BPA's Customer Led Workshop:

Savion's Recommendation for Withdrawal Penalties and Penalty Free Withdrawal Provisions

May 9, 2024

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Recurring Industry-Wide Problem

GI studies are not being completed in a timely fashion, resulting in congested GI study queues.

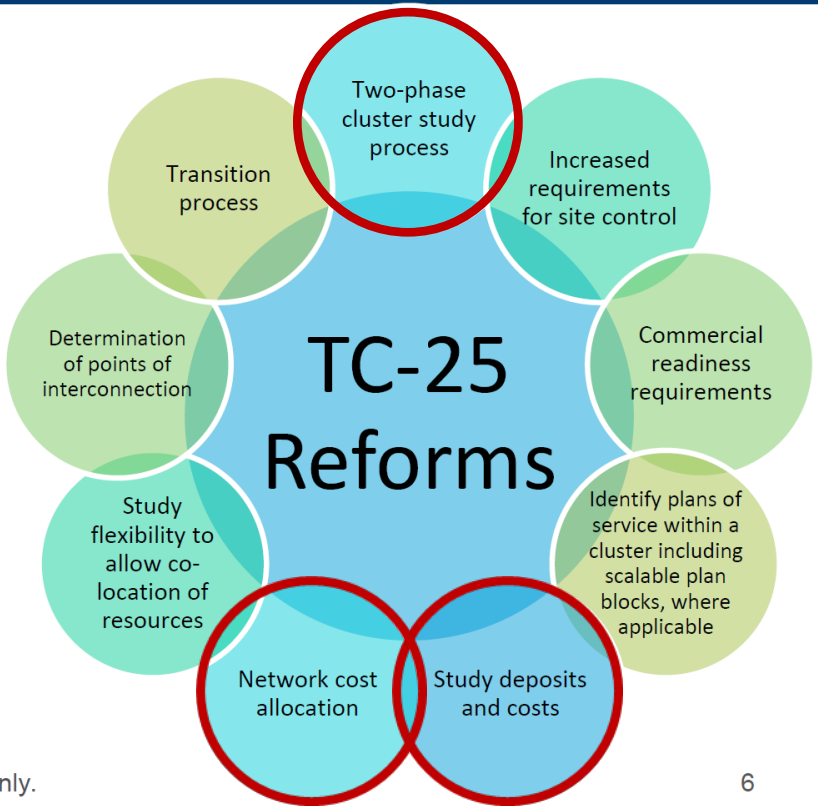
Contributing Issues:

- Overwhelming GI study demand
  - BPA reported >120 GW in GI queue in Feb '23
  - BPA GI queue is now >150 GW
- Insufficient transmission facilities and/or load
- Study models fail to converge
- Vast engineering work-hours wasted developing solutions to mitigate unrealistic contingencies

BONNEVILLE POWER ADMINISTRATION

TC-25 Large Generator Interconnection Queue Reforms

- BPA, customers, and stakeholders agreed to reforms of the large generator interconnection queue in the TC-25 Settlement Agreement.
  - BPA adopted the reforms in the TC-25 Proceeding.
- Reforms replaced the first-come, first-served serial processing of large generator interconnection requests with a first-ready, first-served cluster study process.
- Adopted TC-25 Tariff will go into effect June 30.



BPA's TC-25 Reforms

In the TC-25 Settlement Agreement, BPA committed to hold workshops to discuss whether specific revisions are needed to implement the reformed first-ready, first-served, two-phase cluster study process. Two primary revision topics:

- Large Generator Interconnection Agreement
- Withdrawal Penalties
- BPA has since indicated that it would like to also address Affected Systems

Savion's Experience

Withdrawal Penalties are a significant driver of Interconnection Customer ("IC") behavior. Properly designed Withdrawal Penalties:

- Encourage ICs to self-regulate their GI study activity and prioritize best projects
- Deter late-stage withdrawal of non-viable projects
- Assist in mitigating cascading withdrawals
- Follow cost causation principles
- Most RTOs/ISOs have adopted Withdrawal Penalties as a core aspect of their GI process.

Withdrawal Penalties by RTO / ISO

	Stage 1		Stage 2		Stage 3		
RTO / ISO	**Security ($)**	**$ at-risk upon study start**	**Security ($)**	**$ at-risk upon study start**	**Security ($)**	**$ at-risk upon study start**	
SPP	FS1 = $4k/MW	FS1 (25%) + nonrefundable Study Deposit (20%)	FS2 = Greater of $4k/MW or true up to 10% of FS2 Cost Factor - FS1	FS1 (100%) + FS2 (25%) + nonrefundable Study Deposit (50%)	FS3 = True-up to 20% of total upgrade cost	FS1 (100%) + FS2 (100%) + FS3 (100%) + nonrefundable Study Deposit (100%)	At-risk $ subject to harm assessment
MISO	M2 = $8k/MW	Withdrawal Penalty of M2 (10%) + At-Risk M2 (50%)	M3 = Greater of (true-up to 20% of NU cost, $1k/MW)	Withdrawal Penalty of M2 (35%) + At-Risk M2 (65%)	M4 = Greater of (true-up to 30% of NU cost, $1k/MW)	Withdrawal Penalty of M2 (75%) + At-Risk M2 (25%) + M3 (100%) +M4 (100%)	Only At-Risk $ subject to harm assessment
PJM	RD1 = $4k/MW	RD1 (50%)	RD2 = True-up to 10% of NU cost	RD1 (100%)	RD3 = True-up to 20% of NU cost	RD3 (100%)	At-risk $ subject to harm assessment
NYISO	RD1 = $4k/MW	Withdrawal Penalty: Forfeit 50% of Study Deposit + 10% of RD1.	RD2 = Greater of (true-up to 20% of local SUFs + CTOAFs, $4k/MW)	Withdrawal Penalty: Forfeit 100% of Study Deposit + 20% of RD2.	RD3 = 100% of SUFs + SDUs + CTOAFs	Withdrawal Penalty: 100% of RD3	Withdrawal Penalties first offset study cost of remaining ICs, with any overage given to ICs that reach COD, regardless of harm.

Despite MISO possessing the highest cost and risk structure, their DPP-2023 application window closed with 600 GI requests contributing 120 GW!

Something more is needed.

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Solution Development

Savion recently worked with several IPPs to identify solutions to address MISO's massive GI queue sizes

- Queue crashing was identified as a concern
  - Queue crashing is the submission of several GI requests into a cluster study application window, primarily for the purpose of producing controlled outcomes in subsequent study phases. The withdrawal of one or more GI requests at decision points can trigger Penalty Free Withdrawal opportunities for the same IC's remaining GI requests.
- **Elimination of queue crashing should restore cluster study efficiency and effectiveness of Withdrawal Penalties / Penalty Free Withdrawal provisions.**

IPPs' Ultimate Goal

Develop a gating mechanism that fairly governs GI study entry and benefits the entire GI study process. The ideal gating mechanism will:

- Fairly govern GI study entry
- Encourage Interconnection Customers (ICs) to self-regulate their GI study activity
- Encourage ICs to prioritize their best projects first
- Eliminate manipulative behavior in the GI study
- Minimize late-stage withdrawals
- Ensure opportunity across all IC types
- Support convergence of GI models

Considerations

Gating Mechanisms Considered

- **Cluster Study Cap** – limits MW by cluster study and/or by region
- **Parental Cap** – limits MW by parent company & affiliates
- **Lottery** – drawing for a specific study MW volume
- **Auction** – competitive bidding of a limited study MW volume
- **Volumetric Price Escalation** - rapidly increasing cost for each tranche of study MW within a cluster

Recommendation

Recommended Gating Mechanism: Volumetric Price Escalator ("VPE"); tallied across each corporate family

- A VPE framework consists of escalating security deposit payments that are required when an IC submits a MW volume of GI applications that exceed preset MW limits set by the Transmission Provider. A 3-tier VPE might look like:
  - First 1000 MW @ $4k/MW
  - Next 2000 MW @ $8k/MW
  - All additional MW @ $16k/MW
- All GI requests from same corporate family apply to totals
- All security amounts, regardless of the pricing level, are subject to the TP's Withdrawal Penalty provisions.

Recommendation w VPE Example

Savion recommends the following VPE construct & at-risk criteria:

	Phase 1 Cluster Study		Phase 2 Cluster Study		Facility Study		
RTO / ISO	Security ($)	$ at-risk upon study start	Security ($)	$ at-risk upon study start	Security ($)	$ at-risk upon study start	
BPA	FS1 = $4k/MW for first 1000 MW, $8k/MW for next 2000 MW, and $16k/MW for all additional MW	FS1 (0%)	FS2 = Greater of (true-up to 10% of total upgrade cost, $1k/MW)	FS1 (50%)	FS3 = Greater of (true-up to 20% of total upgrade cost, $1k/MW)	FS1 (100%) + FS2 (100%) + FS3 (100%)	At-risk $ subject to harm assessment

Example: BPA adopts a 3-tier VPE construct as shown above

- Customer A submits 500 MW of GI requests
- Customer B submits 3500 MW of GI requests

VPE Example

Example: continued

- **Customer A**: (submits 500 MW)
  - GI Security is $4k/MW.
    - Phase 2 at-risk amount is $4k/MW x 50% = $2k/MW.
- **Customer B**: (submits 3500 MW)
  - GI Security is $4k/MW for first 1,000 MW
    - Phase 2 at-risk amount of $4k/MW x 50 = $2k/MW.
  - GI Security is $8k/MW for next 2,000 MW
    - Phase 2 at-risk amount of $8k/MW x 50 = $4k/MW.
  - GI Security is $16k/MW for remaining 500 MW
    - Phase 2 at-risk amount of $16k/MW x 50 = $8k/MW.
  - Combined at-risk amount = $4,000/MW

VPE: Pros vs Cons

Volumetric Price Escalator; tallied by corporate family

Pros

- Encourages self regulation & prioritization of best projects
- Maintains queue access across all IC types
- Entities seeking smaller MW advance with a lower average $/MW price and lower at-risk dollars
- Nondiscriminatory; ICs sign up for their own risk tolerance
- Acts as a strong deterrent to queue crashing
- Supports development of a converging study model

Cons

- Increased front-end administration burden to track corporate affiliations
- Increased "banking" of security dollars

Recommendation: Penalty Free Withdrawal

Savion recommends the following VPE, Withdrawal Penalty and Penalty Free Withdrawal structure

	Phase 1 Cluster Study		Decision Point 1 (DP1) No PFW test	Phase 2 Cluster Study		Decision Point 2 (DP2) PFW test applies	Facility Study		Decision Point 3 (DP3) PFW test applies	
TP	**Security ($)**	**$ at-risk upon study start**		**Security ($)**	**$ at-risk upon study start**		**Security ($)**	**$ at-risk upon study start**		**Note**
BPA	FS1 = $4k/MW for first 1000 MW, $8k/MW for next 2000 MW, and $16k/MW for all additional MW	FS1 (0%)		FS2 = Greater of (true-up to 10% of total upgrade cost, $1k/MW).	FS1 (50%)		FS3 = Greater of (true-up to 20% of total upgrade cost, $1k/MW)	FS1 (100%) + FS2 (100%) + FS3 (100%)		At-risk $ subject to harm assessment

At DP1 (FS1 posted previously, FS2 to be posted)

- FS1 payment is fully refundable if IC withdraws prior to end of DP1
- FS1 becomes 50% at-risk upon DP1 conclusion

At DP2 (FS1 & FS2 posted previously, FS3 to be posted)

- FS2 payment is fully refundable if IC withdraws prior to end of DP2
- FS1 is refundable if IC withdraws and Phase 2 upgrade cost increases 25% or more AND increases by at least $10k/MW compared to Phase 1 upgrade cost

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Recommendation: Penalty Free Withdrawal

Savion's recommendation cont…

At FacS Completion (FS1, FS2 & FS3 have all been posted):

- FS1+FS2+FS3 are refundable if IC withdraws, upgrade cost increases 35% or more AND increases by at least $15k/MW compared to Phase 2
- FS1+FS2+FS3 are refundable if IC withdraws, upgrade cost increases 50% or more and increases by at least $20k/MW compared to Phase 1

Regardless of PFW applicability, if a withdrawal results in no cost allocation increases to other equally queued ICs, the withdrawing IC is reimbursed 100% of all FS payments as no harm has occurred. Cost causation is met.

Contacts

Questions?

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