

## Stakeholder Comments Template

### Subject: Generation Interconnection Procedures Phase 2 (“GIP 2”)

| Submitted by  | Company                                | Date Submitted               |
|---|--|------------------------------|
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This template was created to help stakeholders structure their written comments on topics detailed in the July 5, 2011 *Revised Draft Final Proposal for Generation Interconnection Procedures 2 (GIP 2) Proposal* (at <http://www.caiso.com/2b21/2b21a4fe115e0.html>).

We ask that you please submit your comments in MS Word to [GIP2@caiso.com](mailto:GIP2@caiso.com) *no later than the close of business on July 14, 2011* so that there will be time to include them in Board documents.

Your comments will be most useful if you provide the reasons and the business case for your preferred approaches to these topics.

Please also respond to the question “Do you support the proposal?” for each item listed below.

**Comments on topics listed in GIP 2 Draft Final Proposal:****Work Group 1**

The ISO has determined that WG 1 topics should be taken out of the GIP 2 scope and addressed in a separate initiative with its own timeline

**Work Group 2****1. Participating Transmission Owner (PTO) transmission cost estimation procedures and per-unit upgrade cost estimates;**

**Do you support the proposal?** Yes, generally.

**Comments:**

LSA was pleased to hear at the July 7<sup>th</sup> stakeholder meeting that the CAISO's work to standardize and rationalize the posted PTO Per-Unit Costs would include:

- (1) Consistent methodology for multipliers and other adjustments to "base" costs; and
- (2) Guidance and clarification to PTOs of the requirement that such costs reflect "anticipated" costs, as specified by the tariff, including proper and uniform treatment of large contingency adders by some PTOs.

In addition, we continue to support inclusion of 500 kV facilities in the posted costs. These facilities have comprised a major cost component for many interconnection studies, and their omission from the posted costs list significantly limits the usefulness of the information. All three PTOs have 500 kV projects that are either approved or under development, and data from those projects should be used to provide the required information.

Finally, as the CAISO is aware, LSA has been very concerned with the PTO transmission cost estimates in prior cluster studies and believes that some of the outcomes have resulted in unjust and unreasonable Phase I Study cost caps. This problem should be corrected retroactively, and, at the very least, must be corrected on a going-forward basis. Although the utilities have noted that this is a "rough look" and they will refine costs in Phase II, realistic estimates and cost caps are extremely important to the development community, and out-of-proportion caps could lead to the inability of otherwise financeable projects to be financed.

**2. Generators interconnecting to non-PTO facilities that reside inside the ISO Balancing Area Authority (BAA);**

**Do you support the proposal?** Yes

**Comments:****3. Triggers that establish the deadlines for IC financial security postings.**

**Do you support the proposal?** Yes, with the exceptions stated below.

**Comments:**

LSA agrees with the Proposal generally, except for these provisions related to finalization of interconnection studies:

## Comments Template for July 5, 2011 Revised Draft Final

- **Deadline for comments on draft reports:** As noted, there have been situations where the Results Meetings were scheduled very soon after the report is issued, or with so little notice that the IC could not meet the proposed comment deadline of 5 BDs before the meeting and/or would have very little time to prepare comments. Moreover, more generally, the IC is not usually informed of the meeting date when the report is issued and doesn't know how long it has to prepare comments.

The CAISO stated at the July 7<sup>th</sup> stakeholder meeting that it would:

- Attempt to provide Results Meetings dates when reports are issued, or very soon thereafter, so ICs know how much time they have to prepare their written comments;
- Attempt to schedule Results Meetings for “simpler” projects (e.g., those with fewer upgrades required, and thus presumably necessitating fewer IC comments) first, giving ICs with more complex projects more time to comment; and
- Allow ICs with less than 10 BDs before the pre-meeting comment deadline to provide comments closer to the meeting date or at the meeting
- Allow for new issues to be raised in the post-meeting follow-up comments.

LSA supports these clarifications and urges the CAISO to clearly state them in its final proposal. In addition, the CAISO should provide a day-for-day extension of comment deadlines for delays in posting base-case data.

- **Definition of “substantial error or omission:”** LSA is concerned about the addition to the Proposal of the statement that “a dispute over the plan of service by an [IC]” is not a “substantial error or omission” unless the IC can show that the plan of service was based on an “invalid or erroneous study assumption” that if corrected would meet the threshold criteria above. The report should also be revised if the IC suggests a feasible and equally effective alternative Plan of Service that, if used, would have an impact that would meet the specified threshold.

We have found that CAISO and PTO staff frequently agree for Phase I Studies that IC-suggested solutions would be better – i.e., accomplish the same thing with a feasible solution at a lower cost – but say that there's no time to correct the study until Phase II. However, waiting until Phase II to correct the study removes the cost-cap protection that would be associated with a Phase I correction.

This is particularly important in cases where clusters are combined in Phase II, because upgrades triggered by a subsequent cluster could place additional responsibility on projects in the previous cluster. If the Phase I cost caps were unreasonable, this would result in an unjust and unreasonable allocation based on the Tariff.

It is equally critical to use the most cost-effective interconnection option in the Phase II Study, because that study defines the facilities that will be incorporated into the GIA and ultimately built.

#### 4. Clarify definitions of start of construction and other transmission construction phases, and specify posting requirements at each milestone.

**Do you support the proposal?** No.

**Comments:**

As discussed at the July 7<sup>th</sup> stakeholder meeting, LSA is concerned that the very general Proposal language – allowing posting requirements for the Third IFS Posting to be negotiated in the GIA but providing no other specifics – would leave too much uncertainty for this substantial financial commitment. The Proposal should be revised to provide for the following:

- **Staged posting for different discrete upgrades:** The different Network Upgrades are listed clearly in the study reports. The IC should explicitly be entitled to stage the postings based on the estimated start dates for each of these upgrades. Even SCE agreed with this interpretation at the stakeholder meeting, and since the postings benefit the PTO, its interpretation should be given substantial weight.
- **Separation of upgrades into discrete components:** This concept would require separation of a particular upgrade into discrete parts, and that may or may not be feasible. However, if it is feasible, and the upgrade cost is significant, then the PTO should be required to do that, and the IFS postings should be timed accordingly.

**5. Improve process for interconnection customers to be notified of their required amounts for IFS posting**

**Do you support the proposal?** Yes.

**Comments:****6. Information provided by the ISO (Internet Postings)**

**Do you support the proposal?** Yes, but with the additional details described below.

**Comments:**

The Proposal should be more explicit about the details of the information to be provided, and include a CAISO commitment to continue to develop the details in the GIP-2 Work Group process. Specifically, the additional information provided by the CAISO should include the following:

- A complete set of maps, showing location and voltage information for transmission lines and substations (with substation names, and single-line diagrams for substation configurations and locations of transformers and other key equipment);
- Cluster group studies, within one week of issuance if possible; and
- Other information that will allow the ICs to replicate CAISO study results, including (but not limited to) TPP Study Plans, contingency files, transmission upgrade alternatives studied, and other data used in Reliability, Deliverability, and Short Circuit Duty studies.

In addition, the CAISO should ensure that the information in the posted interconnection queues is up to date, and show clearly the date of the most recent update. For example, the queue should show the POI that is actively being studied, in addition to the originally requested POI (if they are different), and the expected study due dates. The tariff and BPMs should be updated, if necessary, to ensure that the updated information is shown.

**Work Group 3****7. Develop pro forma partial termination provisions to allow an IC to structure its generation project in a sequence of phases.**

**Do you support the proposal?** Yes, but with the caveats described below.

**Comments:**

As noted in prior comments and at the stakeholder meeting, is concerned with the CAISO's verbal interpretation of the LGIA with respect to a reduction in project size. While connecting fewer megawatts to the grid than originally planned *might* constitute a technical breach of the LGIA, there is no rationale for implying that the appropriate remedy would be termination of the LGIA and disconnection of the generator, rather than mitigation and direct damages for any consequences of such reduction.<sup>1</sup> If the CAISO is truly taking this position, LSA requests a stakeholder process or high level meetings to discuss this very important issue.

While LSA understands that the CAISO wishes to encourage developers to properly size their projects, the CAISO's interpretation does not make sense on either a legal or a practical level. Moreover, it does not take into account the commercial realities that developers face – having to apply for interconnection prior to permitting and financing their projects. While the PTOs should not bear these risks, there are several ways that the CAISO can – and does – mitigate the potential for stranded investment.

Moreover, it would be far more detrimental to ratepayers if a constructed project had its LGIA terminated, thus leaving even more transmission facilities completely unused (or, even worse, if otherwise viable projects cannot get financing because of the CAISO's statements, which will ultimately increase costs to ratepayers)..

With respect to this specific proposal, the CAISO should clarify the financial-security requirements for the Partial Termination Charge. The CAISO's mention of this requirement at the stakeholder meeting was the first time this issue has been raised, and it should not be incorporated into the Proposal without a complete explanation.

We also continue to oppose the differential treatment of phased projects and non-phased projects with respect to Partial Termination provisions, as described below.

**8. Reduction in project size for permitting or other extenuating circumstances**

**Do you support the proposal?** No.

**Comments:**

LSA continues to be troubled by the widely disparate treatment of phased projects compared to non-phased projects that are otherwise similar with respect to Partial Termination provisions. The impact on the CAISO/PTO of the potentially stranded transmission upgrades, and on later-queued generation projects, would be the same, for example, for: (1) a 600 MW project with three 200-MW phases that cancels the last phase; and (2) a 600 MW project without construction phases that cancels the last 200 MW because it did not receive a permit for the full project. The CAISO has provided no rational explanation for these differences.

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<sup>1</sup> These comments are for discussion purposes only, and do not constitute a legal interpretation of the LGIA or any other provision of the Tariff. LSA takes no formal legal position on behalf of itself or its members, and LSA and its members reserve the right to make any arguments in any appropriate forum in the future.

## Comments Template for July 5, 2011 Revised Draft Final

With respect to this specific proposal, , the CAISO proposes to allow only a 5% reduction for any reason. As several developers have mentioned, this proposal is virtually meaningless for the generator community.

Instead, LSA proposes that a 20% reduction in project size be allowed for any reason. There are several reasons for this proposal

- **Commercial considerations:** From a commercial perspective, allowing a 20% reduction would strike the right balance between encouraging developers to right-size their projects and allowing flexibility when a developer simply doesn't yet know what size permit it will get and/or the number of MWs in can sell through a PPA. Several companies have faced permit-related capacity reductions due to mitigation and environmental issues, and these are risks that cannot be identified in advance. Therefore, the CAISO should allow a meaningful compromise that addresses this very real concern.

- **Potential "overbuilding:"** Those concerns have already been mitigated and should not serve as a basis for rejecting the proposal.

First, a reduction in size after LGIA execution would not absolve a generator for funding its share of the plan of service. Thus, the CAISO could bill the generator for the a needed upgrade and will have a security deposit for that generator's share of the full build out.

Second, the queue is so large, and transmission planning has moved so slowly, that it is highly unlikely that the capacity on any new line would not be utilized by another generator. Moreover, moreover, the CPUC must permit these lines, and they will not be permitted if it's not apparent that they are necessary.

Third, the PTOs have been granted 100% abandoned plant recovery by FERC in every instance they've requested it, and LSA has supported abandoned plant recovery where the utility is required to fund under the LGIP. Therefore, there is little to no PTO risk in allowing a size reduction without additional penalty beyond the generator payments described above.

- **"Outlier" projects:** Even in the unlikely event that a project triggers massive upgrades that are not one of the "backbone" needed for California to accomplish its renewable standards goals, the generator would be required to fund the full amount of its upgrades (assuming the PTO wouldn't fund), and it's highly unlikely that a single developer could (or would) raise funds to finance massive upgrades that couldn't be used by another generator in order to build a single project. Even companies with very large balance sheets find it difficult to finance these facilities; thus, this potential "problem" should not be used as a reason for the CAISO to avoid implementing rules that make sense for the development community (its ultimate customers), the ratepayers and California as a whole.

The CAISO should also make the following process changes:

- **Pre-GIA execution:** If the size reduction occurs before GIA execution, the CAISO should reflect this change in the Phase II Study if possible.
- **Post-GIA execution:** If the size reduction occurs after GIA execution, the CAISO should:
  - Expressly provide that failure to build the full project for permitting reasons would not trigger a GIA termination; and



## Comments Template for July 5, 2011 Revised Draft Final

- Make a good-faith effort to mitigate damages by examining whether the required Network Upgrades change as a result the size reduction.
  - If Network Upgrades are still needed, there should be no change to the Network Upgrade costs or reimbursement, with the reimbursement timing based on completion of the permitted project capacity.
  - If Network Upgrades are no longer needed, the IC should be responsible for irrevocable costs under a framework similar to that proposed for cancellation of phased projects, with the Partial Termination Charge determined at the time that the size reduction is known.

### 9. Repayment of IC funding of network upgrades associated with a phased generation facility.

**Do you support the proposal?** No.

#### **Comments:**

The Proposal is both internally inconsistent, and inconsistent with current LGIP reimbursement policies. The Tariff currently provides for reimbursement to begin based on the *generator* Commercial Operation Date (COD), with no requirements that the transmission upgrades be completed before reimbursement of costs paid begins. As confirmed at the July 7<sup>th</sup> stakeholder meeting, as well as prior meetings, the PTOs all base their reimbursement policies on the generator COD.

At the meeting, the CAISO indicated that it believes that it has discretion to determine the COD definition, because the GIA is a three-party agreement and, therefore, its agreement is required. That is not the correct interpretation of the tariff. The definition of Commercial Operation under the Tariff is: “The status of a Generating Unit or project phase at a Generating Facility that has commenced generating electricity for sale, excluding electricity generated during Trial Operation.” The COD is clearly defined in the Tariff as the date upon which that status occurs (i.e., the date that the *generating unit* comes on-line), and there is no requirement that any Network Upgrades must be built in order for the COD to occur, much less that they must all be completed.

This element, as suggested by LSA and other stakeholders in the original GIP-2 scoping effort, was intended to simply provide for phased reimbursement of transmission upgrade costs as a generation project was completed, instead of delaying reimbursement until the COD of the entire generation-project capacity. No other policy changes are required.

Instead, the CAISO Proposal would significantly change the basis for reimbursement to require that transmission upgrades associated with a completed generation-project phase be completed before cost reimbursement begins. There are numerous problems with this proposal:

- **No method for determining Network Upgrades for project phases:** It is not clear how NUs for each phase would be identified for reimbursement purposes, since: (1) interconnection studies do not identify upgrades for each generation-project phase; and (2) an IC could decide to phase a project after completion of interconnection studies but before the GIA is executed.

## Comments Template for July 5, 2011 Revised Draft Final

- **Internal inconsistency:** The CAISO justified the proposal for phased projects by stating that “COD” of a project phase could be interpreted to include completion of all the transmission upgrades needed to provide its requested deliverability.

First, as noted above, the CAISO tariff definition of “COD” does not support this interpretation.

Second, it is not even necessary for all the Reliability Network Upgrades in the GIA to be completed for a generator to interconnection and achieve its COD, much less Deliverability NUs. For example, a project could interconnect and begin Commercial Operations before all RNUs are complete if a Limited Operation Study under the LGIA finds that such interconnection would be safe, and a project could be fully deliverable for RA purposes before all the DNUs are complete (e.g., if a higher-queued project in the area is cancelled).

- **Inconsistency with current policy:** The CAISO said it was not proposing to change reimbursement policies for non-phased projects, i.e., reimbursement would continue to require full generation-project completion/commercial operation. However, the CAISO has not explained why, if “COD” for project phases includes completion of NUs for that phase, the same would not apply to “COD” for an entire non-phased project.

Generally, there is no reason to delay reimbursement until all NUs are completed. There is no risk of upgrades not being “used and useful” once a generating facility (or a proportional share of it) is on-line, so there is no justification for the PTO to retain the IC’s funds beyond the generation COD; moreover, given the current state of the interconnection queue, it is also likely that upgrades identified in the GIP and included in the GIA may never be built. Under the CAISO’s proposal, this could lead to indefinite reimbursement delays.

In addition, like the GIA partial termination provisions discussed above, non-phased generation projects should also be eligible for proportional repayments on the same basis as phased generation projects.

### 10. Clarify site exclusivity requirements for projects located on federal lands.

**Do you support the proposal?** Yes, with the caveats explained below.

**Comments:**

LSA has no additional comments in this area beyond our earlier input that the BLM materials referenced in the issue paper do not seem to indicate that any change in the site exclusivity requirements for projects on federal lands is needed. If such changes are needed, the CAISO should state them in the final Proposal.

### 11. CPUC Renewable Auction Mechanism

**Do you support the proposal?** Yes

**Comments:**

There do not appear to be any proposal details to comment on in the Proposal. Of course, the CAISO should work with the CPUC to make sure that their respective requirements are compatible.



## 12. Interconnection Refinements to Accommodate QF conversions, Repowering, Behind the meter expansion, Deliverability at the Distribution Level and Fast Track and ISP improvements

### a. Application of Path 1-5 processes

**Do you support the proposal?** Yes, with the exceptions noted below.

**Comments:**

LSA found the CAISO path framework to be helpful and support these elements in the Proposal. However, with respect to “behind-the-meter” changes under Path 3:

- **The CAISO should clearly state that generator capacity that could be tripped by the expansion breaker can be any generating capacity in the facility**, as long as it is the right amount of capacity, and is not required to be the specific capacity added;
- **The deliverability level studied in the interconnection studies should be clearly stated**, in both the studies and the GIA, to prevent later confusion; and
- **The provision that BTM capacity expansion could only “take place after the project COD and after all [NUs] for the project are in service” should be removed.** The CAISO could not even explain what it meant by the expansion “taking place,” e.g., whether this meant submitting a request for the expansion, reflecting it in the GIA, or physically installing the equipment. Since it could not explain the meaning of the criterion, it was then unable to explain the reason for it.

Generally speaking, this timing provision is unnecessarily restrictive – these capacity expansions should be allowed as long as the other criteria are met

### b. Maintaining Deliverability upon QF Conversion

**Do you support the proposal?** Yes.

**Comments:**

### c. Distribution Level Deliverability

**Do you support the proposal?** Yes.

**Comments:**

## Work Group 4

## 13. Financial security posting requirements where the PTO elects to upfront fund network upgrades.

**Do you support the proposal?** Yes, with the caveats explained below.

**Comments:**

The CAISO should state explicitly that the amount of the Initial IFS Posting would be reduced to reflect any lower costs in the Phase II Study results below the Phase I costs used to set that posting, regardless of whether the PTO is financing NU upgrades.

**14. Revise ISO insurance requirements (downward) in the pro forma Large Generation Interconnection Agreement (LGIA) to better reflect ISO's role in and potential impacts on the three-party LGIA.**

**Do you support the proposal?** Yes.

**Comments:****15. Standardize the use of adjusted versus non-adjusted dollar amounts in LGIAs.**

**Do you support the proposal?** Yes.

**Comments:****16. Clarify the Interconnection Customers financial responsibility cap and maximum cost responsibility**

**Do you support the proposal?** Yes.

**Comments:****17. Consider adding a "posting cap" to the PTO's Interconnection Facilities**

**Do you support the proposal?** Yes.

**Comments:****18. Consider using generating project viability assessment in lieu of financial security postings**

**Do you support the proposal?** No.

**Comments:**

LSA has proposed that project milestones – e.g., PPA execution – be considered in setting IFS requirements, reducing posting requirements in recognition of the substantial financial and other commitments made by ICs in other project development areas. The CAISO has deferred these proposals to either the upcoming Work Group 1 initiative or the GIP-3 effort next year. LSA believes that these proposals should have been incorporated into GIP-2 and is disappointed that they are not.

**19. Consider limiting interconnection agreement suspension rights**

**Do you support the proposal?** No.

**Comments:**

This proposal is unnecessary, because:

- **This problem would likely be extremely uncommon.** The Tariff (LGIA Section 5.16) already prohibits exercise of suspension rights for upgrades “identified in the Phase II Interconnection Study as common to multiple Generating Facilities.” Thus, for the problem that the CAISO/SCE fear to occur, a transmission upgrade would have to be:
  - Found to be needed by (i.e., allocated 100% to) a single project in the entire cluster, under the current flow-based study methodology and cluster-study process; and
  - Critically needed by later projects in the same area.
- **The PTO would retain the IC’s IFS** and could draw on it if the generation project is later cancelled.
- **The proposal to give PTOs abandoned-plant treatment for GIP-related upgrades would mitigate any PTO financial risk.**

**20. Consider incorporating PTO abandoned plant recovery into GIP**

**Do you support the proposal?** Yes, with the caveat below.

**Comments:**

LSA supports inclusion in the CAISO tariff of 100% abandoned-plant recovery treatment for upgrades that the PTO is compelled to finance and construct because of GIP cost-cap guarantees (i.e., funding the gaps left when a project drops out late in the process, or when upgrade costs exceed interconnection-study estimates), and where the “abandonment” is due to circumstances beyond the PTO’s control.

As stated before, our support for this proposal is contingent on removal of the unreasonable contingency and other adders to the PTO Per-Unit Costs that unreasonably inflate study cost estimates (Issue #1 above). If the PTOs are entitled to receive 100% abandoned-plant cost recovery for such facilities, there is no reason for the use of high contingency adders to also mitigate that risk. Since the CAISO has committed to addressing the issue of such adders, we support this proposal.

**Work Group 5****21. Partial deliverability as an interconnection deliverability status option.**

**Do you support the proposal?** Yes, with the caveat explained below.

**Comments:**

LSA appreciates and fully supports the CAISO's effort to allocate Partial Deliverability (PD) capacity to projects being impacted by system limitations. However, LSA does not support the CAISO's position that the Phase I cost cap would not be adjusted if ICs reduce deliverability to avoid a Network Upgrade.

In addition, LSA recommends that the CAISO consider an alternative way to increase the efficiency of the PD allocation. The most effective way to maximize PD of projects overall is to focusing on relieving the most critical constraints that limit deliverability of project in cluster studies. Basically, flow impacts should be used to allocate PD to generation project instead of project capacity, since the latter it is a better indicator of critical constraints. The **Appendix** contains more details of this proposed change, based on examples provided by the CAISO in GIP-2 Work Group 5.

**22. Conform technical requirements for small & large generators to a single standard**

**Do you support the proposal?** Yes, with the caveat explained below.

**Comments:**

The Proposal should address situations where generators connected to the distribution system have different requirements from those connected to the transmission system. For example, the generators connected to the distribution system generally operate with fixed power control rather than voltage control. **[Question: Can we provide any other examples of such conflicts?]**

**23. Revisit tariff requirement for off-peak deliverability assessment.**

**Do you support the proposal?** Yes.

**Comments:****24. Operational partial and interim deliverability assessment**

**Do you support the proposal?** Yes, with the caveats explained below.

**Comments:**

The annual assessment should give priority for awards of existing deliverability to Full Capacity interconnection customers over to those seeking deliverability through the separate annual CAISO assessment. FC customers, who have made substantial contractual and financial commitments to fund Delivery Network Upgrades, should have superior rights to use availability deliverability over those that have not made such commitments.

The CAISO agreed with this position in the stakeholder meeting, but LSA believes that it should be explicitly stated in the final Proposal.

**25. Post Phase II re-evaluation of the plan of service**

**Do you support the proposal?** No.

**Comments:**

There is no proposal left to comment on, other than a deferral of this topic to the “Work Group 1” effort.

LSA supported the prior proposal, which would provide for an assessment of the need for certain Network Upgrades (e.g., if a large project drops out of the queue), with a change that would allow ICs to request an assessment of changes along with the CAISO or PTOs. Those general elements could still be included with GIP-2, even if the CAISO and PTOs are still “assessing the required network upgrades modeled in the base cases” and looking at specific projects.

**Other Comments:****1. If you have other comments, please provide them here.**

**Examination of study data, assumptions, and methodology (Work Group 5):** LSA continues to object to the omission of issues related to interconnection study data, assumptions, and methodology in the Straw Proposal scope, especially for the Deliverability Assessment. The CAISO has repeatedly promised that it would include this issue in the GIP-2 scope, to give stakeholders a chance to better understand (“look under the hood”) and, where appropriate, suggest changes to the study process. For example, we would like to explore the following concepts with the CAISO:

- **Study assumptions**, including the determination of generation output profiles (which can be different for the projects using the same technology in different study clusters;
- **Cost allocation**, including allocation:
  - Within a cluster, e.g., allocating to each project only the portion of an upgrade that it will actually use, instead of the entire upgrade cost pro rata; and
  - Between clusters, e.g., if the present pro rata allocation is retained, allocating some upgrade costs from one cluster that triggers an upgrade to later clusters in the same area that would also benefit from it. The current process functions similarly to the old serial-study process, where one project would trigger an upgrade that exceeds its direct needs and later projects in the same area would get a “free ride,” except now the inequity is between higher-queued and lower-queued study clusters in the same area. (CalWEA proposal).

These issues are critical to the integrity and accuracy of the entire interconnection-study framework. We request that, if they are not addressed in GIP-2 effort, the CAISO keep its commitment by establishing a separate effort to examine these significant issues and/or include them in the upcoming separate Work Group 1 effort.

**EXAMPLE OF FLOW-BASED ALLOCATION OF  
AVAILABLE PARTIAL-DELIVERABILITY CAPABILITY  
(based on prior GIP-2 Work Group 5 examples)**

The Partial Deliverability (PD) allocation should recognize the impacts from multiple constraints and only allocate PD to the most limiting constraint. In that manner, allocated PD capability will be maximized.

Recent CAISO cluster studies show that generation projects may not achieve Full Capacity deliverability status due to limitations on multiple facilities. However, if the most critical limitation is mitigated, a generation project can be more deliverable until it is limited by the next most limiting constraint.

For example, for generation projects D, E, and F below, a Line F upgrade may increase the deliverability of Project F from 0 MW to 75MW but does not increase the deliverability of Projects D and E at all. Therefore, the most effective way to maximize the PD of generators in a cluster overall is allocating additional transfer capability to generators that really rely on the facility being upgraded to be deliverable.

Table 1: Impacts from multiple limitations

| <b>Generation Project</b> | <b>NQC</b> | <b>Transmission Constraint</b> | <b>Deliverability without constraint mitigation (MW)</b> |
|---------------------------|------------|--------------------------------|--|
| Project D                 | 200        | Line A                         | 100  |
|                           |            | Line B                         | 150  |
|                           |            | Line C                         | 0  |
| Project E                 | 300        | Line A                         | 250  |
|                           |            | Line B                         | 150  |
|                           |            | Line C                         | 0  |
|                           |            | Line E                         | 150  |
| Project F                 | 150        | Line C                         | 75   |
|                           |            | Line F                         | 0  |

Flow impact reflects the correlation between generators and limiting constraints better than project capacity and will better direct PD from upgrading a facility to generators that highly rely on it. As shown in Table 2 below, the project capacity approach would allocate more PD to Project F (169.7 MW) which has lowest flow impact on Line C.

Assume that Line C is being upgraded, which results in a 37.5 MW increase in its transfer capability (table 2). The capacity-based allocation results in 0 MW of additional deliverability for Project F, since Line C is not its most limiting constraint. As shown in Table 2, actual total deliverability from the Line C upgrade comes only from Projects D and E and totals 134.6 MW.

Table 2: Partial Deliverability using Capacity Approach



**Comments Template for July 5, 2011 Revised Draft Final**

|              | NQC        | Distribution Factor | Flow Impact | Allocation Factor | Allocated Facility Capacity | Apparent Deliverable NQC | Actual Deliverable NQC |
|--------------|------------|---------------------|-------------|-------------------|-----------------------------|--------------------------|------------------------|
| C1 Project D | 200        | 0.150               | 30          | 0.31              | 11.5                        | 76.9                     | 76.9                   |
| C1 Project E | 300        | 0.300               | 90          | 0.46              | 17.3                        | 57.7                     | 57.7                   |
| C1 Project F | 150        | 0.051               | 7.65        | 0.23              | 8.7                         | 169.7                    | 0.0                    |
|              |            |                     |             |                   |                             |                          |                        |
| <b>Total</b> | <b>650</b> |                     |             |                   | <b>37.5</b>                 | <b>304.3</b>             | <b>134.6</b>           |

In contrast, with the flow impact approach (Table 3), more PD will be assigned to projects with high flow impacts on the upgrade. In this case, Projects D and E will receive more PD, for 146.9 MW in total deliverable capacity – higher than the capacity approach.

Table 3: Partial Deliverability using Flow Impact Approach

|              | NQC        | Distribution Factor | Flow Impact   | Allocation Factor | Allocated Facility Capacity | Apparent Deliverable NQC | Actual Deliverable NQC |
|--------------|------------|---------------------|---------------|-------------------|-----------------------------|--------------------------|------------------------|
| C1 Project D | 200        | 0.150               | 30            | 0.24              | 8.8                         | 58.8                     | 58.8                   |
| C1 Project E | 300        | 0.300               | 90            | 0.71              | 26.4                        | 88.1                     | 88.1                   |
| C1 Project F | 150        | 0.051               | 7.65          | 0.06              | 2.2                         | 44.1                     | 0.0                    |
|              |            |                     |               |                   |                             |                          |                        |
| <b>Total</b> | <b>650</b> |                     | <b>127.65</b> |                   | <b>37.5</b>                 | <b>191.0</b>             | <b>146.9</b>           |