Concurrent Loss Imbalance Capacity Study: Data Description

Summary: At this time, BPA will not implement a capacity charge for the loss imbalance. However, BPA will continue to monitor if there is a pattern of scheduling that negatively impacts loss imbalances and may consider establishing cost mechanisms beyond BP-24 to incentivize more accurate scheduling. Overall the Concurrent Loss Imbalance Capacity Study shows there could be some impacts to the amount of capacity provided by the FCRPS to support losses, but BPA believes at this time those impacts will decrease due to entry into the EIM.

What: An analysis of three years of historical Loss Obligations as compared to proposed policy related to the Concurrent Loss project, in order to evaluate the loss imbalance that would result from the policies and determine if the magnitude of imbalance is large enough for BPA to require a capacity cost component.

Base Queries used in the Data Study:

a) Verification: Compared query calculated final obligation results against same time frame for data within the OATI Loss Module. Verification correct, assuming known exclusions of the query.
b) kW Rounding Remainders: Annual evaluation of all kW remainders per contract hour if standard rounding was applied to the calculated Loss Obligation as of T-30 prior to each hour of flow.
c) Timing Imbalance: Annual evaluation of rounded Loss Obligation as of T-30 prior to the start of flow, compared to the final After the Fact calculated Loss Obligation at the kW level as of T+180 after each hour of flow.

When: Calendar years 2019 –2021 (3 years)

Loss Return Types: In-Kind, Slice, and Financial customer contracts based on the customer Loss Return election the customer was configured for in each year of the study.

Customer Transmission Contract Types: PTP & NT

Data Types:

- Final Losses – final after the fact modification to the calculated Loss Obligation (T+180 after the hour of flow)
- T-30 Obligation – calculated aggregated hourly Loss Obligation at T-30 in kW hours
- T-30 Round – calculated aggregated hourly Loss Obligation at T-30 after standardized rounding has been applied

Loss Factors: Loss factors for the Network and Southern Intertie as defined in the current Tariff (eff. Oct. 1, 2021) were applied.

Known Exclusions from the Data Study: The following tagging scenario policies were not included as part of the data study. The amount of development effort was too complex to implement prior to Customer Workshop 4. Separate queries were performed to ensure that in both cases, the impact to the final totals was minimal and in both cases would have resulted in even less total Loss Imbalance…further supporting BPA's decision to not include a capacity cost component.

- Special Loss Obligation rules applicable to transmission eTags utilizing the Reno-Alturas line as noted in the BPAT Real Power Loss Business Practice. A small portion of these eTags may have contributed twice to any given hour's Loss Obligation, even if both BPAT paths that make up this line contained the same transmission product. Per the Business Practice, if the same product is used on both BPA paths over the Reno-Alturas line, the MWs should only count once towards the Loss Obligation.
- Transmission eTags with vertically stacked segments for more than one customer on the same stack. A vertical stack is where two different reservations/contracts are used on a single POR/POD segment within an eTag for MWs flowing during the same time period. In some cases, this may have led to double counting towards the calculated Loss Obligation for those hours. Only each contract's portion of the MWs making up a vertical stack should have contributed to that contract's hourly Loss Obligation.

Loss Exemptions: All known contractual and Business Practice stated exemptions to the calculated Loss Obligation were accounted for within the data study queries.

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Rounding Remainders:

Hourly loss return imbalances due to rounding loss obligations to whole megawatt values are small. Across all contracts that are included in the study, the aggregated hourly maximum over-returned and under-returned amounts range between 4 and 6 MWs. The capacity cost to BPA is also small, about $300K per year using BP-22 INC and DEC rates to value the max and min rounding remainder imbalances.

Rounding Remainder: T-30 Rounded minus T-30 Obligation				
(Negative is under-returned, positive is over-returned)				
In-Kind Loss Return Type	**CY 2019**	**CY 2020**	**CY 2021**	**average MW**
Sum MWh	(4,981)	(4,547)	(7,591)	(0.651)
Max MW	4.002	4.645	4.428	4.358
Min MW	(5.103)	(5.725)	(4.245)	(5.024)
Annual cost of DECs (BP-22 $0.37/kW/mo applied to Average Max)				$ 19,351
Annual cost of INCs (BP-22 $5.27/kW/mo applied to Average Min)				$ 317,739
Total annual capacity cost				$ 337,090

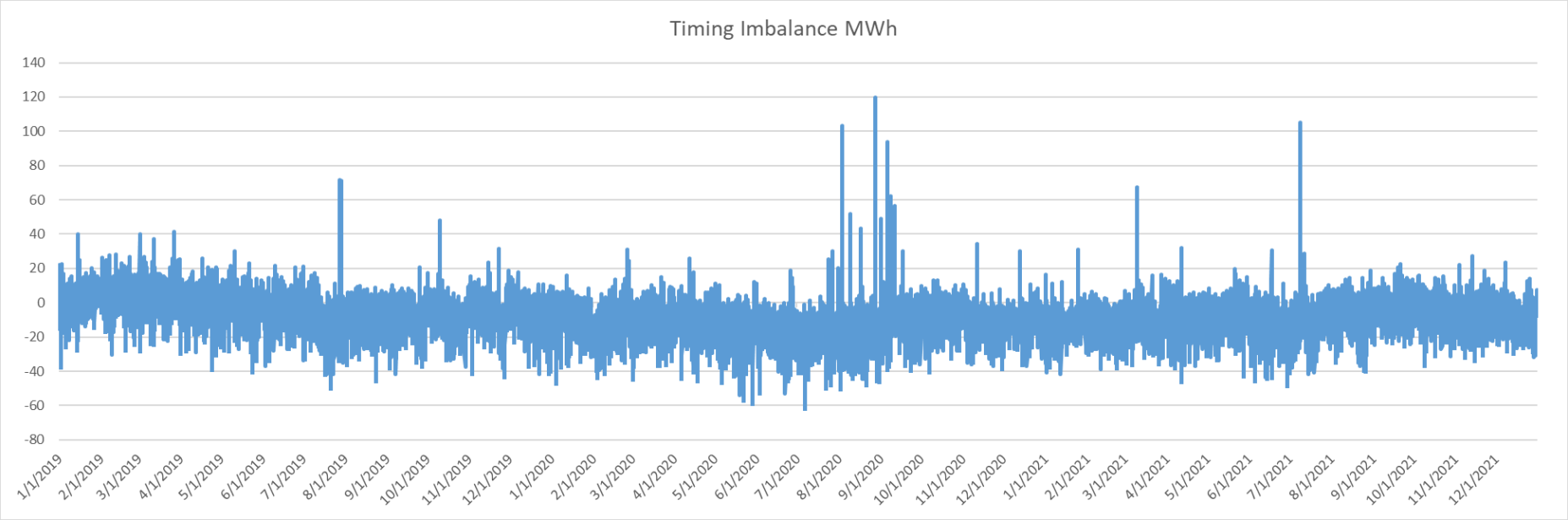
Timing Imbalance:

Time-based loss imbalances by hour can be large, in some hours losses are over- and under-returned in the range of 50-100 MWs, which could result in annual capacity costs to Power Services as high as $3.8 million. However, many of the larger over-returns are likely due to curtailments associated with reliability events and the imbalance associated with these events is currently covered by the deployment of balancing reserves. And many of the under-returns are likely due to customers that use dynamic and pseudo-ties scheduling options and do not input accurate energy estimates at T-30 (many input 0 MW.) However, over time the imbalances do tend to balance out and they appear to be random in nature, with the bias towards under-returns being due to the 0 MW estimates associated with dynamic and pseudo-tie schedules.

Timing Imbalance: T-30 Obligation minus Final Obligation				
(Negative is under-returned, positive is over-returned)				
Loss Return Type	**CY 2019**	**CY 2020**	**CY 2021**	**average MW**
In-Kind Sum MWh	(29,410)	(110,925)	(78,766)	(8.330)
Slice Sum MWh	(869)	(546)	(706)	(0.081)
In-Kind + Slice Sum MWh	(30,279)	(111,471)	(79,472)	(8.410)
In-Kind + Slice Max MW	71	120	105	99
In-Kind + Slice Min MW	(50)	(62)	(48)	(53)
Annual cost of DECs (BP-22 $0.37/kW/mo applied to average Max)				$ 438,113
Annual cost of INCs (BP-22 $5.27/kW/mo applied to average Min)				$ 3,349,844
Total annual capacity cost				$ 3,787,956

Based on the results of the hourly loss imbalance data, BPA will not establish a capacity charge associated with concurrent loss return imbalances due to rounding and timing for the following reasons: rounding imbalances are very small; imbalance due to curtailments is covered by balancing reserves; and BPA expects scheduling accuracy associated with dynamic and pseudo-tie schedules to improve due to joining the EIM and thus reduce the capacity cost associated with timing imbalances. BPA will monitor scheduling behavior (i.e. dynamic and pseudo-tie) and if there is a pattern of scheduling that negatively impacts loss imbalances we may consider establishing cost mechanisms, in future rate periods, to incentivize more accurate scheduling.

The data has been posted as in XLS format to the BP-22 Settlement web page under the May 26 workshop for Concurrent Loss Return Service.


Timing Imbalance MWh
140
120
100
80
60
40
20
0
-20
-40
-60
-80
1/1/2019
2/1/2019
3/1/2019
4/1/2019
5/1/2019
6/1/2019
7/1/2019
8/1/2019
9/1/2019
10/1/2019
11/1/2019
12/1/2019
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