



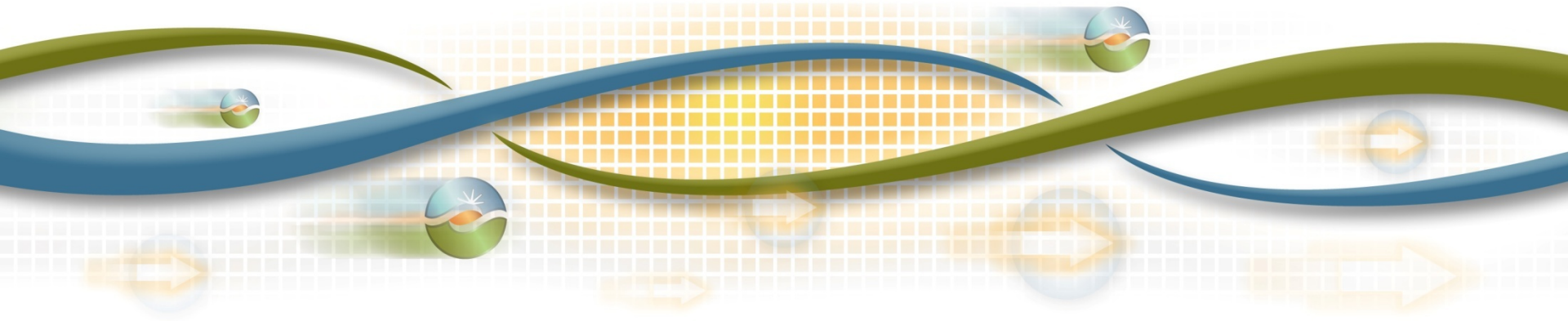
2018 Interconnection Process Enhancements (IPE)

Issue Paper

Stakeholder Meeting

January 24, 2018

10:00 a.m. – 4:00 p.m. (Pacific Time)

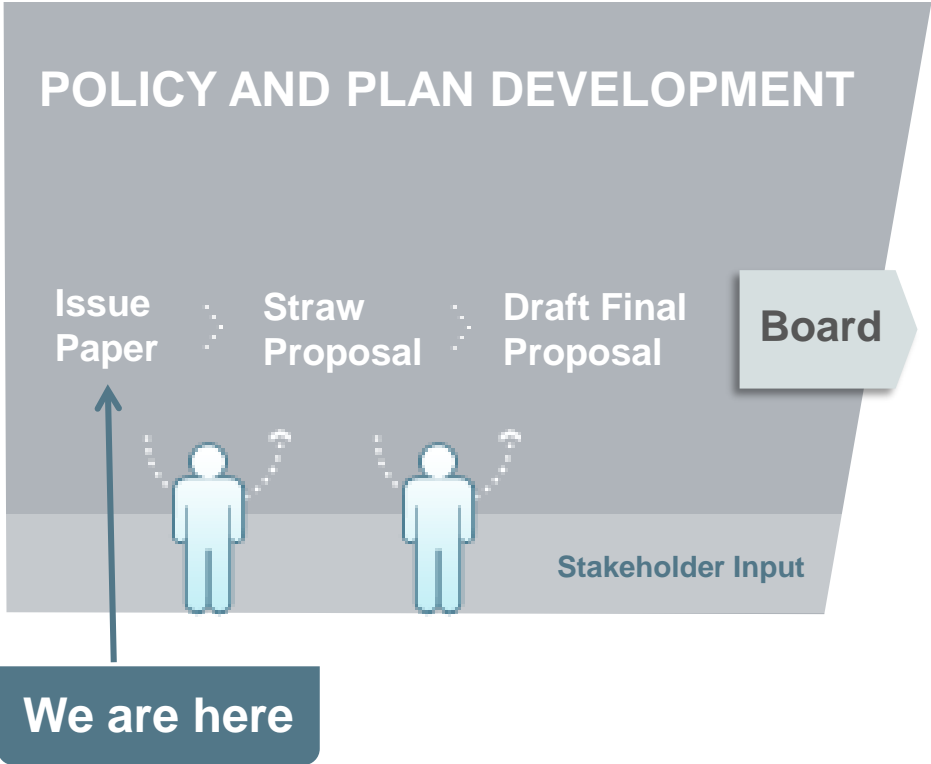


Agenda

Time	Item	Speaker
10:00 - 10:10	Stakeholder Process and Schedule	Kristina Osborne
10:10 - 10:15	Introductions	Joanne Bradley
10:15 - 10:30	Background and Scope	
10:30 - 12:00	Potential Scope for Deliverability	Team
12:00 – 1:00	Lunch Break	
1:00 – 1:30	Potential Scope for Energy Storage	Team
1:30 – 2:00	Potential Scope for Generator Interconnection Agreements	
2:00 – 2:25	Potential Scope for Interconnection Financial Security and Cost Responsibility	
2:25 -2:40	Break	
2:40 – 3:00	Potential Scope for Interconnection Requests	
3:00 – 3:50	Potential Scope for Modifications	
3:50 - 4:00	Next Steps	

STAKEHOLDER PROCESS

CAISO Policy Initiative Stakeholder Process



Background/Scope

2018 IPE goal is to modify and clarify the generator interconnection process to reflect changes in the industry and in customer needs

- IPE was completed in 2014
 - Included 14 topics
- IPE 2015 was completed in 2016
 - Included 11 topics
- IPE 2017 FERC ruling expected March 2018
 - Included 2 topics
- 2018 IPE
 - Issue paper includes 42 potential topics

Potential scope items and associated presenter

Category	Topic	Presenter
Deliverability	Summary	Jason Foster
	Transmission Plan Deliverability Allocation	Jason Foster
	Balance Sheet Financing	Jason Foster
	Change in Deliverability Status to Energy Only	Linda Wright
	Energy Only Projects' Ability to Re-enter the Queue for Full Capacity	Linda Wright
	Options to Transfer Deliverability	Sushant Barave
	Transparency on Availability of Deliverability	Sushant Barave
	Interim Deliverability Status	Sushant Barave
	Effective Load Carrying Capacity	Robert Sparks
	Cancellation or Delay of TPP Approved Projects	Robert Sparks
	Commercial Viability Criteria – Continuous Compliance Obligation	Deb Le Vine
	Eligibility for Participating in the Annual Capacity Process	Bob Emmert

Potential scope items and associated presenter

Category	Topic	Presenter
Energy Storage	Distributed Energy Resources	Joanne Bradley
	Deliverability Assessment for Energy Storage Facilities	Sushant Barave
	Replacing Entire Existing Generator Facilities with Storage	Deb Le Vine
Generator Interconnection Agreements	Suspension Notice	Deb Le Vine
	Ride-through Requirements for Inverter-based Generation	Deb Le Vine
	Modeling Data Requirements	Deb Le Vine
	Affected Participating Transmission Owner	Daune Kirrene
	Clarify New Resource Interconnection Requirements	Riddhi Ray
	Affected System Options	Joanne Bradley

Potential scope items and associated presenter

Category	Topic	Presenter
Interconnection Financial Security and Cost Responsibility	ITCC for Non-Cash Reimbursable NU Costs	Deb Le Vine
	Queue Clearing Measures	Deb Le Vine
	Maximum Cost Responsibility for NUs and potential NUs	Phelim Tavares
	Financial Security Postings and Forfeitures	Phelim Tavares
	Shared SANU and SANU Posting Criteria Issues	Phelim Tavares
	Clarification on Posting Requirements for PTOs	Bob Emmert
	Reliability Network Upgrade Reimbursement Cap	Bob Emmert
	Reimbursement for NUs	Bob Emmert

Potential scope items and associated presenter

Category	Topic	Presenter
Interconnection Requests	Revisions to Queue Entry Requirements	Bob Emmert
	Master Planned Projects	Bob Emmert
	Study Agreements	Julie Balch
	Project Name Publication	Joanne Bradley
	Interconnection Request Application Enhancements	Jason Foster
	FERC Order No. 827	Sushant Barave

Potential scope items and associated presenter

Category	Topic	Presenter
Modifications	Short Circuit Duty Contribution Criteria for Repower Projects	Sushant Barave
	Timing of Technology Changes	Raeann Quadro
	Commercial Viability – PPA Path Clarification	Raeann Quadro
	PPA Transparency	Raeann Quadro
	Increase Repowering & Serial Deposit	Deb Le Vine
	Clarify Measure for Modifications After COD	Deb Le Vine
	Material Modifications for Parked Projects	Jason Foster

POTENTIAL SCOPE FOR DELIVERABILITY

Deliverability Summary

Where the opportunity exists, CAISO seeks to clarify existing deliverability issues and modify some of the current methodologies so there is better alignment with the procurement landscape in California

- CAISO suggests the following principles for revisions:
 - Limit risk to the Participating TOs (PTOs)
 - Limit the impact that one Interconnection Customer's choices have on other Interconnection Customers
 - Ensure the most viable projects proceed appropriately
 - Allow those projects that have executed a PPA or are in a short-list process greater opportunity to obtain deliverability
 - Provide Interconnection Customers reasonable time to market their projects with minimal financial impact or risk

Transmission Plan Deliverability (TPD) Allocation

- TPD is required for a Full Capacity Deliverability Status (FCDS) designation and for Resource Adequacy eligibility
- Currently 2 opportunities for TPD allocation – 3rd if FERC approves
- CPUC Integrated Resource Plan process will provide guidance to Load Serving Entities (LSEs) on future renewable procurement
 - IRP modeling showed minimal need for renewables until 2026 after consideration of “banked” renewable energy credits from renewables that were previously procured
- First Solar believes projects should be allocated TPD as they receive PPAs and does not believe it’s prudent to force to Energy Only following parking
- CAISO agrees that the renewable procurement environment is unclear and thus believes it may be premature to make changes
- CAISO may consider the issue based on stakeholder feedback

Balance Sheet Financing

- Consider changes and/or criteria for Balance Sheet Financing (BSF) in TPD allocation process – options include:
 - Eliminate option to choose BSF in Section 8.9.2(2)(a), (App. DD), however there are implications to commercial viability with this option
 - Adjust scoring criteria of BSF demonstration
 - Strengthen requirements for providing evidence that a project is capable of BSF
 - Increase financial disclosures (attestations) and/or obligations (postings)
- CAISO is seeking additional input and suggestion from stakeholders

Change in Deliverability Status to Energy Only

- Current Opportunities
 - Between Phase I and Phase II
 - Following TPD Allocation process
- Future Opportunities may be considered in 2018 IPE
- EO Conversion for Failure to Meet Commercial Viability or TPD Retention Criteria
 - CAISO proposing maximum cost responsibility not be adjusted in these cases

Ability for Energy Only Projects to Re-enter CAISO Queue for Full Capacity

- LSA proposes that projects achieving COD with Energy Only or Partial Deliverability status should be able to re-enter the queue
- CAISO is willing to consider based on stakeholder feedback
- Concern that it may not be in the best interest of ratepayers:
 - Reimbursable costs may only benefit a single project
 - TPP identifies upgrades with wider benefit that could provide additional deliverability via the existing annual full capacity deliverability option currently available

Options to Transfer Deliverability

- CAISO will clarify the methodology of deliverability transfer under various scenarios
- CAISO will consider including the deliverability transfer option in the behind-the-meter capacity expansion under the independent study process

Transparency on Availability of Deliverability

- LSA and First Solar request more information on available deliverability and awarded deliverability for the purpose of TPD allocation
- CAISO provides the information in Phase I & Phase II interconnection study area reports and TPD allocation reports
 - Reports are posted on market participant portal
- CAISO includes TPD summary in the annual TPP report that is public
- CAISO will consider improving the reports or creating new mechanisms for the stakeholders to access the information

Interim Deliverability Status

- LSA requests clarification and documentation of interim deliverability assignment
- The methodology to allocate interim deliverability is described in the GIDAP BPM
- The transmission upgrades required for each generation project to achieve FCDS or PCDS are provided in the Phase II interconnection study reports or a reassessment report
- General FC requirement for an area is provided in Phase II interconnection study area reports on MPP
- No need to address the issue in 2018 IPE

Effective Load Carrying Capability

- LSA requests that the CAISO explore the implications of the CPUC's adoption of the ELCC for wind and solar projects on deliverability availability and interconnection studies
- CAISO is having a broad framework review regarding the study methodology, upgrade identification, NQC determination and coordination between transmission planning process and generation interconnection procedure
- This effort will take its own track outside 2018 IPE, CAISO expects to share the initial results of this effort and seek input from the stakeholders in the 2018-2019 transmission planning cycle

Cancellation or Delay of CAISO Approved Transmission Projects

- LSA requests generator deliverability being explicitly included in decisions to delay or cancel transmission projects approved under the TPP and providing notice to generation developers of resulting impacts
- Generator deliverability is one of the factors used to re-evaluate the need for a transmission project
- Transmission project status is updated in annual transmission plan and generation interconnection study reports
- CAISO also directly communicates with the interconnection customers regarding their deliverability status
- CAISO does not see a need to address in 2018 IPE

Commercial Viability Criteria – Continuous Compliance Obligation

- EDF-RE proposed that the CAISO require continuous commercial viability for all projects over the 7/10 years
- This issue is currently is in FERC Docket No. ER18-156
- CAISO may consider this issue once that docket is resolved

Eligibility for Participating in the Annual Capacity Process

The annual full capacity deliverability option allows Option (A) projects that were not allocated all the TPD they are seeking in any prior TPD allocation cycle or that converted to energy only to seek TPD for the energy only portion of their project

- CAISO recommends adding criteria to the annual option – options including:
 - Additional qualifying criteria
 - Requiring the same TPD retention criteria as for projects that received TPD in the allocation process
 - Other criteria to limit potential gaming
- The CAISO agrees and proposes this issue be included in the 2018 IPE initiative

POTENTIAL SCOPE FOR ENERGY STORAGE

Distributed Energy Resources

- Diversified Energy Regulatory Consulting suggested that the CAISO provide clarification on DER issues including interconnection, jurisdictional boundaries, market participation and dispatch, and safety requirements
 - Issues would be best addressed in ESDER Phase 3 and at the CPUC
- Dominion Energy requested notification to DERs when aggregations total 75 MVA and fall under NERC jurisdiction
 - CAISO does not determine or advise other entities on NERC jurisdiction or obligations to NERC standards
- CAISO is not planning to include this topic in 2018 IPE

Deliverability Assessment for Energy Storage Facilities

- CESA is concerned with a charging deliverability study and a discharging deliverability study under the worst dispatch scenario
- CAISO clarifies that
 - There is no charging deliverability assessment
 - Discharging deliverability assessment is based on the established methodology instead of worst case dispatch
 - Reliability studies assess both charging and discharging under various dispatch scenario
 - Charging reliability studies identify potential congestion
- CAISO does not see a need to address this issue in 2018 IPE

Replacing Entire Existing Generator Facilities with Storage

- Various stakeholders have requested to replace their entire project with storage through the modification process
- A complete change of technology from existing technology requires a study to determine the new electrical characteristics and the impact to the grid
- Therefore the modification process is not appropriate, the project must go through the study process
- CAISO does not plan to include this issue in 2018 IPE

POTENTIAL SCOPE FOR GENERATOR INTERCONNECTION AGREEMENTS

Generator Interconnection Agreements

- **Suspension Notice**
 - Modification to GIA to allow transparency of suspensions and impact on other customers
 - Add approval process to ensure no impact to other customers
- **Ride-through Requirements for Inverter-based Generation**
 - Revise asynchronous actions during faults
 - Discuss who the rules should apply to:
 - Existing generators converting to 3-party agreements?
 - Generators less than a certain MW size?

Modeling Data Requirements

- NERC/WECC have implemented new modeling standards that could improve reliability of the grid by ensuring that the model used in planning and operation studies is accurate
- The standard does not apply to approximately 30% of the CAISO's market fleet
- CAISO is looking to clarify this data requirement in the tariff and BPM for clarity and ensure reliability of the grid

Affected Participating Transmission Owner

- A project could have both an interconnecting PTO and an affected PTO – similar to an affected system
- Clarify the interconnection customer's financial security postings and cost responsibility for the interconnecting and affected PTOs
- Clarify how the PTOs' repayment obligations will be disbursed among the interconnecting and affected PTOs

Clarify New Resource Interconnection Requirements

- New Resource Interconnection (NRI) requirements have existed for years
- Clarifying that existing generators converting to market participant need to complete CAISO NRI process
- CAISO does not plan to propose new requirements; only clarify existing requirements in the tariff

Affected System Options

LSA proposes the inclusion of CAISO-system options to mitigate adverse affected system impacts in order to eliminate or reduce the need to deal with separate affected system study timelines and financial-impact uncertainty

- CAISO studies do not identify impacts on other electric systems because we do not have their topology data nor do we know their reliability criteria
- Existing process provides for CAISO input and assistance to interconnection customers to the greatest extent possible
- CAISO is not planning to include this topic in 2018 IPE

POTENTIAL SCOPE FOR INTERCONNECTION FINANCIAL SECURITY AND COST RESPONSIBILITY

ITCC for Non-cash Reimbursable NU Costs & Queue Clearing Measures

- Income Tax Component of Contribution (ITCC) for Non-Cash Reimbursable NU Costs
 - CALWEA questions whether non-cash reimbursement NUs be subject to ITCC
 - CAISO has no position and seeks stakeholder input
 - CALWEA also questions whether non-cash reimbursement NUs be paid CRRs which is already allowed in GIDAP 14.3.2.1
- Queue Clearing Measures
 - LSA proposed additional ways to clear the queue
 - Periodic review of commercial viability criteria
 - One-time security non-refundable funds “holiday”
 - CAISO believes existing measures and current 2018 IPE proposals are sufficient or duplicative

Maximum Cost Responsibility for NUs and potential NUs

CAISO proposes to clarify cost responsibility for Network Upgrades by adding additional defined terms

- Proposed defined terms:
 - Maximum Cost Responsibility
 - Current Cost Responsibility
 - Potential Network Upgrade
 - Other defined cost terms will be considered
- Proposed definition of Potential NU and cost responsibility
 - Upgrades that are considered precursor network upgrades from prior cluster projects
 - Cost to be included in the Maximum Cost Responsibility
 - Projects are not required to post for potential network upgrades
 - Costs cannot be used to create headroom within the maximum cost responsibility for increasing the allocation from other NUs

Financial Security Postings and Non-Refundable Amounts

First Solar and Westlands Solar Park have provided feedback that the current structure for the recovery of financial security is punitive towards interconnection customers

- CAISO believes that the current process ensures that generators are serious in moving forward with project costs
- Since 2015, non-refundable amounts are disbursed to TAC and to PTOs for still needed upgrades
- CAISO will include in 2018 IPE the issue of PTOs' obtaining non-refundable amounts to pay for incurred costs

Shared SANU and SANU Posting Criteria Issues

Clarify SANU provisions when multiple generation projects in a cluster trigger a SANU and desire to share construction of the SANU, and clarify the posting requirement related to SANUs

- CAISO believes that SANU criteria should be on a case-by-case basis
 - CAISO seeks input on whether or not to remove the BPM requirement of 100% cost responsibility for a SANU must be assigned to one customer for that customer to build the SANU
- CAISO policy states that any project assigned a SANU must post for 100% of the costs
 - LSA asks that multiple projects sharing a SANU not be required to each post 100% of the costs of the SANU
 - Can potentially put the PTO at risk if projects with a shared SANU withdraw, but the SANU is still needed

Clarification on Posting Requirements for PTOs

PG&E proposes that PTOs should not have to post financial security to themselves when they develop new generation projects interconnecting to their own service area

- The CAISO agrees that PTOs should not be required to post security to themselves
- PTOs have successfully petitioned FERC for case-by-case waivers on this issue
- Including this in the tariff would obviate the need for further waiver filings
- Mechanism needed to address tariff requirement for sending non-refundable funds to CAISO if PTO withdraws a project
- Need to ensure that RNU costs in excess of \$60k/MW do not go into PTO's TRR where PTO is the IC
- CAISO plans to include this issue in 2018 IPE

Reliability Network Upgrade Reimbursement Cap

The \$60k/MW maximum reimbursement amount for RNUs has the potential to be circumvented when a PTO backstops the cost of construction

Scenario

- Some projects sharing an RNU withdraw and the RNU is still needed
 - The PTO backstops the construction costs
 - The PTO will get 100% reimbursement in the TAC even though costs exceed \$60k/MW
 - Amount above the \$60k/MW will be included in the PTO's TRR and ratepayers will have to pay for the 100% of the RNU costs
- CAISO plans to include this issue in 2018 IPE

Reimbursement for Network Upgrades

Six Cities proposed considering whether the CAISO's current policy of reimbursing the cost of constructing network upgrades funded by an interconnection customer should be revised

- This would be a fundamental paradigm shift in:
 - The CAISO interconnection procedures
 - PTO TRR and the CAISO transmission access charge
 - LSE procurement cost
 - The creation of new merchant transmission congestion revenue rights
- CAISO proposes to not consider this issue in the 2018 IPE initiative

POTENTIAL SCOPE FOR INTERCONNECTION REQUESTS

Revisions to Queue Entry Requirements

Westlands Solar Park suggests requiring additional information for interconnection requests to demonstrate viability and discourage the speculative “testing” that occurs by project developers

- FERC Order 2003 and 2006 require the study of projects without discrimination
- FERC has expressed concern with barriers to entry, particularly for small projects
- CAISO believes it's unlikely that a feasible and consensus solution can be found
- CAISO is not planning to consider this issue in the 2018 IPE
 - However, the CAISO will consider concrete proposals for new interconnection requirements or project screens

Master Planned Projects (Open-Ended and Serial Projects)

Westlands Solar Park suggests address the unique status of open-ended, master planned projects that provide better understanding of quantity and timing of project planned buildout in specified areas

- GIDAP provisions allow for phased generating facilities, decreases in capacity, and project modifications
 - These provisions can accommodate most of the issues raised
- Modifications to the study process to accommodate this would be complex and could present obstacles to other projects
- CAISO may consider the issue based on stakeholder feedback

Study Agreements

- CAISO proposes to make the study agreement part of the interconnection request so that it is executed when the interconnection customer submits the interconnection request
- To achieve this efficiency, the interconnection request would change slightly and incorporate the *pro forma* Generator Interconnection Study Process Agreement
- Will avoid duplicative but separate processes

Project Name Publication

- Coordination with other entities and ability to meet NERC standards would be improved if project names were publicly available
- CAISO proposes to include at a minimum project names in the public queue list
- May consider other information based on stakeholder suggestions (e.g., parent company, contact information)

Interconnection Request Application Enhancements

- Project Naming Guidelines
 - Suggestion to improve naming guidelines to avoid duplicate use
 - Section 5.2 of GIDAP BPM & Prohibited Project Name List used as naming guidelines
 - CAISO believes more time is necessary to evaluate impact and need for further improvements
- Standardized Technical Data
 - Suggestion to improve interconnection request (IR) application and standardize technical data on IR
 - CAISO is currently shifting IR Technical Data (Att.A to App.1) from Microsoft WORD to EXCEL
 - Expect to publish by end of February
- Changes to Technical Data submissions during Application Process
 - Suggestion to define a cut-off date for allowable changes to technical data during the Phase I Study Process
 - CAISO expects all technical data to be final and 'locked-in' following the scoping meeting and believes the current process is sufficient
- CAISO will not include these topics in 2018 IPE

FERC Order No. 827 – Generator Reactive Capability Requirement

- PG&E and PARS request CAISO clarify implementation of FERC Order No. 827 in the generation interconnection process
- Generator reactive capability will be evaluated during the IR validation and throughout the interconnection studies
- The consistent evaluation approach will be developed among all PTO areas and implemented for Queue Cluster 11 application window
- This issue will be handled outside 2018 IPE

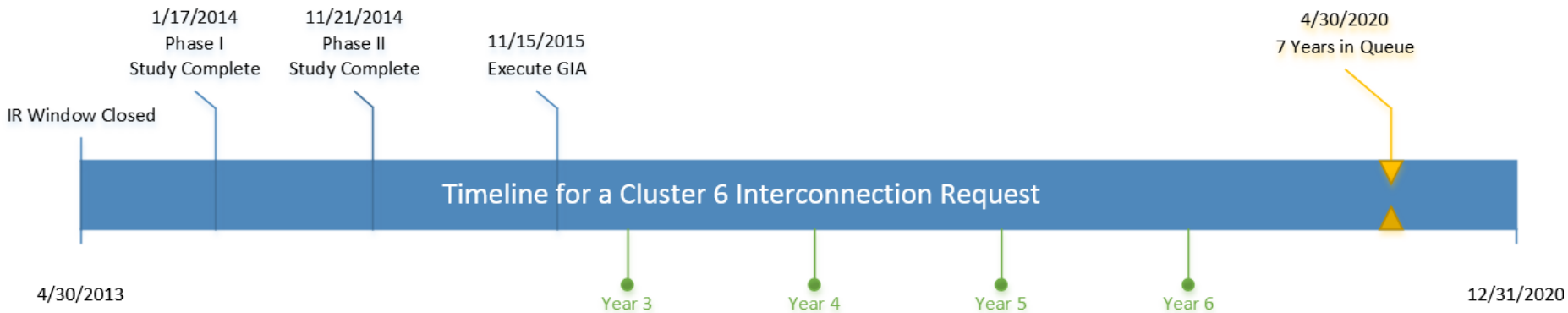
POTENTIAL SCOPE FOR MODIFICATIONS

Short Circuit Duty Contribution Criteria for Repower Projects

- Any increase of SCD contribution is considered substantial change of the electrical characteristic under section 12 of the GM BPM for repower projects
- Consider SCD criteria more consistent with other study tracks, such as material modification analysis
- Address potential enhancements in 2018 IPE

Timing of Technology Changes

- Should the CAISO establish a cut-off for project technology and fuel type changes?
- 25% of projects in the queue beyond the 7/10 years have changed their fuel type or technology. Without a cutoff, more are expected
- Currently the change may be requested *at any time*



Commercial Viability – PPA Path Clarification

- Customers requesting milestone dates beyond the 7/10 year threshold must meet commercial viability financial criteria by:
 - 1) Providing a PPA, or
 - 2) Attesting to balance sheet financing, or
 - 3) Electing for a 1-year grace period to seek a PPA
- Currently the tariff does not prohibit customers from attesting to balance sheet financing at the close of the grace period

Commercial Viability – PPA Path Clarification cont'd

- The CAISO proposes that the decision to either a) balance-sheet finance, or b) pursue PPA opportunities during the grace period must be made during the initial MMA assessment to ensure that selecting balance-sheet financing is meaningful at the time of the request
- Customers would not have the opportunity to revert to balance sheet financing after their PPA efforts were unsuccessful during the 1-year grace period

PPA Transparency

- The CAISO proposes to clarify that customers demonstrating commercial viability criteria with a PPA must provide the PPA to the CAISO, and that the PPA must match the GIA on the following items:
 - the Point of Interconnection
 - MW capacity fuel type and technology; and
 - site location
- The PPA may be redacted to protect commercial sensitive information, and will not be shared with the PTO

Interconnection Requests


- Increase Repowering and Serial Deposit
 - Costs for repowering studies and serial project re-studies are greater than the current \$10,000 deposit
 - Recovering the shortfall is time consuming and inefficient
 - Costs have varied from \$7,000 - \$54,000
 - Proposing to change deposit to \$50,000
 - Any excess study funds are returned with interest
- Clarify Measure for Modifications After COD
 - Clarify that modifications post-COD are subject to section 25.1 of the tariff; and not the terms in the section 5.19 of the GIA

Material Modifications for Parked Projects

- CAISO believes intent of parking is to defer project obligations, including the ability to modify projects
- CAISO is considering the formalization of a restriction that a project may not submit a Material Modification Request while parked
- CAISO is seeking additional input and suggestion from stakeholders

NEXT STEPS

Next Steps



Milestone	Date
Post issue paper	January 17, 2018
Stakeholder call	January 24, 2018
Stakeholder comments due	February 7, 2018

Written stakeholder comments on the issue paper are due by COB February 7 to InitiativeComments@caiso.com

Materials related to the IPE 2018 initiative are available on the ISO website at <http://www.caiso.com/informed/Pages/StakeholderProcesses/InterconnectionProcessEnhancements.aspx>

Once the CAISO can assess the comments we will publish a schedule