



# Order 2222: Observations from a Distribution Utility

Presentation to the DOE Electricity Advisory Committee

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# Background: DER Aggregation Under Current CAISO Tariff

- CAISO filed its DER aggregation proposal with FERC on March 4, 2016, and FERC accepted the CAISO's proposal on June 2, 2016
- Provides for participation of aggregations of distribution-connected or distributed energy resources in CAISO's energy and ancillary services markets
- Generators 1 MW or greater are still be required to become participating generators and are not be eligible for DER aggregation
- NEM resources cannot participate in a wholesale market aggregation
- FERC did not agree that DERs must interconnect under a wholesale tariff (WDAT) to participate
  - *"...it would be unduly discriminatory to require all distributed energy resources to interconnect through a WDAT when the WDAT interconnection rules do not apply to some distributed energy resources, such as dispatchable demand response resources. Accordingly, we find that CAISO's proposed language is reasonable because it does not limit or expand upon the scope of entities that must interconnect through a WDAT."*
- To date, little-to-no interest in CAISO DER aggregation due to more lucrative CPUC jurisdictional programs (e.g., NEM)

# Background: CAISO Order 2222 Compliance Filing

- CAISO performed a comprehensive gap analysis on FERC Order 2222 requirements against current distributed energy resource provider provisions (2021 Q1)
- CAISO made its compliance filing on July 19, 2021
  - Reducing minimum size requirement of 500 kW to 100 kW
  - Adjusting aggregation and metering requirements to accommodate baseline measured demand response in a DERA
  - Resolving settlement impact on broader definition of mixed aggregations (energy injections, energy withdrawals, and demand reductions)
- October 1, FERC sent a 20+ page letter to CAISO requesting additional information necessary to process the compliance filing (due in 30 days)
  - Small Utility Opt-In
  - Definition of Distributed Energy Resource
  - Eligibility to Participate in RTO/ISO Markets through a Distributed Energy Resource Aggregator
  - Distribution Factors and Bidding Parameters
  - Information and Data Requirements
  - Metering and Telemetry System Requirements
  - Coordination between the RTO/ISO, Aggregator, and Distribution Utility relevant existing or proposed tariff provisions

# Multiple Rules/Multiple Jurisdictions

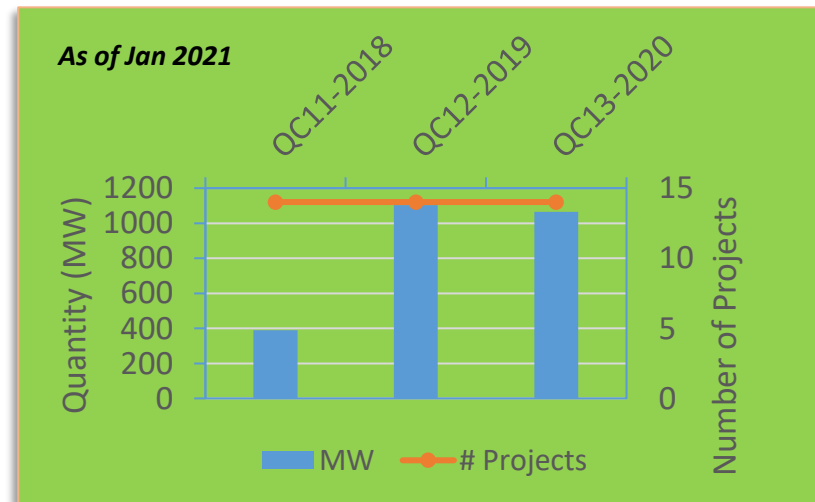
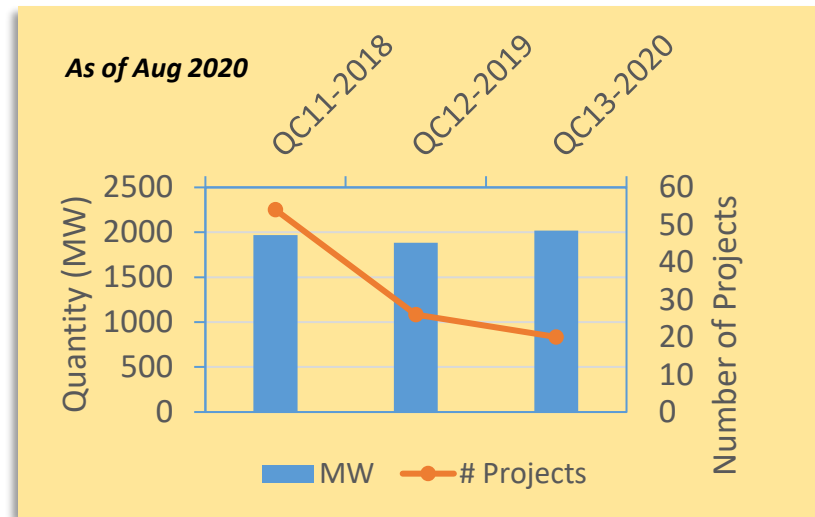
	SCE's Rule 21	SCE's WDAT	CAISO Tariff
<b>Jurisdiction</b>	CPUC	FERC	FERC
<b>Applicability</b>	"Retail" generators interconnecting to SCE's distribution or transmission grid selling 100% of their output to SCE	"Wholesale" resources interconnection to <i>SCE's distribution grid</i> participating in the CAISO (wholesale) market	Wholesale resources interconnecting to the <i>CAISO controlled transmission grid</i>
<b>Tariff Owner</b>	SCE	SCE	CAISO
<b>Study Process</b>	Fast Track, Independent, Group	Fast Track, Independent, Cluster	Fast Track, Independent, Cluster
<b>Deliverability</b>	No	Yes (via CAISO study)	Yes
<b>Queue</b>	First come, first served (not part of CAISO queue cluster)	Cluster Study projects part of CAISO queue	Yes
<b>Costs</b>	Generator pays study costs, direct interconnection costs, and distribution system costs (no refunds); exemptions apply to certain customer programs (e.g., NEM)	Generator pays study costs, direct connection costs, distribution system costs (no refunds), and transmission costs (refunds per CAISO Tariff)  As-available storage pays embedded cost; Firm storage pays "higher-of" embedded cost or upgrades	Generator pays study costs, direct connection costs, distribution system costs (no refunds), and transmission costs (refunds per CAISO Tariff)
<b>Timelines</b>	6 months (fast track); 1 year (ISP/DGSP); 30 Business Days (Standard NEM with facilities required)	6 months (fast track); 1 year (ISP/DGSP); 30 Business Days (Standard NEM with facilities required)	10+ weeks (fast track); 8 months without deliverability (ISP); 2+ years (cluster)

# The Distribution Operator is Solely Responsible for the Distribution Grid

- Distribution operations, planning, expansion, interconnection and reliability is the **sole** responsibility of the Distribution operator (DSO)
  - Of note, the ISO/RTO has no visibility over the distribution grid
  - Under existing regulation, grid typology, technology and business models, the DSO remains is responsible for the distribution system, not the RTO/ISO
- SCE has a robust process for wholesale generation (in front of the meter) that uses the distribution system to reach the ISO grid for wholesale transactions
  - Roughly 5,000MW of generation already on our distribution system participating in the wholesale markets
- SCE recently settled on robust rules for the interconnection of storage on the distribution system for wholesale participation

# Why are Distribution Storage Interconnections so Important at SCE?

- Customers connecting to distribution that want to participate in the wholesale market must interconnect through the WDAT process; however, the WDAT did not contemplate storage buying wholesale power, so this gap was filled by this filing
- SCE has received more than 100 WDAT storage interconnection requests over the last three interconnection queue cluster cycles, totaling over 5,800 MW
- As the financial commitments increase during the study and interconnection process, many projects are withdrawn by applicants
- As of now, 42 storage projects from the past three queues remain, totaling over 2,400 MW



# Interconnections Require (Complex) Studies by the Distribution Operator – e.g., As-Available Storage

Maximum Allowable Charging Schedule

On/Off Peak	Month/Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
On-Peak (MVA)	6AM - 9PM	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Off-Peak (MVA)	9PM - 6AM	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Months Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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14:00							Blue	Blue	Blue	Blue		
15:00							Blue	Blue	Blue	Blue		
16:00							Blue	Blue	Blue	Blue		
17:00							Blue	Blue	Blue	Blue		
18:00							Blue	Blue	Blue	Blue		
19:00							Blue	Blue	Blue	Blue		
20:00							Blue	Blue	Blue	Blue		
21:00							Blue	Blue	Blue	Blue		
22:00							Blue	Blue	Blue	Blue		
23:00							Blue	Blue	Blue	Blue		

No charging allowed
  Limited charging allowed
  Unlimited charging allowed

# New Considerations Under 2222

- 2222 aggregations will require additional studies beyond
  - Interconnections studies currently look at individual customer actions - but for aggregations studies must look at collective/coordinated movements of aggregations
- FERC 2222 now allows retail interconnections to participate in the wholesale market and this includes *injections* of power to the grid
  - Behind-the-meter retail participation: Demand Response
    - Demand Response does not include 'injections' into the grid
    - SCE has reasonably implemented demand response(has over 1,000MW in the CAISO), but it requires (difficult) baselines
- Will require an (wholesale) agreement with the aggregator and the distribution operator to provide a legal point of contact and to manage the use of the distribution system/rules and obligations
  - Distribution Service Agreement – DSA that will be filed with FERC
- We believe double billing (especially for storage where the CAISO will send a wholesale bill and the utility will send a retail bill) is a real issue and how to address this hasn't yet been worked out



# Actual Case Study: Electric Vehicle Fleets

- Interest from EV fleets desiring to participate in wholesale markets (example – delivery trucks, on the weekends when they don't make deliveries) but also wanting to utilize SCE's attractive retail interconnection programs available to EVs
- Raises host of policy, regulatory and technical issues
  - Should this customer interconnect as a retail customer or a wholesale customer?
  - How do we know when the customer is charging for retail purposes (e.g., to charge to make deliveries) and when are they charging for wholesale participation?
  - What should be billed for interconnection, wire use, retail energy, wholesale energy?
  - How do we prevent customer from getting billed twice (once from SCE as a retail customer, and a second time from the CAISO as a wholesale customer?)

