DOCKETED	
Docket Number:	23-IEPR-04
Project Title:	Accelerating Bulk Grid Connection
TN #:	249975
Document Title:	Presentation - Tackling Bulk System Interconnection Challenges
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Organization:	Solar Energy Industry Association
Submitter Role:	Public
Submission Date:	5/3/2023 1:50:37 PM
Docketed Date:	5/3/2023

Tackling Bulk System Interconnection Challenges

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Overview

- California is facing unprecedented challenges interconnecting new resources to its grid at a time when the state faces capacity shortfalls and is struggling to keep pace with its climate targets.

- The CEC projects that California will need to bring 100 GW of solar and 50 GW of storage online to meet our SB100 targets. This would represent more than doubling California's existing solar capacity and an increase in storage deployment by orders of magnitude. This in addition to other clean energy resources.

- Interconnection is no longer merely a headache for industry participants looking to bring their projects online. It is a key roadblock to meeting the state's climate targets, reliability needs, and overall economic development.

- Given the complexity of the challenge and the central role that regulated utilities play in ensuring new resources come online in a timely manner, state policymakers will need to engage in a coordinated and sustained effort going forward to identify core challenges, develop solutions, and hold responsible stakeholders accountable to keep the state on track.

Key Themes

- Shortage of staffing and resources to address interconnection
- Lack of transparency and information from PTOs re: timelines and reasons for delays
- Cost of network upgrades, resulting in known constraints going unaddressed
- Failure to plan for and approve sufficient transmission capacity over last several years
- “Just in time” procurement increasing interconnection applications significantly
- Lack of deliverability availability throughout the system

1. Delays and Lack of Transparency by PTOs

- **Problems:**
  - Upgrade Delays: Transmission projects and interconnection upgrades are often delayed by 6 months or more.
    - Delays in getting upgrades started
    - Multi-year timeframe to complete actual upgrades
      - Ex: PG&E: http://www.caiso.com/Documents/PG_EPresentation-TransmissionDevelopmentForum-Jan25-2023.pdf
  - Status of Upgrades: There is a lack of clarity from PTOs about timing of grid upgrades and whether these have been completed or are delayed.
    - Ex: SCE https://www.sce.com/about-us/reliability/upgrading-transmission

- **Impact:**
  - Delays in transmission and network upgrades leads to delays in interconnection

- **Recommendation:**
  - PTOs should be required to provide more transparency in project status, reason for delay, and project prioritization.
  - Consider an incentive/penalty on ROE that rewards PTOs for completing projects on time and penalizes PTOs for failing to meet deadlines.

2. Interconnection Timelines

- **Problem:**
  - Interconnection time at CAISO can take several years. Causes include:
    - Delayed study results, re-studies due to project withdrawals, and required network upgrades.
    - Emergency procurement, resulting in:
      - 1 year delay in C15
      - 373 IX requests in C14 (2.4 x from C13)
      - Over 500 new IX applications in C15

- **Impact:**
  - Looking ahead, CPUC has authorized 14 GW of procurement by 2030. This will result in a high volume of IX applications going forward.
  - If left unaddressed, we can expect similar challenges and delays in IX queue.

- **Recommendation:**
  - Oversight/coordination b/t legislature, agencies, and CAISO on IX timelines w/goal setting.
  - Increased staffing: education/workforce development focused specifically on transmission planning, electrical engineers, and other workforce needed to support system upgrade work.
  - Measuring resources needed to support IX by surveying the market re: expected IX applications.
  - Leveraging new technology and processes to help with workload (cloud computing/big data/AI).

3. High Network Upgrade Costs

- **Problem:**
  - Developers assigned very high costs to upgrade network as part of IX. This is especially the case for deliverability network upgrades (DNU).

- **Impact:**
  - NU/DNU costs result in developers dropping out of queue, leaving NU/DNU costs to be reidentified in subsequent cycles.

- **Recommendation:**
  - Buildout Recurring DNUs: Repeatedly identified network upgrades that are not addressed should be prioritized and built out by PTOs.
  - Cost/Sharing Where Cost-Effective: CPUC could conduct a cost-benefits study looking at NUs that are needed to bring resources online per IRP planning. Reidentified NU and transmission lines could be built out with cost-sharing arrangement b/t load and generators where such projects are considered to be cost-effective and a priority to meet state needs.
    - Note: Better Tx planning can reduce need for system upgrades

4. Insufficient Transmission Capacity

- **Problem:**
  - California has failed to plan for and approve sufficient new transmission capacity to support the state's resource needs. It is starting to play catch up with 20 yr outlook / 22-23 transmission plan.
    - Historically, CAISO has mostly approved reliability driven projects, with limited approvals of economically and policy driven projects.
      - From 2016-2021, only 5 out of 64 economic-driven projects were approved.
      - CAISO's 20-year outlook states CA will need $30.5 B in Tx investment to meet SB 100.

- **Impact:**
  - Insufficient transmission means CA cannot bring online the resources it needs in the timeframe that it needs them.

- **Recommendations:**
  - Legislature can direct CPUC to develop accelerated milestones/timelines for permitting new Tx.
  - Review process for determining economic-driven projects.
  - Establish a Grid Enhancing Technologies Pilot Program focused on maximizing use of existing Tx system (ex: strategic deployment of storage as Tx resource; reconductoring of lines to increase capacity where possible).
    - Note: Storage as Tx requires finishing SATOA guidance

5. Insufficient Deliverability Availability

- **Problem:**
  - CAISO's current methodology for determining available deliverability is overly conservative and leads to a shortage of available deliverability.
- **Impact:**
  - Lack of available deliverability makes it difficult for new resources to contract with LSEs and to meet state needs.
- **Recommendations:**
  - To be covered in more detail on this panel
  - See SEIA's comments to CAISO on deliverability methodology


Questions?