Integrating Flexible Large Loads in Planning and Operations

Planning For Flexible Interconnections - ESIG Flexible Interconnections for Large Load Workshop

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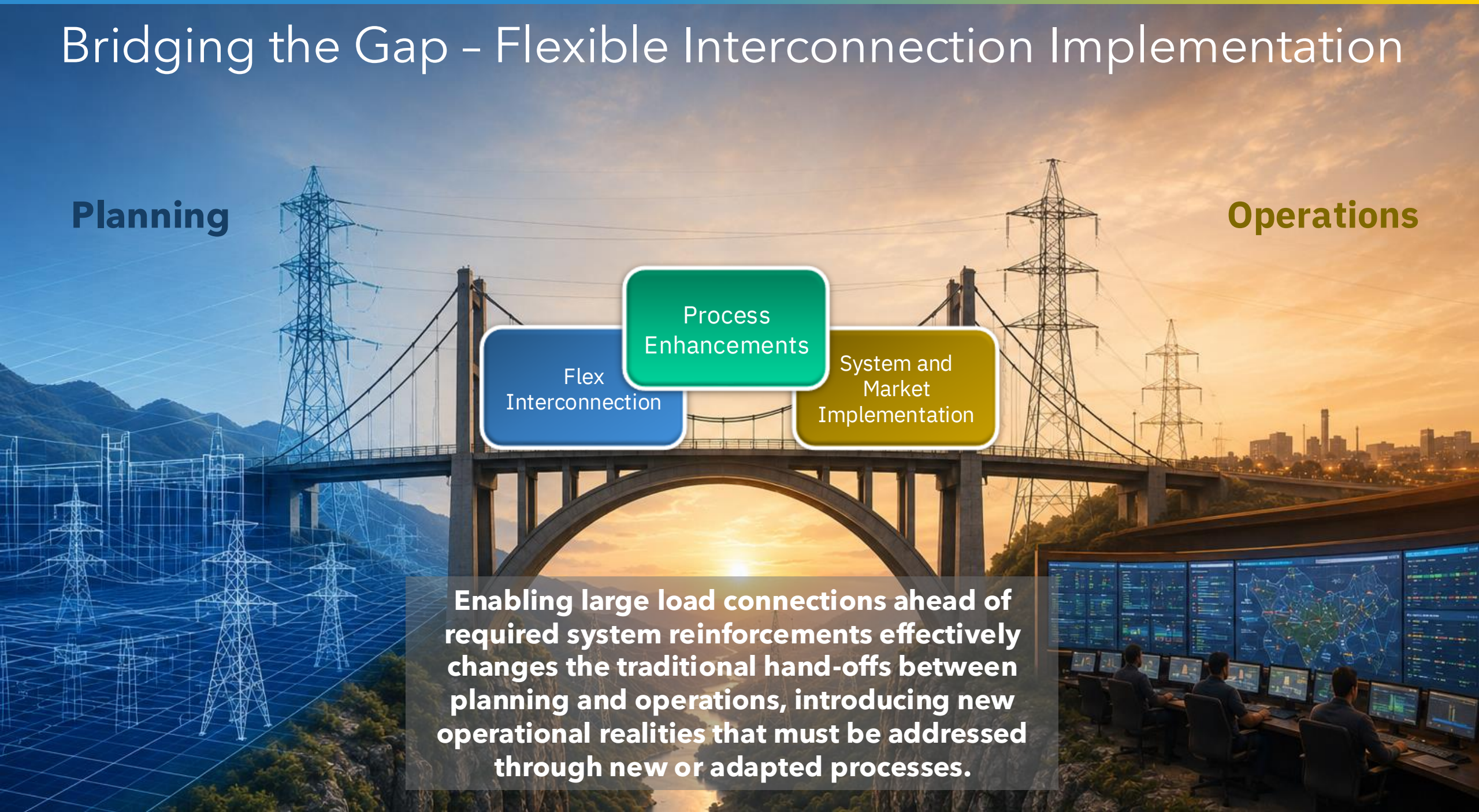
Bridging the Gap – Flexible Interconnection Implementation



Enabling large load connections ahead of required system reinforcements effectively changes the traditional hand-offs between planning and operations, introducing new operational realities that must be addressed through new or adapted processes.

Planning: How much flexibility can be accommodated?

Balancing Risk and Operability

- Establish metrics for acceptable levels of congestion for constrained interfaces (e.g. percent of time, MW threshold)
- Introduce methodologies that appropriately measure congestion probability in planning (e.g. detailed 8760 reliability analyses)
- Collaborate with large load facilities to ensure clear understanding of expected grid service.

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Operations Planning: Preparing for Load Flexibility

Characterize Flexibility

What does flex look like? 5 min dispatchable? One-time dispatch? More like demand response? How long does it last? how do you deploy it?

Additional Operational Planning Limits and Instructions

- Establish System Operating Limits and instructions that capture when the load facility or facilities introduce reliability constraints
- The study volume and limit implementation will be substantially more than today, as we'll be introducing new interfaces and system limitations in planning without requiring compensatory upgrades for connection

Enhanced Outage Management and Coordination

- We often hear statistics suggesting that the grid is underutilized, many of which are derived from offline studies or data reviews that simplify operational realities.
- In practice, system operators face increasingly limited maintenance outage windows, particularly for facilities that are critical to serving peak demand.

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Markets: Local Market Power and Flex Dispatch

Local Market Power

Integrating large load facilities ahead of prescribed upgrades, relying in the interim on the flex resource's ability to reduce consumption when needed, could provide them with local market power – i.e. the ability to control price in an area and potentially game the market.

Ex-ante Mitigation or Price Formation Changes

- Price formation changes could minimize the impact of local market power.
- Market Power Mitigation could also be leveraged to manage local market power. An ex-ante approach is preferable to prevent a potentially unmanageable amount of mitigation analysis ex-post.

Flexibility Implementation

- Develop appropriate modeling for market systems depending on flex characteristics.
- Update training, simulate events and evaluate operator staffing needs.

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Thank you!