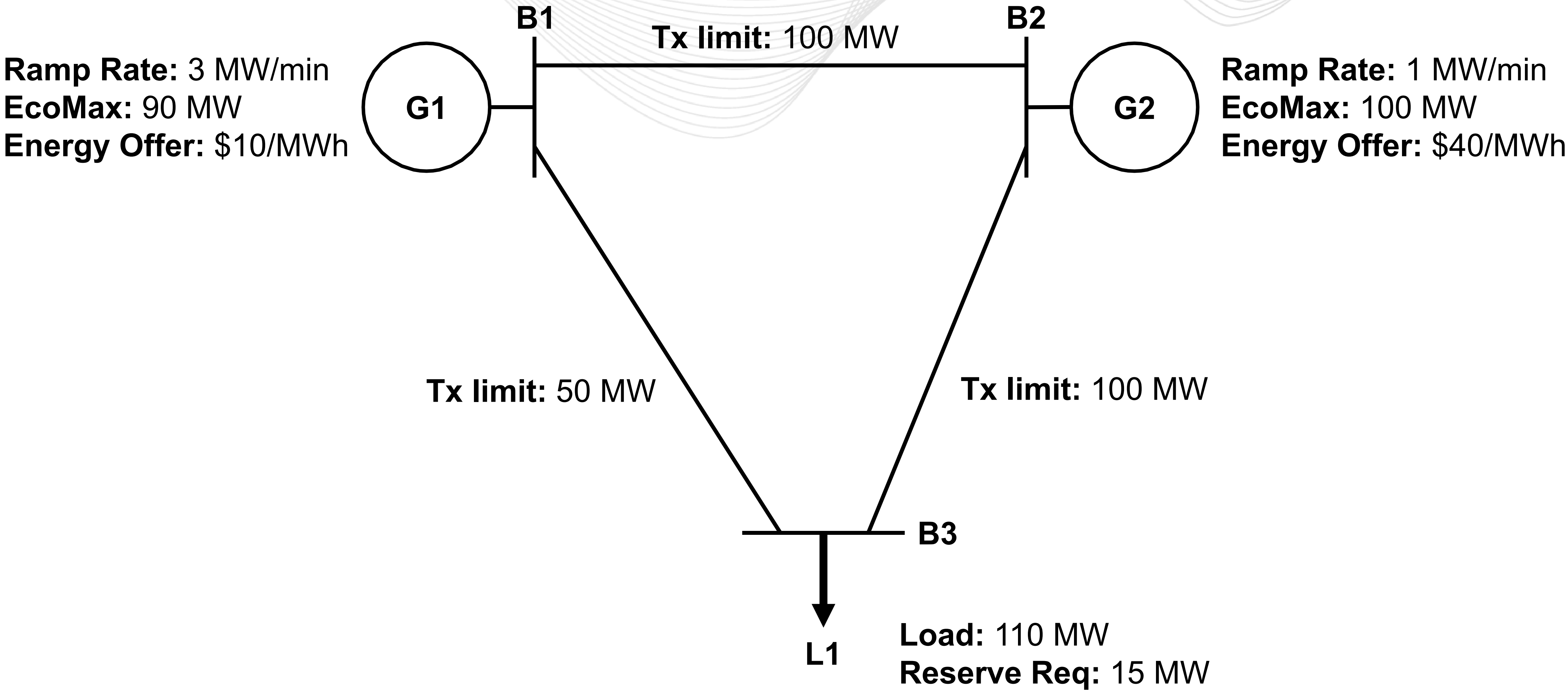
When we don't evaluate the deliverability of the procured reserves, the optimization will back down G1 to provide reserve capability, which shows up as lost opportunity cost incurred and sets a system-level reserve market clearing price of $30/MWh.

3-Bus Example 1: Locational Constraint on Reserves

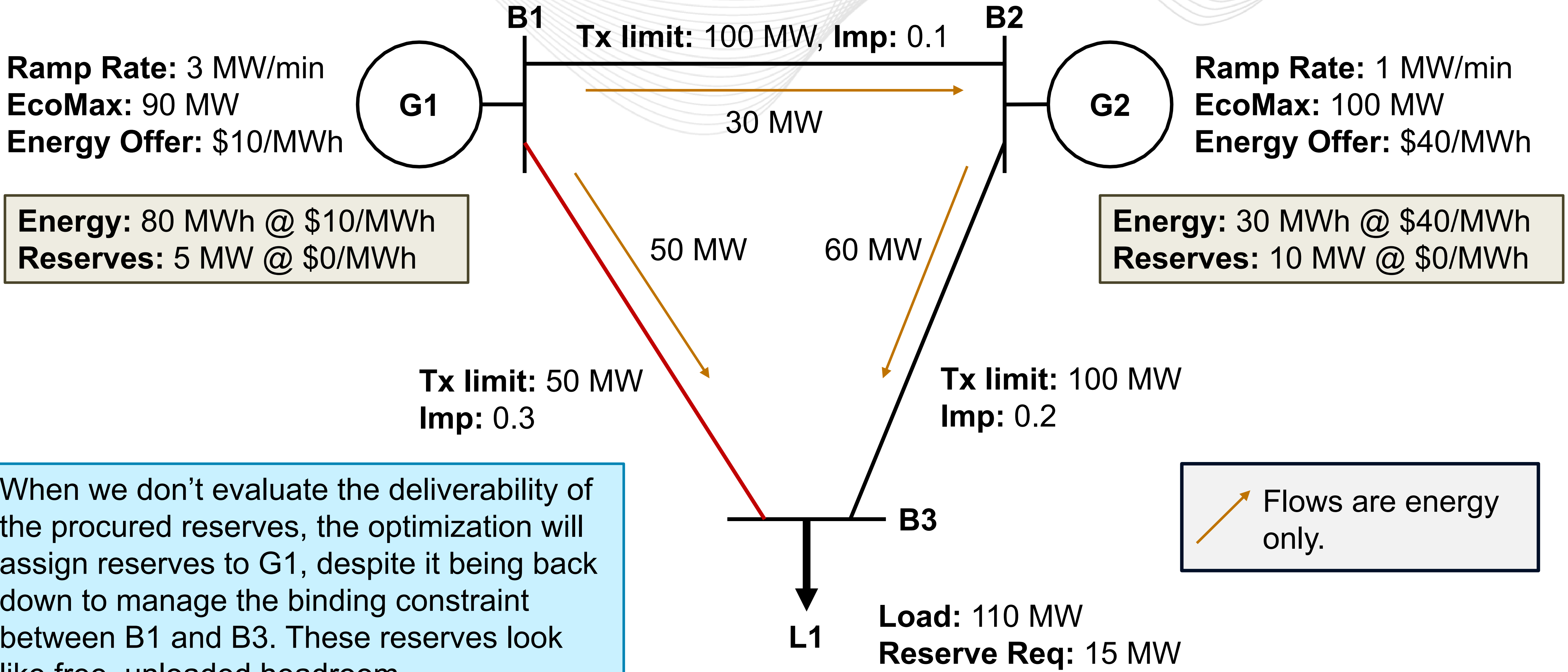


When we procure reserves locationally, the transmission line between B1 and B3 binds at its limit of 50 MW, which forces the redispatch of G1. This creates price separation between B1 and B2 for both energy and reserves.

3-Bus Example 2: Set-Up

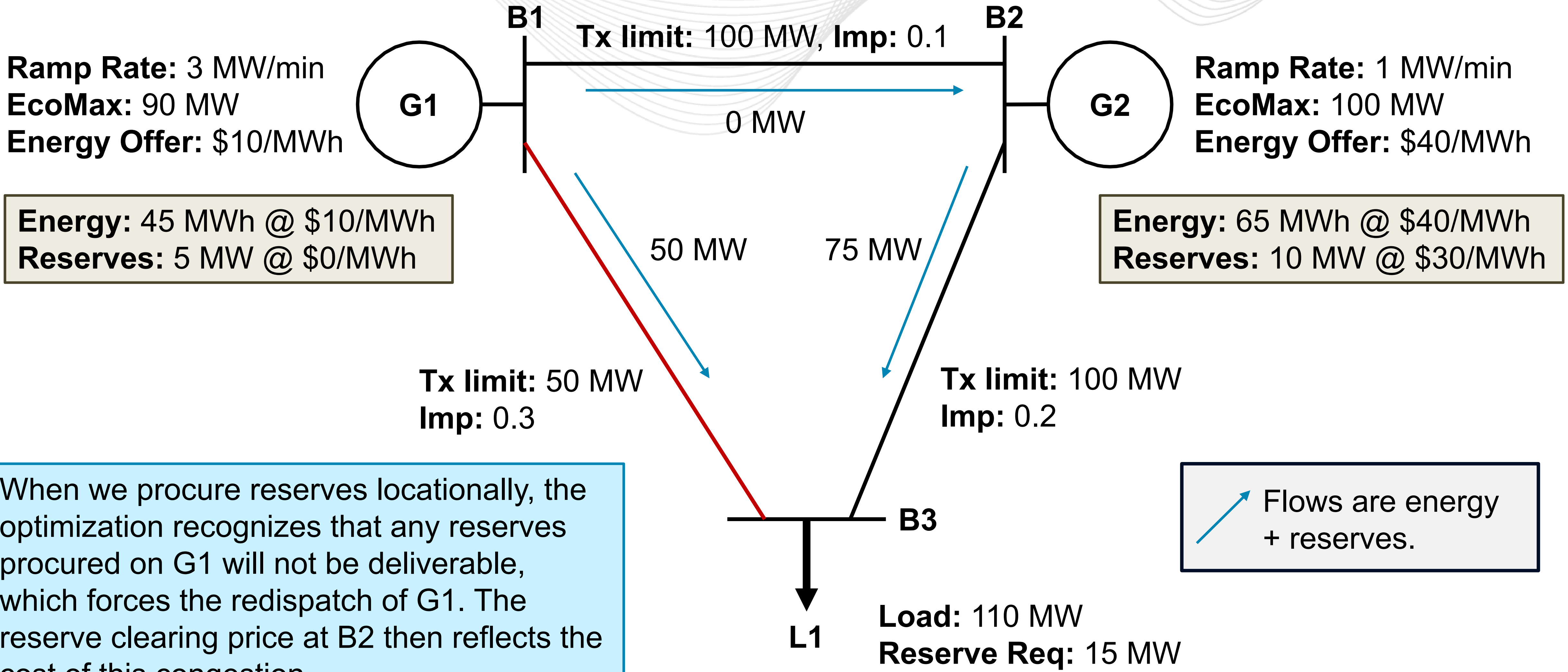


3-Bus Example 2: No Locational Constraint on Reserves



When we don't evaluate the deliverability of the procured reserves, the optimization will assign reserves to G1, despite it being back down to manage the binding constraint between B1 and B3. These reserves look like free, unloaded headroom.

3-Bus Example 2: Locational Constraint on Reserves



When we procure reserves locationally, the optimization recognizes that any reserves procured on G1 will not be deliverable, which forces the redispatch of G1. The reserve clearing price at B2 then reflects the cost of this congestion.

Contact

Facilitator:
Lisa Morelli, Lisa.Morelli@pjm.com

Secretary:
Amanda Egan, Amanda.Egan@pjm.com

SME/Presenter:
Emily Barrett, Emily.Barrett@pjm.com

Additional Details on PJM's Proposed Solutions for Locational Reserves

Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

Acronyms

Acronym	Term & Definition
SR	**Synchronized Reserves** are reserves provided by resources that are synchronized to the grid and can respond within 10 minutes.
RUR	**Ramp/Uncertainty Reserves** are reserves procured to meet expected net-load ramp and to manage net-load forecast uncertainty in upcoming intervals.


PROTECT THE POWER GRID
THINK BEFORE YOU CLICK!
Be alert to malicious phishing emails.
pjm
Report suspicious email activity to PJM.
(610) 666-2244 / it_ops_ctr_shift@pjm.com