

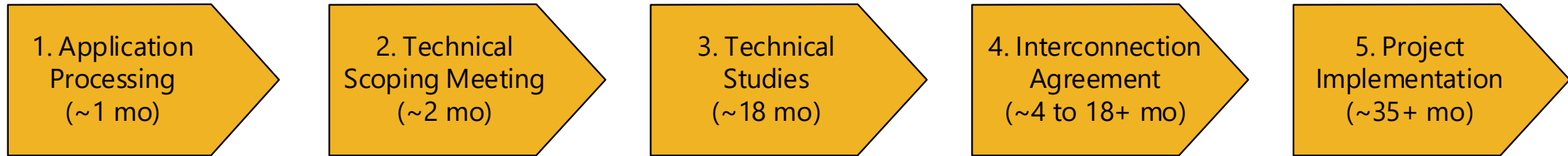
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SCE Interconnection Processes – Bulk Electric Grid

May 4, 2023

Interconnection Process Overview



1. Application Processing

- Customer submits Interconnection Request to CAISO (TOT) or SCE (WDAT) including technical data, study deposit, and Request for Distribution Service (WDAT only)
- SCE reviews submission and iterates with Customer on any issues until it is “deemed complete”

2. Technical Scoping Meeting

- SCE/CAISO and Customer meet to ensure a common understanding of the process (typ. within 30-60 days of application deemed complete)
- SCE provides technical system details and limitations known from past studies
- After scoping meeting, Customer confirms Point of Interconnection and size (MW)

3. Technical Studies

- SCE/CAISO complete technical studies to understand the impact of the project on SCE Distribution System and CAISO grid:
 - System reliability impact
 - Plan of interconnection
 - Estimated scope with cost/duration of upgrades
- Study outcome is provided in reports to Customer and at a results meeting

4. Interconnection Agreement

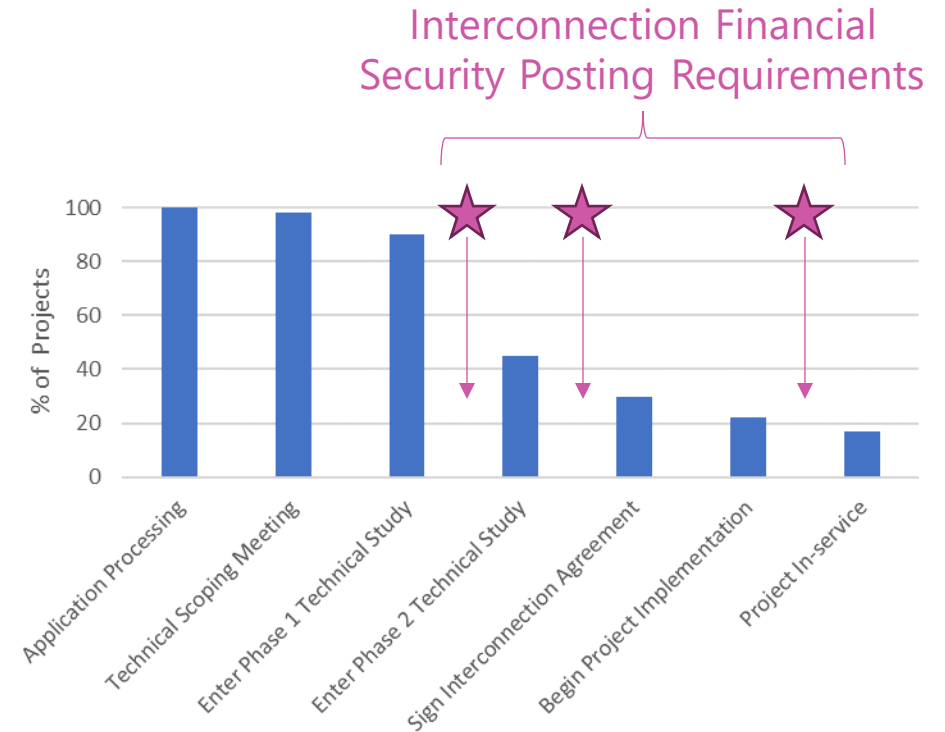
- The Interconnection Agreement is a contract that defines the requirements for interconnection, including scope of facilities, operational requirements, financial responsibility, milestones, payment, etc.
- Negotiations begin after completion of studies and results meeting and end when executed by all parties

5. Project Implementation

- SCE initiates a project to complete the work, conducts a kick-off meeting with Customer, and holds regular execution team meetings with Customer
- SCE and Customer complete their respective scopes of work and coordinate necessary interfaces

Typical Interconnection Process Delays and Hurdles

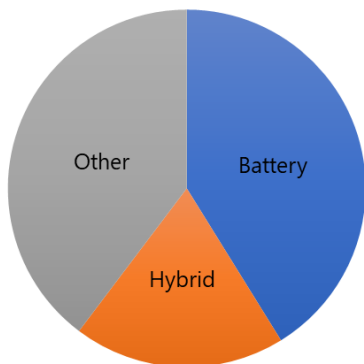
- Application Processing
 - High volume of applications leads to review delays; applications may need several rounds of review to remove all deficiencies
 - Application indicates the wrong tariff, utility, or Point of Interconnection
- Technical Studies
 - Estimated upgrade cost/duration considered too high
 - Project does not receive adequate eligibility to provide resource adequacy (deliverability allocation)
- Interconnection Agreement
 - Delays can occur because project is waiting for a Power Purchase Agreement, is not ready to proceed (suspension), is waiting for deliverability (parked), and/or has contract disputes
- Project Implementation
 - Supply chain delays (e.g., 100 weeks for a 220 kV circuit breaker)
 - Outages to complete construction must be coordinated with other projects
 - Skilled workforce shortages; testing for remedial action scheme (RAS) and centralized RAS is a particular challenge
 - Permitting and project line routing into substation



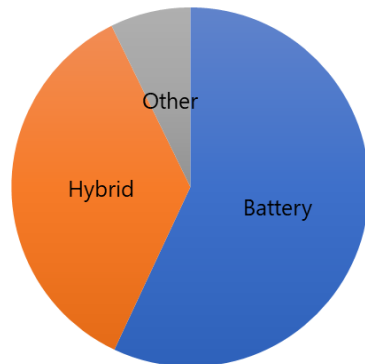
Typical attrition of projects in a cluster study process

Recent Interconnection Trends (SCE)

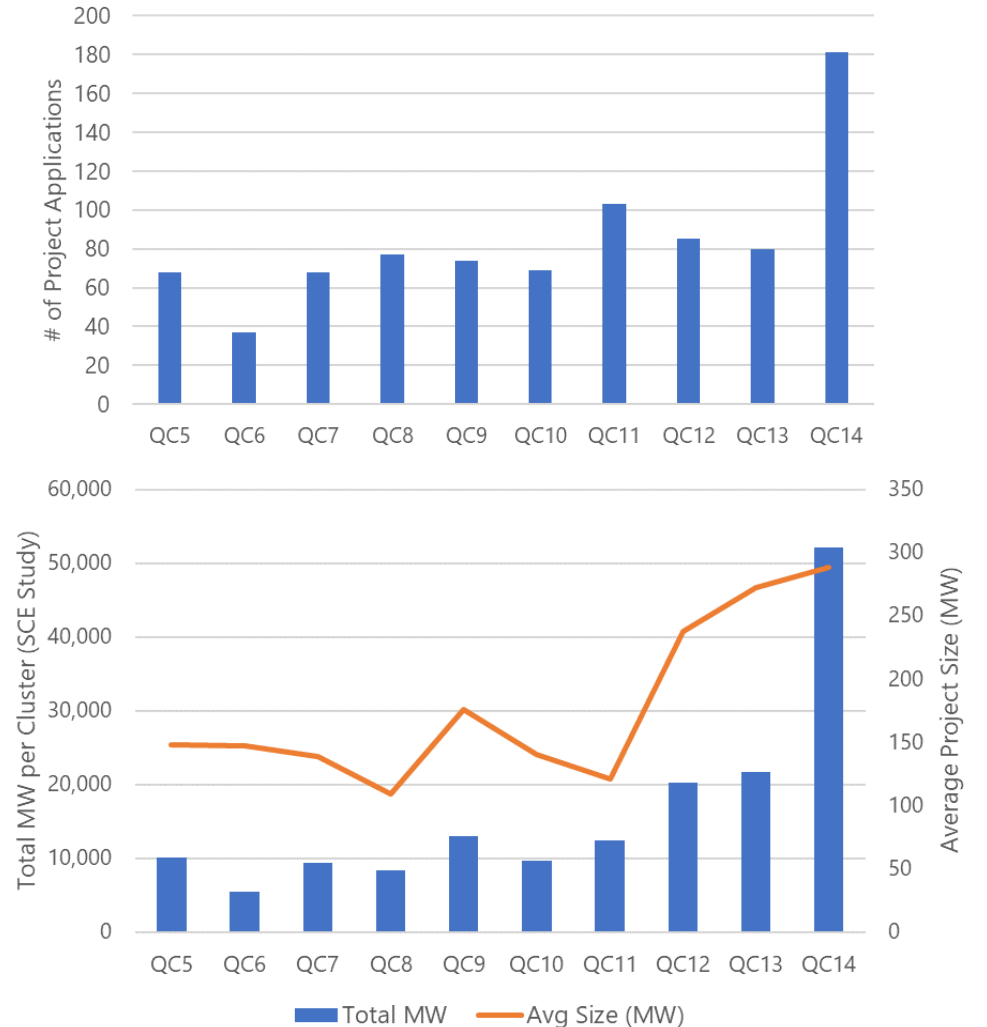
- Recent significant increase in the number of project applications (includes affected systems studies)
- Generation project sizes have been increasing on average (combined WDAT and TOT)
- Battery projects and projects with batteries (hybrid) have become increasingly common
- Consistent lack of generation projects electing to finance area deliverability upgrades (Option B)
- Representative median time from application to in-service (recent):
 - Transmission (TOT/CAISO) = 6.1 years
 - Distribution (WDAT) = 4.8 years



QC10 (2017)



QC14 (2021)



Improvement Efforts and Recommendations

- SCE Overall Efforts
 - Increasing headcount in critical staff roles for generator interconnections and focusing on hiring and training activities
 - Incorporating interconnection forecasts into company resource plans
 - Utilizing new generator interconnection dashboard for tracking process performance and current project status
- SCE Project-Specific Efforts
 - Streamlining the work order creation process to reduce time from the signed Interconnection Agreement to project kick-off
 - Mitigating construction and engineering delays through additional risk tracking of projects beginning in the Interconnection Agreement execution phase
 - Improving integrated knowledge management to ensure Customer and SCE have access to high-quality data
- Other Improvement Recommendations
 - Pursue generator interconnection reforms, such as through the proposed CAISO 2023 Interconnection Process Enhancement (IPE)
 - Align generation interconnection requests to optimal resource areas and provide developers relevant information
 - Conduct workshops for key groups to determine metrics of commercial viability earlier in the process (e.g., load serving entities and developers)
 - Move toward “first ready, first served” as proposed in the 2022 FERC Notice of Proposed Rulemaking on Generator Interconnection Planning
 - Continue proactive planning and coordinate activity between CEC, CPUC, and CAISO