First Solar Proposal
Integration of Transmission Planning Process and Generation Interconnection Procedures (TPP-GIP Integration)

Introduction

The CAISO's Revised Straw Proposal of September 12, 2011 is a good first step toward achieving the stated goals, but it does not go far enough. First Solar advocates additional changes and enhancements, which are described below, to better achieve those goals. The enhancements include synchronizing the resource planning and procurement processes of the Load Serving Entities (LSEs) with the integrated TPP-GIP.

Challenges with Generator Interconnection Procedures

Previous Generation Interconnection Procedures (GIP) reform efforts have provided only partial, temporary relief from the problems encountered with the process. However, there now exists a very competitive supply market with many potential providers seeking to participate in the LSE's procurement processes. As a result, the sheer volume of applicants has defeated the purpose of Phase I study—which is to provide a reasonably accurate but preliminary estimate of interconnection and upgrade costs and a usable cap on those costs. The GIP's use of supply-based planning, in which a transmission plan is developed to accommodate the totality of all queued projects, is not working. With so much generation in the queue, and with the earlier queued generation having locked up the benefits the transmission upgrades that have been planned to accommodate the state's 33% renewable portfolio standard (RPS), recent Phase 1 studies have way too much new generation and identify too much transmission. As a result, transmission plans are made, and information is provided to developers and the LSEs, for transmission projects that are highly unlikely to ever be built. This results in cost estimates that are unreasonably high, and the indicated times for upgrades to be completed and resources to become deliverable are much too long.

This results in excessively high financial security requirements for upgrades of dubious need 7-10 years out. LSEs are reluctant to contract with generators that have to wait 7-10 years for deliverability and have high transmission costs, unless the contract price is substantially reduced during the years before Full Capacity Deliverability Status (FCDS) is achieved. This problem has become so severe that it constitutes an insurmountable barrier to entry for new resource projects.

Another challenge with the GIP is that the financial security posting deadlines for the GIP are not aligned with the resource procurement process, which results in a chicken-and-egg situation to the detriment of both processes. ICs are hesitant to risk interconnection financial security to get into Phase 2 of the GIP without a good

indication that they will succeed in landing a power purchase agreement (PPA). But, LSEs are unlikely to favor a project if the Phase 1 study indicates the upgrades will be expensive and take a long time, which is the usual case today with so much generation in the queue.

While there are some mechanisms in the current process to address the burgeoning interconnection queue, these are woefully insufficient to address the problem in an acceptable time frame. Serial group projects have low barriers to remaining in the queue. Many of the transition cluster projects have benefited from utility funding of network upgrades, but with a consequence that the financial hurdles of remaining in the queue have been greatly reduced.

A fundamental change is needed in the interconnection process whereby the projects that are identified as being in consumers' interest through the least-cost, best-fit procurement process have a path to transmission access in a manner that is commercially viable and meets both the state policy goals and the LSEs' procurement needs. Change also is needed so that generation projects do not have to place excessive capital at risk in the interconnection process just to participate in the California market.

Demand-based planning and reformed deliverability allocation can solve these problems.

One needed reform is to switch from supply-based planning in the GIP to demand-based planning in the integrated TPP-GIP. By demand-based planning, we mean that the transmission plan that is developed in the TPP-GIP provides the upgrades needed to accommodate the generation that the LSEs plan to procure, rather than all of the generators in the queue, most of which never will be developed. We should plan most network upgrades needed for new resource integration and deliverability in the annual, demand-based, transmission planning process (TPP), as the Revised Straw Proposal proposes, but starting right away with Phase 1. And then, we should approve and start developing the upgrades needed to comfortably accommodate the generation expected to be constructed (total of intended operating generators, not total of PPA contracts) based on the LSEs' procurement results in advance of generator interconnection agreements.

Referral from the GIP or satisfaction of a minimum cost criterion would no longer be required for generator-related upgrades to be considered in the TPP. Most of the transmission upgrades needed by new generators would be policy driven, based on the resource scenarios developed in conjunction with the LSEs' approved long-term procurement plans (LTPP). Policy driven upgrades, which would no longer be driven by individual IRs, should not be financed by Interconnection Financial Security.

The need for Interconnection Facilities and Plan of Service Reliability Upgrades (i.e. upgrades that are allocated 100% to a single project) is driven by the individual generator interconnection requests (IRs), so they should continue to be studied in the GIP, rather than the TPP. The TPP would identify additional Delivery Upgrades for niche projects that were not anticipated in the TPP resource scenarios.

A second needed reform is to synchronize the GIP, TPP and the LSE procurement processes to minimize uncertainty and maximize benefits for all involved. Study reports, transmission cost information, and determinations of the amounts of new generation that could be interconnected and delivered from each area (which we will call AAC, or Available Area Capacity) should be timed to support the LSE procurement processes. LSE resource plans should be timed to provide up-to-date resource scenarios for the TPP, and LSE procurement decisions should be timed to provide timely information for: 1) IC decisions on whether continue to GIP Phase 2 and post interconnection financial security, and 2) updated resource scenarios for a final transmission plan update before conclusion of the annual TPP cycle.

The third reform that is needed is to terminate the practice of assigning delivery upgrades to individual projects by queue position, which deprives LSEs and many of the most competitive generators of the benefits of delivery upgrades by assigning them to proposed projects that are not competitive and will not be built.

Deliverability should go to projects that get PPAs and timely reach COD.

It is better to have generators compete for PPAs to get deliverability than compete to get in the queue. The GIP should ensure that available transmission resources, which always will be scarce, are allocated to the "least-cost, best-fit" projects, and that it accounts for the delivered cost of power, not just the transmission cost.

Instead of assigning delivery upgrades and FCDS by queue position, CAISO should allocate them to LSEs, as described below, and let LSEs use their allocations to designate the generators that would have Full Capacity Deliverability Status from their portfolios. That way, the assignment of FCDS will mirror the outcome of the procurement process. The LSE procurement process under regulatory oversight already considers the costs of the resources and the required transmission in screening the resource alternatives and selecting projects for PPAs. There is no reason to have another screening process that gives different results. However, to balance the benefits and burdens of this change, the form of the PPAs would need to be changed so that the LSE responsible for the availability of the upgrades needed to make a generator deliverable, not the IC.

The Integrated Process

The following describes how the integrated TPP-GIP would work with the changes and enhancements that we propose.

The Interconnection Application and Phase 1 Studies

The IC would submit an interconnection application that includes a selection to be treated as a Conditional Network Deliverable Resource, an Energy-Only Resource or a Merchant Deliverable Resource. Each would be defined as follows:

> Conditional Network Deliverable Resource (CNDR) – A CNDR is a resource that plans to only go forward if it secures a PPA. In the Phase 1 studies, only Interconnection Facilities and Plan of Service Reliability Network Upgrades would be identified. If the resource is in an area that was addressed by the prior TPP (to identify resource-related policy driven upgrades), the only other study that would be needed for Phase 1 is to determine the extent to which the generator is part of one or more pre-defined areas. (This will assist the LSEs decide how much AAC the resource would use.) If the resource is not in an area addressed by the prior TPP, the Delivery Network Upgrades would be identified and the TPP transmission plan would be updated with this information. (The IC's Phase 1 study would not assign such costs to the IC.)
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> Energy-Only Resource (EOR) – EORs would be studied in a manner similar to the current process for such interconnection requests.
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> Merchant Deliverable Resource (MDR) – MDRs would be studied similar to CNDRs except costs for Delivery Network Upgrades beyond the TPP policy-driven upgrades are identified and assigned to the IC. Consistent with the cost-causation principle, the incremental Delivery Network Upgrades for a MDR would be funded by the MDR and not eligible for cash reimbursement to the extent they do not benefit other grid users. Instead, MDRs would receive reimbursement in CRRs, as is done for merchant transmission projects.

The Transmission Planning Process

The CAISO and PTOs would determine the network upgrades necessary to accommodate the LSE scenarios with "least regrets" plus the MDRs.

With the synchronization of the GIP, TPP and LSE resource procurement processes, the Available Area Capacity and the transmission capacity associated with policy driven upgrades would be allocated using a multi-step process. The first step would be in development of the resource scenarios for the TPP. Each LSE, consistent with its

approved LTPP, would specify a floor amount and a ceiling amount for its interest in each resource area (e.g. CREZ). For each resource area, the amount of generation to be studied would range between the sum of the LSEs' floor amounts and the sum of the LSEs' ceiling amounts. Considering the LSEs' needs in the TPP should result in identification of sufficient upgrades to satisfy those needs and avoid the need for difficult allocation decisions down the road.

To achieve reasonable results, there may need to be some rules for how high the sum of each LSE's ceiling amounts can be compared to its RPS obligation. For example, the sum of an individual LSE's ceiling amounts could be limited to an amount that would result in a 50% RPS for that LSE.

CNDRs (and QNDRs, as discussed below) would be considered only to the extent that they are part of a pre-identified LSE resource scenario or they are niche projects in other areas of potential LSE interest.

The transmission plan developed in the TPP would identify sufficient Category 1 & 2 upgrades sufficient to satisfy the LSEs' previously expressed interest. In a process similar to today, the CAISO and PTOs would publish a Transmission Ranking Cost Ranking Report (TRCR) describing the available capacity for resource interconnection and delivery from the major resource areas, as well as the AAC associated with policy driven upgrades identified to meet the 33% RPS goal. The TRCR also would include the incremental cost and schedule of transmission capacity additions.

The LSEs would use the transmission plan and TRCR for resource bid evaluation, and then report the results of their procurement efforts, at which time the transmission plan would be updated and the amounts of the delivery allocations to each LSE would be confirmed.

LSE resource forecasts are not perfect, and procurement activities may identify some projects that are "least-cost, best-fit", despite the fact that they were not included in the forecasts and that transmission for them is not included in the current TPP transmission plan. In such instances, we believe that requiring non-reimbursable IC financing is not the best solution. Rather, the LSE resource forecasts, the resource scenarios and the resulting CAISO transmission plan should be updated based on the procurement results, and the delivery and joint-project reliability upgrades should be included in the transmission plan as policy driven upgrades. This treatment is appropriate for both niche projects that are not in a predefined resource area and projects in excess of the previously forecasted ceiling for the area.

Progressing into Phase 2

Upon completion of the Phase 1 studies, the IC would have options based upon its resource type. For an EOR or a MDR, the IC would make the requisite security postings and move into Phase 2. For a CNDR, the IC also would post security and move into Phase 2 if it gets a PPA and a LSE designates the CNDR as a Network Deliverable Resource (NDR). If the CNDR is not designated as a NDR, the interconnection request goes into a hold status. A CNDR may stay in a hold status as long as the IC pays continuing study costs, since it would not affect the TPP or the transmission plan. The IC also may elect to switch the CNDR to an EOR and proceed to Phase 2.

All security postings would be fully refundable at this point except those for the MDRs' incremental Deliverability Network Upgrades, which would be partially reimbursable the same as today.

GIP Phase 2

Phase 2 of the GIP would be much like the Facilities Study used to be. Phase 2 would finalize the plan for each generator's interconnection facilities and Plan-of-Service Network Upgrades, and it would provide transmission cost estimates and schedule information for the LGIA.

As was the case with Phase 1, Phase 2 for CNDRs (and EORs) would focus primarily on Interconnection Facilities and Plan of Service Reliability Network Upgrades. Therefore, it should be possible to do at least some of the Phase 2 studies individually at the times requested by the ICs rather than with the rest of the queue cluster. This would facilitate timely development of a CNDR that belatedly secures a PPA after the synchronized LSE procurement cycle has closed.

The LGIAs

Once the TPP has been approved and the Phase 2 study is complete, the LGIA would be negotiated. For NDRs and EORs, the LGIA includes terms, conditions and charges for the interconnection facilities and Plan-of-Service Network Upgrades. For MDRs, the LGIA also includes terms, conditions and charges for the incremental Delivery Network Upgrades.

Partial Delivery Allocation after Phase 2

If the capability of the CAISO Controlled Grid in an area exceeds the allocation that an LSE receives in the TPP, there should be a secondary allocation mechanism whereby LSEs may trade among themselves to acquire additional deliverability. The secondary allocation mechanism would be similar to the mechanism used to allocate import capacity on interties for use in meeting LSEs' resource adequacy requirements. LSEs

also could request that, subject to CAISO approval, the CAISO transmission plan be expanded to accommodate its full delivery request. For any NDR resource that does not receive FCDS, the LSE can request that the resource be included in future cycles of the TPP to assess the availability and cost of FCDS. Additionally the LSE may request that an existing or planned EOR be studied in the TPP as a NDR.

Give incentives for earlier queued projects to transition to the new framework.

The sequestering of deliverability by Cluster 4 and earlier projects is a severe problem that can and should be addressed. The GIP should include incentives for prior queued projects to transition to the new framework. One potential incentive would be to allow projects to volunteer for the new TPP-GIP rules treatment, under which their Interconnection Financial Security would be made fully refundable upon withdrawal in return for converting to CNDR status to increase the pool of deliverability for LSE allocation.

Independent of the GIP, LSEs also may be able to provide incentives for generators to convert to the new framework. For example, it may be possible for an LSE to require that RFO bids with earlier queue positions include proof that the bidders have voluntarily transitioned to CNDR status.

Use more realistic assumptions for prior queued generation

At present, all prior queued generation projects that have asked for Full Capacity Deliverability are modeled as if they are on line, operating Network Deliverable Resources. However, their actual status does not warrant such treatment. In reality, these projects and their achievement of FCDS are subject to LSE selection, much the same as CNDRs, and many of them will not be built.

For FCDS, a CNDR would need to be selected by a LSE for a PPA, have the LSE designate the project as a NDR and then complete construction. The situation with a prior queued project is not much different. It also needs to be selected by LSEs for a PPA, given that independent financing without a PPA takes a veritable miracle in the current economic environment, and it needs to complete construction. The only significant difference is that it will be granted FCDS upon achievement of Commercial Operation and completion of the assigned Delivery Network Upgrades, whether the LSA formally designates it a NDR or not.

Given that the success of both CNDRs and prior queued projects depends on being selected by a LSE, we propose that, in the TPP deliverability assessment, prior queued projects that do not have PPAs, or have not closed financing and are not under active

construction, be treated the same as we have proposed for CNDRs. We would give them a different label—"QNDR" for Queue-Conditional Network Deliverable Resource".

In the deliverability assessment, QNDRs would be assumed to be part of the pool of CNDRs and QNDRs waiting to be selected by LSEs. The capacity of the Delivery Network Upgrades that has been assigned to QNDRs would be combined and allocated to the LSEs the same as for the capacity of policy driven upgrades. Then, when LSEs conduct their procurement processes, they can choose the least-cost, best-fit projects from among the CNDR and QNDR bidders. If no LSE selects a given QNDR, that project will fail and the delivery capacity that was "assigned" to it in the GIP will become available for delivery of more competitive project. If an LSE selects a QNDR, that selection would decrease the remaining amount of the LSE's delivery allocation in that area.

This method would provide fair and equitable treatment for both QNDRs and CNDRs, and it would help qualify the least-cost, best-fit new resources to be counted toward the LSEs' Resource Adequacy Requirements as soon as possible. In addition, it would make TPP more efficient by addressing questions regarding how to deal with the uncertain viability of prior queued projects. In addition, it also would address concerns that too many upgrades are being planned in the interim before many of those projects finally withdraw from the queue.

Demand-based planning simplifies the GIP

With demand-based planning, the integrated TPP-GIP will result in a much more realistic transmission plan with considerably less work. In addition, the study results will be largely insensitive to individual projects dropping from the queue, as long as the resource scenarios and the transmission plan do not change.

We expect that there will be few if any Market Delivery Resources that will succeed, given the competitive disadvantage of extra-cost, non-reimbursable upgrades. (Non-reimbursed upgrades may be taxable, which would increase costs that are passed through to consumers by 35%.) For the most part, planning transmission to handle a range of credible resource scenarios should identify more Category 2 upgrades than ultimately need to be approved and constructed for CNDRs. Some of these upgrades may satisfy the needs of the expected few MDRs.

On the other hand, we cannot be sure that the number of ICs that select the MDR box will be few. In the event that there are a lot of MDR applications, we should not again fall into the trap of trying to devise a transmission plan based on the fallacious assumption that all MDR projects will be built. Instead, realistic assumptions need to be made on the amount and timing of such projects that probably will be constructed.

Planning each MDR's upgrades as though no other MDR is built may be the most appropriate assumption.

With demand-based planning and LSE allocation of deliverability, shrinking the queue will not be nearly as critical. Most upgrades would be policy driven, based on approved resource scenarios, rather than driven by individual generator IRs. Consequently, there would be no need for CRN projects to post non-refundable Interconnection Financial Security so that weak projects will leave the queue. Making all IFS refundable for most projects (i.e. the CRN and EOR projects) will lower resource costs.

Demand-based planning also reduces problems with downsizing and technology conversion. Such changes may require individual restudies, but they are not likely to significantly affect the transmission plans for policy-driven upgrades or other generators in the queue.

Recommended process enhancements improve resource procurement results

With demand-based planning and synchronization of the GIP, TPP and resource procurement process, the timing and cost of the transmission upgrades for each project will be much more certain.

In the TPP, the LSE resource scenarios derived from their approved LTPPs would provide a much more stable and realistic foundation than the totality of the generator interconnection queue.

The transmission plan developed in the TPP then becomes the authoritative source Transmission Ranking Cost Report for LSE resource procurement. Deriving the TRCR directly in the TPP will make it much more accurate than the one-off TRCRs and Phase I studies previously used. With the cost, timing and capacity of delivery upgrades much more certain, it will be simpler for LSEs to assemble cost-optimized resource portfolios. CAISO review (e.g. via participation in Procurement Review Groups) and regulatory oversight of LSE procurement activities should assure that transmission costs are properly considered in procurement decisions.

Start work on ample Category 2 upgrades to enhance procurement optionality

An ample amount of Category 2 transmission upgrades for resource integration and delivery should be approved for design and permit application preparation, at least, without waiting for satisfaction of all the conditions for Category 1. Having this work done in advance of PPAs and LGIAs will provide valuable optionality in the procurement process and reduce the considerable lag between PPA/LGIA approval and the

completion of delivery upgrades. To implement this concept, a mechanism for including these advance development costs in rates undoubtedly will be needed.

Jim Filippi
First Solar
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