



California ISO

2023 Interconnection Process Enhancements Track 2 Straw Proposal

September 28, 2023

New pre-registration process to join meetings

- Pre-registration is required for all future stakeholder meetings in order to receive a link to join the meeting.
 - The link to pre-register is available in the meeting notice, and the ISO calendar.
- A recent update to WebEx disabled the ability to view the list of meeting attendees.
- The new pre-registration process will allow us to provide the list of meeting attendees to stakeholders during the call.
- Please make sure your systems administrator white list our domain to receive the web conference notification email.

Housekeeping reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.
- This collaborative meeting are intended to stimulate open dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please try and be brief and refrain from repeating what has already been said so that we can manage the time efficiently.
- If you need technical assistance during the meeting, please send a chat to the event producer

Instructions for raising your hand to ask a question

- If you are connected to audio through your computer or used the “call me” option, select the raise hand icon  located on the top right above the chat window. **Note:** #2 only works if you dialed into the meeting.
 - Please remember to state your name and affiliation before making your comment.
- Do not mute yourself until you have completed your question or comment. WebEx platform will LOCK and mute you if you mute yourself once you have finished your question.
- Attendee list for today’s call can be viewed on your chat.
- You may also send your question via chat to either Brenda Corona or to all panelists.

Agenda

Time	Topic	Presenter
9:00am – 9:30am	Introductions and Background	Brenda Corona, Danielle Mills
9:30am – 12:00pm	Interconnection Request Intake	Robert Sparks, Bob Emmert, Steve Ruty
12:00pm – 1:00pm	LUNCH	
1:00pm – 2:45pm	Contract and Queue Management	Jason Foster, Debi LeVine
2:45 pm – 3:00pm	Summary and Next Steps	Brenda Corona

CAISO Policy Initiative Stakeholder Process

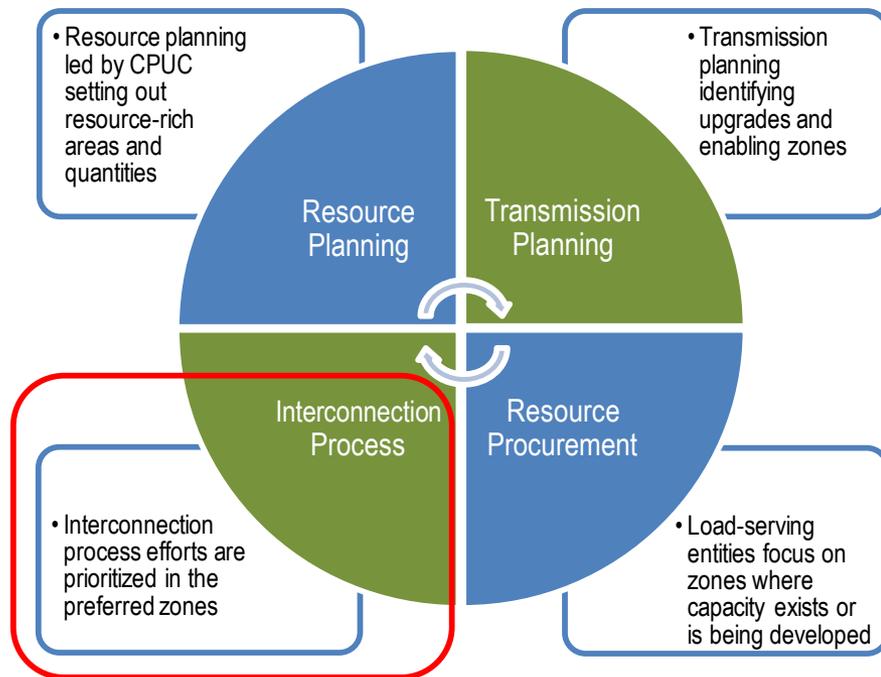


We are here

Stakeholder Working Group Process

- Working Group Engagement
 - Development of principles and problem statements
 - Feedback on ISO concepts
 - Stakeholder proposals
 - Informal survey results (data and viability)
 - Going forward: continued engagement of subgroups to address discrete elements of the straw proposal
- Note: The ISO is considering opportunities to automate elements of the interconnection process, and will manage these decisions internally.

Transformative change to the interconnection process is part of a larger coordinated strategy with state agencies



Expectations:

- The CPUC will provide direction to its jurisdictional load serving entities (LSEs) to pursue resources in the key zones.
- Procurement will focus on the expected quantities enabled by the planned transmission development, as set forth in the ISO's transmission planning process (TPP);
- State agencies, local regulatory authorities (LRAs), and LSEs will continue to significantly inform the ISO's TPP.

FERC Order No. 2023 update

- The ISO intends to comply with the order as fully and quickly as possible, with a compliance filing in early December.
- The following elements are FERC requirements, now considered out-of-scope for the IPE initiative:
 - Interconnection request requirements
 - Information availability and heat map
 - Entry fees and deposits for queue entry
 - Site control requirements
 - Single-phase study process
 - Financial posting requirements and withdrawal penalties
 - Affected system processes
 - Consideration of grid-enhancing technologies
 - Consideration of planned storage operation

Implementation of Order No. 2023 and IPE Track 2

- The ISO must comply with Order No. 2023 and will implement the proposals in this paper before re-engaging with the C15 interconnection request validation process and C15 studies.
- The ISO proposes not to open an interconnection request window in 2024. The tariff requirements for such a cluster would be in flux, and additional queue volume would compound the challenges described below.
- It will be part of our compliance to apply Order No. 2023 to Cluster 15, including the site control requirements.

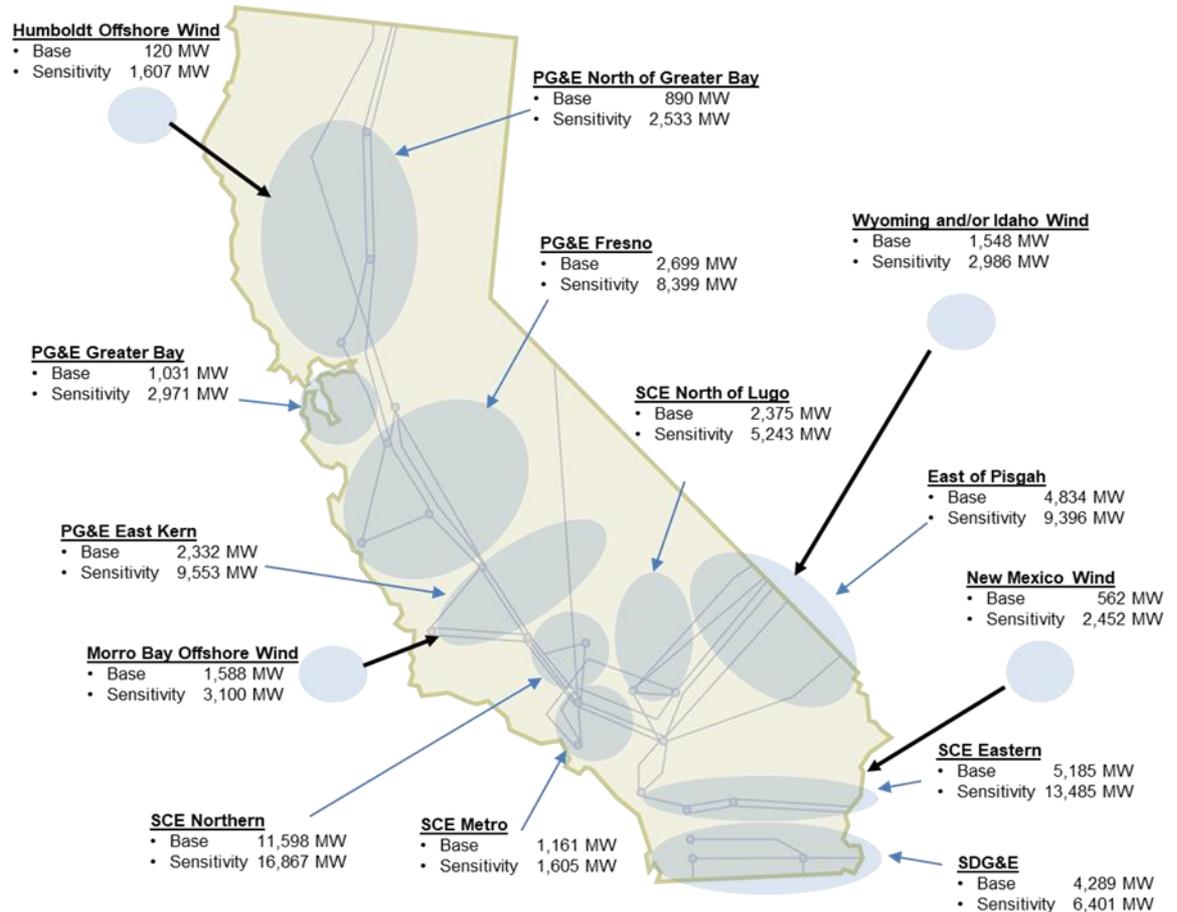
INTERCONNECTION REQUEST INTAKE

Data Accessibility

THE ZONAL APPROACH

Transmission Zones and installed capacity of resources for the 2022-2023 Transmission Planning Process

- Transmission zones and the installed capacity of resources in the base and sensitivity portfolios provided by the CPUC for the 2022-2023 transmission planning process (TPP)
- Transmission zones are aligned with the transmission interconnection areas used in the generation interconnection process



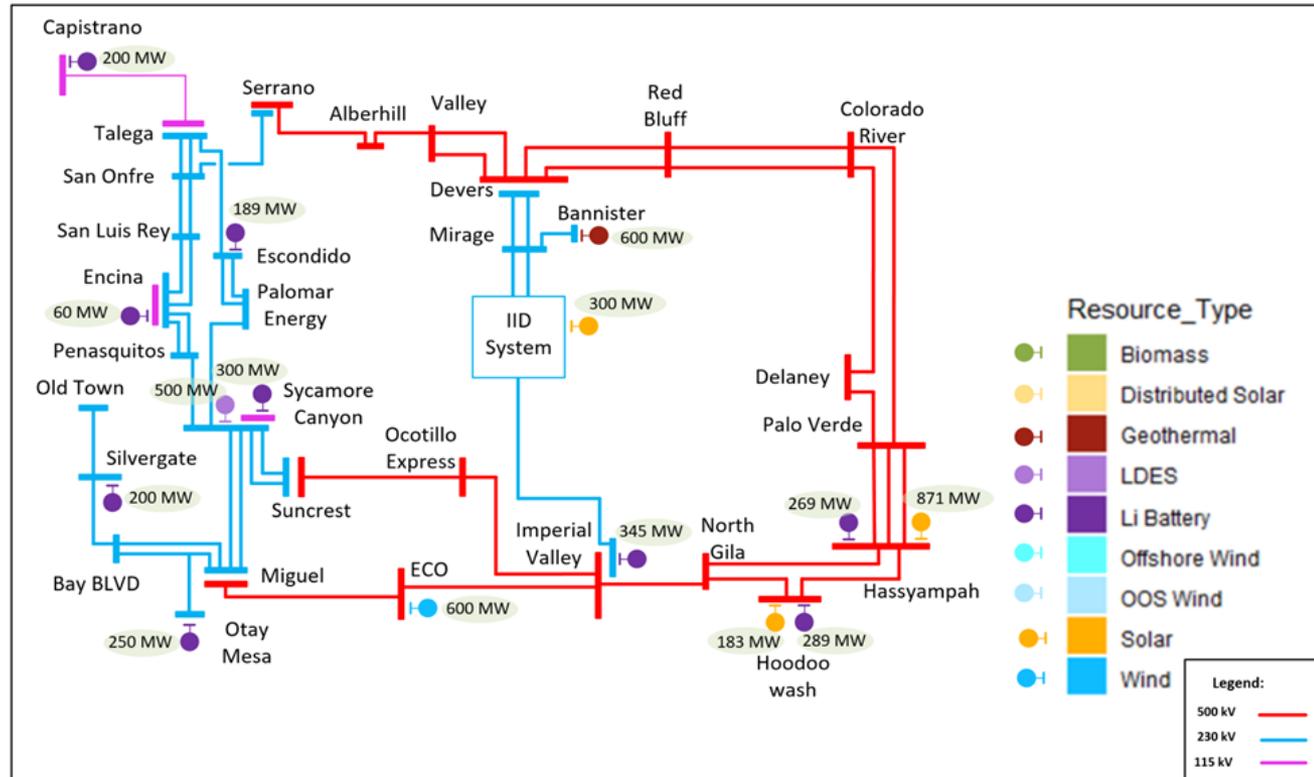
CPUC Busbar Mapping of Resources in Portfolios

- The CPUC’s busbar mapping provides the following information for the portfolios:
 - transmission area/zone
 - substation
 - technology
 - capacity

Transmission Area	Substation	Voltage	Resource Type	22-23 TPP 38 MMT Proposed Base Case Final Mapped Amount		
				FCDS (MW)	EODS (MW)	Total (MW)
PG&E Fresno Study Area	Alpaugh	115	Biomass/Biogas	3	-	3
SCE Northern Area	Antelope	230	Distributed Solar	3	-	3
SCE Northern Area	Antelope	230	Li_Battery	439	-	439
SCE Northern Area	Antelope	230	Solar	450	497	947
PG&E East Kern Study Area	Arco	230	Li_Battery	76	-	76
PG&E East Kern Study Area	Arco	230	Solar	125	28	153
SDG&E Study Area	Bannister	230	Geothermal	600	-	600
SCE Metro Study Area	Barre	230	Li_Battery	10	-	10
East of Pisgah Study Area	Beatty(VEA system)	138	Geothermal	440	-	440
PG&E North of Greater Bay Study Area	Bellota	115	Biomass/Biogas	4	-	4
PG&E North of Greater Bay Study Area	Bellota	115	Li_Battery	132	-	132
SCE Northern Area	Big Creek Hydro Fa	230	Biomass/Biogas	6	-	6

Mapping of CPUC portfolio in Transmission Plan

- Chapter 3 and Appendix F of the ISO's 2022-2023 Transmission Plan included single-line diagrams for each of the transmission zones indicating the capacity and technology type where the resources in the portfolio were mapped to the electrical grid in the zone.



Additional information on transmission capability in the zones

- ISO's Transmission Capability Estimates for the CPUC's Resource Planning Process
- ISO's annual Transmission Plan Deliverability Allocation Report

Transmission capability estimates

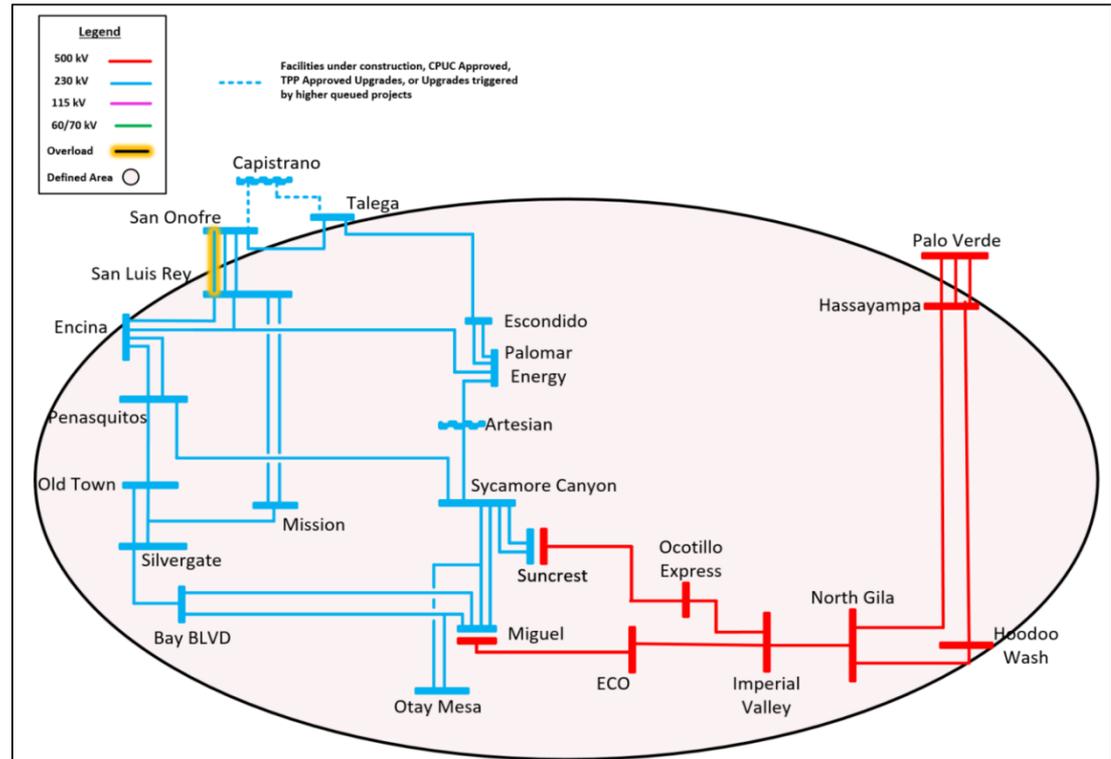
- Within each zone, the ISO identified the following information for each of the identified transmission constraints:
 - Available transmission plan capability
 - Network upgrade to increase transmission plan capability
 - Incremental available transmission plan capability
 - Estimated cost of network upgrade

Transmission capability estimates for use in the CPUC's IRP process - Revised 6/28/2023						
Transmission Constraint	Affected Resource Locations	Condition Under Which Constraint is Binding (On-peak and/or Off-peak)	Estimated FCDS Capability Based on On-peak Study Resource Output (MW)**		ADNU & Cost Estimate (\$million)	
			Transmission Plan Capability***	Incremental due to ADNU	ADNU (Time to Construct)	Cost (2022\$)
SDG&E Interconnection Area Constraints						
Capistrano-San Onofre 230 kV constraint	SDGE local area	On-peak	1,500	920	Capistrano-San Onofre 230 kV upgrade (60 months)	\$58
Chicarita 138 kV constraint	Baja, Imperial, SDGE local area	On-peak	224	700	Chicarita 138 kV Upgrades (48 months)	\$100
El Cajon 69 kV constraint	SDGE local area	On-peak	406	547	El Cajon 69 kV Upgrade (48 months)	\$15
Internal San Diego Area constraint	Baja, Imperial, SDGE local area	On-Peak, Off-Peak	1,001	2,757	Internal San Diego Area reconductors (48 months)	\$107
Miguel 69 kV constraint	SDGE local area	On-peak	231	431	Miguel 69 kV upgrades (48 months)	\$671
Encina - San Luis Rey 230 kV constraint	Baja, Imperial, Arizona, SDGE local area	On-Peak, Off-Peak	1,922	4,660	New Encina - San Luis Rey 230 kV line (120 months)	\$84
East of Miguel constraint	Baja, Imperial, Arizona, Riverside East	On-Peak, Off-Peak	1,035	1,286	New Imperial Valley - Serrano 500 kV line (188 months)	\$2,713
San Luis Rey-San Onofre 230 kV line constraint	Baja, Imperial, Arizona, SDGE local area	On-Peak, Off-Peak	2,018	4,254	New San Luis Rey-San Onofre 230 kV line (120 months)	\$107
Ocean Ranch 69 kV constraint	SDGE local area	On-peak	274	692	Ocean Ranch 69 kV upgrade (48 months)	\$28
Otay Mesa 230 kV constraint	Imperial, SDGE local area	On-peak	1,425	2,189	Otay Mesa 230 kV upgrade (60 months)	\$80
Silvergate - Bay Blvd 230 kV constraint	Baja, Imperial, SDGE local area	On-Peak, Off-Peak	663	4,887	Silvergate - Bay Blvd 230 kV 3-ohm Series Reactor (36 months)	\$30
Silvergate-Old Town 230 kV constraint	Baja, Imperial, SDGE local area	On-peak	1,221	2,522	Silvergate-Old Town 230 kV Upgrades (60 months)	\$283
Talega 230 kV constraint	SDGE local area	On-peak	1,205	2,201	Talega 230 kV Upgrades (60 months)	\$211
Trabuco-Capistrano 138 kV constraint	SDGE local area	On-peak	501	556	Trabuco-Capistrano 138 kV upgrade (48 months)	\$103

- In addition to the table identifying the constraints within the zone, single line diagrams, similar to those provided in the transmission plan, are provided identifying the substations where generators located would be behind the identified constraint

Annual transmission plan deliverability report

- Transmission Plan Deliverability Report includes a diagram of the constraints within the transmission zones identifying the substations that within the constraint .
- Provides for the constraints in the zone:
 - Non-operational prior commitments
 - requested TPD
 - allocated TPD
 - remaining TPD



Non-Operational Prior Commitment (MW)	2148
Eligible TPD Candidate (MW)	2747
TPD Allocated (MW)	0
Remaining TPD available (MW)	0

The ISO understands that access to information is critical to the zonal approach

- The ISO will develop a heat map along with the associated information, as required in FERC Order No. 2023.
 - Based on discussions with entities that have already developed a heat map, the ISO anticipates developing a heat map by Q3/Q4 2024.
- The ISO will work to ensure consistency of single line diagrams for each of the transmission zones and transmission interconnection areas in the generation interconnection process. The diagrams will identify the boundaries of the zones/area, location of resources in the portfolios and the queue, the affected stations and the available TPD for allocation behind each of the transmission constraints.

LRAs and non-CPUC jurisdictional entities

- As a part of the ISO transmission planning process, the ISO will coordinate with the LRAs and non-CPUC jurisdictional entities, in addition to the portfolios received by the CPUC for the annual transmission planning process, to determine their approved resources in individual IRPs to include in the transmission planning analysis.

INTERCONNECTION REQUEST REQUIREMENTS AND REVIEW

Interconnection Request Window

- Site control requirements consistent with FERC Order No. 2023
- Entry fees and deposits consistent with FERC Order No. 2023
- Limit number of requests that a developer may submit in a cluster window to 25% of available transmission capacity (MW) across the ISO footprint for that cluster
- Requests should include bid prices associated with each interconnection request if the zone requires an auction once scoring criteria are applied

Scoring criteria for prioritization to study process

- Criteria designed to rank interconnection requests by zone based on readiness.
- Used to reduce capacity to 150% of available transmission capacity within each zone when exceeded.
- ISO proposes to automatically include any project that a non-CPUC jurisdictional LSE demonstrates is a preferred resource in its resource plan that has been approved by its Local Regulatory Authority.
- ISO seeks feedback on opportunities to incorporate information from LSE procurement activities into the process.
- Following review of comments, may utilize sub-workgroup to refine criteria.
 - Criteria needs to be reasonable for projects at IR stage .
 - Criteria needs to be easily validated.

Auction process for final project inclusion in zonal studies

- If required, the ISO will conduct a market-clearing, sealed-bid auction for the right to be prioritized and studied in a specific zone.
- All interconnection customers will submit bids on a dollars per MW basis with each interconnection request.
- The auction will only be used if the viability scoring is unable to limit the proposed capacity to 150% of available capacity within each zone.
 - Only projects that are deemed equal in viability rating and cause the total MW for a zone to cross the 150% capacity limit for that zone will participate in the auction.
- Bidder will only submit at-risk auction financial security if they win the auction and proceed to be studied.

Auction process for final project inclusion in zonal studies (continued)

Example:

- Assume there is 266 MW of available transmission capacity in a zone, and thus 400 MW capacity deemed reasonable to study
- Seven 100 MW projects apply in this zone
 - Projects A and B have a viability score of 70
 - Projects C, D, and E have a viability score of 60
 - Project F and G have a viability score of 50
- Projects A and B are selected to be studied since they have the highest viability score, and therefore they do not need to compete in the auction,
- Only projects C, D and E will be considered in the auction because their projects cross the 400 MW. The two projects with the highest auction bids will win the auction, be studied, and must post the clearing price (the lower of the two winning bids) prior to being studied.
- Projects F and G will not be considered in the auction and will not be studied.

Auction process for final project inclusion in zonal studies (continued)

Use of Auction Revenues

- Auction funds posted by an interconnection customer will be in favor of the Participating TO.
 - Financial security instruments are the same as currently allowed for interconnection financial security.
- Projects that successfully compete in an auction and reach commercial operation will be refunded their auction-posted security.
- If a project withdraws, or is withdrawn prior to reaching commercial operation, some or all of their auction-posted security will be forfeited and used to offset and support still-needed network upgrades.

Auction process for final project inclusion in zonal studies (continued)

Withdrawal Timeline (Timeline is consistent with FERC Order 2023)	Amount to be refunded to the Interconnection Customer	Amount to be dispersed to the applicable Participating TO
If Interconnection customer withdraws or is deemed withdrawn during the Cluster Study or after receipt of a Cluster Study Report, but prior to commencement of the Cluster Restudy or Interconnection Facilities Study	85%	15%
If Interconnection customer withdraws or is deemed withdrawn during the Cluster Restudy or after receipt of any applicable restudy reports issued, but prior to commencement of the Interconnection Facilities Study	70%	30%
If Interconnection customer withdraws or is deemed withdrawn during the Interconnection Facilities Study, after receipt of the Interconnection Facilities Study Report issued, or after receipt of the draft LGIA but before Interconnection customer has executed an LGIA or has requested that its LGIA be filed unexecuted	50%	50%
If Interconnection customer has executed an LGIA or has requested that its LGIA be filed unexecuted	0%	100%

Modifications to the Merchant-Financing “Option B” Process

- Only projects seeking to interconnect in areas that have no available or planned TPD capacity are eligible to select Option B.
- Option B will not be available to projects that were not selected to be studied in transmission zones that have available or planned capacity.
- Option B projects will not have to compete for TPD in the allocation process.
- Projects requiring LDNUs will be eligible for cost recovery of the IFS posted for the LDNU.
- Projects eligible to receive Merchant Transmission Congestion Revenue Rights for ADNU

Modifications to the Merchant-Financing “Option B” Process (continued)

- Projects required to make an initial IFS posting of 30% of the estimated cost of required ADNU.
 - ISO will publish available cost estimates of ADNUs from prior cluster studies.
 - if no applicable ADNU cost estimate is available, the project would be required to post an amount equal to \$10,000 per MW, but not less than \$500,000.
- Projects that complete the cluster studies will be required to increase their posting to 50% and no longer eligible for a partial refund of their IFS posting upon withdrawal.

COMPETITION TO SECURE TPD IN EACH ZONE

Full proposal on modifications to the TPD Allocation process is pending further initiative work

- At this time, the ISO only proposes to limit the eligibility of EO projects to seek an allocation of TPD to allocation group C.
 - Significantly reduces the number of low-viability projects lingering in the queue.
 - Would not limit the ability of partial deliverability projects or projects adding storage from seeking an allocation for the EO portion of their projects.
- Development of a full TPD allocation proposal will begin after details around scoring criteria and the study process are finalized.
 - Consideration of a new multi-year interim deliverability allocation process to bridge the gap between the in-service date of any required LDNU and the project's requested COD.
- Consideration of how to prioritize long lead-time resources specific to resource planning portfolios.

CONTRACT AND QUEUE MANAGEMENT

Contract and Queue Management

One-Time Withdrawal Opportunity

- Non-refundable Financial Security held by PTO and used to assist in funding remaining Network Upgrades.
- Such non-refundable funds will be refunded to the now-withdrawn project after the upgrade is developed and in-service.
- This presents a balance of benefits and cost impacts to all parties and will incentivize lingering projects to withdraw.
- The ISO also considered a cost shift for PNU's from withdrawing interconnection customers to the same-or-later queued interconnection customers that may see their overall current cost responsibility reduced due to this one-time withdrawal opportunity. However, the ISO determined that it would result in retroactive ratemaking.

Contract and Queue Management Limited Operation Study Updates

- Extend from 5 months to 9 months to submit a LOS request.
 - Cannot extend further due to less accurate results and risk of reliability of the system.
- Update BPM for Generator Management to clarify that a technical-MMA interconnection request package submitted simultaneously with a LOS must be deemed complete and valid prior to the start of the LOS. If an MMA is submitted after a LOS is completed and the MMA results may impact the LOS, the LOS will need to be re-evaluated and potentially restarted.

Contract and Queue Management

- Revise Attachment 7 (SGIA) to be consistent with Appendix H (LGIA)
- Remove suspension rights
- TP Deliverability Transfer Limitations
 - Project transferring TPD will be withdrawn from the queue upon the approval of such transfer request.
 - ISO will consider situations where a single parent company owns multiple queue positions interconnecting as same POI.
 - TPD between resources/technologies within the same queue number is not considered a TPD transfer.

Contract and Queue Management

Viability and Time-in-Queue

- Impose an unavoidable time-in-queue requirement for all projects in the queue without executed GIAs to execute an interconnection agreement and subsequently provide notice to proceed and third financial security posting.
- This finite time-in-queue proposal ultimately places a financial obligation on the project if it desires to remain in the queue.

- See next slide

Contract and Queue Management Viability and Time-in-Queue

Cluster	IR Received Date (April)	7 years in queue	GIA Executed No Later Than:	Years-in-queue	Time to negotiate & execute after Phase 2 study results published	Notice To Proceed & 100% 3rd posting No Later Than:	Years-in-queue	Time to Provide after GIA Execution
6 (and prior)	2013	2020	Dec. 31, 2024	11.7+	121+ Months	June 30, 2025	12	6 Months
7	2014	2021	Dec. 31, 2024	10.7	109 Months	June 30, 2025	11	6 Months
8	2015	2022	Dec. 31, 2024	9.7	97 Months	Sept. 30, 2025	10.4	9 Months
9	2016	2023	Dec. 31, 2024	8.7	85 Months	Sept. 30, 2025	9.4	9 Months
10	2017	2024	Dec. 31, 2024	7.7	73 Months	Sept. 30, 2025	8.4	9 Months
11	2018	2025	Dec. 31, 2024	6.7	61 Months	Sept. 30, 2025	7.4	9 Months
12	2019	2026	Dec. 31, 2024	5.7	49 Months	Sept. 30, 2026 Dec. 31, 2025	6.7*	12 Months
13	2020	2027	June 30, 2025	5.3	43 Months	June 30, 2026	6.3	12 Months
14	2021	2028	Dec. 31, 2025	4.7	23 Months	Dec. 31, 2026	5.7	12 Months

*Typo in Straw Proposal to be updated in future paper.

Contract and Queue Management Modification Request Updates

- Increase deposit to \$30,000
- Increase time to complete engineering analysis from 45 days to 60 days
- Increase time to complete the FRR from 45 days to 60 days

Process Updates

- Work to host calls following the second or third validation turn.
- Coordinate with the PTOs to improve the initial and subsequent validation reviews for modification requests.
- Work to identify specific milestones such as executing the GIA or providing notice to proceed in the modification results.
- Update the BPM for Generator Management (Section 6.2.1.4) that projects must have started construction and be within six months of achieving their then-current synchronization or commercial operation date to submit a construction sequencing delay request.

Contract and Queue Management

Earlier Financial Security Postings for Projects with Shared Upgrades

- Concern is shared upgrades are not getting started when the first project is ready potentially resulting in a delay for that project
- ISO Proposal
 - Once the first project provides a Notice to Proceed then the PTOs will notify all other project with the same shared network upgrade they need to post for the upgrade

Contract and Queue Management

Revise Timing of GIA Amendments to Incorporate Modification Results

- In the past 2 ½ years there have been 376 MMAs been approved which currently results in 376 amendments
- There is insufficient staff at the ISO and PTOs to keep up
- ISO Proposal
 - The MMA report(s) is the controlling document for change to the GIA
 - Once the MMA report is published, work can begin based on that change
 - Nine months prior to synchronization the GIA will be amended to incorporate all MMA reports

Contract and Queue Management

Commence Network Upgrades When the First Notice to Proceed is Provided to the PTO

- IC concern is that Notice to Proceed is provided to the PTO but the work doesn't begin potentially resulting in delay of the upgrade
- ISO Proposal
 - GIA include a specific date for Notice to Proceed and third posting
 - Once the Notice to Proceed and third security is received by the PTO, the PTO notifies the IC and ISO that activity has begun

NEXT STEPS

IPE 2023 Track 2 Schedule

Date	Milestone
09/21/23	Straw Proposal posting
09/28/23	Stakeholder call on Straw Proposal
10/12/23	Comments due
11/21/23	Draft Final Proposal posting
11/28/23	Stakeholder call on Draft Final Proposal
12/12/23	Comments due
01/8/24	Final Proposal posting
01/16/24	Stakeholder call on Final Proposal
01/20/24	Comments due
02/08/24	Board of Governors meeting

To implement process changes ahead of Cluster 15 phase I studies, the ISO seeks to present Track 2 to the Board of Governors in February 2024.

Additional information

- Visit initiative webpage for more information:
<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Interconnection-process-enhancements-2023>
- If you have any questions, please contact
isostakeholderaffairs@caiso.com