

# Resource Adequacy Workshops Ordered by D.19-06-026

September 2019



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## Summary of Proposal

- Proposal
  - The Commission should adopt qualifying capacity (QC) counting rules for hydroelectric resources that reflect resources' availability to the CAISO market.
- Rationale
  - Disconnect between Commission's RA program and CAISO's operational requirements for RA.
  - The existing QC counting rules for hydroelectric resources likely overstates the availability because it does not reflect variability driven by hydrological conditions, weather patterns, FERC licensing, upstream powerhouses, and storage levels.

## Current State

- Hydroelectric resources are divided into two categories for QC counting purposes: (1) dispatchable and (2) non-dispatchable
  - Dispatchability is based on a flag from the CAISO's Master File
  - No overall consensus on the definition of dispatchability

CPUC Category	QC
Dispatchable	P-Max
Non-dispatchable	Three-year rolling average of generation production during the RA measurement hours



# Challenges with Current State

## QC values do not mirror the CAISO's bidding obligations for RA resources

- Hydroelectric resources are categorized differently by the CPUC and CAISO

CPUC	CAISO	CAISO Bidding Requirements	QC
Dispatchable	Use-limited	24 x 7	P-Max
	Conditionally available	As available	
	Use-limited and conditionally available		
Non-dispatchable (includes run-of-river)	Non-use-limited (includes run-of-river)		Generation Output

- QC methodologies do not account for operating constraints reflected in actual bidding and scheduling of hydroelectric resources



# Potential QC Counting Rules

Methodology	Description
Exceedance Methodology	Measures the minimum amount of capacity made available to the market by a specific resource in a certain percentage of hours
Effective Load Carrying Capability (ELCC)	Measures the contribution (or effectiveness) of a resource class in maintaining reliability versus a benchmark resource (“perfect capacity”)
Generation Output (status quo for non-dispatchable resources)	Measures the average output over three years by a resource in a certain set of hours



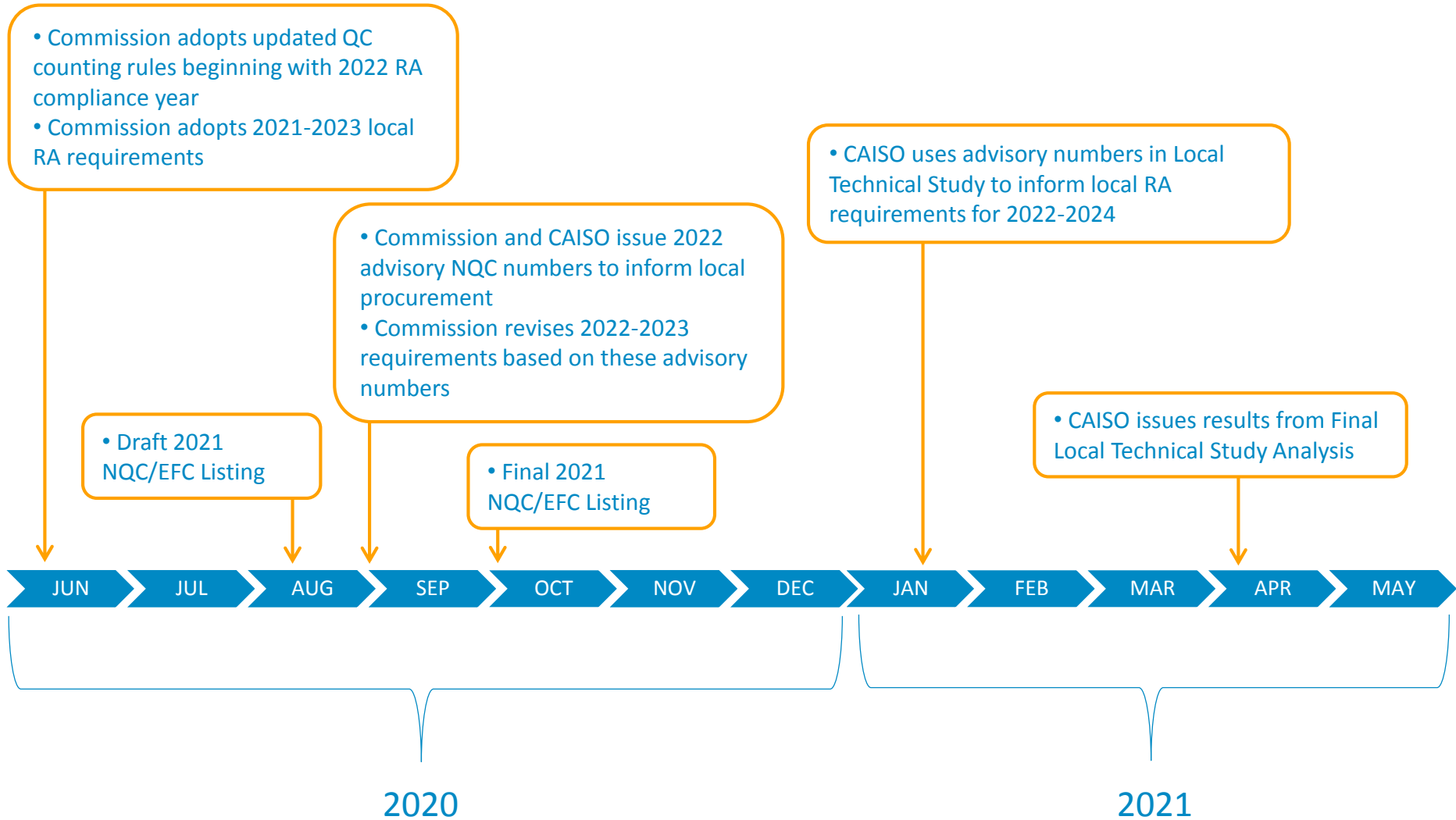
# Exceedance Methodology Application

Exceedance methodology measures the minimum amount of capacity made available to the market by a resource in a certain percentage of hours

Hydroelectric Categories	CAISO Bidding Requirements	%	Years	Based On	Hours
Use-limited	24 x 7	50	Rolling 10 Years	Bids	24 hours
Conditionally available	As available				RAAIM
Use-limited and conditionally available					
Non-use-limited (includes run-of-river)					



# Proposed Implementation Timeline



# Questions

Send written comments to:  
Tyson Brown - [MTBL@pge.com](mailto:MTBL@pge.com)



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# Appendix



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# Details of Exceedance Methodology

Set forth below is the specific exceedance methodology for hydroelectric resources, including the steps in the calculation and the data that must be obtained to implement the methodology.

## Data for Methodology for Counting Hydroelectric Resources

- The previous 10 years of day-ahead market self-schedules and economic bids for each hydroelectric resource.
- For each hydroelectric resource with a 24/7 bidding obligation, the day-ahead market self-schedules and economic bids shall correspond all hours of the day. For each hydroelectric resource with an as-available bidding obligation, the day-ahead market self-schedules and economic bids shall correspond to the five Resource Adequacy Availability Incentive Mechanism (“RAAIM”) hours of each day of the month.
- For each hydroelectric resource, rank in descending order all of the included data and determine the QC from the value 50% of the way (or median) through the ranking.

The specific methodology set forth is based on providing an appropriate level of confidence that each hydroelectric will be made available to the CAISO during its respective hours of bidding obligations. The RAAIM hours correspond to the operating period when high demand conditions typically occur and when the availability of RA capacity is most critical to maintaining system reliability [CAISO Tariff Section 40.9.3.1(a)(2)(A)].

The proposed methodology shall provide a higher level of confidence in capturing the inherent challenges related to counting hydroelectric resources. Specifically, it can better reflect hydrological conditions, weather patterns, Federal Energy Regulatory Commission licensing, state fish and wildlife agencies, storage levels and upstream and downstream powerhouses that can impact resource availability.