



Balancing Reserve and other Ancillary Services

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Outline

- Basic Transmission Service
- Balancing Reserve
- Generation Imbalance
- Operating (contingency) Reserve

Basic Transmission Service

- Allows a customer to move power from a Point of Receipt (usually an integration point) to a Point of Delivery on BPA's system (usually a load or an interconnection to another BAA).
- Requires that power from the resource be "scheduled" in advance of the scheduling interval.
- "Scheduling" refers to the expected output from a resource over the scheduling interval, which can be as short as 15 minutes.
- This allows the transmission system operator to set up the system in anticipation of power being delivered as scheduled from all

resources.

Balancing Reserve

- Balancing reserve is the amount of capacity needed to maintain load generation balance through every hour.
 - The capacity is for both incrementing and decrementing generation (or load) in order to offset errors in load forecast and generation schedules.
 - When a generator schedules less than it ends up producing in an hour, BPA decrements its responsive generation to keep the system in balance.
 - When a generator schedules more than it ends up producing, BPA increments its responsive generation to keep the system in balance.

Balancing Reserve

- In order for BPA to calculate the balancing reserve needs for new generation, especially new technologies such as wave energy, data needs to be created that realistically shows how the output of the wave generation system will produce power.
 - Ideally it will be one minute data simulating generation over the course of a year.
 - This could then be fed into the program BPA uses to calculate balancing reserve needs to discover how much would need to be held for the wave generation.

Generation Imbalance

- Although Balancing reserve does have a GI capacity component, the Generation Imbalance service is for the energy used to make up the difference between a generator's schedule and its actual output.
- Business Practice:
https://transmission.bpa.gov/ts_business_practices/Content/8_Ancillary_and_Control_Area_Services/Gen_Imbalance.htm
- Generation Imbalance is settled based on a central clearing price
 - Band 1, 100% clearing price
 - Band 2, 110% for under generation, 90% for over generation
 - Band 3, 125% for under generation, 75% for over generation

Operating (Contingency) Reserve

- Contingency Reserve is the amount of capacity BPA must set aside in accordance with standard BAL-002-WECC-2.
- All WECC Balancing Authorities must hold 3% of the load plus 3% of the generation inside its boundaries.
 - Half of this must be spinning reserve
 - The other half can be anything capable of full deployment within 10 minutes.
 - BPA does have some demand response load for a portion of its contingency reserve requirement.
- For this project, 3% of the generation produced (or scheduled, depending on how it is set up) will need to be purchased from BPA.
- This is not large enough to self-supply the contingency reserve, but it could be supplied by an entity that is already performing 3rd party supply for other entities.