



Advanced Transmission Technologies in Maryland

Corridor Identification, Project Selection, Benefits, and PJM Interactions

Presentation to MD Transmission Modernization Working Group

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RMI is a nonprofit think tank dedicated to advancing an affordable, reliable energy transition

- In coordination with other experts, we developed advanced transmission technology (ATT) technical guides & an associated webinar
- We have provided technical assistance to states
 - Multiple publications on state ATT legislation (blog, affordability toolkit entry)
 - Testimony to New Jersey on pending legislation that would establish a state review process for supplemental transmission projects and ATT inclusion
 - Technical assistance to Utah on implementing ATT legislation



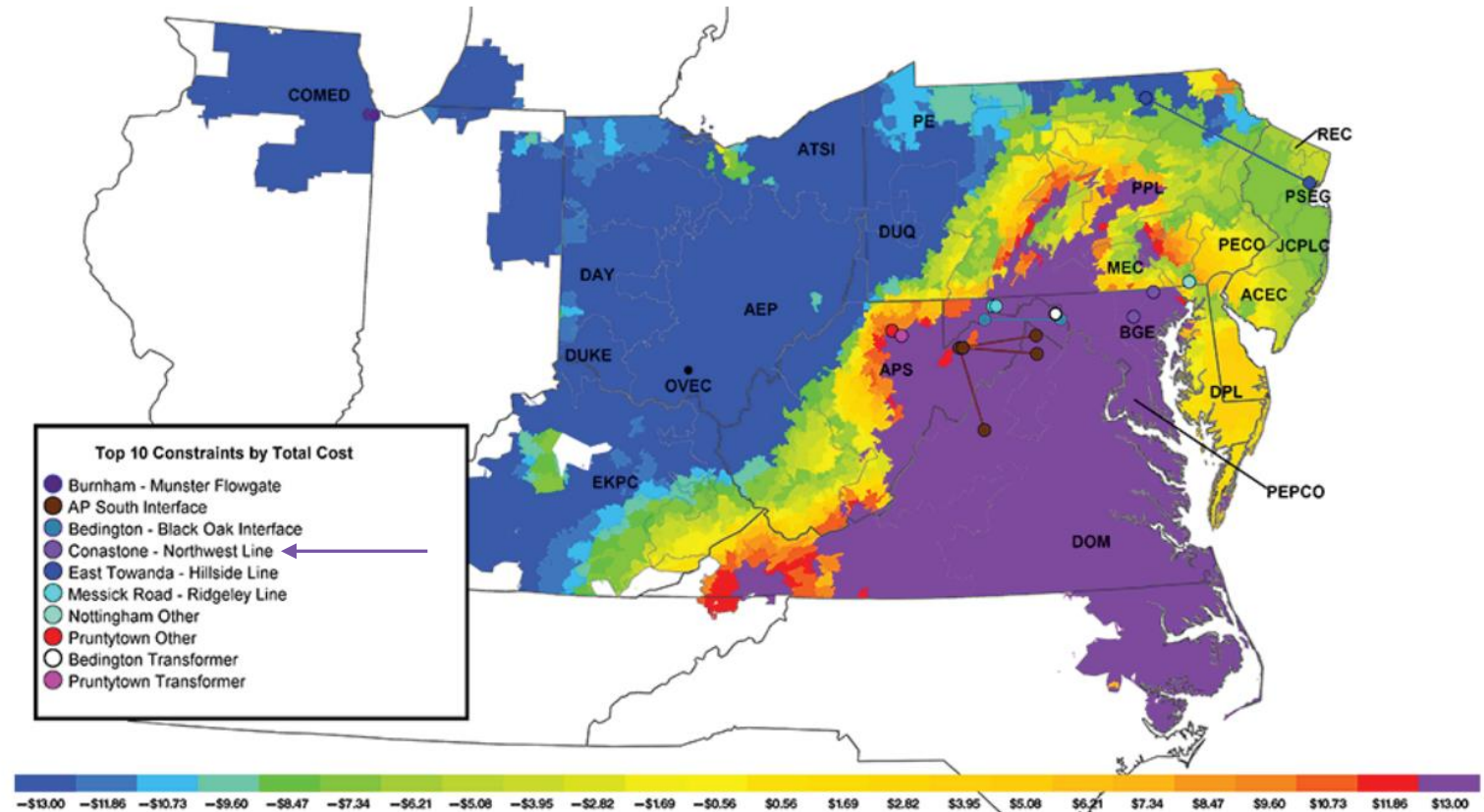


Agenda for Today's Call

- What can congestion tell us about ATT applicability?
- How can constraints be characterized?
- Proposed corridor selection process for ATTs

Congestion costs are only one way to assess ATT applicability

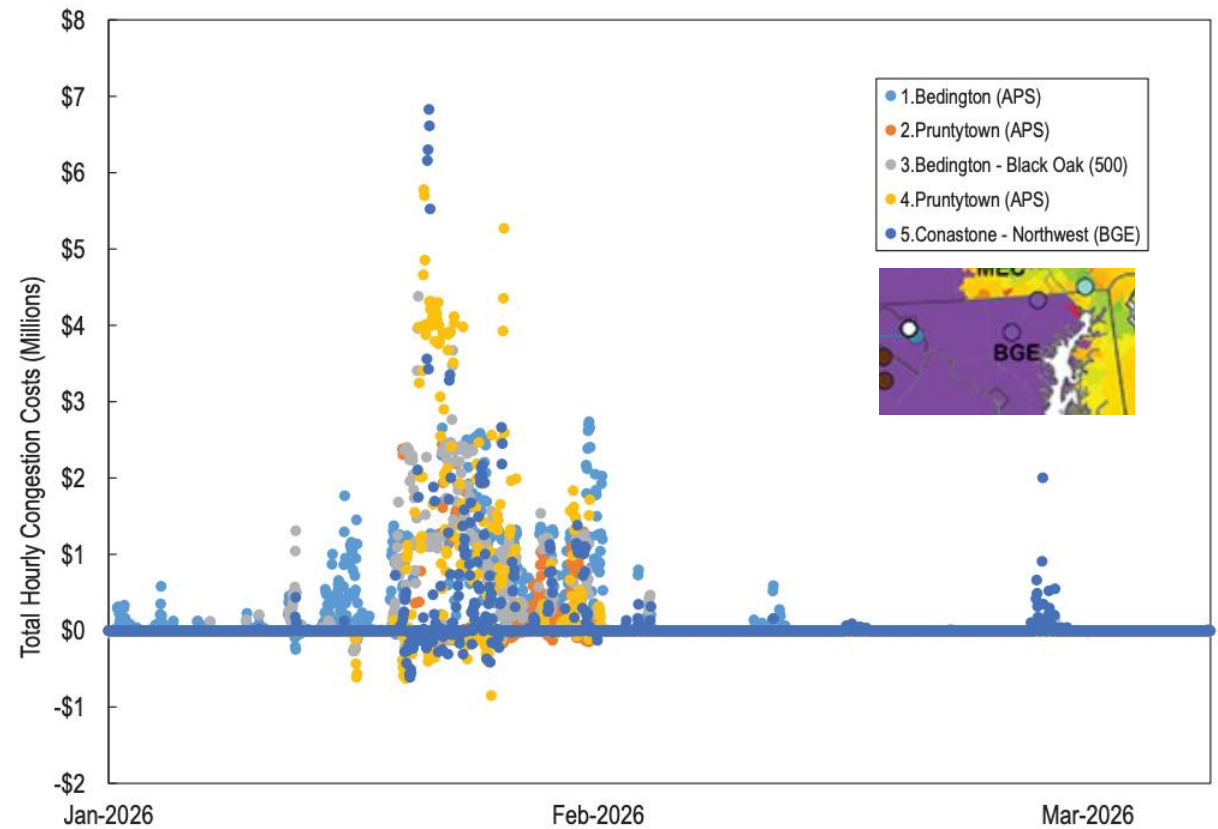
- Areas with a history of high congestion costs don't necessarily mean that they will continue to be high there in the future
 - Planned transmission, new generation, and new and growing load all contribute to adjusting congestion, meaning future congestion may look very different
- Detailed information about the underlying binding constraint is necessary to make good investment decisions



Monitoring Analytics 2026 Q1 State of the Market Report

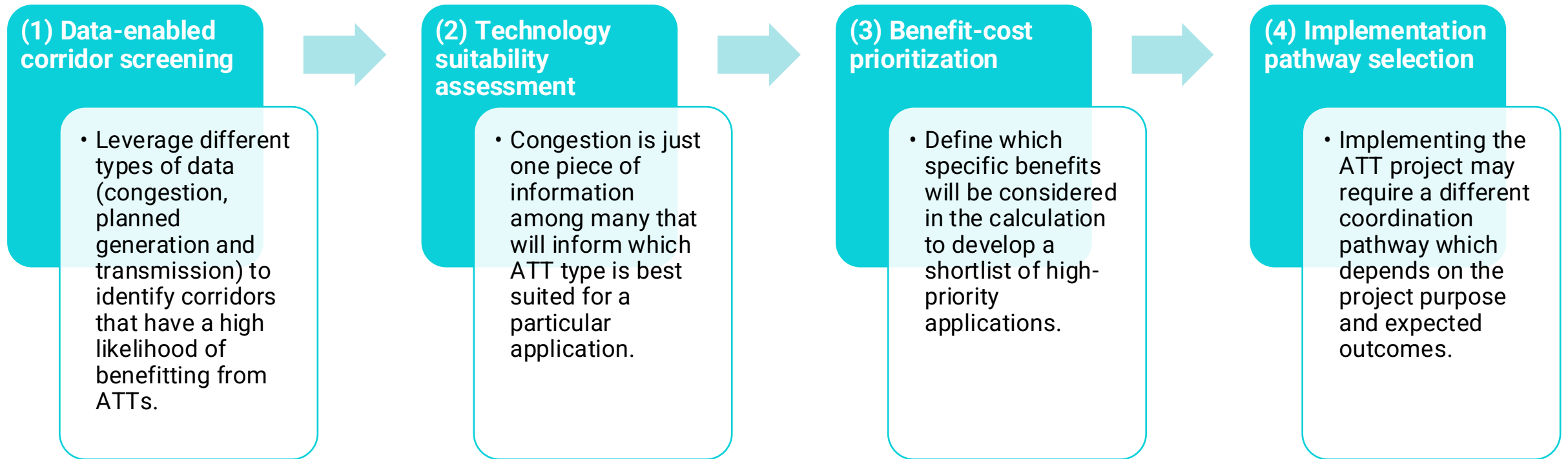
An example of a binding constraint: the 24-mile line between Conastone and the substation Northwest of Baltimore

- **The effects of the constraint:**
 - Jan-March 2025: \$23M over 66 hours
 - Jan-March 2026: \$102M over 118 hours
- **Information necessary to *characterize* the binding constraint, both “now” and in 5 and 10 years:**
 - Does BGE already have a transmission plan to upgrade this line?
 - Have any generators in the PJM interconnection queue been assigned network upgrades on or near this line?
 - What is the cause of the constraint? (eg a thermal limit, voltage limit, instability, etc.)
 - What is the magnitude of the constraint? (Put another way, how much additional capacity would be needed to entirely eliminate the max constraint?)
 - How often is this constraint binding and under what circumstances? (eg normal conditions, contingency conditions, seasonally-dependent, etc?)
 - For how long is the constraint binding?



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Proposed corridor selection process to identify priority projects that relieve congestion and support reliability and clean energy goals:



Step 1: Leverage multiple datasets to comprehensively screen corridors for all three ATT application opportunities

Historical and forecasted congestion

- Reveal high-congestion corridor locations, as well as by how much and how often the binding constraint is causing the congestion.
- Access to sufficiently granular congestion/location marginal price data at the transmission level, as well as the underlying binding constraint, may need to be requested from PJM or the Independent Market Monitor.

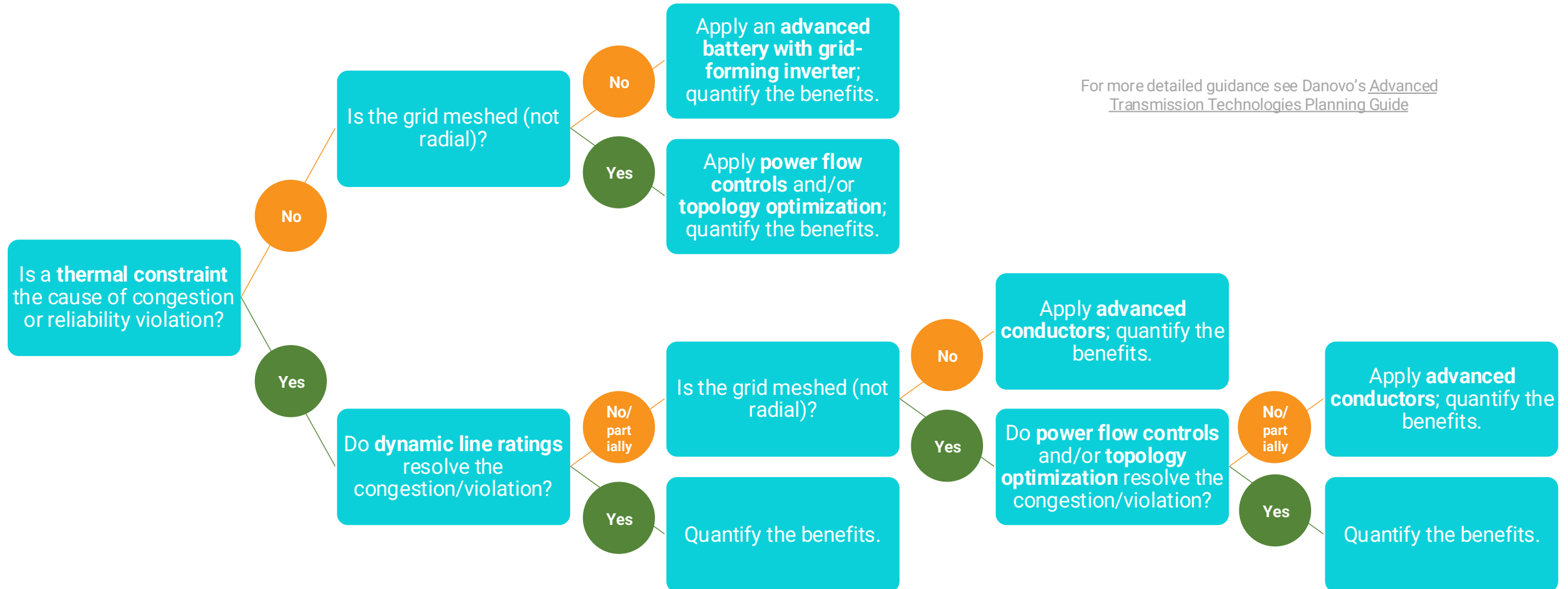
Actively queued generation

- As PJM wraps up its final “transition cycle” (TC2) and launches evaluation of its first “cycle” process (“Cycle 1”), ATTs remain outside the scope of routine consideration despite the proven benefits.
- Analyzing queued generator data in MD alongside posted interconnection study results, could pinpoint high-priority new generators at risk of leaving the queue—projects that might be retained were ATTs factored into the evaluation.

Planned transmission

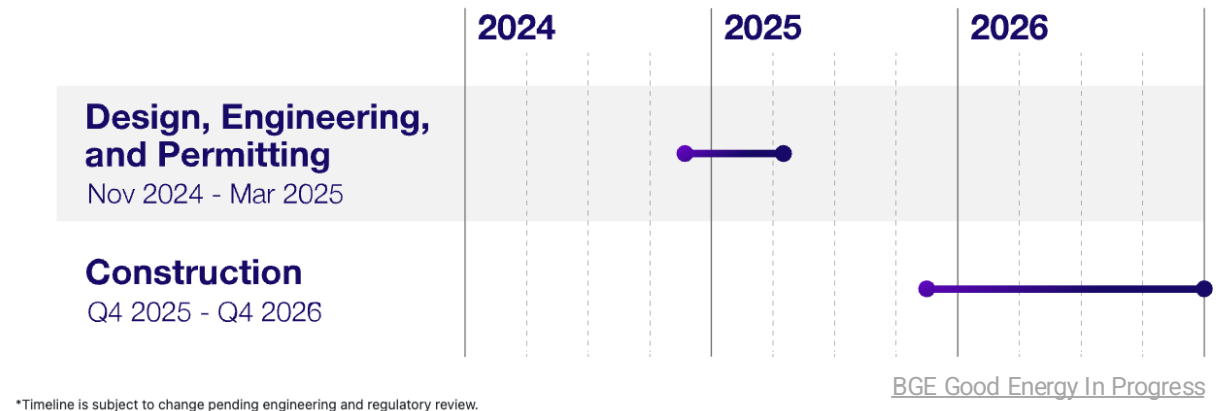
- Proposed transmission lines in the Regional Transmission Expansion Plan process could meaningfully impact congestion and dispatch within MD, and may be suitable for deferral or expansion via ATTs.
- ATT applicability depends on the underlying rationale of the transmission proposal, (eg, reliability versus economically driven transmission, and the magnitude and type of the constraint).

Step 2: For each identified corridor, proceed along the decision tree to evaluate which ATT is most suitable and cost-effective for the application



BGE plans to reconnector the two-circuit, 230 kV Conastone-Northwest line

- Did they follow the decision tree and rule-out applicability of lower-cost ATTs first?
- In the years between the initial constraint identification and construction completion, could DLR have already paid for itself via congestion reduction in the interim?

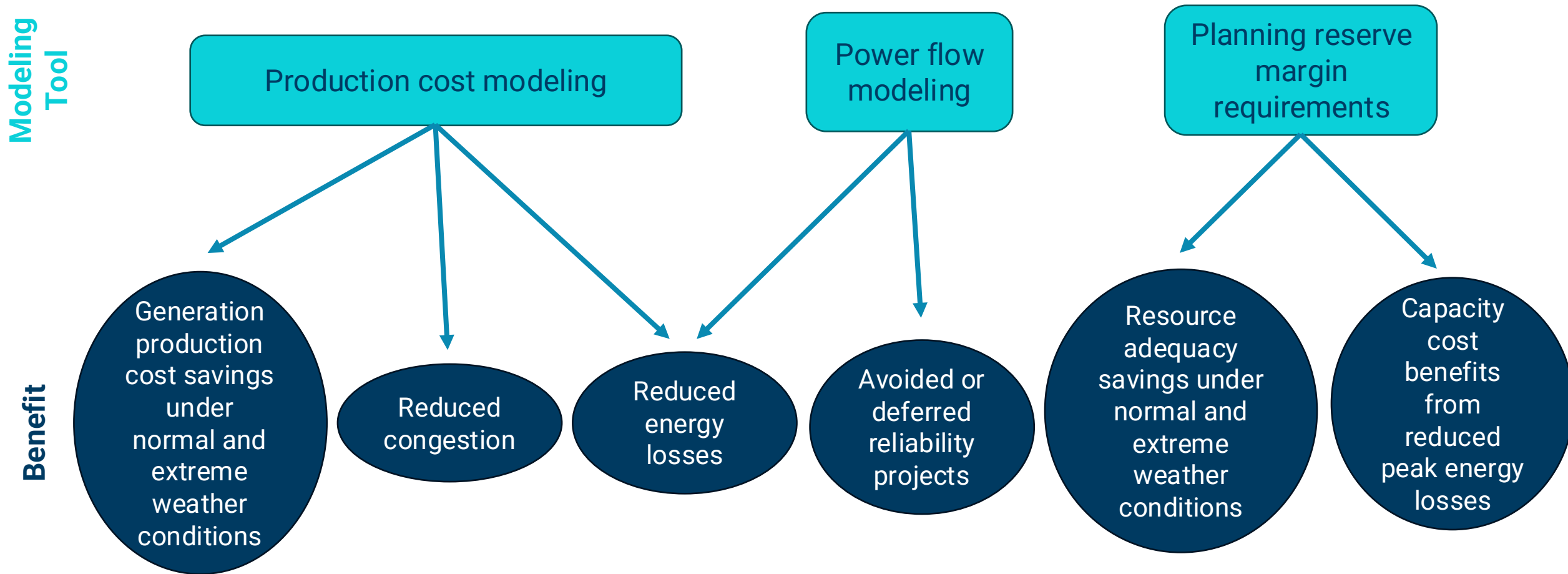


- Which conductor are they using to reconnector?
 - No mention of “advanced” or “high performance” or “composite-core conductors”, which could boost capacity in-place without needing structural reinforcement.
 - Mentions need to replace existing structures, and add reinforcements – may or may not suggest use of legacy, steel-core conductor.
 - For how many years will this new conductor be sufficient, given forecasted load and generation growth in the region?

Step 3: Quantify benefits and prioritize based on benefit-cost (B:C) ratio

- **Define which core Order 1920 benefits applicable to ATTs will be quantified, such as:**
 - Production cost or congestion savings (as well as reduction in outage-related congestion)
 - Avoided or deferred transmission upgrades/rebuilds/new builds
 - Extreme weather resilience
 - Reduced energy losses
 - Reduced peak capacity costs
- **For each, develop and apply a repeatable analysis framework to quantify the benefits**
 - Could break into two steps: an initial, lighter screening calculation, and then a secondary deep-dive quantification for those projects which cleared an initial threshold (see below)
- **Assess the range of B:C ratios and define a threshold past which applications are considered “high priority” (e.g., >1, >median, etc.)**

Different modeling tools can be used for different benefits



Step 4: Select the most feasible implementation pathway

- **Option 1:** Maryland works with utilities or third parties to submit proposal(s) into PJM RTEP window(s) in response to PJM-posted needs
- **Option 2:** Maryland opens independent solicitation for proposals in collaboration with PJM and relevant transmission owners
 - **Option 2a:** State Agreement Approach if competitive
 - **Option 2b:** Supplemental project pathway if not competitive
- **Either option:** Findings from the ATT screening process can inform Maryland's decision to approve or deny requested CPCNs



**Thank you.
Questions?**