Reserves in Actual Performance

MIC Special Session

Transparency in Performance Assessment Interval Settlements

October 1, 2020

Reserves in Actual Performance

- Tariff Attachment DD 10A c.
  - Actual Performance = for each generation resource the metered output of energy delivered to PJM by such resource **plus the resource's real-time reserve or regulation assignment**, if any, during the PAI.

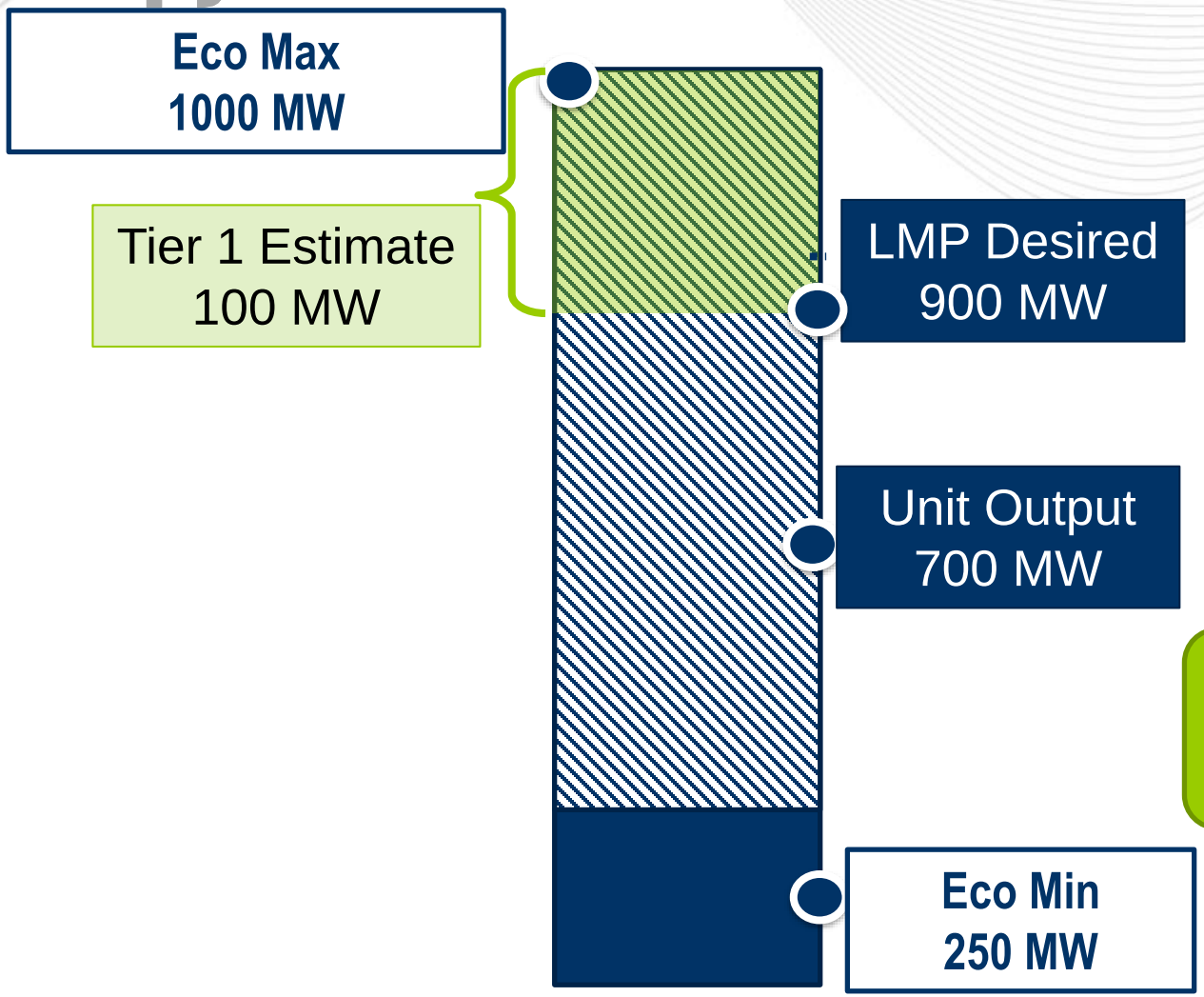
- Tariff language is broad and lacking details on how reserves are captured to calculate the actual performance of the resource.
  - To capture real-time reserve assignments in actual performance, calculations beyond adding the market assignment is needed.

Tier 1 Reserves

- Tier 1 Reserves are not included in actual performance since the resource was not holding those reserve MWs for PJM. Tier 1 reserves is the available headroom on the unit while the unit is operating economically.

- If we were to account for Tier 1 reserves on a resource in the calculation of actual performance, resources could (1) avoid penalty or (2) be given bonus performance, even when the resource was not providing the desired MWs to the system.

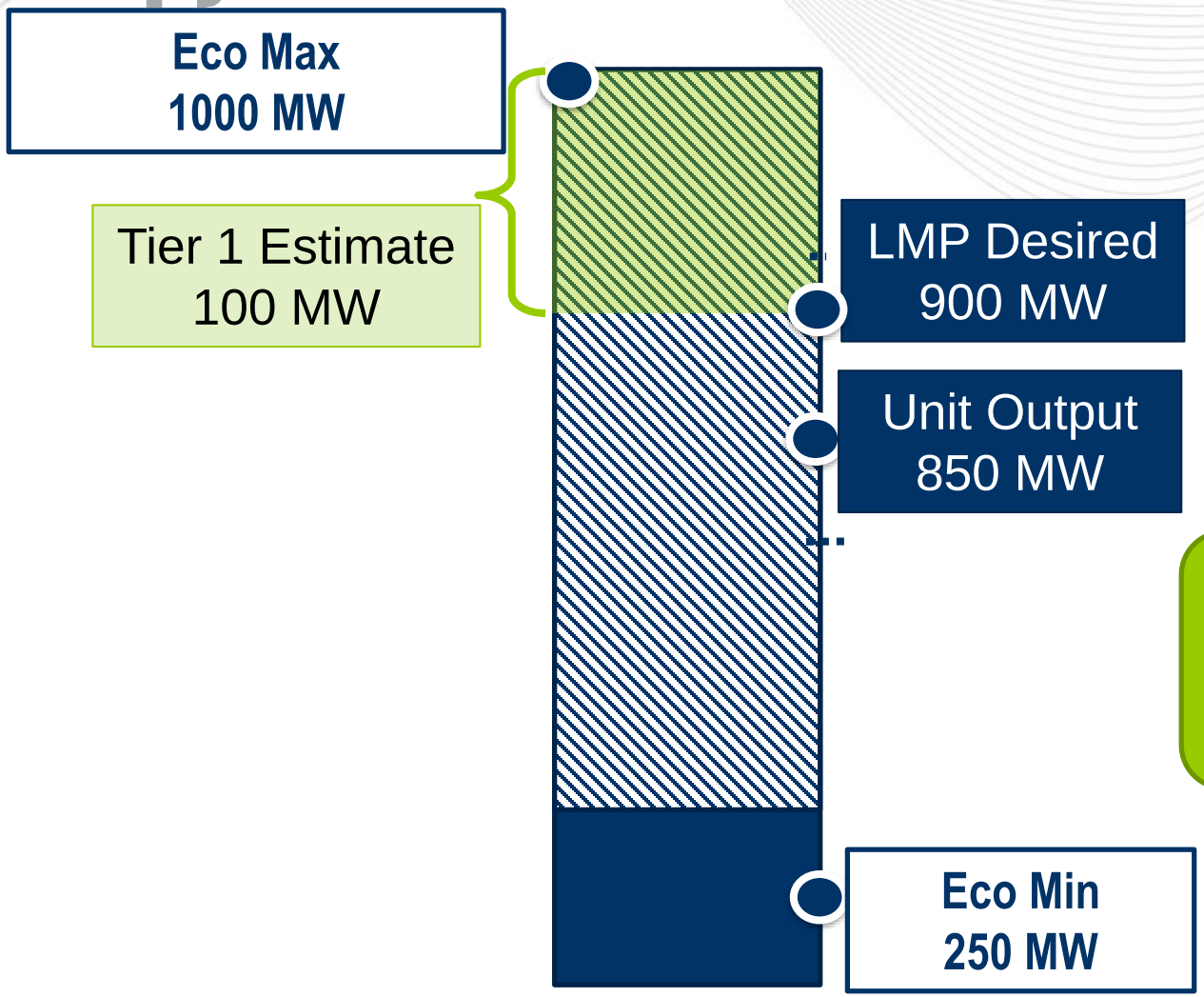
Tier 1- Avoid Penalty



- UCAP = 1000 MW
- BR = 0.8
- Expected Perf. (UCAP x BR) = 800 MW
- Actual Perf. (output + Tier1 reserve) = 800 MW
- Expected – Actual = 0 MW

If Tier 1 (100MW) was added back to the resource, the initial shortfall would be 0 MW and unit would have avoided a potential penalty.

Tier 1- Bonus



- UCAP = 1000 MW
- BR = 0.8
- Expected Perf. (UCAP x BR) = 800 MW
- Actual Perf. (output + Tier 1 reserve)= 950 MW
- Expected – Actual = -150 MW

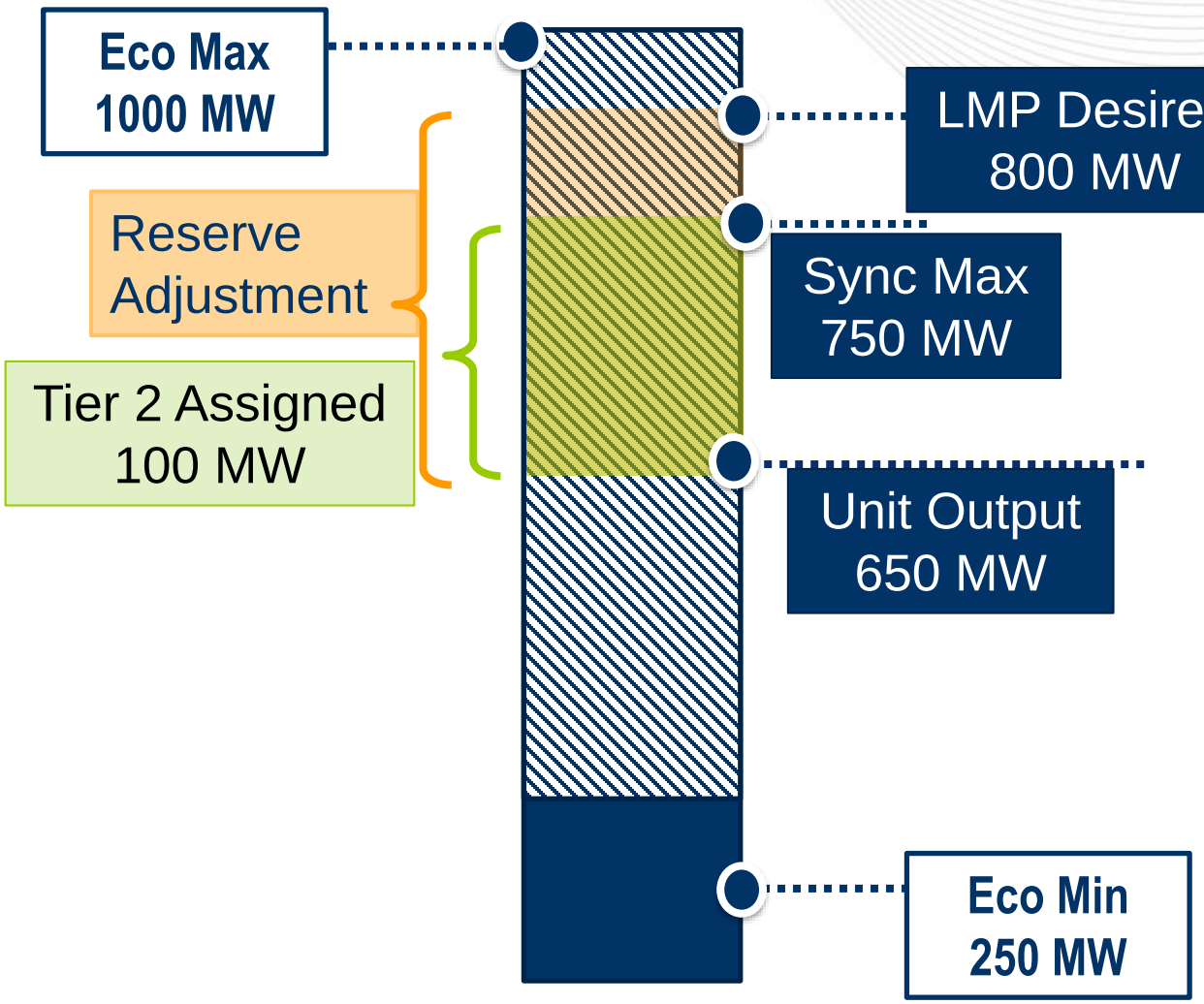
If Tier 1 (100MW) was added into the calculation, the resource would be eligible for 50 MW of additional Bonus, even though they were under generating from LMP Desired

Tier 2 Reserves

- Resources are backed down from their economic set point to provide Tier 2 reserves. By just adding back the assigned MW (from Market's Gateway) resources could incur a penalty for providing reserves.

- By adjusting for MWs off economic set point in order to create the assigned reserves, the actual performance can be appropriately adjusted for all resources.

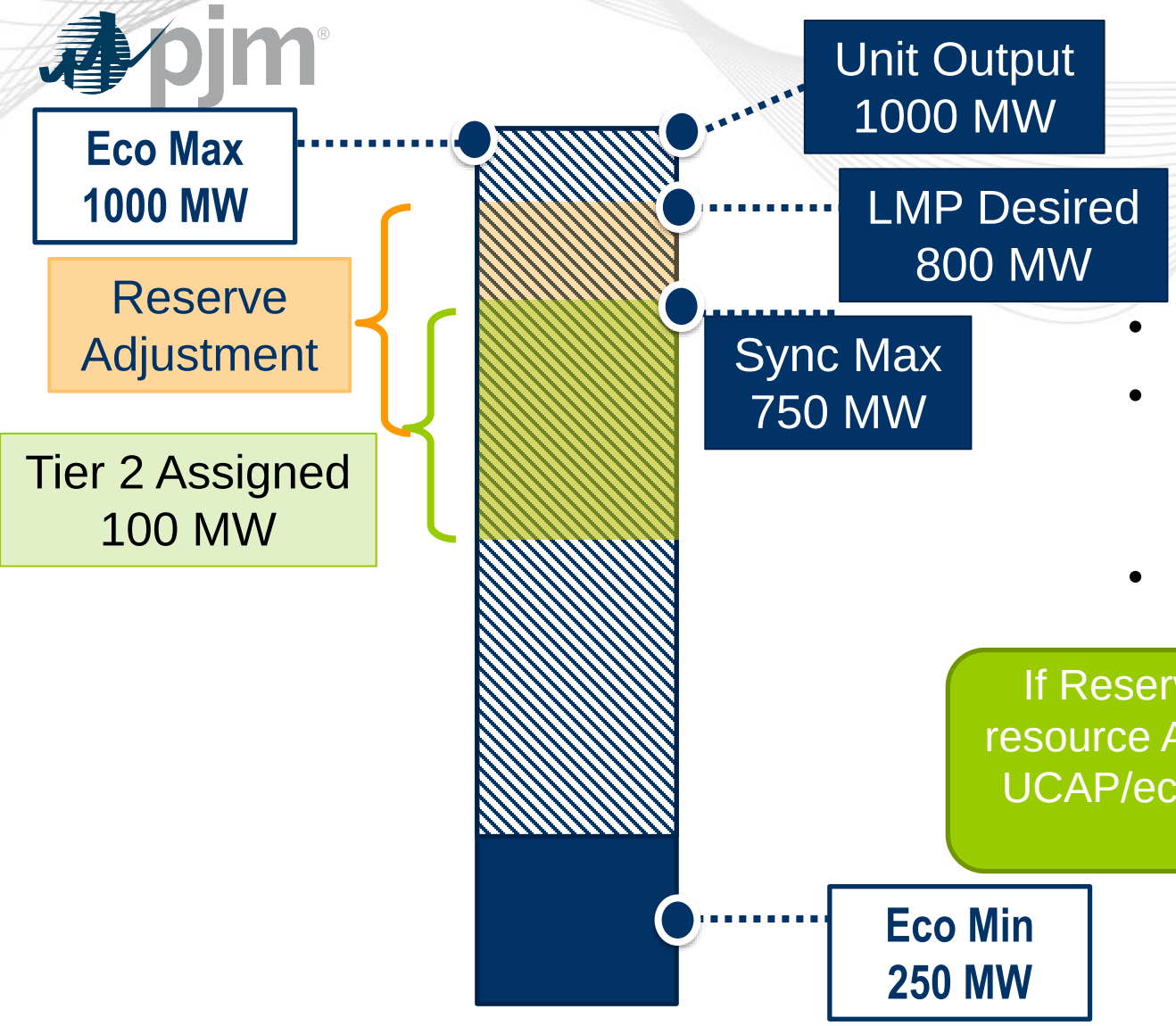
Tier 2 - Incur Penalty



- UCAP = 1000 MW
- BR = 0.8
- Expected Perf. (UCAP x BR) = 800 MW
- Reserve Adjustment = 150 MW
  - Accounts for backing the unit down 50 MW to sync max and 100 MW tier 2 assignment
- Actual Perf. (output +Tier 2 Reserve) = 800 MW
- Expected – Actual = 0 MW

If Reserve Adjustment was 100 MW (just Tier 2 Assignment) the resource would have an initial shortfall of 50 MW subject to penalty.

Tier 2 – Balancing Ratio



- UCAP = 1000 MW
- Reserve Adjustment = 0 MW
  - Unit was performing about economic set point and not holding reserves
- Actual Perf.(output + Tier 2 reserve) = 1000 MW

If Reserve Adjustment was 100 MW (Tier 2 Assignment) the resource Actual Performance would be 1100 MW (100 MW over UCAP/eco max). Which would be over accounting generation and reserves on the system.