

No.	Comment Submitted	ISO Response	Assigned To:
1	Should responses be provided directly in the application word document, or should responses be provided in a separate document?	To the extent possible, please include responses directly in the application word document. We understand this may not be practical for all application sections. In such a case, the applicant may submit additional documents and reference them in their responses.	Grid Assets
2	Can the Collinsville Substation be located anywhere along the existing 500 kV lines shown in the right picture of slide 27? it is a different locational information from previous Att. G	Yes. The cost estimate of \$5.0M per circuit mile will be used for PG&E's scope of Vaca – Tesla line extension, depending upon the location of the Collinsville substation.	Planning
3	Is CAISO considering overhead solutions for the two 230kV transmission lines connecting Collinsville to Pittsburg? The solution must be submarine cable?	The 230 kV lines could be overhead or submarine cable as long as it meets the required capacity.	Planning
4	Manning: Appendix G provides GPS coordinates indicating an acceptable 10 mile stretch along the Los Banos-Midway #2/Los Banos-Gates 500 kV path. However, the coordinates provided are not along the Los Banos-Gates 500 kV corridor, they are along the I-5 corridor. Can the CAISO clarify the acceptable location for Manning.	The GPS coordinates are provided for horizontal mid-line reference only for the 10 mile stretch.	Planning
5	Should an engineering design for the looping lines be included as part of the proposal? If so, what kind of deliverables should be submitted? Should an estimate for the costs of the incumbent's scope of work be included?	The looping in of the existing transmission lines should not be included in the proposals. The existing transmission line extensions will be constructed by PG&E and brought to within 100' of the new proposed substation fence.	Grid Assets
6	The HVDC projects require SSR and SSTI studies. Will the CAISO make available a short circuit case that reflects the latest topology?	The studies are required but will only be completed by the selected project sponsors. The submitted proposals shall include the cost of these studies and any anticipated mitigation.	Grid Assets
7	Could we have some clarification on the expected operation of the Metcalf to Newark HVDC project?	The Metcalf to Newark HVDC link identified is not included in the current solicitation. The proposals shall include space for the future	Planning



8	Is the June 2028 in service date identified in the Attachment G specifications a required date? Will proposals that show an in service date after June 2028 be penalized or rejected?	expansions at the proposed Metcalf and Newark HVDC terminals to accommodate for the future operation of a multi-terminal HVDC link. The date is a requested in-service date. Proposals with an inservice date later than June 2028 will be considered with preference given to the earlier in-service date.	
10	What is the refundability of the \$75,000 deposit if a bidder decides to withdraw a bid after the application deadline?	The applicant only pays for actual costs incurred during the process associated with evaluating their application. If the costs are greater than \$75,000 but less than \$150,000 the applicant will be billed for the difference (see CAISO tariff section 24.5.6)	Grid Assets
11	Would it be acceptable by the ISO to deliver the proposal attachments in a flash-drive or an external hard-drive (depending on size) instead of CDs or DVDs?	No, the proposals shall be delivered as noted in the application instructions.	Grid Assets
12	Will sensitive financial information, such as audited financial statements, remain confidential throughout the selection process? If not, under what circumstances would such information become public?	Section 20 of the California ISO's tariff describes how the ISO handles confidential information, and these provisions apply to information submitted in the applications. The ISO will not disclose sensitive financial information in its public selection report. Note that the ISO will disclose all of the cost containment details of the winning bidder.	Grid Assets
13	Please clarify if a proponent would be able to submit a proposal with two alternatives for a proposed project. For example, can a proponent submit one proposal that identifies alternate substation locations or transmission line routing? Furthermore, please confirm if a single \$75,000 payment would suffice for such application.	The CAISO will not evaluate multiple alternatives as part of a single application. A separate proposal and application fee must be provided for each proposed solution.	Grid Assets



14	Is there more information available around the design/configuration of the competitive projects beyond what was included in the April 20 presentation i.e. proposed location of facilities/substations, t-line configuration (double/single circuit), ROW dimension requirements, acreage for substations? As a follow up, will bidder be allowed to propose their own configuration assuming compliance with all applicable standards i.e. placement of substation and t-line ROW? Thanks.	Information on the projects eligible for competitive solicitation can be found in Appendix G of the Board Approved 2021-2022 Transmission Plan (http://www.caiso.com/InitiativeDocuments/AppendixG-BoardApproved-2021-2022TransmissionPlan.pdf) Project sponsors are encouraged to submit proposals that show innovation and cost competitive advantages however they must meet the functional requirements outlined in Appendix G and satisfy the need identified in the transmission plan.	Planning
15	 Is the DC Voltage Level of ± 320kV a fixed requirement? 500MW HVDC Converters can be achieved with lower DC Voltage Levels, reducing the size of the HVDC components, obtaining smaller layouts that require smaller sites, and therefore the HVDC Converter Stations will be more economical. Due to the short distance between the HVDC Converters, the reduction of the DC Voltage Level, will not have an important impact in the cost of the HVDC Cables and therefore in the overall solution. In order to allow a Multi-Terminal solution, the DC Voltage Levels of both HVDC Links of Stage 1 and the one of the Stage 2 need to be the same. 	The DC voltage is required to be ±320 kV for both HVDC projects to enable the 1000 MW rating and the multi-terminal configuration in the ultimate plan.	Planning
16	In case of a solution based on Back-to-Backs, is it possible to choose a lower internal DC Voltage Level than ± 320kV?	The DC voltage is required to be ±320 kV in any configuration including back-to-back to enable the multi-terminal configuration in the ultimate plan.	Planning



17	 How will CAISO evaluate the HVDC Offers at Stage 1? Will CAISO consider the total cost of the "Ultimate HVDC Development Plan"? Will CAISO consider only the cost the Stage 1 	The CAISO will not be evaluating the total cost of the "Ultimate HVDC Development Plan." The proposals will be evaluated based on the Stage 1 design criteria and must include future space and allowances for the Ultimate HVDC Multi-terminal solution. The CAISO will consider the requisite Stage 1 costs incurred to facilitate the Ultimate HVDC Development Plan, as set forth in the Stage 1 design criteria. The CAISO will also consider whether an applicant's Stage 1 proposal might make it more costly or difficult to implement the ultimate HVDC Development Plan.	Grid Assets
18	How will CAISO consider the time of the upgrading from Stage 1 to Stage 2, for the evaluation of the Stage 1?	The CAISO will not consider this when evaluating the Stage 1 proposals.	Grid Assets
19	In case that CAISO will evaluate the HVDC Offers at Stage 1 considering the total cost of the "Ultimate HVDC Development Plan", will CAISO accept to build the Newark and Metcalf HVDC Converter Stations as unique HVDC Converter Stations with a final ratings at Stage 2 of ± 320kV / 1000 MW each one, delivering at Stage 1 only 500 MW and replacing for Stage 2 only some equipment for the final 1000 MW rating and making the 500 MW ready for 1000 MW.	allowances for the Ultimate HVDC Multi-terminal solution. The	Grid Assets
20	In page G-23 of Appendix G, in the Newark Converter Station and NRS Converter Station AC Switchyards section, it is indicated that "The bus configuration at both Converter Station AC Switchyards shall be breaker and a half". • In case that Stage 2 need to be taken into account in the evaluation of Stage 1, according to our understanding, with the Ultimate HVDC plan developed (Stage 1 and 2), at		Planning



	Newark and NRS Converter Station AC Switchyards will be a maximum of three bays at each AC Yard. Considering that CAISO is not requesting foreseeing space for future expansion at the AC Yards, please, clarify if the Breaker and Half configuration could be finally simplified as ring configuration, requiring only 3 Circuit Breakers to achieve the same operational flexibility and reliability. In case that the evaluation of Stage 1 will be independent from Stage 2, will CAISO allow the Proposer to offer the HVDC Converter Stations of Newark and NRS, with the corresponding AC Yard implemented with just one AC Circuit Breaker? For the previous point need the Proposer to leave space for future AC Yards with Breaker and Half configuration? How many bays of Breaker and Half configuration are needed?		
21	In page G-21 of Appendix G it is said "The approved project sponsor, who will own the Newark and NRS converter stations and switchyards, will be responsible for owning, operating, and maintaining the protection equipment located within the substation that is designated for the protection of the incoming transmission lines". Please, clarify if in this paragraph, CAISO is referring to the protection equipment located in the AC Switchyards of the	The CAISO is referring to the protection equipment in the AC switchyards of the new Convertor Stations. The protection equipment in the Newark and NRS substations will be provided by the PG&E and SVP respectively.	Grid Assets



	Converter Stations or is CAISO referring to the protection equipment		
	located in the existing Substations of Newark and NRS.		
22	In page G-19 and G-23 of Appendix G it is said "Sub-synchronous Resonance (SSR), Sub-synchronous Torsional Interaction (SSTI), Harmonics and other required studies to be completed and any identified mitigation shall be implemented as part of this project". These studies shall be carried out and completed during the project stage by the selected HVDC Converter Supplier?	The studies will be completed by the successful bidder after the project has been awarded. Bidders should provide cost allowances in their proposals. Please clearly define the scope of the associated cost allowance as well as any assumptions or limits.	Grid Assets
23	In page G-19 and G-23 of Appendix G it is said "Regardless of HVDC control characteristics and functions, in case of high potential SSTI risk, additional mitigation measures may be required for redundancy in addition to the control characteristics intended to avoid SSTI." Please, clarify what kind of redundant measures additionally to control characteristics you are referring to and the level of interaction that will require the implementation of these additional measures?	Redundant measures could be relays that will trip the HVDC link if the HVDC controls are not sufficient to address sub-synchronous interaction issues.	Planning
24	Do the future breaker-and-a-half bays need to be physically located as shown in the one-line diagrams (Fig G1-2 and Fig G2-2 in the Functional Specifications) or is there flexibility in adjusting the locations of new two-terminal bays along the breaker-and-a-half bus?	The layouts shown in the diagrams in Fig. G1-2 and G2-2 are intended to provide high level information. Any design that meets the requirements detailed in sections G1.2 and G2.2 would be acceptable.	Planning
25	Figures G1-2 & G2-2 in the Functional Specifications show a switch structure at the Point of Change of Ownership (PCO), to be installed by PG&E. Will this switch be on a dead-end structure outside the station fence and the slack span from the substation needs to be connected to the switch terminals?	Figures G1-2 & G2-2 are only intended to provide a high-level graphical representation of the interconnections to Manning and Collinsville. As described in the functional specifications, PG&E will terminate the line extensions on a dead end structure, and the approved project sponsor will own and maintain the facilities from	Planning



		this dead end structure into the new substation. The Point of Change of Ownership (POC) is the slack span attachment points on this dead end structure.	
26	For both the Newark - NRS and Metcalf - San Jose B HVDC projects, can CAISO confirm that +/- 320 kVdc is the only acceptable voltage for the DC line arrangement?	See the ISO's response to Question 15 and 16.	Grid Assets
27	Can additional information be provided on the assumed line configuration and impact to the existing line for Tranquility-Panoche in order to implement the looping into Manning?	As described in the functional specifications, PG&E will loop in the existing Tranquility – Panoche lines into the new Manning 500/230 kV substation and will reconductor the sections from Manning to Tranquility 230 kV substation. PG&E will terminate the line extensions on a dead end structure, and the approved project sponsor will own and maintain the facilities from this dead end structure into the new substation.	Planning
28	Can additional information be provided on the assumed line parameters (such as structure type, right-of-way plan and profile, conductor geometry) for Panoche-Gates and Panoche-Schindler to accommodate for the Manning 500/230 kV Substation Project scope?	The ISO does not have this information.	Grid Assets
29	Power Transformer impedance (%IZ) value / range is provided in Appendix-G (pages G-9 and G-16). Can CAISO confirm base MVA for impedance values?	The base MVA for impedance values is the Transformer MVA	Planning
30	Can CAISO provide additional description or diagrams of the new structure locations for the Tranquility – Panoche #1 & #2 circuits to accommodate the change of line termination positions described on page G-5 of the Functional Specifications?	The ISO does not have any additional information regarding the structure locations or additional diagrams pertaining to the Panoche - Tranquility #1 and #2 bus position relocation.	Planning
31	Can CAISO confirm if the cost estimate values per mile for the line extensions, as part of PG&E's scope of work for Manning and	The cost estimate for the 500 kV line extensions are \$5.0M per mile per circuit. For example, the interconnection of the new Manning	Grid Assets



	Collinsville, are calculated based on the existing circuit configurations or the future ones? For instance, Los Banos - Midway 2 will be transformed into Los Banos - Manning and Midway 2 – Manning; is the \$5 MM / mile for each of the 2 new lines or for both?	substation will require four 500 kV line extensions to be constructed between Manning and the Los Banos - Gates #1 and Los Banos - Midway #2 transmissions lines each estimated to cost \$5.0 M per mile.	
32	Is it the correct interpretation that each of the 500kV lines terminating in the Manning and New Collinsville 500/230kV Substations will require the installation of PG&E 500kV Interchange Revenue Metering Accuracy CTs / CVTs and (as well as isolating disconnect switches on both source and load sides of the installation per PG&E Standards)? If so, will this equipment be installed on PG&E's side of the Point of Interconnection as part of the PG&E Scope of Work?	PG&E will be responsible for the transmission line extensions that terminate on dead end structure within 100 feet of the new substation fence. The approved project sponsor will be responsible for all the facilities from this dead end structure(s) into new substations including the facilities required to terminate the line extensions. These facilities should satisfy the requirements defined in PG&E interconnection handbook and any additional requirements determined as part of the interconnection studies/agreement between the approved project sponsor and PG&E.	Planning
34	Is it the correct interpretation that the successful applicant will own and maintain the 500kV Series Compensation installations and related protection/control facilities that are part of the PG&E 500kV lines?	The approved project sponsor will own and maintain the series compensation on the Los Banos – Manning transmission lines and the Collinsville – Tesla transmission line, including the protection equipment at the Manning and Collinsville substations.	Planning
35	Could CAISO provide an overview of the conceptual operation of the Ultimate Plan? (e.g. Is it expected to feed San Jose from Newark under a Metcalf outage? etc.)	It is expected to feed San Jose from Newark/Metcalf if there is a Metcalf/Newark outage.	Planning
36	Figure G3-1 of the Functional Specifications seems to indicate that the future HVDC line between Newark and Metcalf in the ultimate plan is rated at 500 MW. Can CAISO confirm whether the line will be rated at 500 or 1000 MW?	All the HVDC lines shown on diagram G3-1 in the Functional Specifications are 500 MW.	Planning



37	On Page G-11 of the Functional Specifications, CAISO indicates that the station shall be configured to permit the installation of 20 ohm series reactors in the future. Can CAISO confirm the expected timing of installation of such series reactors?	The need for the series reactors will be based on future load forecast and generation portfolios, which will be determined in future.	Planning
38	Can CAISO clarify whether the Collinsville 500/230 kV Substation Project is expected to fully address overloads to allow full deliverability for the P7 contingency Contra Costa - Moraga lines #1 and #2?	Not related to this competitive solicitation.	Planning
39	 If the Collinsville 500/230 kV Substation Project is expected to fully address overloads to allowfull deliverability for the P7 contingency Contra Costa - Moraga lines #1 and #2, can CAISO: Confirm whether additional mitigation in addition to the Collinsville 500/230 kV Substation Project is expected to address P7 overloads, such as RAS or other transmission upgrades? Provide post-project loadings on Las Positas – Newark / Lone tree – USWP - Cayetano lines 	Not related to this competitive solicitation.	Planning
40	If the Collinsville 500/230 kV Substation Project is not expected to fully address overloads to allow full deliverability for the P7 contingency Contra Costa - Moraga lines #1 and #2, can CAISO confirm that a project that increases deliverability comparable to CAISO's Collinsville model posted on the portal would be an acceptable proposal?	Not related to this competitive solicitation.	Planning
41	The application instructions state "Project sponsors must provide responses to each of the items in the space provided after the	The project sponsor need only provide the unique item identifier in their response when responding to application sections with	Grid Assets



	specification of the information required and clearly note in the response the unique item identifier in each part of the response." Can you clarify what this means? The sponsor application document already identifies the unique item identifier (e.g. CC-1, CC-2, etc.) along with each item. Is it necessary to repeat this identifier in the response itself if responding directly in the workbook as CAISO has directed?	multiple subparts. In addition, if a project sponsor refers to a response provided elsewhere in their application the unique item identifier for the referenced response should be provided.	
42	Attachment G indicates that cost of estimated line extensions is calculated from existing lines to point of interconnection. Could CAISO confirm that: - Point of interconnection as used in attachment G is defined as the dead end structure located 100 ft from the new SS fence - The point of interconnection has to be defined by the project sponsor on its application - The distance will be the minimum distance from point of interconnection to the existing lines	The point of interconnection described in cost estimates for the line extensions is defined as the dead end located within 100 feet of the new substation fence. Project sponsors should identify the geographical location of the point of interconnection consistent with the requirements defined in the project sponsor application. At a minimum, the geographic location should include the GPS coordinates or be identified in the shapefile that accompanies the application. In calculating the estimated cost for the line extensions, the ISO will use the shortest distance between the existing lines and the new substation adjusting the route to account for obvious obstacles (e.g.	Grid Assets
43	Shall the project sponsor define the point of interconnection to the existing substations in their application with the only requirement that it has to be located 100ft from the fence of those facilities?	solar farms, substations, other existing infrastructure). Project sponsors should identify the geographical location of the point of interconnection consistent with the requirements defined in the project sponsor application. At a minimum, the geographic location should include the GPS coordinates or be identified in the shapefile that accompanies the application.	Grid Assets

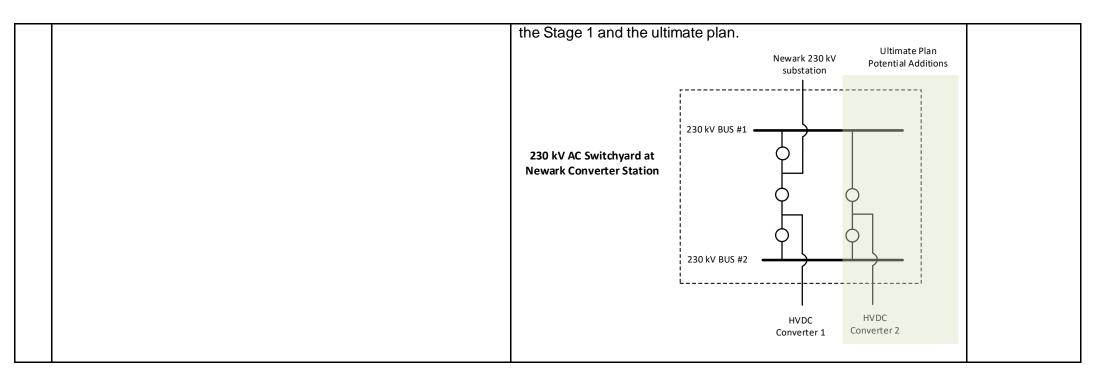


44	Could you please provide the specification of the transformers (e.g. Impedance %, MVA base, Ratings, etc.) that will be installed in the future at NRS, ahead of the 2028 COD of the project?	354/472/500 MVA, 230 +/- 2 x 2.5% kV (DETC), 120 +/- 16 x 0.625 % kV (LTC), Autotransformer (ANSI C57.12.00).	Planning
45	Would you already have an idea of where the new dead-end structure for the interconnection of the HVDC project will be within the NRS substation?	Dead-end structure is planned for the East side of NRS substation.	Planning
46	Based on the CAISO BPM section 5.6.3 Transmission Interconnection Request, any project sponsor will be required to submit a transmission interconnection request to the TO.	The approved project sponsor will not be submitting a generator interconnection request to the ISO. The projects will submit transmission interconnection requests to the applicable PTO, PG&E in this case.	Grid Assets
	Approved project sponsors that are connecting the subject regional transmission facility to facilities owned by a different transmission owner must submit a transmission interconnection request to that transmission owner to perform detailed engineering studies to determine short circuit duty mitigation and protection equipment requirements. The approved project sponsor must submit the request within sixty (60) calendar days after the selection results are posted. It is expected that this will be the same study that the CAISO requested the transmission owner to perform in section 4.10.1 of this BPM, but the study may need to be updated due to possible newtechnical information provided by the approved project		

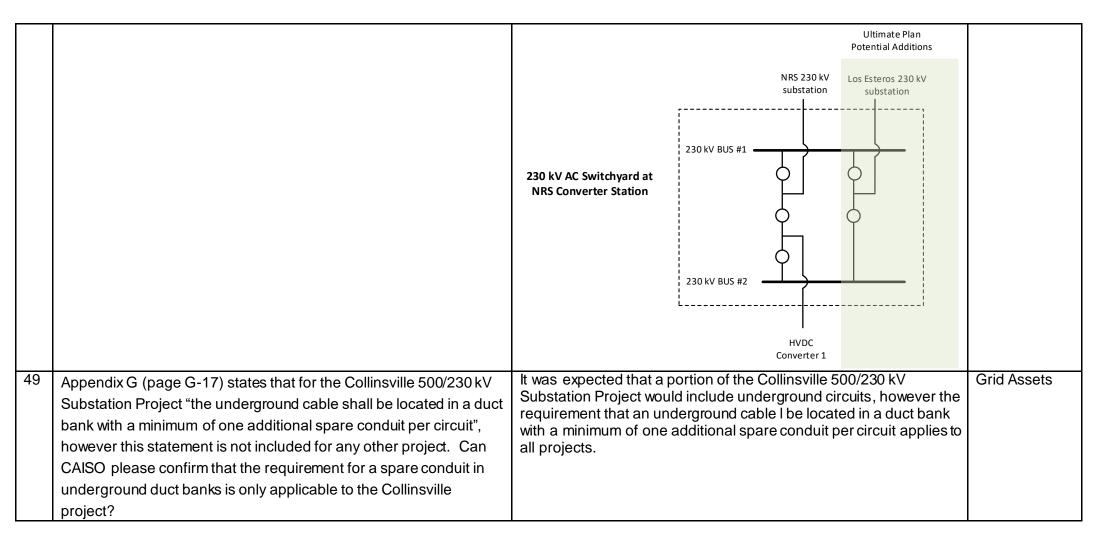


	sponsor. The approved project sponsor will be responsible for the costs associated with the interconnection study and updates. Could you please indicate where could I find this application form, cost and procedure?		
47	Appendix G (page G-25) indicates that "PG&E is currently performing detailed engineering review to confirm the feasibility of undertaking this work at San Jose B substation" and that the ISO expects to provide an update around mid-May. Has the feasibility of the work at Jan Jose B substation been confirmed and is there any update to the scope or requirements of the project?	PG&E had indicated they need to convert the San Jose B substation to a GIS BAAH in order to create a terminal for the HVDC interconnection. PG&E performed the detailed engineering review and on 6/6/2022 confirmed the feasibility of undertaking this work at the San Jose B substation.	Planning
48	Can you clarify the response to question 20 regarding the connection between Newark Converter Station terminal and the 230 kV yard? Specifically, does CAISO require a three breaker, single-bay breaker-and-a-half substation for the connection between the converter station and Newark Substation?	The following diagrams indicate the intended configurations for the 230 kV AC switchyards at Newark and NRS converter stations in	Planning











50	The project files provided by CAISO show the HVDC projects set to 400 MW. Was the analysis performed modeling 400 or 500 MW? If the analysis was performed at 500 MW are there mitigations for overloads on the Trimble to SJB #1&2 115 kV lines and the NRS 230/115 kV transformer?	The analysis was performed at various HVDC set points up to 500 MW. No mitigation is identified for the Trimble-SJB lines. SVP has plans to add new 230/115 kV transformer at NRS.	Planning
51	Were the policy driven projects analyzed as part of the reliability assessment?	Yes.	Planning
52	In its response to question 48, CAISO indicated two HVDC Converters connecting to the 230 kV AC Switchyard at the NRS Converter Station as part of the Ultimate Plan. Figure G3-1 in Appendix G shows one HVDC Converter Station, the NRS Converter Station, connecting to the NRS 230 kV substation for the Ultimate Plan. Can CAISO confirm whether a second HVDC Converter is expected to connect to the 230 kV AC Switchyard at the NRS Converter Station as part of the Ultimate Plan?	There is only one HVDC converter station connected to the 230 kV AC Switchyard at the NRS Converter Station as part of the Ultimate Plan. This is reflected in the updated diagram is provided in the response to question 48 above.	Planning
53	For the delivery of the proposal, if delivering in person, where and to whom should the proposal CD/DVDs be delivered to? Is there a requirement for entering the CAISO building? What documents should the Project Sponsor representative bring to the delivery of the proposal?	Proposals delivered in person may be left with CAISO Security provided they are properly addressed as outlined in Section 16 of the application.	Grid Assets



55	Is the transition between submarine and underground considered part of the duct bank and therefore required to have a spare conduit? Could you please elaborate on the meaning of "Loading Corridor Separation", mentioned in item T-7? Is it the electrical loading in the	Portions of the underground circuits not incased in a duct bank do not require a spare conduit to be installed. Duct banks are intended to minimize the probability of a "dig in" and project sponsors should minimize the unprotected portions of underground circuits in their proposal. Subsection i) of T-7 refers to the NERC/WECC reliability standards as it pertains to common corridor line separation, in addition to any structure loading requirements defined in NESC and/or GO95.	Grid Assets Grid Assets
56	corridor considering existing and/or future transmission lines? Can you please clarify the Manning Series Capacitor Winter Continuous Ampacity is intended to be 4000A Normal and 4000A for the 30 Minute Emergency?	Minimum continuous and 30 minute emergency ampacities for Manning series capacitor in winter are specified to be 4000A which is intended to indicate that 30 minute winter emergency rating is not required to be higher than continuous normal winter rating.	Planning
57	In order to support validating HVDC response times as required in Appendix G, can CAISO provide the Short Circuit MVA (Max and Min) as well as the Thevenin Equivalent impedance at the Point of Interconnection for the proposed DC line terminals (NRS 230 kV, Newark 230 kV, SJB 115 kV, Metcalf 500 kV)?	Appendix H of the "C13Ph1 PGE Greater Bay Area Interconnection Area Report" on the CAISO's Market Participant Portal provides the short circuit currents at many PG&E system buses including Newark 230 kV, SJB 115 kV, Metcalf 500 kV, and Los Esteros 230 kV.	Planning
58	What is the timeline for the TCA execution process for Approved Project Sponsors initiated by CAISO? Will this process be started after the APSA or closer to the project in-service date?	The Approved Project Sponsor Agreement (APSA) should be executed within 120 days of project sponsor selection while the Transmission Control Agreement is typically signed six months prior to energization.	Grid Assets
59	The City of San José seeks to provide information to potential bidders on the pending CAISO RFP for new transmission lines to ensure the best possible outcome for the residents and businesses	http://www.caiso.com/InitiativeDocuments/SanJoseInterestsinNewC AISOTransmissionLines.pdf	Grid Assets



	of the city and build a foundation for a strong collaboration during design and construction.		
60	The document provided in the response to question 59 has been updated.	http://www.caiso.com/InitiativeDocuments/SanJoseInterestsinNewC AISOTransmissionLines.pdf	Grid Assets
61	Could you please clarify if the submission of the San Jose Area HVDC Projects (comprising the Newark-NRS HVDC project and the Metcalf-San Jose B HVDC project) should or could be submitted as a single proposal, or does the CAISO expect to receive separate proposals for each one of the HVDC projects from sponsors looking to bid on both?	The two HVDC projects are separate projects. Project sponsors must submit separate applications and separate application fees for each project. Project sponsors cannot submit one application for both projects.	Grid Assets