California Independent
System Operator Corporation

September 18, 2012

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: California Independent System Operator Corporation,
Docket No. ER12-____
Resource Adequacy Deliverability for Distributed Generation

Dear Secretary Bose:

The California Independent System Operator Corporation ("ISO") files this tariff amendment to establish a streamlined process for providing resource adequacy deliverability status to distributed generation resources from transmission capacity identified in the ISO's annual transmission plan. [1] Under this process, the annual transmission planning process will identify, through a proposed new deliverability study, available transmission capacity to support deliverability status for distributed energy resources without requiring any additional delivery network upgrades to the ISO controlled grid and without adversely affecting the deliverability status of existing generation resources or proposed generation in the interconnection queue.[2]

[1] The ISO submits this tariff amendment pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 842d, and Part 35 of the Commission's regulations, 18 C.F.R. Part 35. Capitalized terms not otherwise defined herein have the same meanings as set forth in ISO Tariff, Appendix A, Master Definitions Supplement.

[2] For purposes of this filing, distributed generation resources are generation resources connected to utility distribution systems. The ISO recognizes that, in some contexts, some parties use the term "distributed generation" to mean resources of certain types or below certain size thresholds, and may even include such resources connected to the transmission system. For the context of this transmittal letter and this tariff amendment, however, the ISO is using the term "distributed generation" to encompass *all* generation resources connected to *utility distribution systems*, without regard to size or resource type, and only such resources.

The ISO's proposal to identify and make available transmission capacity to provide deliverability status for distributed generation supports a key element of the state's strategy for increasing the share of renewable resource production in the state's annual electricity consumption. Specifically, Governor Brown has identified a goal to develop 12,000 megawatts of renewable generation capacity within the electricity distribution grid by 2020.[3]

I. EXECUTIVE SUMMARY

Under the ISO Tariff, to be eligible to provide resource adequacy capacity to a load-serving entity, a resource must, as part of the interconnection process, request and obtain deliverability status.[4] As part of the interconnection study process, the ISO performs deliverability studies to assess whether existing transmission capacity can support the requested deliverability status of resources in the current queue cluster, which requires that such resources be able to deliver their output to the aggregate of load on the ISO system under peak load conditions, or if existing capacity is not sufficient, identify necessary delivery network upgrades to the ISO-controlled transmission grid to provide the requested deliverability status.

The proposed tariff amendment will establish an annual process that enables distributed generation resources that are interconnecting to the utility distribution grid and seeking deliverability status to obtain such status earlier than would typically be possible through the normal interconnection study cycle, up to the amount of such status that the ISO grid can support without additional delivery network upgrades. For those resources interconnecting pursuant to a wholesale distribution access tariff ("WDAT")[5] offered by one of California's investor owned utilities, the new process provides a potential alternative, and quicker path to deliverability status. For resources interconnecting under the

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[3] This effort has been promoted through such activities as the Governor's conference on Local Renewable Energy Resources, held July 25-26, 2011 at the University of California Los Angeles, the results of which have been encapsulated in a report issued by the UC Berkeley Law Center for Law and the Environment, California's Transition to Local Renewable Energy: 12,000 Megawatts by 2020 (accessible on the UC Berkeley Center website at http://www.law.berkeley.edu/files/ccelp/CA_Transition_to_Local_Renewable_Energy.pdf.

[4] An interconnecting generation resource may request "full capacity deliverability status," which is a request for deliverability status for the maximum MW amount it is physically able to provide based on its nameplate capacity and resource type, or "partial capacity deliverability status," which is a request for a specific fraction of the maximum MW amount it is physically able to provide. A resource that does not seek either full capacity or partial capacity deliverability status is an "energy-only" resource and is said to have "energy-only deliverability status."

[5] Pacific Gas & Electric Company (PG&E) uses the term "WDT" to refer to its wholesale interconnection tariff; for simplicity in this filing the ISO will use the generic term "WDAT" to refer to any and all of the wholesale interconnection tariffs relevant to this proposal.

state interconnection process known as Rule 21,[6] the proposed tariff amendment provides an opportunity for deliverability status that was previously unavailable to them.

The proposed tariff amendment is just and reasonable because it provides an efficient method to provide deliverability status to distributed generation resources through a high level process which avoids the need for such resources to undergo individual deliverability assessment in the interconnection study process. The proposal builds upon the ISO's existing transmission planning process, which will identify and approve public policy driven transmission elements to support development of renewable resources, and promotes efficient use of the transmission system by identifying nodes on the ISO grid suitable for distributed generation to obtain deliverability status without the need for delivery network upgrades.

Currently, a proposed generation resource has to undergo a deliverability assessment in order to obtain deliverability status. Through prior tariff amendments in 2010 and 2011, the ISO and participating transmission owners structured their interconnection efforts so that the deliverability assessments needed for a resource that connects to either a distribution system or the ISO grid are performed by the ISO in the context of the ISO's interconnection study cycle. This process – which may be described as a "bottom-up" approach because it is driven by generator interconnection requests – takes approximately two years between the time a generation resource submits its interconnection request and when it receives the study results specifying the network upgrades required to provide its requested deliverability status and the resource's associated cost responsibilities.

Under the new proposal, distributed generation deliverability status can be obtained through a "top-down" rather than a "bottom-up" approach, whereby transmission capacity to support deliverability status is identified in the transmission planning process and ultimately assigned to those distributed generation resources that qualify through a process and criteria developed by local regulatory authorities for their jurisdictional load-serving entities.[7]

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[6] Rule 21 refers to California Public Utilities Commission Electric Rule 21, which is a tariff that describes the interconnection, operating and metering requirements for generation facilities to be connected to a utility's distribution system, over which the CPUC has jurisdiction. The CPUC is in the process of adopting a revised Rule 21 which has been accepted in a proposed decision in CPUC R.11-09-011. The proceeding information and rulings can be found on the CPUC website at http://delaps1.cpuc.ca.gov/CPUCProceedingLookup/f?p=401:56:605287454613701::NO. The revised Rule 21 specifies that this interconnection procedure does not provide for deliverability status; rather, it directs customers seeking deliverability through the interconnection process to instead apply to the utility company's WDAT. The Rule 21 tariff for each of California's large investor owned utilities is available on each company's website.

[7] The proposal provides for the local regulatory authorities that oversee procurement by their jurisdictional load-serving entities, and not the ISO, to develop the process

The process described in the tariff amendment is a two-part process:

- First, the ISO will perform a study to determine MW amounts of deliverability status, called "Potential DG Deliverability" in the proposed tariff amendment, that are available for distributed generation resources at specific network nodes on the ISO controlled grid without requiring additional network upgrades and without adversely affecting the deliverability status of existing generation or the deliverability status of proposed generation in the interconnection queue.

- Second, the ISO will apportion the use of such Potential DG Deliverability to the local regulatory authorities that oversee procurement by their regulated load serving entities, who will in turn assign deliverability status to specific distributed generation resources.[8]

This proposed new process will result in a streamlined method to enable load-serving entities and developers of distributed generation resources to understand where sufficient transmission capacity exists to provide deliverability status to additional distributed generation resources, and allow such entities to contract for deliverable resource adequacy capacity at locations with available transmission capacity without requiring each distributed generation resource to undergo a further deliverability assessment in the interconnection processes. By making it easier for distributed generation resources to obtain deliverability status, or in the case of Rule 21 projects, providing a path to deliverability status that did not previously exist, this proposal will advance important policy objectives, including:

- Supporting California's strategy for increasing the share of

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and criteria for assigning the available deliverability status to specific distributed generation resources. As indicated later in this transmittal letter, some stakeholders in the ISO stakeholder initiative commented that the ISO should exercise some oversight or approval of the process and criteria adopted by each local regulatory authority to ensure that these are just and reasonable. The ISO declined to add this feature to the proposal because the ISO did not find it reasonable for the ISO tariff to reach into an area of local regulatory authority to superimpose requirements for eligibility for deliverability and thus resource adequacy of distributed generation units, especially with respect to resources interconnecting to state-jurisdictional power lines under Rule 21. In response to stakeholder concerns about transparency, however, the proposal does require local regulatory authorities to provide information to the ISO, for publishing on the ISO web site, regarding the retention criteria a distributed generation resource must meet to retain an assignment of deliverability status it received under this proposal.

[8] As the ISO explains later in this transmittal letter, the tariff amendment adopts the term "Potential DG Deliverability" to refer to the quantity of deliverability status available for use by local regulatory authorities for assignment to distributed generation resources; "Potential DG Deliverability" is expressed in MW quantities no smaller than 1 MW.

renewable resource production in the state's annual consumption of electricity in furtherance of the state's Renewables Portfolio Standard of 33 percent renewable energy by 2020;

- Supporting the state's goal of adding 12,000 additional MW of distributed generation by 2020, by providing a means for load-serving entities to procure deliverable capacity from distributed generation resources to meet their resource adequacy requirements without waiting for the completion of each resource's individual study in the WDAT study process;[9]

In addition, this new process is designed so that it will work in harmony with the ISO's existing generator interconnection and transmission planning processes. Significantly, apart from providing a streamlined approach to obtain deliverability status, the ISO's proposal does not alter or eliminate any of the requirements such resources must meet in conjunction with the Rule 21 or WDAT process through which they request interconnection. These processes require, among other things, that each generation resource requesting interconnection to the distribution system be studied for reliability impacts and potentially be responsible for reliability upgrades to the distribution system or the ISO grid or both. Similarly, the ISO's proposal does not in any way alter or adversely affect the ability of a distributed generation resource to obtain deliverability status through the normal WDAT process, should that resource fail to obtain such status under the new process.

The ISO requests that the Commission accept the proposed tariff amendment to become effective 61 days from the date of this filing, and no later than November 18, 2012. The ISO plans to perform its first distributed generation deliverability study as described in this proposal beginning in late November. A November 18, 2012 effective date for this tariff filing is necessary in order to allow the ISO to incorporate the proposed modifications, and any changes to its proposal that may be required by the Commission's order, into its study process without delaying the conduct of the studies.

II. BACKGROUND

A. The Current ISO Deliverability Assessment Process

Currently, the only method for a distributed generation resource to acquire

[9] For example, to support the state's Renewables Portfolio Strategy targets, California Governor Jerry Brown's Clean Energy Jobs Plan called for adding target amounts of localized renewable generation (i.e., distributed generation) close to consumer loads and transmission and distribution lines.

deliverability status is by having the deliverability component of its interconnection request studied by the ISO, which the ISO does in the deliverability assessment ISO performs for the current cluster interconnection study cycle in the ISO's interconnection study process. A distribution-connected resource must enter the WDAT process of one of the distribution companies and must request deliverability status, and will then be studied by the ISO for deliverability in conjunction with the current ISO interconnection queue cluster.[10] If the resource interconnects through the state-jurisdictional Rule 21 process, the resource has no opportunity for deliverability status and thus cannot establish resource adequacy status.

Although the ISO begins a new interconnection study cycle each year for a new cluster of interconnection requests, the entire cycle consists of two phases. These phases take roughly two years to identify any delivery network upgrades to the ISO grid needed to provide the requested deliverability status for proposed generation resources in the cluster, including WDAT resources that request deliverability status. State policy makers, distributed generation developers, load-serving entities and other stakeholders have asserted that the current process is too lengthy and too cumbersome for the sheer number of small-scale projects that will be needed to meet the state's goals.

In addition, load-serving entities are expected to meet some portion of their resource adequacy and renewable portfolio standard requirements through distributed generation resources situated behind the end-use customer meter. These resources interconnect under CPUC Rule 21 to power lines which are not subject to open access under an OATT. Because there is presently no way for Rule 21 resources to obtain deliverability status, those resources cannot qualify as resource adequacy resources under the state's resource adequacy program. Thus, there is a need for a process that will provide deliverability for Rule 21 resources as well as for WDAT resources.

An ISO determination that a generation resource is deliverable is required for a resource to be eligible to provide resource adequacy capacity. A fundamental objective of the state resource adequacy program is that the energy produced by the generation facility at a level that reflects the amount of resource adequacy capacity it is providing must meet a *simultaneous deliverability*

[10] The ISO's generator interconnection procedures provide that the ISO perform deliverability assessment for WDAT resources as part of its deliverability studies for its own interconnection customers. For generation resources participating in ISO queue cluster 5 and later, the ISO performs the deliverability assessment in accordance with the GIDAP provisions contained in ISO Tariff Appendix DD, which became effective July 25, 2012. For generation resources participating in ISO queue cluster 4 and earlier, the deliverability assessment is performed in accordance with ISO Tariff, Appendix Y, Section 6.5.2 and the Business Practice Manual for Generator Interconnection Procedures ("GIP"), Section 6.1.4.3. A more detailed description of the deliverability assessment methodologies is available on the ISO website, http://www.caiso.com/Documents/Deliverability%20assessment%20methodologies.

requirement when dispatched together with all other resource adequacy capacity resources under peak load conditions.

This means that all available generating capacity determined to be deliverable within each electrical study area of the ISO grid, and therefore acceptable for meeting resource adequacy requirements, can be simultaneously dispatched to the full amount of its deliverability status under peak load conditions without exceeding system operating limits on any ISO grid facilities. Thus, the purpose of subjecting new generation resource additions seeking full or partial deliverability status to the deliverability assessment is to identify, in situations where such simultaneous dispatch would exceed system operating limits on one or more grid facilities, those delivery network upgrades required to provide the proposed generation project with its requested deliverability status.[11]

B. Stakeholder Process

The ISO conducted a stakeholder initiative to establish a process for distribution-connected resources to obtain deliverability status in a faster and less complicated manner than the currently available procedures, while remaining effectively integrated with the existing generator interconnection and transmission planning processes. The stakeholder initiative involved meetings and conference calls with stakeholders, issuance of several whitepapers discussing the ISO's proposal, and multiple opportunities for stakeholders to

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[11] It is important to distinguish between a generation resource's "deliverability status," which is established through the generator interconnection study process or, for distributed generation resources, through the new process the ISO is proposing in this filing, versus the resource's annual net qualifying capacity ("NQC") which is the final determinant of the maximum amount of resource adequacy capacity a resource can provide in the upcoming resource adequacy compliance year.

Because grid conditions can change from year to year in ways that cannot be perfectly anticipated at the time the interconnection deliverability studies are performed, which may be years before the resource achieves commercial operation, a resource's deliverability status is not the final determinant of how much resource adequacy capacity the resource can provide in any given resource adequacy compliance year. Therefore, in addition to determining the deliverability status of each resource through the interconnection study process, the ISO also conducts an annual NQC assessment to determine how much resource adequacy capacity each resource is eligible to provide during the upcoming resource adequacy compliance year.

Once a generation facility achieves commercial operation and its required network upgrades are placed into service, or if these conditions are scheduled for completion during the upcoming resource adequacy compliance year, the facility then participates in the ISO's annual NQC assessment for the upcoming resource adequacy compliance year, based on system conditions anticipated for that year. This annual assessment is described in ISO Tariff Section 40.4.6.1 and in the Business Practice Manual for Reliability Requirements, Section 5.1.3.4. The instant proposal does not modify any provisions of the ISO's annual NQC assessment; rather, it focuses more narrowly on the determination of deliverability status as described in this transmittal letter.

provide written input into the development of the proposal.[12] An outline of stakeholder activities and written iterations of the ISO's proposal is set forth in Attachment A to this filing. The proposal was presented to the ISO Governing Board on May 16, 2012 and the Board authorized this filing.[13]

The ISO began the stakeholder process on December 12, 2011 by publishing a combined issue paper and straw proposal. From December through May 2012, the ISO conducted three stakeholder web conferences, and issued three iterations of the draft proposal.

Following Board approval on May 16, 2012, the ISO conducted an additional stakeholder process to develop the proposed tariff language creating a new ISO tariff Section 40.4.6.3 to implement this proposal. The draft tariff language and the stakeholder comments were discussed on a web conference held on July 16, 2012. In response to input by stakeholders, the ISO revised its draft tariff language and posted a revised iteration on July 13, 2012.

III. DISTRIBUTED GENERATION DELIVERABILITY PROPOSAL

A. Overview

The ISO proposes to conduct an annual process consisting of two sequential steps to enable distributed generation resources to obtain resource adequacy deliverability status in a faster and more streamlined manner than is possible under the existing interconnection procedures. For resources connecting through the state's Rule 21, this creates an opportunity that does not currently exist to obtain deliverability status. In the first step of the process, the ISO will assess the MW amounts of Potential DG Deliverability[14] available to support deliverability status for distributed generation resources at specific network nodes on the ISO grid without requiring additional network upgrades. In the second step of the process, the ISO will apportion the available Potential DG

[12] The record for the initiative is posted on the ISO's website at: http://www.caiso.com/informed/Pages/StakeholderProcesses/DeliverabilityforDistributedGeneration.aspx.
This record includes the ISO's whitepapers, all comments submitted by stakeholders during the stakeholder process, all stakeholder meeting presentations, and the draft tariff language.

[13] The Memorandum presented to the ISO Board of Governors regarding the Decision on Resource Adequacy Deliverability for Distributed Generation is provided as Attachment E to this filing.

[14] "Potential DG Deliverability" is a defined term in the proposed tariff amendment that means "the capability of the CAISO Controlled Grid, measured in MW and determined through a CAISO Deliverability Assessment, to support the interconnection with Full Capacity Deliverability Status or Partial Capacity Deliverability Status of additional Distributed Generation Facilities."

Deliverability to local regulatory authorities for their assignment of deliverability status to specific distributed generation resources with which their jurisdictional load-serving entities contract.

The intent of this streamlined process is to enable load-serving entities to procure deliverable resource adequacy capacity from distributed generation resources up to these MW amounts without requiring further assessment to establish deliverability in the interconnection processes. All distributed generation resources will still be required, however, to apply to and complete the appropriate Rule 21 or WDAT interconnection process, including undergoing reliability studies and potentially bearing responsibility for reliability upgrades to the distribution or transmission system.[15] The ISO's proposal would simply enable a resource pursuing interconnection through a WDAT process, in a location where the ISO has identified available capacity, to be assigned deliverability status before the normal interconnection study process for its queue cluster is completed. This available capacity will also be accessible to resources interconnecting through the Rule 21 process. In order to align with the ISO's generator interconnection and transmission planning processes, the ISO's new annual process will begin in the fourth quarter of one year and be completed by mid-summer of the following year.

The proposal is designed to align with the ISO's transmission planning and generator interconnection processes through two main features. First, in constructing the network model to be used in the new DG Deliverability study, the ISO will model the existing transmission system plus new additions and upgrades that have been approved in prior transmission planning process ("TPP") cycles, plus existing generation and certain new generation in the ISO interconnection queue and associated upgrades, as described in greater detail below. This feature ensures that the nodal quantities of Potential DG Deliverability that result from the study can be apportioned to local regulatory authorities without triggering additional delivery network upgrades or "queue jumping" by utilizing available transmission capacity ahead of other generation projects earlier in the ISO or WDAT queues.

Second, the ISO will utilize, both as a minimal target level for assessing DG deliverability at each network node and as a maximum amount that can be apportioned to local regulatory authorities in the current cycle, the nodal DG quantities specified the base case resource portfolio that was adopted in the latest TPP cycle for identifying public policy-driven transmission needs. This feature both ensures that the new DG deliverability assessment is aligned with the public policy objectives adopted in the TPP, and precludes the possibility of

[15] The finding that a particular MW amount of distributed generation is deliverable at a specific network node does not obviate the need to perform the transmission reliability impact assessment normally performed in conjunction with WDAT requests. Thus, it is possible that some reliability network upgrades or other mitigation may be required in conjunction with the deliverable distributed generation resources.

apportioning more Potential DG Deliverability in each cycle than was assumed in the base case resource portfolio used in the TPP. These features are discussed in more detail below.

Distributed generation resources assigned deliverability status through the new process are subject to an annual net qualifying capacity determination, as are all generators that obtain deliverability through the ISO's interconnection process, as specified in existing tariff Section 40.4.6.1, which is not modified by the proposed tariff amendment. The existing tariff provides that the net qualifying capacity for a generator, which specifies the maximum MW amount of resource adequacy capacity a generation facility may provide in the upcoming resource adequacy compliance year, may be reduced below the level of its full or partial capacity deliverability status in any given year depending on system conditions, such as changes to transmission system configuration and load levels. Such reductions are reassessed annually and apply for the upcoming resource adequacy compliance year only. The new process does not include an exemption or other special treatment for distributed generation resources with regard to the annual net qualifying capacity determination.

As mentioned above, not all entities use the term "distributed generation" in exactly the same way. In some grid areas the resource portfolios used in the TPP may include some quantities of resources *directly connected to the ISO grid* that are considered under some definitions to be "distributed generation resources" based on their size or other characteristics. The ISO will not reflect these resources directly connected to the ISO grid in the proposed DG deliverability assessment because the purpose of the methodology is to assess deliverability available strictly *for distribution-connected resources*. Any ISO interconnection requests that are considered "distributed generation resources" under other definitions of that term, must participate in the ISO's generator interconnection process in the normal manner to receive their desired deliverability status. As such, for purposes of the deliverability study proposed here the ISO will model them in a manner consistent with the provisions of the GIP or the GIDAP, depending on the queue cluster in which they participate.

B. Resource Portfolios

The proposed new DG Deliverability Study will utilize the nodal distributed generation quantities in the base case resource portfolio that was adopted in the most recent TPP cycle for identifying public policy-driven transmission needs as the basis for setting target values of Potential DG Deliverability to be assessed in the study. Although development of the resource portfolios for the TPP was not the subject of the stakeholder initiative, some stakeholders commented that the resource portfolios used in the distributed generation deliverability assessment should consider the distributed generation-related input of all local regulatory authorities (i.e., the CPUC and local regulatory authorities other than the CPUC). The ISO agreed. The base resource portfolio used to determine distributed

generation deliverability under this proposal should adequately reflect the distributed generation target amounts of all local regulatory authorities that oversee procurement by load serving entities within the ISO balancing authority area.

The ISO has accordingly requested information from the non-CPUC local regulatory authorities in order to supplement the distributed generation representation in the TPP base portfolio and the TPP high distributed generation portfolio for the current 2012-2013 TPP cycle. The DG Deliverability assessment the ISO expects to perform near the end of this year will therefore reflect the existing and anticipated distributed generation procurement of load serving entities overseen by non-CPUC local regulatory authorities. This will ensure that when the instant proposal is implemented at the end of 2012, it will effectively address the distributed generation procurement needs of these local regulatory authorities.

C. Deliverability Methodology

During the course of the annual transmission planning process, the ISO will perform a special distributed generation deliverability study to determine MW amounts of Potential DG Deliverability available to support deliverability status for distributed generation resources at each of a specified set of network nodes on the ISO grid. In conducting this study, the ISO will model the existing transmission system and new additions and upgrades that have been approved in prior Transmission Planning Process ("TPP") cycles, plus existing generation and certain new generation in the ISO interconnection queue and associated upgrades, as described below. The ISO will then add to the model the target distributed generation quantities at each network node and determine how much of each nodal target quantity is deliverable without requiring additional upgrades on the ISO grid and without adversely affecting the deliverability of other modeled resources.[16]

1. Specifying Target Nodal DG Deliverability Amounts

The nodal target quantities will be at least as large as, and may exceed, the nodal distributed generation quantities specified in the base case resource portfolio used in the current TPP cycle for identifying public policy-driven

[16] The ISO will perform the proposed deliverability study in accordance with its normal procedure for such studies. For generation resources participating in ISO queue cluster 5 and later, the ISO performs the deliverability assessment in accordance with the GIDAP provisions contained in ISO Tariff Appendix DD, which became effective July 25, 2012. For generation resources participating in ISO queue cluster 4 and earlier the deliverability assessment is performed in accordance with ISO Tariff, Appendix Y, Section 6.5.2 and the Business Practice Manual for Generator Interconnection Procedures ("GIP"), Section 6.1.4.3. A detailed description of the deliverability assessment methodologies is available on the ISO website at: http://www.caiso.com/Documents/Deliverability%20assessment%20methodologies

transmission upgrades. In this regard it is important to explain that by design, the public policy resource portfolios created for the TPP specify locational quantities of distributed generation that are incremental to any distributed generation that is already in operation at each location, most if not all of which would not have been studied previously for deliverability. Thus, the target nodal quantities in the new study must be at least as large as the total of the TPP resource portfolio amounts plus the distributed generation currently in operation.

In addition, for information purposes, the study may assess deliverability for even larger nodal target quantities, to give developers, load-serving entities and their regulatory authorities additional information on the potential for developing additional deliverable distributed generation resources. In any given cycle, however, the ISO will not apportion any nodal amount of Potential DG Deliverability greater than the corresponding nodal amount of distributed generation used in the TPP base case portfolio plus distributed generation projects already in operation that were not previously studied for deliverability. This limitation is crucial to ensure that the results of the proposed new process are aligned with the TPP. The nodal distributed generation amounts in the base case public policy resource portfolio used in the TPP, plus the nodal amounts of distributed generation already in operation, are the amounts that were assumed in the current TPP cycle for purposes of identifying needs for public policy-driven transmission. If the ISO were to apportion larger amounts of Potential DG Deliverability at any network nodes, the base case portfolio would no longer reflect valid distributed generation amounts for that transmission planning cycle, which could undermine the basis for any public policy transmission elements contained in the latest transmission plan. Thus, the assessment of larger nodal quantities in the proposed study would be for informational purposes only. If the CPUC or other local regulatory authorities, on the basis of the resulting information, want to expand DG development at any location beyond the amount of Potential DG Deliverability made available after the study, the appropriate course of action would be to expand the distributed generation component of the base case resource portfolio for the next TPP cycle.[17]

[17] An illustrative timeline should help to clarify this discussion. For the 2012-2013 TPP cycle, the ISO adopted the public policy resource portfolios in the first part of 2012, and augmented these with information from the non-CPUC local regulatory authorities at that time. Since then the ISO has proceeded with its normal transmission planning studies. Under the proposal, the ISO would perform the new DG Deliverability study in December 2012 and post results – most importantly the amounts of Potential DG Deliverability available for apportioning to local regulatory authorities – in February 2013. During roughly the same time period, the ISO will develop a draft comprehensive transmission plan for the 2012-2013 TPP cycle by the end of January 2013, and will take the final version of this plan to its Board of Governors for approval in March. Any public policy transmission elements contained in that plan would be based on the assumptions built into the resource portfolios adopted earlier in 2012. Thus, if the ISO were to make available any nodal quantities of Potential DG Deliverability in excess of the TPP base case portfolio plus DG already in operation, the public policy-related planning assumptions behind the 2012-2013 comprehensive transmission plan would no longer be valid. This does not, of course, preclude the ISO assessing larger target DG values in the DG Deliverability study for information purposes. If it turns out that larger amounts would be deliverable, and if state or local authorities

For purposes of establishing the nodal target quantities, in addition to modeling the distributed generation already in operation at each node as described above, the study process will take into account "actual" distributed generation development, which is defined as the amount of distributed generation capacity currently in the wholesale distribution access tariff queue and "non-NEM" resources in the Rule 21 queue, i.e., those that have chosen not to be treated as "net energy metering" resources in that process. If the actual distributed generation development at any node already exceeds the target levels of distributed generation in the TPP base resource portfolio, then the target level used in the study at that node will be increased to accommodate the actual distributed generation development at that node. In such a case, the ISO will apportion no more Potential DG Deliverability than the amount of distributed generation identified in the transmission planning process base portfolio.

Although the study will model all wholesale distribution access tariff and non-net energy metering Rule 21 projects in the "actual" category described above, the study will preserve deliverability only for those WDAT projects that have requested deliverability status. Thus, the ISO respects the queue positions of these WDAT projects and prevents "queue jumping" by other DG projects, but does not preserve excessive deliverability for resources in the distribution interconnection processes that have not elected to be studied for deliverability.

To give an illustrative example, suppose the TPP base resource portfolio in a given year models 2,500 MW of distributed generation, while a "high DG" resource portfolio has 5,000 MW of distributed generation.[18] Also suppose that the target distributed generation amount at node N is 150 MW in the base resource portfolio and 225 MW in the "high DG" resource portfolio. To simplify the example, assume that there is no distributed generation currently in operation at node N, and that the "actual" distributed generation development in the queue at node N is less than 150 MW. The ISO would then study at least 2,500 MW of distributed generation for the system including 150 MW at node N. Beyond that, the ISO could study the higher amounts reflected in the high DG portfolio, or some other amounts of interest to the local regulatory authorities, for

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want to expand DG development in certain areas based on these results, then the appropriate vehicle would be to expand the DG component of the new resource portfolios being developed in the first few months of 2013 for the 2013-2014 TPP cycle.

[18] The reader may observe that although Governor Brown has established 12,000 MW of DG as a target by 2020, the DG amounts discussed in this example are far smaller. At this time the TPP resource portfolios – even the high DG portfolio – are including smaller DG amounts because there is too much uncertainty regarding the ultimate geographic distribution of new DG, as well as the extent to which the Governor's target will be met by residential rooftop solar facilities that fall in the "net energy metered" category to be treated as a reduction in load rather than a resource adequacy resource and therefore would not be concerned with deliverability status. The numbers used in the example here are roughly consistent with current estimates of DG in the TPP resource portfolios to date.

informational purposes, but would only make available for apportioning in the current cycle at most 2,500 MW in total, and at most 150 MW at node N.

The value of studying larger amounts of distributed generation than the ISO would make available in the current cycle is to provide information for developing resource portfolios in subsequent cycles. Continuing the numerical example of the previous paragraph, suppose that the DG deliverability study modeled 5,000 MW of distributed generation system wide and 225 MW at node N, and that the study showed that 3,700 MW is deliverable system wide, including 190 MW at node N. If state policy objectives later indicate that a system-wide distributed generation amount greater than 2,500 MW should be specified in the TPP base portfolio, then the nodal information from the study could suggest how to distribute the increased system-wide distributed generation quantity to specific network nodes. The one caveat the ISO makes in this regard, however, is that this approach does not guarantee that the larger amounts of deliverability identified in one year's study would necessarily still be available a year later because, as other factors affecting distributed generation deliverability could change from one year to the next. In other words, the ISO will not reserve or protect any larger nodal amounts of distributed generation deliverability identified in the study, which is clearly appropriate because otherwise the ISO would be committing the same inconsistency with the TPP assumptions as it would by apportioning the larger amounts in the current cycle, as described earlier.

2. Determining Nodal Amounts of Potential DG Deliverability

The DG deliverability study may find that in some grid areas where all resources are modeled and dispatched at output levels corresponding to their deliverability status, including the target distributed generation amounts, all of the resources cannot be simultaneously dispatched without exceeding system operating limits on ISO grid facilities. In such cases, the ISO will reduce the amount of distributed generation modeled in the deliverability study as needed to achieve a feasible dispatch. The nodal amounts of distributed generation that remain after such reductions will then reflect the nodal MW amounts of distributed generation that would be deliverable.

When the ISO observes any transmission system operating limit violations as a result of the modeled dispatch levels, the ISO will reduce the distributed generation quantities at effective nodes (i.e., nodes that have at least a five (5) percent flow factor on a system operating limit) from their target levels in a manner that balances efficiency and equity. To balance efficiency and equity, the ISO will use a weighted least squares algorithm to determine the nodal distributed generation reduction amounts. Such an algorithm distributes the reduction amounts across multiple effective nodes in an equitable manner, so as

to avoid applying very dramatic distributed generation reductions at the one or two most effective nodes.[19]

This approach of reducing the target distributed generation amounts rather than reducing the deliverability of other generation is necessary and appropriate to preserve the deliverability status of existing resources (*i.e*. those resources already in commercial operation at the time the study is performed) and to prevent preferential treatment of distributed generation resources relative to those resources that are currently in the ISO's interconnection queue and the participating transmission owners' WDAT queues ("queue jumping").

In that regard, if the ISO were to reduce the dispatch of existing resources in a given study area before reducing the target distributed generation amounts, then either (1) the resource adequacy eligibility of those existing resources would need to be reduced commensurately, which could adversely and inappropriately impact their ability to offer resource adequacy capacity, or (2) without such reductions to reflect the actual capability of the grid, the load-serving entities could end up procuring more resource adequacy capacity in that area than can be fully deliverable. The latter outcome would unnecessarily increase costs for ratepayers and potentially jeopardize grid reliability by providing less usable resource adequacy capacity than the procurement numbers indicate. Moreover, because new distributed generation capacity will likely be comprised primarily of variable, non-dispatchable resources, reducing the deliverability status of flexible existing resources in favor of new distributed generation in the study could jeopardize grid reliability by reducing the availability as resource adequacy resources of the flexible resources needed to support renewable integration.

Alternatively, if the ISO were to reduce the dispatch of full capacity generation projects already in the ISO interconnection queue or in a participating transmission owner's wholesale distribution access tariff queue, this would allow "queue jumping" by the distributed generation resources in violation of open access generator interconnection requirements as provided through the queue cluster system in the ISO tariff. This should not be misconstrued as a policy choice to give lower priority to distributed generation resources relative to projects in the interconnection queue (which may, by the way, include some

[19] In contrast to the proposed weighted least squares algorithm, the standard approach would be to minimize the total MW amount of dispatch reduction by reducing the distributed generation amount at the node with the highest flow impact on the limiting constraint all the way to zero if necessary before reducing the distributed generation amount at the node with the second highest flow factor, even if the second highest flow factor is only very slightly lower than the highest flow fact. As a result, when there are limiting constraints observed in the study, the standard approach tends to result in severe dispatch reductions to some nodes while leaving nearby nodes untouched. In contrast, the weighted least squares will tolerate a somewhat larger amount of total dispatch reduction in order to spread the reduction across the nodes that have similar impacts on the limiting constraint. In instances where the nodes in question affect multiple local regulatory authorities, the weighted least squares approach "shares the pain" and thus is more equitable.

distributed generation resources that have requested deliverability status through the WDAT); rather, this is a recognition that projects abiding by the established rules of the interconnection process should not be adversely impacted by the allocation of "as available" transmission through this streamlined process to support deliverability status for distributed generation resources. As explained earlier, if state or local regulatory authorities want to expand the amount of Potential DG Deliverability available in any particular grid area, this should be done through expansion of the distributed generation component of the TPP base resource portfolio in the next TPP cycle.

It is important to understand that the proposed study cannot determine the maximum amount of distributed generation that can be connected with full deliverability at any particular network node or for the system as a whole. The proposed study will only determine whether the nodal target MW amounts of distributed generation are fully deliverable and, if not, what portion of the target is deliverable at each node without further delivery network upgrades. Thus, if the nodal target amount is found to be fully deliverable, it may be possible that a greater amount would also be deliverable, but the proposed study would not be able to determine that.

D. Building The Assessment Model

To develop the base model for the assessment of Potential DG Deliverability the ISO will start with the most recent generation interconnection cluster Phase 2 deliverability power flow base case, and then add the generation projects that have obtained deliverability though an additional deliverability path known as the annual full capacity deliverability option,[20] as well as any transmission additions and upgrades approved in the final comprehensive transmission plan for the most recent transmission planning process cycle.

Next, the ISO will add in any generation projects in the most recent generation interconnection Phase I study that have been found to be fully deliverable without any delivery network upgrades (i.e., projects that were not assigned any delivery network upgrade costs in the Phase I study). The following table summarizes the core modeling assumptions for the distributed generation deliverability assessment.

Generation Assumptions	Transmission Assumptions
• Existing generators • Generation projects requesting full	• Existing transmission system • Transmission upgrades and additions

[20] GIDAP (ISO Tariff Appendix DD) Section 9.2 [*Annual Full Capacity Deliverability Option*].

capacity or partial deliverability status queued earlier or in the cluster that most recently completed Phase II interconnection • Generation projects that obtained full capacity or partial deliverability status through the annual full capacity deliverability option • Distributed generation resources assigned deliverability status in previous cycles of the new process proposed in this filing • Generation projects in the most recently completed Phase I interconnection study that were found to be deliverable without requiring delivery network upgrades	approved through the most recently completed transmission planning cycle • Funded or permitted network upgrades for generation completed interconnection studies

The ISO will then examine the distributed generation network nodes specified in the 33 percent renewable TPP base portfolio and remove (i.e., zero-out the MW values for) those nodes that are in study areas for which the most recently completed Phase 1 or Phase 2 study has identified a need for delivery network upgrades. The rationale for this step is that if the Phase 1 or Phase 2 study found a need for delivery network upgrades in a study area, then there would be no capacity available at nodes within that study area to provide deliverability for distributed generation, without such distributed generation adversely impacting the generation projects in the queue ("queue jumping"). For similar reasons, the ISO will zero out the distributed generation MW values for those nodes that are in the study areas for which the recent Phase II studies for clusters 1-4 identified and then removed certain delivery network upgrades to support deliverability for MW amounts in the interconnection queues.[21]

Finally, for the remaining distributed generation network nodes, the ISO will add the MW amounts in the 33 percent base portfolio – or larger target MW amounts as explained above for study purposes – to the base case model for the distributed generation deliverability assessment.

As mentioned above, consideration of the distributed generation plans and targets of non-CPUC jurisdictional local regulatory authorities will occur during the development of the resource portfolio in the first phase of each annual

[21] Details as to this aspect of the Cluster 1-4 Phase II study process are provided in the ISO Revised Technical Bulletin, Deliverability Requirements for Queue Clusters 1-4 and Determination of Net Qualifying Capacity (June 8, 2012), accessible on the ISO website at http://www.caiso.com/Documents/RevisedTechnicalBulletin-DeliverabilityRequirements-QueueClusters1-4_Determination-NetQualifyingCapacity.pdf.

transmission planning process cycle, so this information will already be included in the 33 percent base portfolio.

E. Publishing the Study Results

Upon completion of the DG Deliverability study the ISO will provide the results in the form of a table listing all of the network nodes with non-zero MW amounts of deliverability for distributed generation, the corresponding nodal MW amounts of distributed generation determined to be deliverable, and the corresponding nodal MW amounts available for apportionment to local regulatory authorities. Specifically, the study results at each node will indicate:

1. The distributed generation MW amount specified in the 33 percent TPP base portfolio;

2. The distributed generation MW target amount assessed in the study, which will be at least as large as item 1;

3. The distributed generation MW amount determined to be deliverable, which will be a value between zero and item 2; and

4. Distributed generation MW amount available for apportioning to local regulatory authorities in the current cycle, which will be the minimum of item 1 and item 3.

In addition the ISO's published study results will provide sufficient information to explain for stakeholders how the above amounts were determined, given the considerations noted above to account for distributed generation already in commercial operation and the "actual distributed generation development" reflected in the interconnection queues.

The deliverable amounts (item 3 above) will be the MW amounts of distributed generation that would be fully deliverable without any additional delivery network upgrades, without needing any further deliverability assessment, and without degrading the deliverability of existing resources or generation projects in the ISO's interconnection queue. The amount available for apportioning to local regulatory authorities (item 4) may be less than item 3, however, for reasons explained earlier.

F. Apportioning Potential DG Deliverability to Local Regulatory Authorities

Following the annual determination of how much deliverability is available for distributed generation without triggering additional delivery network upgrades, the ISO will apportion the available Potential DG Deliverability to the local regulatory authorities for assignment to specific distributed generation resources

in coordination with their jurisdictional load-serving entities. The ISO anticipates that the apportionment process would commence in March of each year, shortly after the publication in February of the results of the annual DG Deliverability study, including the MW amounts of Potential DG Deliverability at each network node.

The ISO proposes to follow a process similar, but not identical to that used for the allocation of maximum import capability for imported resource adequacy resources under existing ISO Tariff Section 40.4.6.2. Under the proposed tariff amendment, the ISO will apportion the available deliverability amounts at each node on the grid to the local regulatory authorities based on the MW amount each entity requests or nominates at each node in a three-stage nomination process.

The sequential steps in the apportionment process are as follows:

1. Determine each local regulatory authority's apportioned share. The ISO will determine:

a) each local regulatory authority's apportioned share of the total system MW of Potential DG Deliverability available for allocation, and

b) each load serving entity's initial or provisional share[22] of nodal MW of Potential DG Deliverability for nodes at which load serving entities for more than one local regulatory authority serve load.

Item (a) for the local regulatory authority will be based on the share of system peak load forecast attributable to those load serving entities subject to that local regulatory authority's jurisdiction, using the same load forecast for the upcoming resource adequacy compliance year that the ISO uses for the maximum import capability allocation for the same resource adequacy year. This quantity will be a share of total system MW of Potential DG Deliverability, without reference to any particular nodes or locations.

The ISO will determine item (b) for each relevant node and each affected local regulatory authority based on that node's share of the system peak load forecast, multiplied by the share of the nodal load attributable to the load serving entities subject to each local regulatory authority's jurisdiction. The ISO will perform this step in March of each year.

2. Notify each local regulatory authority of its apportioned shares. By the end of March, the ISO will notify each local regulatory authority of the results of the previous step.

[22] Nodal shares for these nodes are considered provisional at this point because they may need to be adjusted in a later step of the process, as described further below.

3. Transfer of shares. The proposed process allows a local regulatory authority to transfer a portion of its system-wide MW share or its nodal MW to another local regulatory authority. Both local regulatory authorities participating in a transfer will notify the ISO of the transfer. The ISO proposes to allow such transfers during each cycle of this process at any time up to the third and final round of local regulatory authority nominations, as described further below.

4. Local regulatory authorities submit nominations. Each local regulatory authority will submit nominations or requests to the ISO to apportion its share of the total system MW of Potential DG Deliverability to specific network nodes. The proposed process allows for three rounds of nominations. In any given round, each local regulatory authority's total nominations cannot exceed its share of the total system MW of Potential DG Deliverability, and its nodal nomination at any node where load serving entities subject to more than one local regulatory authority serve load cannot exceed its nodal share of the Potential DG Deliverability. The first round of nominations will be due to the ISO by the end of April, and in this round the local regulatory authority may only specify nodes at which its jurisdictional load serving entities serve load.[23] Following the submission of nominations, the ISO will validate that all nominations comply with the limitations just described, and will notify the submitting local regulatory authority of any invalid nominations and allow a reasonable opportunity for the local regulatory authority to make adjustments and resubmit.

5. ISO apportions Potential DG Deliverability based on local regulatory authority nominations. Except for nodes where the load serving entities of more than one local regulatory authority serve load, the ISO will approve all first round nominations that comply with the validation rules above. For nodes where there are load serving entities subject to different local regulatory authorities, some additional considerations are required to ensure that small local regulatory authorities whose load serving entities serve load at only one or two ISO network nodes are not unduly disadvantaged in their ability to utilize their full system-wide shares of Potential DG Deliverability.

Although the initial provisional nodal load shares described above will be good starting points for first round of local regulatory authority nominations, simply enforcing those shares may be insufficient and in some instances may actually prevent a small local regulatory authority from utilizing its full system-wide share in a manner that aligns with its load locations. The most obvious example is where the LSE of a municipal local regulatory authority has load at only one node, while a larger LSE under jurisdiction of the CPUC also has load at the same node, and the smaller entity's load-ratio share at that node provides fewer MW of Potential DG Deliverability than its system-wide share. This would

[23] Nominations at nodes at which a local regulatory authority has no load, as well as at any load-free nodes that provide positive amounts of Potential DG Deliverability, are allowed in the second and third nomination rounds.

occur when the ISO study indicates very limited capacity to support distributed generation deliverability at that node. For a local regulatory authority that has a reasonably large number of nodes at which its load-serving entities serve load, being unable to utilize some of those nodes may have little or no adverse impact on its ability to utilize its full system-wide share of Potential DG Deliverability at its own load nodes. But for a local regulatory authority that has load at only one node and wants to develop distributed generation at its load location, providing it only its nodal load-ratio share could be insufficient in such a situation.

To address the above type of situation, the ISO proposes that the following formula be applied at nodes where load serving entities under multiple local regulatory authorities have load, and where the geographic distribution of an affected load serving entity's retail load territory, combined with the simple nodal load-ratio share rule, would limit a load serving entity's ability to utilize its system-wide share of Potential DG Deliverability. In such a case the nodal Potential DG Deliverability available to the small load serving entity would be determined by the following formula:

The maximum of
(a) (nodal load-ratio share * nodal PDGD available), or
(b) the minimum of
- nodal PDGD available, or
- (system load-ratio share * system PDGD available)[24]

In this formula (a) is the simple nodal load-ratio share rule, which would be the result if (b) is smaller. But (b) compares the simple result against the full amount of nodal Potential DG Deliverability available, or the smaller local regulatory authority's share of system-wide Potential DG Deliverability. Thus in the scenario described above, the smaller authority could obtain a larger share of the nodal Potential DG Deliverability all the way up to the full amount that is available at that node. This approach does not guarantee that in all cases the smaller authority will be able to fully utilize its system-wide share of Potential DG Deliverability at locations where its LSEs serve load, but it does get as close to that result as possible up to the full amount of Potential DG Deliverability that is available at the node in question.

The ISO believes that this modified approach is justified for use at nodes where load serving entities under multiple local regulatory authorities have load because, the small publicly owned utility may have few nodes, or even just a single node, at which it has load to try and obtain its share of the total system MW of Potential DG Deliverability, whereas the large investor owned utility will have many nodes available at which to obtain its share of the total system MW of Potential DG Deliverability.

[24] In the formula, "PDGD" is Potential DG Deliverability.

6. Notify local regulatory authorities of outcomes of first round nominations. The ISO, by the end of May, will notify local regulatory authorities of the outcome of their first round nominations (i.e., those approved, adjusted or denied), and will post any remaining nodal Potential DG Deliverability that has not been apportioned.

7. Local regulatory authorities submit second round nominations. Local regulatory authorities may submit second round nominations to the ISO to the extent that they have not yet received their full shares of the total system MW of Potential DG Deliverability. These will be due to the ISO by mid-June.

Under the proposed tariff amendment, in this second round, the local regulatory authorities will be allowed to submit nominations at nodes where their load serving entities have no load and even at load-free nodes. As with the first round submissions, the ISO will validate the second round submissions to ensure that each local regulatory authority's nominations plus its first round allocations do not exceed its system-wide MW share. Any amounts apportioned in the second round would count towards each local regulatory authority's share of the total system MW of Potential DG Deliverability. If multiple local regulatory authorities nominate Potential DG Deliverability at the same load-free node and the total of these nominations exceeds the MW amount of available distributed generation deliverability at the node, then each local regulatory authority will receive an amount proportional to its share of total system MW of Potential DG Deliverability.

8. Notify local regulatory authorities of outcome of second round nominations. The ISO, by the end of June, will notify local regulatory authorities of the outcome of their second round nominations and will post any remaining nodal Potential DG Deliverability that has not been apportioned.

9. Local regulatory authorities submit third round nominations. If any nodal Potential DG Deliverability remains unassigned after the second round, then the ISO will provide one last opportunity for local regulatory authorities to submit nominations if they have not yet met their full system-wide amounts. Any transfers of apportioned shares between local regulatory authorities must be completed and reported to the ISO by the deadline for these submissions in order to be considered in the current cycle. These nominations and any transfer reports will be due to the ISO by mid-July. The ISO will notify local regulatory authorities of the outcome by the end of July.

The following table provides a brief summary of the steps described above and the approximate timeframe in which they will occur. The ISO will provide the details of the apportionment process and the timeline in the Business Practices Manual for Reliability Requirements, and will issue market notices to ensure that all eligible local regulatory authorities are fully apprised of the steps in the process and the associated requirements and deadlines in each current cycle.

Sequential steps in the apportioning process	Timeframe
ISO will determine local regulatory authority shares of the total system MW of Potential DG Deliverability as well as nodal local regulatory authority shares at nodes where load serving entities of more than one local regulatory authority serve load.	March
ISO will notify each local regulatory authority of its available shares of Potential DG Deliverability .	End of March
Local regulatory authorities will notify the ISO of any transfers of Potential DG Deliverability to other local regulatory authorities. Local regulatory authorities may engage in and report such transfers to the ISO during any round of the apportioning process up to the deadline for submitting third round nominations.	By mid-July
Each local regulatory authority will submit first round nominations to the ISO for apportioning nodal quantities of Potential DG Deliverability, up to its system-wide share and subject to any applicable nodal limits.	Nominations due by end of April
ISO will notify local regulatory authorities of the outcome of their first round nominations (i.e., those approved, adjusted or denied), and post any nodal Potential DG Deliverability not yet apportioned.	By end of May
Local regulatory authorities may submit second round nominations to the ISO if they have not yet been allocated their full share of the total system MW of Potential DG Deliverability.	Nominations due by mid-June

Sequential steps in the apportioning process	Timeframe
ISO notifies local regulatory authorities of the outcome of their second round nominations and will post any nodal Potential DG Deliverability not yet apportioned.	By end of June
If any nodal Potential DG Deliverability remains unapportioned, the ISO will provide a third nomination round as one last opportunity in the current cycle for local regulatory authorities to submit nominations to be apportioned any remaining amounts of their shares.	Nominations due by mid-July ISO will notify local regulatory authorities of outcome by end of July

G. Distributed Generation Deliverability Status as an Attribute of a Distributed Generation Resource

Before the start of the next ISO distributed generation deliverability study for the next annual cycle (i.e., by approximately October 15 of the year for the current allocation cycle), local regulatory authorities will report to the ISO on the assignment or attribution of deliverability status by their load serving entities to specific distributed generation projects.

Utilizing a MW amount of Potential DG Deliverability to assign deliverability status to a specific DG resource will correspond to an actual resource production level appropriate to the qualifying capacity determination method for that resource type. As such, the deliverable MW amount assigned to a resource may be less than the installed or nameplate capacity of the resources.[25]

[25] For example, a distribution-connected wind generator has 10 MW nameplate capacity and is electrically located with non-wind generation, but under the CPUC methodology for determining qualifying capacity based on actual production during defined peak load hours, its wind production levels vary between zero MW and 9 MW, with median production equaling 4 MW. Under the CPUC qualifying capacity methodology, which is based on the MW output value that the resource will exceed 70% of the time, its qualifying capacity is only 2 MW. But, in assigning full capacity deliverability status to the wind generator, the ISO deliverability methodology would utilize the 50% exceedance level, to be sure that the resource's qualifying capacity can be fully realized, given its output variability. Thus, in this example, it would utilize 4 MW of the Potential DG Deliverability at that ISO network node.

Once such assignment is done and reported to the ISO, and the DG resource achieves commercial operation, the resource adequacy deliverability status for the assigned MW amount becomes an attribute of the distributed generation project[26] and is not transferable by the local regulatory authority or load serving entity to another distributed generation project. This would mean, for example, that when a distributed generation resource's contract with a particular load serving entity expires, the distributed generation resource will be eligible to provide resource adequacy capacity to another load serving entity. This is consistent with how resource adequacy deliverability status is treated today for ISO grid-connected resources.

Prior to the distributed generation resource achieving commercial operation, however, the ISO believes that the local regulatory authority should have reasonable flexibility to establish transparent retention criteria, which it may enforce by revoking, through a transparent process, the assigned deliverability status of a distributed generation resource that fails to meet the criteria. The ISO will look to the responsible local regulatory authority to ensure that each distributed generation project that was assigned deliverability is making satisfactory progress toward commercial operation and that the distributed generation project continues to meet local regulatory authority-specified retention criteria in order to retain the resource adequacy deliverability status.

In the event that a distributed generation project fails to meet the local regulatory authority-specified retention criteria, the ISO will allow the local regulatory authority to revoke the project's deliverability status and assign it to another distributed generation project, as long as the new project is connected to distribution circuits below the same ISO grid node and utilizes no more deliverability MW than the original project. The local regulatory authority must report any such revocations and reassignments to the ISO.

In the interest of transparency and comparability the ISO will require participating local regulatory authorities to provide descriptions of their retention criteria and processes for revoking deliverability status to the ISO for posting on the ISO web site in conjunction with the new process proposed in this filing.

H. Unused or Unassigned Distributed Generation Deliverability

The ISO will preserve the apportioned Potential DG Deliverability at each node in subsequent generation interconnection studies, up through the next cycle of the proposed new process, even if the amount of Potential DG Deliverability apportioned at any given node was not fully assigned by local regulatory authorities to specific distributed generation projects by the time the next cycle of this new process begins. The ISO does not believe that apportioned but

[26] An allocation to a distributed generation resource does not allow that distributed generation resource to avoid milestones, security deposits, or other requirements needed to maintain good standing under either Rule 21 or a wholesale distribution access tariff.

unassigned Potential DG Deliverability should be preserved or protected indefinitely. In particular, it may turn out that specific locations that were thought at one time to be favorable for distributed generation development ultimately attract significantly less commercial interest than expected. In such cases it would be inefficient to protect apportioned but unassigned deliverability in these areas indefinitely.

III. Stakeholder Comments and ISO Responses

Overall, the deliverability for distributed generation proposal has received broad support from stakeholders[27], including Pacific Gas & Electric Co., Southern California Edison, the California Public Utilities Commission, the Six Cities,[28] the Sierra Club, the Clean Coalition, the Interstate Renewable Energy Council (IREC), and BAMx.[29] Even though some stakeholders argued for changes to specific provisions of the proposal, all stakeholders supported the proposal as a significant and valuable improvement over the status quo.

A. Issues that arose during proposal development

Reducing deliverability for distributed generation before reducing deliverability of other generation already in operation or in a queue. Stakeholders IREC and Sierra Club qualified their support of the proposal arguing that reducing target distributed generation amounts to relieve violations of system operating limits while maintaining the dispatch levels of existing generation and projects in the queue either under-values distributed generation or causes ratepayers to overpay for unnecessary transmission.

IREC noted in this regard that the "current ISO deliverability assessment results in the construction of upgrades to accommodate the deliverability of distant [central station] generation when DG resources might actually serve proximate load more directly."[30] The Sierra Club noted that "the Draft Final Proposal again brushes aside the fundamental concern that, with DG relegated to the lowest priority for deliverability assignment, a mechanism to assign deliverability to DG may be of limited value since little to no deliverability will

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[27] Stakeholder comments on the draft final proposal are found on the initiative webpage at http://www.caiso.com/Documents/Deliverability%20for%20distributed%20generation%20-%20stakeholder%20comments.

[28] Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California

[29] Bay Area Municipal Transmission Group, consisting of Alameda Municipal Power Utility, City of Palo Alto Utility and the City of Santa Clara Silicon Valley Power.

[30] IREC comments on draft final proposal, at p. 2.

ultimately be left for DG resources."[31] The Sierra Club also requested that the ISO reconsider efforts to maintain output levels of existing resources indicating that this frustrates promotion of environmental policy seeking to decarbonize the generation fleet.[32]

The ISO did not expand the scope of this stakeholder initiative or the instant proposal to consider a priority level for distributed generation over various types of generation resources notwithstanding their vintage or queue position. As explained earlier regarding the reasons for reducing distributed generation deliverability first when needed in the DG deliverability study, the ISO has emphasized that for the resource adequacy program to serve its intended purpose of ensuring sufficient supply to meet peak load, the ISO must seek to preserve the deliverability of resources already in operation, and that reduction of deliverability of existing flexible resources needed to support renewable integration could reduce the effectiveness of the resource program and ultimately compromise renewables policy by displacing flexible capacity in the resource adequacy procurement and thus compromising grid reliability. Moreover, the ISO noted that reducing the deliverability of generation already in the queue in favor of distributed generation could permit queue jumping in contravention of open access requirements.

In assessing the ISO's proposal, the proper legal standard to apply is whether the ISO's proposal is just and reasonable under Section 205 of the Federal Power Act (FPA).[33] Specifically, as the Commission has explained:

> [t]he courts and this Commission have recognized that there is not a single just and reasonable rate. Instead, we evaluate [proposals under Section 205] to determine whether they fall into a zone of reasonableness. So long as the end result is just and reasonable, the [proposal] will satisfy the statutory standard.[34]

The ISO's proposal falls well within the zone of reasonableness, because it provides for distributed generation deliverability status without degrading existing resource deliverability or making inroads to the current generation interconnection structure. Moreover, the proposal promotes the state resource

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[31] Sierra Club comments on draft final proposal at p. 1.

[32] *Ibid.*

[33] 16 U.S.C. § 824d (2006). Under Section 15 of the CAISO tariff, CAISO is the entity authorized to submit filings for Commission approval pursuant to Section 205 of the FPA.

[34] *Calpine Corp. v. California Independent System Operator Corp.*, 128 FERC ¶ 61,271, at P 41 (2009) (citations omitted). *See also New England Power Co.*, 52 FERC ¶ 61,090, at 61,336 (1990), *aff'd, Town of Norwood v. FERC*, 962 F.2d 20 (D.C. Cir. 1992) (rate design proposed need not be perfect, it merely needs to be just and reasonable) (citing *Cities of Bethany, et al. v. FERC,* 727 F.2d 1131, 1136 (D.C. Cir. 1984) (utility needs to establish that its proposed rate design is reasonable, not that it is superior to all alternatives)).

adequacy program by providing a path to resource adequacy status for distributed generation resources without undercutting that program by adversely affecting the deliverability—and thus the resource adequacy values-- of existing generation resources which already have resource adequacy status.

Desire for a "no backflow" criterion for deliverability of DG. Sierra Club has maintained its support for a provision that a distributed generation resource connected to a particular distribution circuit should be deliverable as long as its output does not "backflow" onto the transmission grid, i.e., as long as its output is less than the load served on the same distribution circuit.[35]

The ISO presented examples in the stakeholder process to illustrate why a "no backflow" criterion would not be sufficient for a finding of deliverability for distributed generation. Specifically, the key question for the distributed generation deliverability study is not whether the output of distributed generation resources creates a net flow from a distribution circuit onto the ISO grid, but rather, whether the output of the distributed generation will alter the amount and pattern of net load below any ISO grid nodes to the extent that the deliverability of other resources cannot be sustained.

When the ISO found existing generating resources to be deliverable, it did so based on deliverability studies that assume particular amounts and patterns of load being served over the ISO grid. If those load assumptions are no longer valid and the ISO then tries to assess the deliverability of resources previously found to be deliverable, there may be violations of system operating limits that cause the existing resources to no longer be fully deliverable. The key point is that deliverability for the resource adequacy fleet as a whole depends on the overall volume and pattern of load being served under peak conditions. Consequently, deliverability for distributed generation depends on the impact of the distributed generation on the overall volume and pattern of load, irrespective of whether there is net flow from the distribution system onto the ISO grid at any particular network node.

Apportionment to LRAs. SCE qualified its full support of the proposal with the argument that the ISO should apportion Potential DG Deliverability directly to the load serving entities instead of to local regulatory authorities. The ISO believes, however, that it is more appropriate to provide the apportioned Potential DG Deliverability to the local regulatory authorities. In this regard, the ISO did not find it reasonable for the ISO tariff to reach into an area of local regulatory authority to place requirements for eligibility for deliverability and thus resource adequacy of distributed generation resources, especially with respect to resources interconnecting to state-jurisdictional power lines under Rule 21.[36] In

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[35] See Sierra Club comments on draft final proposal at p. 2.

[36] See footnote 7.

response to stakeholder concerns about transparency, however, the proposal does require local regulatory authorities to provide information to the ISO, for publishing on the ISO web site, regarding the retention criteria a distributed generation resource must meet to retain an assignment of deliverability status it received under this proposal.

Moreover, in the case of the municipal local regulatory authorities, the distinction between the load serving entity and the local regulatory authority makes no practical difference, since each authority regulates a single municipal load-serving entity. The difference has practical impact only in the case of load-serving entities regulated by the CPUC. In that case, the CPUC will need to address several important questions regarding how to allocate the Potential DG Deliverability the ISO apportions to it among its jurisdictional load-serving entities, questions which the ISO believes are better left to the CPUC rather than the purview of the ISO tariff.

For example, the assignment of deliverability status to distributed generation resources under this proposal will largely follow the procurement decisions of the load-serving entities in fulfillment of state policy requirements for renewable energy and expansion of distributed generation. Because the CPUC regulates these procurement decisions, it will be the most appropriate entity to address such issues as the extent to which load-serving entities within one distribution utility's service territory, or that distribution utility itself, can procure DG resources in another distribution utility's service territory. The ISO asserts that its proposal design is reasonable because, were the ISO to try to resolve such an issue through provisions in its tariff, it would in the end only complicate the implementation of this proposal without any clear potential benefits to either the distributed generation developers or the load-serving entities to justify such efforts.

B. Issues that arose during tariff development

The ISO also received several comments to its draft tariff language implementing the proposal. For example, PG&E's comments recommended that the ISO modify proposed Section 40.4.6.3 to provide that the determination of potential distributed generation deliverability would not apply *to the portion of a distributed generation facility's output used to serve the host's on-site load*.

The ISO declined to make this change. In accordance with prevailing practices regarding treatment of distributed generation resources in the state resource adequacy program, net-energy-metered (NEM) resources are counted as reductions to the load forecast on which resource adequacy requirements are based, whereas non-NEM resources are not. The ISO believes, therefore, that only the NEM resources should be excluded from the provisions of this proposal. The proposal will therefore be applicable to all WDAT and non-NEM Rule 21 distributed generation resources.

Stakeholder BrightSource Energy commented that the ISO should include provisions in the tariff amendment for the ISO to evaluate local regulatory authority criteria for a distributed energy resource to retain the deliverability status that the resource is assigned. In this regard, BrightSource Energy commented that some level of ISO evaluation was necessary to assure that rules established by the local regulatory authorities were fair and non-discriminatory criteria for a distributed generation resource to retain the deliverability status it is assigned.

The ISO declined to adopt such a provision. The ISO acknowledges the need for transparency in this matter and has therefore included a requirement for local regulatory authorities to document their criteria for retention and their processes for revocation of deliverability status, and to provide such documentation to the ISO for posting on the ISO website. The ISO believes that it would not be appropriate to go beyond ensuring such transparency, however, because questions of retention and revocation of previously assigned deliverability status can be expected to be based on contractual provisions such as a DG developer's completion of milestones toward achieving its contracted commercial operation date. Again, given the regulatory responsibilities of the local regulatory authorities with regard to such bilateral contracts and the expected large numbers of relatively small projects that will be developed in pursuit of the state's renewable energy and distributed generation targets, the ISO believes that trying to go beyond requiring transparency in these matters would be an intrusion into the regulatory authority of the local authorities that would complicate and frustrate the implementation of this proposal.

Finally, it is important to reiterate that revocation and reassignment by the local regulatory authority of deliverability status that has been granted to a distributed generation resource will only be possible before the resource has achieved commercial operation. The ISO believes that such flexibility is reasonable as a practical necessity given the recognition that the volume of proposed new generation development far exceeds the requirements of current state policies and the present uncertainties about the ultimate geographic and technological patterns of distributed generation development. Once a given distributed generation project has achieved commercial operation, however, the ISO would treat its deliverability status as a permanent attribute of the resource, comparable to the treatment of ISO grid-connected resources.

The ISO declined to make a change requested in CPUC comments that would expand the definition of "node" in the ISO tariff, or ISO business practice manual, to provide a connection between *the distribution circuit* and the node. The ISO explained that this change is not necessary because the utility distribution companies are already aware of the connection and have all the locational and other system information they need to be able to implement this proposal. In order to submit settlement quality meter data to the ISO, they must

know the mapping of distribution circuits to nodes.

IV. EFFECTIVE DATE

The ISO requests that the Commission accept the proposed tariff amendments to become effective 61 days from the date of this filing, and no later than November 18, 2012. The ISO will begin its next generator interconnection study process in November 2012. A November 18, 2012 effective date for this tariff filing is necessary in order to allow the ISO to incorporate the proposed modifications, and any changes to its proposal that may be required by the Commission's order, into its study process without delaying the conduct of the studies

IV. EXPENSES

No expense or cost associated with this filing has been alleged or judged in any judicial proceeding to be illegal, duplicative, unnecessary, or demonstratively the product of discriminatory employment practices.

V. COMMUNICATIONS

Correspondence and other communications regarding this filing should be directed to the following individuals. The individuals identified with an asterisk are the persons designated for service pursuant to 18 C.F.R. § 203(b)(3) with respect to this proceeding.

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***** Individuals designated for service pursuant to 18 C.F.R. § 203(b)(3).

VI. SERVICE

The ISO has served copies of this transmittal letter, and all attachments, on the Public Utilities Commission of the State of California, the California Energy Commission, and all parties with Scheduling Coordinator Agreements under the ISO Tariff. In addition, the ISO has posted a copy of the filing on the ISO Website.

VII. CONTENTS OF THIS FILING

The following documents, in addition to this transmittal letter, support the instant filing:

Attachment A:	Outline of stakeholder activities
Attachment B:	Revised ISO tariff sheets – clean
Attachment C:	Revised ISO tariff sheets – blackline
Attachment D:	ISO's Draft Final Proposal, Resource Adequacy Deliverability for Distributed Generation
Attachment E	Memorandum to the ISO Board of Governors Re Decision on Resource Adequacy Deliverability for Distributed Generation

VIII. CONCLUSION

For the foregoing reasons, the ISO respectfully requests that the Commission accept the tariff revisions proposed in the instant filing, without modification, suspension or hearing, so they become effective and can be implemented 61 days after the date of this filing, and no later than November 18, 2012.

Respectfully submitted,

/s/ Baldassaro Di Capo_____

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September 18, 2012

Attachment A – Listing of Stakeholder Initiative Events

Deliverability of Distributed Generation Amendment Filing

California Independent System Operator

Fifth Replacement FERC Electric Tariff

September 18, 2012

Stakeholder Initiative Events re:

Deliverability for Distributed Generation

Date	Event
December 13, 2011	Issue Paper/Straw Proposal Posted to Website
December 19, 2011	Stakeholder Meeting (Web Conference)
January 5, 2012	Stakeholders' Written Comments Received
February 28, 2012	Revised Straw Proposal Posted to Website
March 6, 2012	Stakeholder Meeting (Web Conference)
March 13, 2012	Stakeholders' Written Comments Received
March 29, 2012	Draft Final Proposal Posted to Website
April 5, 2012	Stakeholder Meeting (Web Conference)
April 12, 2012	Stakeholders' Written Comments Received
May 16, 2012	Proposal Presented to CAISO Board of Governors for Approval
June 22, 2012	Draft Tariff Language Posted to Website
July 9, 2012	Stakeholders' Written Comments Received
July 13, 2012	Revised Draft Tariff Language Posted to Website
July 16, 2012	Stakeholder Meeting (Web Conference)

Attachment B – Clean Tariff

Deliverability of Distributed Generation Amendment Filing

California Independent System Operator

Fifth Replacement FERC Electric Tariff

September 18, 2012

Appendix A

Master Definition Supplement

*** * ***

- Distributed Generation Facility

A Generating Facility connected to the Distribution System of a Utility Distribution Company.

*** * * ***

- Potential DGD

Potential Distributed Generation Deliverability

* * * *

- Potential Distributed Generation Deliverability

The capability of the CAISO Controlled Grid, measured in MW and determined through a CAISO Deliverability Assessment, to support the interconnection with Full Capacity Deliverability Status or Partial Capacity Deliverability Status of additional Distributed Generation Facilities.

*** * * ***

CAISO Tariff Section 40

Resource Adequacy Demonstration for All SCs In The CAISO BAA

*** * * ***

[*Note: Existing Section 40.4 Tariff Section Headings are included for convenience of the reader*]

40.4.6.3 Deliverability of Distributed Generation

The CAISO will perform an annual Deliverability Assessment, as described in Section 40.4.6.3.1, to determine MW quantities of Potential DGD at specific Nodes of the CAISO Controlled Grid for Distributed Generation Facilities seeking interconnection to the Distribution System of a Utility Distribution Company under either CPUC Rule 21 or a wholesale distribution access tariff, where such interconnection and Potential DGD can be provided:

(i) without any additional Delivery Network Upgrades (although Reliability Network Upgrades, Distribution Upgrades or other mitigation may be needed);

(ii) without the need for the CAISO to conduct any further Deliverability Assessment; and

(iii) without degrading the Deliverability of Generation in Commercial Operation, proposed Generating Facilities in the CAISO Interconnection queue, or the Distributed Generation Facilities of interconnection customers under a wholesale distribution access tariff who have previously requested Full Capacity or Partial Capacity Deliverability Status.

As described in Section 40.4.6.3.2, following the CAISO's publication of the nodal Potential DGD quantities resulting from the Deliverability Assessment, the CAISO will apportion the identified Potential DGD to Local Regulatory Authorities for their assignment of Full Capacity Deliverability Status or Partial Capacity Deliverability Status to specific Distributed Generation Facilities.

This Section 40.4.6.3 is intended to supplement, and not to preclude or limit, the ability of an interconnection customer for a Distributed Generation Facility to seek and receive Full Capacity Deliverability Status or Partial Capacity Deliverability Status through a CPUC Rule 21 or wholesale distribution access tariff. Nothing in this Section 40.4.6.3 is intended to relieve the interconnection customer for a Distributed Generation Facility from the requirements to request and achieve interconnection to the Distribution System through the appropriate CPUC Rule 21 or wholesale distribution access tariff.

40.4.6.3.1 Deliverability Assessment to Determine Potential DGD

This Section describes the annual Deliverability Assessment the CAISO will perform to determine nodal MW amounts of Potential DGD to be apportioned to Local Regulatory Authorities in accordance with Section 40.4.6.3.2. The Deliverability Assessment and its results will be based on the assumption that the Distributed Generation Facilities that are eventually assigned Deliverability Status under this Section 40.4.6.3 complete all requirements for interconnection to the Distribution System under the appropriate CPUC Rule 21 or wholesale distribution access tariff and that these Distributed Generation Facilities will be supported by needed Reliability Network Upgrades, Distribution Upgrades or other mitigation that would be needed to safely and

reliably interconnect to the Distribution System and deliver Energy from the Distribution System to the appropriate CAISO Controlled Grid Node.

40.4.6.3.1.1 Developing the Assessment Model

To develop the base case model for the Potential DGD Deliverability Assessment, the CAISO will include:

(i) The most recent GIP or GIDAP Queue Cluster Phase II Interconnection Study deliverability power flow base case;

(ii) Those Generating Facilities that have obtained Deliverability using the annual full capacity deliverability option under either Section 8.2 of the GIP or Section 9.2 of the GIDAP;

(iii) Transmission additions and upgrades approved in the final comprehensive Transmission Plan for the most recent Transmission Planning Process cycle;

(iv) Any Generating Facilities in the most recent GIDAP Phase I Interconnection Study that have been determined to be deliverable in accordance with their requested Deliverability Status and were not assigned any Delivery Network Upgrade costs in the Phase I Interconnection Study;

(v) Delivery Network Upgrades that have received governmental approvals or for which Construction Activities have commenced;

(vi) The MW amounts of resources interconnected to the distribution system for distributed generation Nodes contained in the most recent Transmission Planning Process base portfolio, except that the CAISO will remove each Node (by using a zero MW value) located within electrical areas for which the most recently completed GIP or GIDAP Phase I or Phase II Interconnection Study has identified a need for a Delivery Network Upgrade or for which the most recent Phase II Interconnection Study identified and then removed a Delivery Network Upgrade to support Deliverability for MW amounts in the Interconnection queue;

(vii) Actual distributed generation development based on the MW amount of distributed generation in applicable Utility Distribution Company wholesale distribution access tariff interconnection queues and non-net-energy-metering resources in any Utility Distribution Company CPUC Rule 21 interconnection queue;

(viii) Information provided by each Local Regulatory Authority identifying existing and anticipated distributed generation procurement of Load Serving Entities within its jurisdiction; and

(ix) Other information that the CAISO, in its reasonable discretion, determines is necessary.

40.4.6.3.1.2 Performing the Potential DGD Deliverability Assessment

The CAISO will perform the Potential DGD Deliverability Assessment using the Deliverability Assessment procedures described in GIDAP Section 6.3.2 to determine the availability of transmission system capability, as reflected in the study model described above, to provide Deliverability Status for targeted amounts of additional distributed generation at given Nodes of the CAISO Controlled Grid. Except for Nodes that the CAISO removes by assigning a zero MW value pursuant to Section 40.4.6.3.1.1(vi), the targeted amounts of additional distributed generation at each Node shall be at least as large as the maximum of the corresponding nodal MW amounts determined in accordance with Sections 40.4.6.3.1.1(vi), 40.4.6.3.1.1(vii) or 40.4.6.3.1.1(viii). The CAISO may use larger targeted amounts as it deems appropriate to enhance the information provided by the Potential DGD Deliverability Assessment. The Potential DGD Deliverability Assessment will preserve modeled transmission system capability to provide requested levels of deliverability for the Generating Facilities of Interconnection Customers or the Distributed Generation Facilities of interconnection customers under a wholesale distribution access tariff who have previously requested Full Capacity or Partial Capacity Deliverability Status. Therefore, at each Node where all modeled Generating Facilities, including the distributed generation target amounts, cannot be simultaneously Dispatched to the modeled

output levels corresponding to their Full Capacity or Partial Capacity Deliverability Status without violating operating limits of the CAISO Controlled Grid, the CAISO will reduce the modeled distributed generation target amounts as needed to achieve a feasible Dispatch.

40.4.6.3.1.3 Publishing Results of the Potential DGD Deliverability Assessment

The CAISO will publish the results of the Potential DGD Deliverability Assessment by posting on the CAISO Website. The results will identify all Nodes modeled in the assessment with the corresponding nodal MW amounts of Potential DGD that (a) were studied as targeted amounts in the Potential DGD Deliverability Assessment; (b) were found to be deliverable in the Potential DGD Deliverability Assessment; and (c) are available for apportionment to Local Regulatory Authorities in accordance with Section 40.4.6.3.2. The nodal MW amounts of Potential DGD available for apportionment to Local Regulatory Authorities will not exceed the maximum of the corresponding nodal MW amounts determined in accordance with Sections 40.4.6.3.1.1(vi), 40.4.6.3.1.1(vii) or 40.4.6.3.1.1(viii), even though the amounts that were studied and found to be deliverable may be larger.

40.4.6.3.2 Apportionment of Potential DGD to LRAs

Following the annual determination of Potential DGD as described in Section 40.4.6.3.1, the CAISO will apportion the Potential DGD to LRAs for assignment of Deliverability Status to Distributed Generation Facilities. The CAISO will perform the apportionment through a three-round nomination process described in this Section. The CAISO will provide a generic timetable for the process in the Reliability Requirements BPM, and will issue a market notice each year setting out a specific schedule for this process.

40.4.6.3.2.1. Determining LRA Shares of Potential DGD

At the start of each annual cycle for apportionment of Potential DGD to LRAs, the CAISO will determine each LRA's MW share of the total system-wide Potential DGD on the CAISO Controlled Grid, which is the sum of all the nodal Potential DGD MW quantities resulting from the

Deliverability Assessment under Section 40.4.6.3.1. Each LRA's share will be based on the LRA's share of system peak load forecast attributable to those LSEs subject to that LRA's jurisdiction, using the Load Forecast for the next Resource Adequacy Compliance Year. The LRA's share determined in this manner will represent the LRA's initial eligibility to use a MW quantity of the total CAISO system-wide Potential DGD to assign Deliverability Status to specific Distributed Generation Facilities, without reference to any particular Nodes or electrical locations. Apportionment to LRAs of Potential DGD at specific Nodes will be performed through the three-stage nomination process described below.

As part of the CAISO's determination of LRA shares, the CAISO will also determine each LRA's share of nodal Potential DGD MW for Nodes at which LSEs for more than one LRA serve Load. For each such Node the CAISO will determine each affected LRA's share of the nodal Potential DGD MW determined in the assessment based on the share of the nodal Load attributable to the LSEs subject to each LRA's jurisdiction, except for Nodes where the following conditions apply:

(i) The Load under the jurisdiction of one of the affected LRAs is located entirely at that one Node, whereas the Load under the jurisdiction of the other affected LRA is located at multiple Nodes on the CAISO Controlled Grid; and

(ii) For the LRA whose Load is located entirely at the one Node, the LRA's Load ratio share of the nodal Potential DGD, as described above, is less than the LRA's share of the total system-wide Potential DGD on the CAISO Controlled Grid. This condition means that limiting the LRA's apportionment to the nodal Load ratio share described above would prevent the LRA from obtaining, at the Node where its Load is located, the full amount of system-wide Potential DGD on the CAISO Controlled Grid for which it is eligible.

For a Node where the above two conditions apply, the share of the nodal Potential DGD for the LRA whose Load is located entirely at that Node will equal the lesser of (a) the entire MW quantity of Potential DGD at that Node, or (b) the LRA's Load ratio share of the system-wide Potential DGD on the CAISO Controlled Grid as described above.

After completing the initial determination of eligibility for shares of Potential DGD as described above, the CAISO will notify the LRAs of the results.

40.4.6.3.2.2. Bilateral Transfers of Potential DGD

An LRA shall be entitled to transfer all or a portion of its MW share of Potential DGD at one or more specific Nodes to another LRA, in quantities no smaller than 1 MW. Both LRAs participating in such a transfer shall notify the CAISO of the transfer, and the CAISO will reflect the transfer in the apportionment process only after receiving notification from both LRAs. LRAs may engage in such transfers during the period from the date they received notification of their shares under Section 40.4.6.3.2.1 through the end of third round of LRA nominations.

40.4.6.3.2.3 Apportionment Through LRA Nominations

Each LRA seeking to assign Deliverability Status to specific Distributed Generation Facilities through this Section 40.4.6.3 shall submit nominations, in the form of MW quantities of Potential DGD at specific Nodes of the CAISO Controlled Grid, to the CAISO to utilize portions of its share of the total CAISO system-wide MW of Potential DGD. If an LRA does not submit such nominations, or nominates less than the MW amount for which it is eligible, the CAISO will not apportion Potential DGD beyond the amounts nominated.

There shall be three rounds of nominations. In any given round, and for all rounds cumulatively, each LRA's total nominations cannot exceed its share of the total system-wide MW quantity of Potential DGD on the CAISO Controlled Grid, and its nodal nomination at any Node where the LSEs of more than one LRA serve Load cannot exceed its share of the Potential DGD at that Node as determined under Section 40.4.6.3.2.1, except where its share at that Node has been increased as a result of bilateral transfers under Section 40.4.6.3.2.2.

<u>First Round Nominations</u>

Following the CAISO's notification of LRA shares determined under Section 40.4.6.3.2.1, each LRA shall submit its first round nominations to the CAISO by a date that will be specified in the

market notice for the current cycle of this process. In the first round, the LRA may only nominate Nodes at which LSEs under its jurisdiction serve Load. Following the submission of nominations, the CAISO will validate that all nominations comply with this limitation and the eligibility limitations stated above, will notify the submitting LRA of any invalid nominations and will allow the LRA an opportunity to adjust and resubmit its nomination. Once the CAISO has ensured that all LRA nominations are valid in accordance with this Section, the CAISO will approve all validated first round nominations.

Following the CAISO's receipt and validation of the first round nominations and in accordance with the schedule set forth in the market notice for the current cycle, the CAISO will apportion Potential DGD to LRAs in accordance with their nominations and will notify the LRAs that their first round nominations have been approved. The CAISO will then publish on the CAISO Website any MW quantities of Potential DGD at specific Nodes that were not apportioned in the first round.

Second Round Nominations

Each LRA may submit a second round nomination to the CAISO to the extent that the LRA has not yet been apportioned the full MW quantity of Potential DGD for which it is eligible under Section 40.4.6.3.2.1, as modified by any applicable bilateral transfers. In the second round, LRA nominations are not restricted only to those Nodes at which LSEs jurisdictional to the LRA serve Load. Thus an LRA could nominate Potential DGD at a Node where there is no Load at all, or at a Node where another LRA serves Load and that LRA did not nominate all the available Potential DGD at that Node in the first round. For a Node where the combined second round nominations of multiple LRAs exceed the remaining Potential DGD at the Node, the CAISO will apportion shares of the remaining Potential DGD at the Node to LRAs in proportion to their Load ratio shares of system-wide Potential DGD as determined under Section 40.4.6.3.2.1. In addition, the LRA shares of nodal Potential DGD at Nodes where the LSEs of more than one LRA serve load, as determined under Section 40.4.6.3.2.1, will still apply in the second round. Following receipt

and validation by the CAISO of second round nominations, the CAISO will apportion any available Potential DGD based on the LRA nominations.

The CAISO will notify LRAs of the outcome of the second round nominations and will publish on the CAISO Website any nodal Potential DGD amounts that were not apportioned through the second round.

Third Round Nominations

Each LRA may submit a third round nomination to the CAISO to the extent that the LRA has not yet been apportioned the full MW quantity of Potential DGD for which it is eligible under Section 40.4.6.3.2.1, as modified by any applicable bilateral transfers. In the third round, LRA nominations are not restricted only to those Nodes at which LSEs jurisdictional to the LRA serve Load, subject to the same provisions as specified above for second round nominations. Following receipt and validation by the CAISO of third round nominations, the CAISO will apportion any available Potential DGD based on the LRA nominations, and will notify LRAs of the outcome of the third round nominations.

40.4.6.3.3 Assignment of Deliverability Status to Distributed Generation Facilities

Before the start of the next CAISO cycle of the process described in this Section 40.4.6.3, and in accordance with a CAISO market notice setting out the schedule for the new cycle, each LRA should report the following information to the CAISO:

(i) Any assignment of Deliverability Status to specific Distributed Generation Facilities using Potential DGD that the LRA was apportioned in a prior annual cycle; and

(ii) Any revocations or re-assignments of Deliverability Status as a result of a failure to meet LRA-specified retention criteria on the part of a Distributed Generation Facility that was previously assigned Deliverability Status under this Section 40.4.6.3 and had not yet achieved commercial operation.

Upon receipt of this information the CAISO will validate that the LRA's assignments of Deliverability Status to specific Distributed Generation Facilities is consistent with the MW

quantities of Potential DGD at specific Nodes that were apportioned to the LRA and with the CAISO's methodology for associating the Deliverability Status of a specific generating resource type with a MW quantity of Potential DGD.

40.4.6.3.4 Associating MW of Potential DGD with Deliverability Status of a Distributed Generation Facility

As described further in the Generator Interconnection Business Practice Manual, the association of a MW quantity of Potential DGD at a specific Node with the Deliverability Status of a specific Distributed Generation Facility shall be commensurate with the MW Energy production level appropriate to the type of generating resource comprising the facility modeled in the Deliverability Assessment, the qualifying capacity determination method for that resource type, the installed capacity of the facility, and the Deliverability Status (Full Capacity or Partial Capacity) to be assigned to the facility. If the CAISO identifies an inconsistency between an LRA's use of its apportioned Potential DGD to assign Deliverability Status to a Distributed Generation Facility and the CAISO's methodology for associating MW amounts of Potential DGD with the Deliverability Status of a Distributed Generation Facility, the CAISO will notify the LRA, and the LRA in consultation with the CAISO will adjust its assignments of Deliverability Status as needed.

40.4.6.3.5 Unapportioned Potential DGD and Unassigned Deliverability Status

If an LRA does not nominate the full MW quantity of Potential DGD for which it is eligible under Section 40.4.6.3.2.1 as modified by any bilateral transfers, the CAISO will not apportion to the LRA any Potential DGD beyond the amounts the LRA nominated and will not preserve any unapportioned amount of Potential DGD beyond the current cycle of this process. If an LRA does not, by the start of the next cycle, fully utilize the MW quantity of Potential DGD it was apportioned in the previous cycle to assign Deliverability Status to specific Distributed Generation Facilities, the CAISO will preserve the apportioned but unassigned Potential DGD for that LRA through the next cycle. The CAISO will make reasonable effort in performing the process described in this Section 40.4.6.3 to enable each LRA to be apportioned its load ratio share of

total CAISO system-wide Potential DGD on a cumulative basis through successive cycles. The CAISO cannot guarantee, however, that MW quantities of Potential DGD that were available but not apportioned to an LRA in one cycle will be fully available in the next cycle, due to changing conditions on the CAISO Controlled Grid and the need for this process to be coordinated with the CAISO's Transmission Planning Process, GIP and GIDAP.

40.4.6.3.6 Deliverability Status of Distributed Generation Facilities

Subject to the requirements specified in Section 40.4.6.3.7, once an LRA has assigned Deliverability Status to a specific Distributed Generation Facility and reported such assignment to the CAISO, and the CAISO has validated and accepted the reported information as specified under Section 40.4.6.3.3, the Deliverability Status becomes an attribute of the Distributed Generation Facility to which it was assigned. Once that Distributed Generation Facility has achieved Commercial Operation, it will retain that Deliverability Status for as long it remains in Commercial Operation. Prior to the facility achieving Commercial Operation, however, the LRA may revoke the assignment of Deliverability Status if the facility fails to meet LRA-specified criteria for retaining such assignment, and may re-assign the Deliverability Status to another Distributed Generation Facility, provided that the new Distributed Generation Facility is connected to the Distribution System below the same Node on the CAISO Controlled Grid and utilizes no more MW of Potential DGD than the original Distributed Generation Facility. Each LRA that utilizes the provisions of this Section 40.4.6.3 shall provide to the CAISO a description of its retention criteria and its process for revoking an assignment of Deliverability Status from a facility that it determines has failed to meet such criteria. The CAISO will post these descriptions on its web site in conjunction with other documentation regarding the implementation of this Section 40.4.6.3. The LRA must report any such revocations and reassignments to the CAISO, as provided in Section 40.4.6.3.3, and must identify for each such revocation the specific criteria on which the revocation was based.

40.4.6.3.7 Additional Requirements

Assignment of Deliverability Status to any Distributed Generation Facility under this Section 40.4.6.3 is expressly conditioned upon the Distributed Generation Facility's interconnection customer submitting the appropriate interconnection request under the applicable CPUC Rule 21 or wholesale distribution access tariff, completion of such process and achieving Commercial Operation, and completion of all required Reliability Network Upgrades, Distribution Upgrades, or other mitigation that would be needed to safely and reliably interconnect to the Distribution System and deliver Energy from the Distribution System to the appropriate CAISO Controlled Grid Node. In addition, the amount of Resource Adequacy Capacity the Distributed Generation Facility may provide in any given Resource Adequacy Compliance Year is subject to annual Net Qualifying Capacity determination, as specified in Section 40.4.6.1.

Attachment C – Marked Tariff

Deliverability of Distributed Generation Amendment Filing

California Independent System Operator

Fifth Replacement FERC Electric Tariff

September 18, 2012

Appendix A

Master Definition Supplement

*** * ***

- Distributed Generation Facility

A Generating Facility connected to the Distribution System of a Utility Distribution Company.

*** * * ***

- Potential DGD

Potential Distributed Generation Deliverability

* * * *

- Potential Distributed Generation Deliverability

The capability of the CAISO Controlled Grid, measured in MW and determined through a CAISO Deliverability Assessment, to support the interconnection with Full Capacity Deliverability Status or Partial Capacity Deliverability Status of additional Distributed Generation Facilities.

*** * * ***

CAISO Tariff Section 40

Resource Adequacy Demonstration for All SCs In The CAISO BAA

*** * * ***

[*Note: Existing Section 40.4 Tariff Section Headings are included for convenience of the reader*]

40.4.6.3 Deliverability of Distributed Generation

The CAISO will perform an annual Deliverability Assessment, as described in Section 40.4.6.3.1, to determine MW quantities of Potential DGD at specific Nodes of the CAISO Controlled Grid for Distributed Generation Facilities seeking interconnection to the Distribution System of a Utility Distribution Company under either CPUC Rule 21 or a wholesale distribution access tariff, where such interconnection and Potential DGD can be provided:

(i) without any additional Delivery Network Upgrades (although Reliability Network Upgrades, Distribution Upgrades or other mitigation may be needed);

(ii) without the need for the CAISO to conduct any further Deliverability Assessment; and

(iii) without degrading the Deliverability of Generation in Commercial Operation, proposed Generating Facilities in the CAISO Interconnection queue, or the Distributed Generation Facilities of interconnection customers under a wholesale distribution access tariff who have previously requested Full Capacity or Partial Capacity Deliverability Status.

As described in Section 40.4.6.3.2, following the CAISO's publication of the nodal Potential DGD quantities resulting from the Deliverability Assessment, the CAISO will apportion the identified Potential DGD to Local Regulatory Authorities for their assignment of Full Capacity Deliverability Status or Partial Capacity Deliverability Status to specific Distributed Generation Facilities.

This Section 40.4.6.3 is intended to supplement, and not to preclude or limit, the ability of an interconnection customer for a Distributed Generation Facility to seek and receive Full Capacity Deliverability Status or Partial Capacity Deliverability Status through a CPUC Rule 21 or wholesale distribution access tariff. Nothing in this Section 40.4.6.3 is intended to relieve the interconnection customer for a Distributed Generation Facility from the requirements to request and achieve interconnection to the Distribution System through the appropriate CPUC Rule 21 or wholesale distribution access tariff.

40.4.6.3.1 Deliverability Assessment to Determine Potential DGD

This Section describes the annual Deliverability Assessment the CAISO will perform to determine nodal MW amounts of Potential DGD to be apportioned to Local Regulatory Authorities in accordance with Section 40.4.6.3.2. The Deliverability Assessment and its results will be based on the assumption that the Distributed Generation Facilities that are eventually assigned Deliverability Status under this Section 40.4.6.3 complete all requirements for interconnection to the Distribution System under the appropriate CPUC Rule 21 or wholesale distribution access tariff and that these Distributed Generation Facilities will be supported by needed Reliability Network Upgrades, Distribution Upgrades or other mitigation that would be needed to safely and

reliably interconnect to the Distribution System and deliver Energy from the Distribution System to the appropriate CAISO Controlled Grid Node.

40.4.6.3.1.1 Developing the Assessment Model

To develop the base case model for the Potential DGD Deliverability Assessment, the CAISO will include:

(i) The most recent GIP or GIDAP Queue Cluster Phase II Interconnection Study deliverability power flow base case;

(ii) Those Generating Facilities that have obtained Deliverability using the annual full capacity deliverability option under either Section 8.2 of the GIP or Section 9.2 of the GIDAP;

(iii) Transmission additions and upgrades approved in the final comprehensive Transmission Plan for the most recent Transmission Planning Process cycle;

(iv) Any Generating Facilities in the most recent GIDAP Phase I Interconnection Study that have been determined to be deliverable in accordance with their requested Deliverability Status and were not assigned any Delivery Network Upgrade costs in the Phase I Interconnection Study;

(v) Delivery Network Upgrades that have received governmental approvals or for which Construction Activities have commenced;

(vi) The MW amounts of resources interconnected to the distribution system for distributed generation Nodes contained in the most recent Transmission Planning Process base portfolio, except that the CAISO will remove each Node (by using a zero MW value) located within electrical areas for which the most recently completed GIP or GIDAP Phase I or Phase II Interconnection Study has identified a need for a Delivery Network Upgrade or for which the most recent Phase II Interconnection Study identified and then removed a Delivery Network Upgrade to support Deliverability for MW amounts in the Interconnection queue;

(vii) Actual distributed generation development based on the MW amount of distributed generation in applicable Utility Distribution Company wholesale distribution access tariff interconnection queues and non-net-energy-metering resources in any Utility Distribution Company CPUC Rule 21 interconnection queue;

(viii) Information provided by each Local Regulatory Authority identifying existing and anticipated distributed generation procurement of Load Serving Entities within its jurisdiction; and

(ix) Other information that the CAISO, in its reasonable discretion, determines is necessary.

40.4.6.3.1.2 Performing the Potential DGD Deliverability Assessment

The CAISO will perform the Potential DGD Deliverability Assessment using the Deliverability Assessment procedures described in GIDAP Section 6.3.2 to determine the availability of transmission system capability, as reflected in the study model described above, to provide Deliverability Status for targeted amounts of additional distributed generation at given Nodes of the CAISO Controlled Grid. Except for Nodes that the CAISO removes by assigning a zero MW value pursuant to Section 40.4.6.3.1.1(vi), the targeted amounts of additional distributed generation at each Node shall be at least as large as the maximum of the corresponding nodal MW amounts determined in accordance with Sections 40.4.6.3.1.1(vi), 40.4.6.3.1.1(vii) or 40.4.6.3.1.1(viii). The CAISO may use larger targeted amounts as it deems appropriate to enhance the information provided by the Potential DGD Deliverability Assessment. The Potential DGD Deliverability Assessment will preserve modeled transmission system capability to provide requested levels of deliverability for the Generating Facilities of Interconnection Customers or the Distributed Generation Facilities of interconnection customers under a wholesale distribution access tariff who have previously requested Full Capacity or Partial Capacity Deliverability Status. Therefore, at each Node where all modeled Generating Facilities, including the distributed generation target amounts, cannot be simultaneously Dispatched to the modeled

output levels corresponding to their Full Capacity or Partial Capacity Deliverability Status without violating operating limits of the CAISO Controlled Grid, the CAISO will reduce the modeled distributed generation target amounts as needed to achieve a feasible Dispatch.

40.4.6.3.1.3 Publishing Results of the Potential DGD Deliverability Assessment

The CAISO will publish the results of the Potential DGD Deliverability Assessment by posting on the CAISO Website. The results will identify all Nodes modeled in the assessment with the corresponding nodal MW amounts of Potential DGD that (a) were studied as targeted amounts in the Potential DGD Deliverability Assessment; (b) were found to be deliverable in the Potential DGD Deliverability Assessment; and (c) are available for apportionment to Local Regulatory Authorities in accordance with Section 40.4.6.3.2. The nodal MW amounts of Potential DGD available for apportionment to Local Regulatory Authorities will not exceed the maximum of the corresponding nodal MW amounts determined in accordance with Sections 40.4.6.3.1.1(vi), 40.4.6.3.1.1(vii) or 40.4.6.3.1.1(viii), even though the amounts that were studied and found to be deliverable may be larger.

40.4.6.3.2 Apportionment of Potential DGD to LRAs

Following the annual determination of Potential DGD as described in Section 40.4.6.3.1, the CAISO will apportion the Potential DGD to LRAs for assignment of Deliverability Status to Distributed Generation Facilities. The CAISO will perform the apportionment through a three-round nomination process described in this Section. The CAISO will provide a generic timetable for the process in the Reliability Requirements BPM, and will issue a market notice each year setting out a specific schedule for this process.

40.4.6.3.2.1. Determining LRA Shares of Potential DGD

At the start of each annual cycle for apportionment of Potential DGD to LRAs, the CAISO will determine each LRA's MW share of the total system-wide Potential DGD on the CAISO Controlled Grid, which is the sum of all the nodal Potential DGD MW quantities resulting from the

Deliverability Assessment under Section 40.4.6.3.1. Each LRA's share will be based on the LRA's share of system peak load forecast attributable to those LSEs subject to that LRA's jurisdiction, using the Load Forecast for the next Resource Adequacy Compliance Year. The LRA's share determined in this manner will represent the LRA's initial eligibility to use a MW quantity of the total CAISO system-wide Potential DGD to assign Deliverability Status to specific Distributed Generation Facilities, without reference to any particular Nodes or electrical locations. Apportionment to LRAs of Potential DGD at specific Nodes will be performed through the three-stage nomination process described below.

As part of the CAISO's determination of LRA shares, the CAISO will also determine each LRA's share of nodal Potential DGD MW for Nodes at which LSEs for more than one LRA serve Load. For each such Node the CAISO will determine each affected LRA's share of the nodal Potential DGD MW determined in the assessment based on the share of the nodal Load attributable to the LSEs subject to each LRA's jurisdiction, except for Nodes where the following conditions apply:

(i) The Load under the jurisdiction of one of the affected LRAs is located entirely at that one Node, whereas the Load under the jurisdiction of the other affected LRA is located at multiple Nodes on the CAISO Controlled Grid; and

(ii) For the LRA whose Load is located entirely at the one Node, the LRA's Load ratio share of the nodal Potential DGD, as described above, is less than the LRA's share of the total system-wide Potential DGD on the CAISO Controlled Grid. This condition means that limiting the LRA's apportionment to the nodal Load ratio share described above would prevent the LRA from obtaining, at the Node where its Load is located, the full amount of system-wide Potential DGD on the CAISO Controlled Grid for which it is eligible.

For a Node where the above two conditions apply, the share of the nodal Potential DGD for the LRA whose Load is located entirely at that Node will equal the lesser of (a) the entire MW quantity of Potential DGD at that Node, or (b) the LRA's Load ratio share of the system-wide Potential DGD on the CAISO Controlled Grid as described above.

After completing the initial determination of eligibility for shares of Potential DGD as described above, the CAISO will notify the LRAs of the results.

40.4.6.3.2.2. Bilateral Transfers of Potential DGD

An LRA shall be entitled to transfer all or a portion of its MW share of Potential DGD at one or more specific Nodes to another LRA, in quantities no smaller than 1 MW. Both LRAs participating in such a transfer shall notify the CAISO of the transfer, and the CAISO will reflect the transfer in the apportionment process only after receiving notification from both LRAs. LRAs may engage in such transfers during the period from the date they received notification of their shares under Section 40.4.6.3.2.1 through the end of third round of LRA nominations.

40.4.6.3.2.3 Apportionment Through LRA Nominations

Each LRA seeking to assign Deliverability Status to specific Distributed Generation Facilities through this Section 40.4.6.3 shall submit nominations, in the form of MW quantities of Potential DGD at specific Nodes of the CAISO Controlled Grid, to the CAISO to utilize portions of its share of the total CAISO system-wide MW of Potential DGD. If an LRA does not submit such nominations, or nominates less than the MW amount for which it is eligible, the CAISO will not apportion Potential DGD beyond the amounts nominated.

There shall be three rounds of nominations. In any given round, and for all rounds cumulatively, each LRA's total nominations cannot exceed its share of the total system-wide MW quantity of Potential DGD on the CAISO Controlled Grid, and its nodal nomination at any Node where the LSEs of more than one LRA serve Load cannot exceed its share of the Potential DGD at that Node as determined under Section 40.4.6.3.2.1, except where its share at that Node has been increased as a result of bilateral transfers under Section 40.4.6.3.2.2.

First Round Nominations

Following the CAISO's notification of LRA shares determined under Section 40.4.6.3.2.1, each LRA shall submit its first round nominations to the CAISO by a date that will be specified in the

market notice for the current cycle of this process. In the first round, the LRA may only nominate Nodes at which LSEs under its jurisdiction serve Load. Following the submission of nominations, the CAISO will validate that all nominations comply with this limitation and the eligibility limitations stated above, will notify the submitting LRA of any invalid nominations and will allow the LRA an opportunity to adjust and resubmit its nomination. Once the CAISO has ensured that all LRA nominations are valid in accordance with this Section, the CAISO will approve all validated first round nominations.

Following the CAISO's receipt and validation of the first round nominations and in accordance with the schedule set forth in the market notice for the current cycle, the CAISO will apportion Potential DGD to LRAs in accordance with their nominations and will notify the LRAs that their first round nominations have been approved. The CAISO will then publish on the CAISO Website any MW quantities of Potential DGD at specific Nodes that were not apportioned in the first round.

Second Round Nominations

Each LRA may submit a second round nomination to the CAISO to the extent that the LRA has not yet been apportioned the full MW quantity of Potential DGD for which it is eligible under Section 40.4.6.3.2.1, as modified by any applicable bilateral transfers. In the second round, LRA nominations are not restricted only to those Nodes at which LSEs jurisdictional to the LRA serve Load. Thus an LRA could nominate Potential DGD at a Node where there is no Load at all, or at a Node where another LRA serves Load and that LRA did not nominate all the available Potential DGD at that Node in the first round. For a Node where the combined second round nominations of multiple LRAs exceed the remaining Potential DGD at the Node, the CAISO will apportion shares of the remaining Potential DGD at the Node to LRAs in proportion to their Load ratio shares of system-wide Potential DGD as determined under Section 40.4.6.3.2.1. In addition, the LRA shares of nodal Potential DGD at Nodes where the LSEs of more than one LRA serve load, as determined under Section 40.4.6.3.2.1, will still apply in the second round. Following receipt

and validation by the CAISO of second round nominations, the CAISO will apportion any available Potential DGD based on the LRA nominations.

The CAISO will notify LRAs of the outcome of the second round nominations and will publish on the CAISO Website any nodal Potential DGD amounts that were not apportioned through the second round.

Third Round Nominations

Each LRA may submit a third round nomination to the CAISO to the extent that the LRA has not yet been apportioned the full MW quantity of Potential DGD for which it is eligible under Section 40.4.6.3.2.1, as modified by any applicable bilateral transfers. In the third round, LRA nominations are not restricted only to those Nodes at which LSEs jurisdictional to the LRA serve Load, subject to the same provisions as specified above for second round nominations.

Following receipt and validation by the CAISO of third round nominations, the CAISO will apportion any available Potential DGD based on the LRA nominations, and will notify LRAs of the outcome of the third round nominations.

40.4.6.3.3 Assignment of Deliverability Status to Distributed Generation Facilities

Before the start of the next CAISO cycle of the process described in this Section 40.4.6.3, and in accordance with a CAISO market notice setting out the schedule for the new cycle, each LRA should report the following information to the CAISO:

(i) Any assignment of Deliverability Status to specific Distributed Generation Facilities using Potential DGD that the LRA was apportioned in a prior annual cycle; and

(ii) Any revocations or re-assignments of Deliverability Status as a result of a failure to meet LRA-specified retention criteria on the part of a Distributed Generation Facility that was previously assigned Deliverability Status under this Section 40.4.6.3 and had not yet achieved commercial operation.

Upon receipt of this information the CAISO will validate that the LRA's assignments of Deliverability Status to specific Distributed Generation Facilities is consistent with the MW

quantities of Potential DGD at specific Nodes that were apportioned to the LRA and with the CAISO's methodology for associating the Deliverability Status of a specific generating resource type with a MW quantity of Potential DGD.

40.4.6.3.4 Associating MW of Potential DGD with Deliverability Status of a Distributed Generation Facility

As described further in the Generator Interconnection Business Practice Manual, the association of a MW quantity of Potential DGD at a specific Node with the Deliverability Status of a specific Distributed Generation Facility shall be commensurate with the MW Energy production level appropriate to the type of generating resource comprising the facility modeled in the Deliverability Assessment, the qualifying capacity determination method for that resource type, the installed capacity of the facility, and the Deliverability Status (Full Capacity or Partial Capacity) to be assigned to the facility. If the CAISO identifies an inconsistency between an LRA's use of its apportioned Potential DGD to assign Deliverability Status to a Distributed Generation Facility and the CAISO's methodology for associating MW amounts of Potential DGD with the Deliverability Status of a Distributed Generation Facility, the CAISO will notify the LRA, and the LRA in consultation with the CAISO will adjust its assignments of Deliverability Status as needed.

40.4.6.3.5 Unapportioned Potential DGD and Unassigned Deliverability Status

If an LRA does not nominate the full MW quantity of Potential DGD for which it is eligible under Section 40.4.6.3.2.1 as modified by any bilateral transfers, the CAISO will not apportion to the LRA any Potential DGD beyond the amounts the LRA nominated and will not preserve any unapportioned amount of Potential DGD beyond the current cycle of this process. If an LRA does not, by the start of the next cycle, fully utilize the MW quantity of Potential DGD it was apportioned in the previous cycle to assign Deliverability Status to specific Distributed Generation Facilities, the CAISO will preserve the apportioned but unassigned Potential DGD for that LRA through the next cycle. The CAISO will make reasonable effort in performing the process described in this Section 40.4.6.3 to enable each LRA to be apportioned its load ratio share of

total CAISO system-wide Potential DGD on a cumulative basis through successive cycles. The CAISO cannot guarantee, however, that MW quantities of Potential DGD that were available but not apportioned to an LRA in one cycle will be fully available in the next cycle, due to changing conditions on the CAISO Controlled Grid and the need for this process to be coordinated with the CAISO's Transmission Planning Process, GIP and GIDAP.

40.4.6.3.6 Deliverability Status of Distributed Generation Facilities

Subject to the requirements specified in Section 40.4.6.3.7, once an LRA has assigned Deliverability Status to a specific Distributed Generation Facility and reported such assignment to the CAISO, and the CAISO has validated and accepted the reported information as specified under Section 40.4.6.3.3, the Deliverability Status becomes an attribute of the Distributed Generation Facility to which it was assigned. Once that Distributed Generation Facility has achieved Commercial Operation, it will retain that Deliverability Status for as long it remains in Commercial Operation. Prior to the facility achieving Commercial Operation, however, the LRA may revoke the assignment of Deliverability Status if the facility fails to meet LRA-specified criteria for retaining such assignment, and may re-assign the Deliverability Status to another Distributed Generation Facility, provided that the new Distributed Generation Facility is connected to the Distribution System below the same Node on the CAISO Controlled Grid and utilizes no more MW of Potential DGD than the original Distributed Generation Facility. Each LRA that utilizes the provisions of this Section 40.4.6.3 shall provide to the CAISO a description of its retention criteria and its process for revoking an assignment of Deliverability Status from a facility that it determines has failed to meet such criteria. The CAISO will post these descriptions on its web site in conjunction with other documentation regarding the implementation of this Section 40.4.6.3. The LRA must report any such revocations and reassignments to the CAISO, as provided in Section 40.4.6.3.3, and must identify for each such revocation the specific criteria on which the revocation was based.

40.4.6.3.7 Additional Requirements

Assignment of Deliverability Status to any Distributed Generation Facility under this Section 40.4.6.3 is expressly conditioned upon the Distributed Generation Facility's interconnection customer submitting the appropriate interconnection request under the applicable CPUC Rule 21 or wholesale distribution access tariff, completion of such process and achieving Commercial Operation, and completion of all required Reliability Network Upgrades, Distribution Upgrades, or other mitigation that would be needed to safely and reliably interconnect to the Distribution System and deliver Energy from the Distribution System to the appropriate CAISO Controlled Grid Node. In addition, the amount of Resource Adequacy Capacity the Distributed Generation Facility may provide in any given Resource Adequacy Compliance Year is subject to annual Net Qualifying Capacity determination, as specified in Section 40.4.6.1.

Attachment D – ISO's Draft Final Proposal

Deliverability of Distributed Generation Amendment Filing

California Independent System Operator

Fifth Replacement FERC Electric Tariff

September 18, 2012

Resource Adequacy Deliverability For Distributed Generation

Draft Final Proposal

Market and Infrastructure Policy

March 29, 2012

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Resource Adequacy Deliverability For Distributed Generation

Draft Final Proposal

1. Executive Summary

The draft final proposal described in this document is the work product of a stakeholder process launched in December 2011 that has included several rounds of proposals, stakeholder conference calls, and extensive and constructive written stakeholder comments. At this point the ISO expects that the proposal it will present to the ISO Board of Governors at the May 16-17, 2012 meeting will be essentially the same as the proposal described here, with the possible exception of design details that may be refined between now and the Board meeting in response to discussions during the upcoming April 5 stakeholder conference call and the written stakeholder comments due on April 12.

The purpose of this initiative and this draft final proposal is to develop a process for providing Resource Adequacy (RA) deliverability status to distributed generation (DG) resources[1] without any additional delivery network upgrades[2].

The development of substantial amounts of DG resources – relatively small-scale resources connected to utility distribution systems and located close to load – is a key element of California's strategy for increasing the share of renewable resource production in the state's annual consumption of electricity[3]. Because load-serving entities (LSEs) in the coming years will

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[1] For purposes of this initiative, the term "distributed generation" will refer to generating facilities connected to the distribution system of a utility distribution company, irrespective of the size of the facility or the resource type. The ISO recognizes that the term is used slightly differently in other contexts, however, and therefore provides clarification in this proposal where needed to reconcile different usages.

[2] Despite this, it is possible that some reliability network upgrades, distribution upgrades or other mitigation may be required in conjunction with the deliverable DG resources. See footnote 14.

[3] It is not the ISO's intent to exclude non-renewable DG resources from this proposal. The ISO assumes that the decision whether to allocate DG deliverability to non-renewable DG resources is a decision more appropriately left to the local regulatory authorities (LRAs) that oversee procurement

be procuring significant amounts of their energy needs from DG resources, they will likely want to count the capacity of these resources towards their annual RA requirements. The ability of a specific resource to count towards RA requirements depends on, among other things, a demonstration that the energy from the resource is "deliverable" to load within the ISO area. Deliverability means that the energy from the resource can be dispatched, simultaneously with all other deliverable capacity within an electrically-connected study area of the ISO network, to meet peak load conditions without overloading any transmission facilities or causing other reliability problems.[4]

Generally, individual resources receive their deliverability status by either (a) participating in the ISO's generation interconnection procedures (GIP), or (b) if the resource intends to connect to a utility distribution system and is not "behind the [end-use customer] meter," by participating in the distribution company's wholesale distribution access tariff (WDAT) process and being studied in the GIP. For purposes of achieving the state's goals for expansion of DG resources, however, the GIP and WDAT processes may be both too lengthy and too cumbersome for the sheer number of small-scale projects that will need to be connected to meet the goals. In addition, LSEs are expected to meet some portion of their DG goals from behind-the-meter resources that interconnect under the California Public Utilities Commission's (CPUC) Rule 21. There is a need therefore to develop a more streamlined approach for providing deliverability status to DG resources interconnecting under these three processes.[5] The proposed approach should apply to both Rule 21[6] and WDAT interconnections, and should not impose any adverse

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by LSEs within the ISO. Moreover, for the purposes of this proposal, the ISO is not placing a size limit on DG resources, but instead is defining it as any generation connected at the distribution level.

[4] Several stakeholders make the argument that DG resources should be considered deliverable as long as the total DG production below (or downstream from) any given ISO network node does not exceed the amount of load at that node, i.e., there is no "backflow" of energy from the distribution system onto the ISO grid. As explained and illustrated by examples later in this document, the intuitively-appealing backflow criterion is not sufficient – in fact it is not even relevant – for establishing the deliverability of DG resources. What matters in testing deliverability is the assumed amount and pattern of load for which the deliverable resources are being dispatched. Because the operation of DG resources will affect this pattern, their production will affect the deliverability assessment.

[5] The process described in the revised straw proposal is not an interconnection process and, thus, is not intended to substitute for either the GIP, Rule 21, or WDAT interconnection processes. Rather, the proposed process is a means of determining available deliverability for DG resources pursuing distribution-level interconnection at specific nodes on the ISO grid, either under Rule 21 or WDAT, without requiring additional network upgrades. The proposed process may therefore provide an earlier determination of deliverability for such resources, but would not supersede any other requirements of the Rule 21 or WDAT processes.

[6] The ISO understands that Rule 21 applies to both "net energy metering" ("NEM") resources, which do not count toward RA requirements but instead are taken into account as reductions to each LSE's load forecast, as well as resources that plan to export power to the distribution system and are able to

impacts on resources going through the normal GIP, in terms of either cost or time to complete needed network upgrades.

The present paper describes the ISO's draft final proposal for a streamlined[7] approach for providing RA deliverability status to DG resources, subject to the capability of the ISO grid to support such deliverability without additional delivery network upgrades.

The ISO proposes to conduct an annual process consisting of two parts to provide RA deliverability status to DG resources. In the first part of the process, the ISO will determine MW amounts of deliverability available for DG resources at specific network nodes on the ISO grid without requiring additional network upgrades. In the second part of the process, the ISO will allocate the use of such deliverability to LRAs that oversee procurement by their regulated LSEs. The intent of this streamlined process is to enable LSEs to procure deliverable DG resources up to these MW amounts without requiring further assessment to establish deliverability in the interconnection processes (DG resources are still required to apply to and complete the appropriate Rule 21 or WDAT interconnection process, however). The timeline for this annual process would run from the fourth quarter of one year to mid-summer of the following year.

The remainder of this paper is organized as follows. Section 2 lays out a timetable for the rest of this initiative, with dates for key stakeholder activities leading up to presentation of the final proposal to the ISO Board of Governors at the May 2012 meeting. Section 3 defines the scope of the initiative including the initiative's objectives. Section 4 illustrates the proposed timeline for the determination and allocation of DG deliverability. Section 5 provides background on the ISO's deliverability assessment methodology. Section 6 is the heart of the proposal and describes the two main elements of the proposed process: (1) the study methodology the ISO intends to use in determining the MW amounts of deliverability available for DG resources at specific network nodes on the ISO grid without requiring additional network upgrades; and, (2) the process for allocating DG deliverability determined by the studies to load serving entities ("LSEs") through their local regulatory authorities ("LRAs"). Section 7 provides background information comparing the process steps in the allocation of RA import capacity to that in the allocation of DG deliverability. Lastly, Section 8 provides a detailed example illustrating that deliverability of a DG resource is not determined by the flow direction at the transmission-distribution interface.

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count towards RA requirements. This proposal is intended to apply only to the second category of Rule 21 resources.

[7] The process is streamlined in the sense that it may provide RA deliverability status to DG resources sooner than they would otherwise receive through the WDAT interconnection process. The ISO understands that Rule 21 may not offer a means for determining deliverability and may instead rely on the process being proposed here.

2. Stakeholder process and schedule

ISO management intends to take this initiative to its Board of Governors for approval at their May 2012 meeting. Accordingly, the ISO proposes the following dates for the remaining steps of the stakeholder process.

February 28	ISO posts revised straw proposal
March 6	Stakeholder conference call to discuss revised straw proposal
March 13	Stakeholder written comments due
March 29	ISO posts draft final proposal
April 5	Stakeholder conference call to discuss draft final proposal
April 12	Stakeholder written comments due
May 16-17	ISO Board of Governors meeting

Stakeholders should submit their written comments to DeliverDG@caiso.com.

Additional information in this initiative can be found at: http://www.caiso.com/informed/Pages/StakeholderProcesses/DeliverabilityforDistributedGeneration.aspx .

3. Scope of this initiative

3.1.1. Objectives of this initiative

This initiative is intended to develop an approach to successfully achieve the following objectives:

1. Support California's strategy for increasing the share of renewable resource production in the state's annual consumption of electricity;
2. Support the increasing role of distributed generation, as an element of that strategy[8], by providing a means for LSEs to count capacity of DG resources towards their annual RA requirements without requiring the completion of each resource's WDAT study process;

[8] For example, to support the state's RPS targets, California Governor Jerry Brown's Clean Energy Jobs Plan called for adding target amounts of localized renewable generation (i.e., DG) close to consumer loads and transmission and distribution lines.

3. Determine the amount of DG that will be fully deliverable without any additional delivery network upgrades, without needing any further deliverability assessment, and without degrading the deliverability of existing resources or generation projects in the ISO's interconnection queue;
4. Enable both WDAT and non-NEM Rule 21 interconnecting resources to utilize the deliverability made available through the new approach;
5. Ensure consistency of the new approach with the outcome of the ISO's TPP-GIP Integration initiative; and,
6. Inform DG developers, LRA/LSE resource planning and procurement processes, and other interested stakeholders, in a timely manner of locations where sufficient deliverability capacity exists to accommodate additional DG resources.

3.1.2. Definition of DG resources as used in this proposal

For purposes of this initiative, the terms "distributed generation" and "DG" will refer to generating facilities connected to the distribution system of a utility distribution company, irrespective of the size of the facility or the resource type. The ISO recognizes that the term is used slightly differently in other contexts, however, and therefore provides clarification in this proposal where needed to reconcile different usages.

It is not the ISO's intent to exclude non-renewable DG resources from this proposal. The ISO assumes that the decision whether to allocate DG deliverability to non-renewable DG resources is a decision more appropriately left to the LRAs that oversee procurement by LSEs iwthin the ISO. Moreover, for purposes of this proposal, the ISO is not placing a size limit on DG resources, but instead is defining it as any generation connected at the distribution level.

3.1.3. Proposal does not substitute for interconnection processes

The process described in this proposal is not an interconnection process and, thus, is not intended to substitute for the GIP, WDAT or Rule 21 interconnection processes. Rather, the proposed process is a means of determining available deliverability for DG resources pursuing distribution-level interconnection at specific nodes below the ISO grid, either under Rule 21 or WDAT, without requiring additional network upgrades. The proposed process may therefore provide an earlier determination of deliverability for such resources, but would not supersede any other requirements of the Rule 21 or WDAT processes. DG projects awarded deliverability through the process outlined in this proposal may still be responsible for reliability network upgrades or distribution system upgrades. Lastly, this streamlined process is not applicable to projects requesting interconnection through the ISO's GIP.

This proposal is not intended to provide deliverability status to those projects seeking interconnection through the ISO's generation interconnection procedures (GIP). However, as mentioned above, it is intended to apply to projects seeking interconnection through either Rule

21[9] or WDAT. For such projects, this proposal is intended to provide an earlier determination of deliverability than would otherwise occur through the interconnection process. The generation projects awarded or assigned deliverability as a result of this process will be treated as already deliverable for the amount of deliverability determined and awarded in the subsequent deliverability assessment performed as part of the ISO GIP cluster studies.

It is important to emphasize that the process proposed here is solely a means of providing an earlier determination of deliverability status to DG resources and is not a substitute for the interconnection process (either Rule 21 or WDAT). That is, each resource considered eligible for the deliverability allocation proposed here must still apply to and complete its interconnection process under Rule 21 or the WDAT.

4. Proposed timeline for determination and allocation of DG deliverability

The diagram on the following page provides for illustration purposes the proposed timeline of the process for providing RA deliverability status to DG resources. As examples, the timeline depicts what the ISO expects would be the first (2013-14) and second (2014-15) cycles of the proposed process. The process whereby LRAs assign or award[10] DG deliverability to specific projects is external to the ISO process and is not shown. However, it is critical for the ISO to have accurate and timely information on the resulting awards to specific DG projects, and it is expected that such information will be provided to the ISO before the start of a subsequent DG deliverability study cycle (i.e., prior to November). For comparison purposes, the diagram also includes the major GIP milestones that interact with the DG deliverability process in terms of modeling assumptions.

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[9] Non-NEM resources in the Rule 21 queue.

[10] The terms “assign” and “award” are used interchangeably throughout this proposal.

Timeline for determination and allocation of DG deliverability

	2012-Q1	2012-Q2	2012-Q3	2012-Q4	2013-Q1	2013-Q2	2013-Q3	2013-Q4	2014-Q1	2014-Q2	2014-Q3	2014-Q4	2015-Q1
TPP	2012/13 TPP – plans transmission to support deliverability for generation portfolios identified during 2012-Q1				2013/14 TPP – plans transmission to support deliverability for generation portfolios identified during 2013-Q1				2014/15 TPP – plans transmission to support deliverability for generation portfolios identified during 2014-Q1				
	Mar 2012 2011/12 Final Plan				Mar 2013 2012/13 Final Plan				Mar 2014 2013/14 Final Plan				
C3/4	Enter GIP Phase 2	April-November GIP Phase 2 study		GIA negotiation									
C5	March - Open window	April-December GIP Phase 1 study			Option (A) or (B) chosen	April-November GIP Phase 2 study			TPD allocation & GIA negotiation				
DGD1				November – February DG deliverability study		Allocation of DG deliverability							
C6					April - Open window	May-December GIP Phase 1 study			Option (A) or (B) chosen	April-November GIP Phase 2 study			TPD allocation & GIA negotiation
DGD2								November – February DG deliverability study		Allocation of DG deliverability			
C7									April – Open window	May-December GIP Phase 1 study			Option (A) or (B) chosen

Notes/explanations:

"DGD1" represents the first anticipated cycle (2012-13) of the ISO's proposed process for providing RA deliverability status to DG resources without any additional delivery network upgrades.

"DGD2" represents the second anticipated cycle (2013-14) of the ISO's proposed process for providing RA deliverability status to DG resources without any additional delivery network upgrades.

"TPD" is a shorthand reference to "TP deliverability" which is intended to reflect the MW amount of deliverability for new generation projects in the ISO interconnection queue that is provided by the existing transmission system, as expanded by approved projects up to and including the latest approved comprehensive transmission plan.

5. Background on ISO's deliverability assessment methodology

The ISO's deliverability assessment methodology is part of the GIP study process.[11] The GIP study process consists of a reliability assessment and a deliverability assessment. The reliability assessment, among other things, consists of a short circuit analysis, a stability analysis to the extent the ISO and applicable Participating Transmission Owners (PTO) reasonably expect transient or voltage stability concerns, and a power flow analysis, including off-peak analysis. The purpose of the reliability assessment is to identify reliability network upgrades necessary to reliably interconnect the generation to the grid. The reliability assessment for distribution connected generation is performed by the distribution company according to their procedures.

The deliverability assessment consists of an on-peak deliverability assessment, as applicable, in accordance with ISO tariff section 6.5.2 in Appendix Y or GIP Business Practice Manual (BPM) section 6.1.4.3.[12] The purpose of the deliverability assessment is to identify delivery network upgrades required to provide the requesting generation project with full or partial[13] capacity deliverability status for purposes of providing RA capacity to an LSE. A fundamental objective of the RA program is that energy produced by the generation facility must meet a simultaneous deliverability requirement when dispatched with other resource adequacy capacity under peak load conditions. Because the ISO's deliverability assessment is performed in advance of, and as a pre-condition for, the demonstration by LSEs of the resources they have procured to meet their RA requirements, the deliverability assessment must verify that all generating capacity determined to be deliverable (and therefore acceptable for meeting RA requirements) within an electrical study area of the ISO grid can be dispatched to the full amount of its deliverability status under peak load conditions without overloading any ISO grid facilities. To meet RA requirements, LSEs must procure capacity that has been demonstrated to be deliverable through the ISO's deliverability assessment process.

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[11] The ISO conducts deliverability assessments both for generation projects that participate in the ISO interconnection queue to connect directly to the ISO grid and on behalf of PTOs for resources in the Wholesale Distribution Access Tariff (WDAT) interconnection queue and for non-net energy metering ("non-NEM") resources under Rule 21. Resources are studied for deliverability as part of the cluster queue in which they were submitted.

[12] A more detailed description of the deliverability assessment methodologies is available on the ISO website, http://www.caiso.com/Documents/Deliverability%20assessment%20methodologies

[13] On January 30, 2012 FERC conditionally approved the ISO's GIP-2 tariff revisions. The GIP now allows projects to request partial deliverability in their initial interconnection request applications or switch from FC to partial deliverability after receiving the Phase 1 study report. For purposes of the present initiative, the ISO would allow an LRA to assign to a particular DG resource an amount of partial deliverability that is less than its full qualifying capacity.

The ISO's deliverability assessment is described in tariff section 40.4.6.1, *Deliverability Within the CAISO Balancing Authority Area*, and in the BPM for Reliability Requirements section 5.1.3.4, *Deliverability to Aggregate of Load*. These provisions specify the process for establishing deliverability annually for internal supply resources. Once the deliverability of a resource is established through an ISO deliverability assessment, the relevant network upgrades assumed in the study are in-service and the generating facility is in-service, LSEs are able to count all or part of that deliverable capacity toward their respective year-ahead and month-ahead RA requirements.

The deliverability assessment is only one of the elements of the GIP. Interconnection Study Responsibility Allocation, Attachment A to Appendix Y,[14] provides a complete list of requirements for interconnection customers. The deliverability assessment requirements are shown as line items 6 and 9 of Attachment A.

5.1.1. "No Backflow" is not sufficient to determine deliverability for DG

Many stakeholders participating in this initiative and in related proceedings at the CPUC have asserted that DG resources connected to a utility distribution system below (downstream from) any particular ISO network node should be considered deliverable as long as the total output of those DG resources does not exceed the total load below the same node. They rationalize this assertion by saying that, if there is no "back flow" of produced energy from the distribution system onto the ISO grid, then the output of those DG resources is fully absorbed by the local load and does not impact the ISO grid. The ISO has explained that this argument is based on a misunderstanding of the deliverability study methodology, which is designed to verify the fundamental principle of what it means for a group of resources – including both ISO grid-connected and distribution-connected – to be, collectively, fully deliverable. In particular, a finding of deliverability for a group of resources depends on the modeled pattern of load that would be served by the resources. When DG resources reduce the load in the area, the collective deliverability of the resources in the area could be adversely affected, irrespective of whether there is any back flow. The following simple example illustrates why demonstration of "no back flow" is not sufficient to establish deliverability for DG resources.

Referring to the leftmost diagram in the figure on the next page (i.e., "Without DG"), consider a network 230 kV line A-B-C that is part of the ISO grid. Assume that at B is a 230/69 kV transformer and that the 69 kV side of the transformer not part of the ISO grid. Downstream from the low side of the transformer at B is 69 kV bus D with 10 MW of load and no generation. Assume no losses. There is a 100 MW generator connected at A and the power flow from A to B is 100 MW and the power flow from B to C is 90 MW (i.e., 10 MW leaves line A-B-C at B and flows downstream through the 230/69 kV transformer at B to serve the 10 MW load at D).

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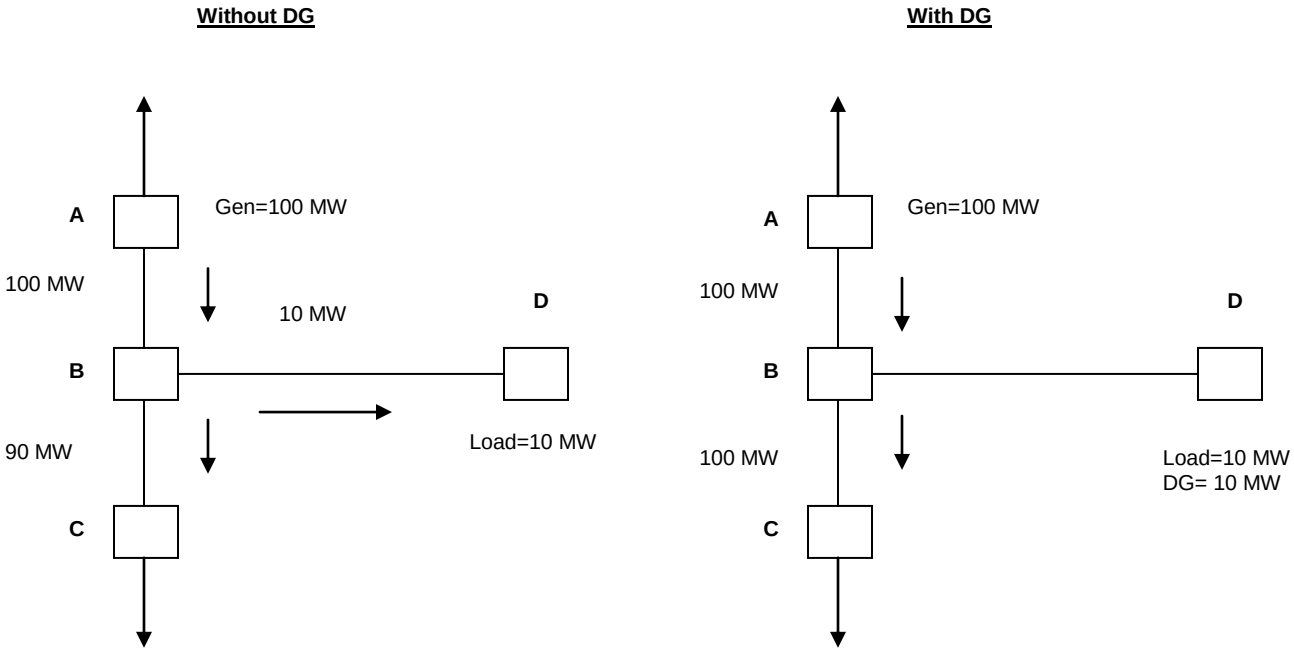
[14] Appendix Y, Interconnection Requests, Generator Interconnection Procedures (GIP), http://www.caiso.com/Documents/AppendixY-FifthReplacementCAISOTariff.pdf

Assume the binding constraint in this example is the 90 MW rating of B-C (for simplicity assume no outages). Assume further that the 100 MW generator at A is fully deliverable, based on modeling 10 MW of load at D and 90 MW of flow on B-C.



Now, turning to the rightmost diagram in the figure above (i.e., "With DG"), assume that 10 MW of DG connects at D. The result will be that the 10 MW DG project fully serves the 10 MW of load at D. There is no backflow on B-D (in fact, there is no power flow at all on B-D), nor is there any back flow onto A-B across the substation at B. The power flow on A-B is still 100 MW, but now the power flow on B-C is also 100 MW which violates the 90 MW rating of B-C. Therefore the 10 MW DG resource at D is not deliverable, even though it did not create back flow. If the 10 MW DG resource at D were deemed deliverable, the 100 MW generator at A would no longer be fully deliverable, because it could not be dispatched to its full capacity level without overloading line B-C. Thus the absence of back flow is not sufficient to demonstrate deliverability of resources connected on the distribution system.

This example should not be misinterpreted to mean that the deliverability of more distant existing generation is valued over new DG generation located closer to load. Rather, DG resources awarded deliverability, whether through the earlier determination of deliverability

proposed in this draft final proposal or through normal interconnection processes, will have its deliverability preserved in subsequent GIP studies.

This same concept is demonstrated by a less simplified and more realistic example (constructed from actual deliverability studies) found in Appendix Section 8.

6. Draft Final Proposal

6.1. Comparison between this proposal and the prior one

Based on discussions of the ISO's February 28, 2012 revised straw proposal during the March 6 stakeholder conference call, as well as the written comments submitted by stakeholders on March 13, the ISO has made a number of clarifications and modifications that are reflected in the draft final proposal.

The following areas are clarified in the draft final proposal:

1. Stakeholders requested additional clarity on the study model used in the DG deliverability studies. In response, the ISO has created several new subsections in the draft final proposal and has included additional material in an effort to provide an improved explanation of the study model. These clarifications are included in both Section 6.2 and Section 6.3 (and its subsections).
2. Stakeholders commented that reducing the target DG amounts in the study to achieve feasibility while maintaining the dispatch levels of existing generation and projects in the queue somehow under-values DG. The ISO clarifies that under current rules and procedures, absent the present proposal, DG resources may request deliverability through the WDAT, and the ISO will study these requests within the GIP as part of the GIP cluster corresponding to the date the WDAT request was submitted. Within the GIP study process the WDAT resources have no less priority than any other resources in the same cluster in the same study area, but they may as a result be responsible for some delivery network upgrades to the ISO grid if their deliverability requires such upgrades. The present proposal does not remove or diminish this option for DG resources. Rather, it provides an alternative route to obtaining a deliverability designation that is faster, because it does not require the two-phase GIP study process to be finished, and potentially less costly, because it bases deliverability for DG on available transmission capacity without triggering additional network upgrades. For non-NEM Rule 21 interconnection requests, the present proposal offers an even more dramatic benefit because currently there is no way for Rule 21 resources to obtain deliverability. Thus, the study approach described in this proposal offers significant benefits to facilitate DG development, without compromising the objectives and effectiveness of the RA program, and without undermining the open access principles behind the ISO's cluster-based GIP. This is discussed more fully in Section 6.2 ("Overview).
3. Stakeholders requested clarification concerning the base resource portfolio used as an input in the DG deliverability study and the extent to which the portfolios include the DG

plans of publicly owned utilities. The ISO agrees that the base resource portfolio used to determine DG deliverability as proposed in this paper should adequately reflect the DG target amounts of all LRAs that oversee procurement by LSEs within the ISO. However, the ISO believes that this consideration is properly within the scope of Phase 1 of each annual TPP wherein the development of the resource portfolios takes place, and not within the scope of the present proposal. For the current 2012-2013 TPP cycle the ISO has requested information from the non-CPUC LRAs with which to supplement the DG representation in the TPP base portfolio and the TPP high DG portfolio. The ISO expects to receive this information in the near future and that these portfolios will reflect the existing and anticipated DG procurement of LSEs overseen by non-CPUC LRAs. This will ensure that when the present initiative is first implemented at the end of 2012 it will effectively address the DG procurement needs of these LRAs.

4. Stakeholders requested clarifications relative to the timeline diagram. In response, the ISO has revamped the timeline diagram to make it easier to follow.
5. In response to the ISO's explanation about "backflow" several stakeholders pointed out that reductions in load due to any number of reasons (including, for example, energy efficiency and departing load besides just the addition of DG) may degrade deliverability and asked how these are addressed today. The ISO clarifies that the impact of load pattern changes due to, for example, weather and economic trends, energy conservation programs, and energy efficiency programs, is today reflected in the annual NQC determination per ISO Tariff Section 40.4.6.1. This proposal makes no changes in this regard.
6. Stakeholders requested additional clarification regarding how existing DG is addressed in the proposed process. The study process will take into account actual DG development defined as the amount currently in the WDAT queue and non-NEM resources in the Rule 21 queue. The DG resources already in operation are modeled in the study as part of the existing system, and as such are not included in the target quantities to be assessed in the study. In response to stakeholder concerns that including all projects in the WDAT and Rule 21 queues may reduce the amount of DG deliverability made available through this process, the ISO clarifies here that although it will model all WDAT and non-NEM Rule 21 projects, the study will preserve deliverability only for WDAT projects requesting full capacity deliverability status. The remainder is available for allocation.
7. Stakeholders expressed interest in the ISO performing the DG deliverability studies using TPP resource portfolios that model higher amounts of DG than in the base resources portfolio. The ISO clarifies that although it could study these higher amounts for informational purposes, the ISO would only make available for allocation the target amounts of DG modeled in the base portfolio. Study results based on higher amounts of DG could be used to inform portfolio development for the next TPP cycle. For example, if state policy goals indicate that a greater amount of system-wide DG should be specified in the TPP base portfolio, then the nodal information from the study could suggest how to distribute the increased DG quantity to specific network nodes. The one caveat the ISO makes is that this approach provides no certainty that the larger amounts of deliverability identified in one year's study would still be available a year later, as other

factors affecting DG deliverability could change from one year to the next; however, this information could still serve as a useful indicator.

8. Stakeholders asked whether DG resources awarded deliverability through this process will be subject to NQC determinations. The ISO clarifies that DG resources awarded deliverability through this project will be subject to annual NQC determination, as specified in ISO Tariff Section 40.4.6.1, as are all generators that obtain deliverability through the interconnection process. The NQC for a generator may be reduced below the level of its full capacity deliverability status in any given year, depending on system conditions, such as transmission system configuration and load levels. Such a reduction would apply for the upcoming RA compliance year only, and would be reassessed the following year for the next RA compliance year.

In addition to the clarifications made, the draft final proposal makes the following modifications to enhance the proposal:

9. Stakeholders expressed concerns about the possibility that an LRA may not obtain its full load share of DG deliverability at nodes where multiple LSEs serve load and suggested that allocation of DG deliverability at any node should be based on nodal load ratio shares and not based on total system load ratio shares. The ISO agrees and has made this modification. However, because the ISO believes that this alone may not be enough to mitigate this concern, the ISO has made several additional modifications for stakeholder consideration. This is discussed in more detail in Section 6.4.1 ("Sequence of the allocation process").
10. Stakeholders objected to the previous proposal's prohibition against the "carry over" of unused or unassigned DG deliverability to subsequent cycles of this process (i.e., a "use it or lose it" approach). In response, the ISO now proposes that if any portion of the deliverable MW in a given year goes unassigned by LRAs to specific projects in that year, the LRA will be allowed to carry over the unused deliverability to subsequent cycles of this process. This is discussed in more detail in Section 6.4.3 ("Unused or unassigned DG deliverability").
11. Stakeholders suggested a few modifications to the objectives of this initiative; specifically, that the objectives reference California's DG goals, and that an objective should be to inform resource planning and procurement processes in a timely manner. The ISO has revised objectives 2 and 6 in response to these suggestions.
12. ISO proposes to remove (i.e., zero-out MW values for) those nodes that are in study areas for which the most recently completed Phase 1 or Phase 2 study has identified a need for delivery network upgrades (the previous proposal only applied this approach to Phase 1 results). Similarly, the ISO will also zero out the DG MW values for those nodes that are in the study areas for which the most recent cluster Phase 2 study identified and then removed certain delivery network upgrades to support deliverability for MW amounts in the interconnection queues. The ISO will only add transmission in the study model that has received ISO approval and delivery network upgrades that are either funded or permitted. The intention here is to lessen the risk of DG deliverability being dependent on network upgrades that may not ultimately get built.

6.2. Overview

The ISO proposes to conduct an annual process consisting of two parts to provide RA deliverability status to DG resources. In the first part of the process, the ISO will determine MW amounts of deliverability available for DG resources at specific network nodes on the ISO grid without requiring additional network upgrades. In the second part of the process, the ISO will allocate the use of such deliverability to LRAs that oversee procurement by their regulated LSEs. The intent of this streamlined process is to enable LSEs to procure deliverable DG resources up to these MW amounts without requiring further assessment to establish deliverability in the interconnection processes. (DG resources are still required to apply to and complete the appropriate Rule 21 or WDAT interconnection process, however.) The timeline for this annual process would run from the fourth quarter of one year to mid-summer of the following year.

For the first part of the process, the ISO will perform special DG deliverability studies during the fourth quarter of each year (during the course of the annual TPP) and would publish the results – a list of available network nodes on the ISO grid with associated MW quantities of deliverability for DG resources – by February 15 of the following year. For this study the ISO will model the existing transmission system plus new additions and upgrades that have been approved in prior GIP and TPP cycles, plus certain new generation in the ISO interconnection queue and associated upgrades, as described below. Onto this model the ISO will then add target DG quantities at each network node and determine how much of each nodal target quantity is deliverable without requiring additional upgrades on the ISO grid and without adversely affecting the deliverability of other modeled resources.[15] The nodal target quantities will be at least as large as, and may exceed, the nodal DG quantities specified in the base case resource portfolio[16] used in the current TPP cycle for identifying public policy-driven transmission upgrades.

The study process will take into account actual DG development defined as the amount currently in the WDAT queue and non-NEM resources in the Rule 21 queue. The DG resources already in operation are modeled in the study as part of the existing system, and as such are not included in the target quantities to be assessed in the study. In response to stakeholder concerns that including all projects in the WDAT and Rule 21 queues may reduce the amount of

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[15] The ISO will perform the proposed deliverability study in accordance with its normal procedure for such studies. A detailed description of the deliverability assessment methodologies is available on the ISO website at: http://www.caiso.com/Documents/Deliverability%20assessment%20methodologies

[16] Although the proposed study may assess deliverability for a nodal target quantity that exceeds the corresponding nodal DG quantity in the TPP base case resource portfolio, the ISO will not allocate any more DG deliverability in the current cycle than the TPP portfolio amount. The use of larger nodal quantities in the proposed study would be for informational purposes only.

DG deliverability made available through this process, the ISO clarifies here that although it will model all WDAT and non-NEM Rule 21 projects, the study will preserve deliverability only for WDAT projects requesting full capacity deliverability status. The remainder is available for allocation. For example, suppose that the DG target amount at node N is 150 MW, and this is the same as the nodal DG amount in the TPP base case resource portfolio Suppose further that there are 200 MW of DG in the WDAT queue at this node, of which 80 MW has requested full capacity deliverability status and 120 MW is energy only. Suppose the study finds that the 150 MW target amount is fully deliverable. Then the amount available for allocation would be 70 MW (i.e., 150 MW - 80 MW).

If actual DG development at any node (WDAT and non-NEM Rule 21 projects currently in queue) already exceeds the target levels of DG in the TPP base resource portfolio, then the target level at that node will be raised to accommodate the actual DG development at that node for study purposes. As noted above, however, in step 2 of the current cycle the ISO will allocate no more than the TPP portfolio amount.

The ISO recognizes that there may be TPP resource portfolios modeling higher DG amounts than those in the base resource portfolio that the ISO proposes to use for these studies. For example, suppose the base resource portfolio in a given year models 2,500 MW of DG but a "high DG" resource portfolio has 5,000 MW of DG. Also suppose that the target DG amount at node N is 150 MW in the base resource portfolio and 225 MW in the "high DG" resource portfolio. The ISO could study these higher amounts for informational purposes, but would only make available for allocation at most 2,500 MW (150 MW at node N) in the current cycle. An informational study such as this could reveal, for example, that 3,700 MW (of the 5,000 MW target amount) of DG is deliverable system wide and 190 MW (of the 225 MW modeled) is deliverable at node N. These study results could then be used to inform portfolio development for the next TPP cycle. For example, if state policy goals indicate that a system-wide DG amount greater than 2,500 MW should be specified in the TPP base portfolio, then the nodal information from the study could suggest how to distribute the increased DG quantity to specific network nodes. The one caveat the ISO makes is that this approach provides no certainty that the larger amounts of deliverability identified in one year's study would still be available a year later, as other factors affecting DG deliverability could change from one year to the next; however, this information could still serve as a useful indicator.

In performing the proposed deliverability study, in grid areas where all resources modeled including the target DG amounts cannot be simultaneously dispatched to the output level corresponding to their full or partial deliverability status without overloading ISO grid facilities, the ISO will reduce the modeled DG amounts as needed to achieve a feasible dispatch. For each network node where the modeled DG amount must be reduced from the target level to achieve feasibility, the ISO will determine the amount of reduction needed to achieve feasibility, leaving the unreduced nodal MW amount of DG that would be deliverable. This approach is necessary and appropriate to preserve the resource adequacy value of the resources the LSEs may procure to meet their RA requirements. If the ISO were to reduce the dispatch of existing resources in a given study area before reducing the target DG amounts, then either the RA eligibility of those existing resources would need to be reduced commensurately, which could

have adverse impacts on the financial status of such resources, or the LSEs could be procuring RA capacity in that area that cannot be fully utilized, which would be costly for ratepayers and would potentially jeopardize grid reliability by providing less available RA capacity than the procurement numbers indicate. Alternatively, if the ISO were to reduce the dispatch of full capacity generation projects already in the ISO interconnection queue or in a Participating Transmission Owner's (PTO) WDAT queue, this would allow "queue jumping" by the DG resources in violation of open access generator interconnection requirements as provided through the queue cluster system in the ISO tariff.

Some stakeholders have commented that reducing the target DG amounts in the study to achieve feasibility while maintaining the dispatch levels of existing generation and projects in the queue somehow under-values DG. The ISO believes that this view reflects a misunderstanding of both the intent and the benefits of the present proposal. Under current rules and procedures, absent the present proposal, DG resources may request deliverability through the WDAT, and the ISO will study these requests within the GIP as part of the GIP cluster corresponding to the date the WDAT request was submitted. Within the GIP study process the WDAT resources have no less priority than any other resources in the same cluster in the same study area, but they may as a result be responsible for some delivery network upgrades to the ISO grid if their deliverability requires such upgrades. The present proposal does not remove or diminish this option for DG resources. Rather, it provides an alternative route to obtaining a deliverability designation that is faster, because it does not require the two-phase GIP study process to be finished, and potentially less costly, because it bases deliverability for DG on available transmission capacity without triggering additional network upgrades. For non-NEM Rule 21 interconnection requests, the present proposal offers an even more dramatic benefit because currently there is no way for Rule 21 resources to obtain deliverability. Thus, the study approach described in this proposal offers significant benefits to facilitate DG development, without compromising the objectives and effectiveness of the RA program, and without undermining the open access principles behind the ISO's cluster-based GIP.

When the study is completed the ISO will provide a list of the network nodes modeled in the study, the corresponding MW amounts of deliverable DG, and the nodal deliverability MW available for allocation to DG resources. The resulting MW amount for allocation at each node will be less than or equal to the target MW amount that was modeled in the deliverability study. For ISO network node locations where the ISO has modeled and found to be deliverable a larger MW amount than was specified in the TPP base portfolio, the ISO will publish this information.[17] The TPP base portfolio amount represents the maximum possible available for allocation in the current cycle. Further details on the deliverability study process are described in Section 6.3 (Deliverability Study Methodology).

[17] This will be provided for information purposes only and will not be used for allocation purposes.

For the second part of the proposed process, the ISO will allocate DG deliverability to local regulatory authorities (LRAs)[18] for use in procurement by the LSEs they regulate. The allocation process can begin soon after the publication of the available nodal deliverability amounts. The proposed allocation process will be similar to the existing annual process for allocating import capacity to LSEs for procurement of resource adequacy capacity, as provided in ISO tariff section 40.4.6.2. The proposed allocation step is described below in Section 6.4 (Allocation of Deliverability to Local Regulatory Authorities).

DG resources awarded deliverability through this process are subject to annual NQC determination, as specified in ISO Tariff Section 40.4.6.1, as are all generators that obtain deliverability through the interconnection process. The NQC for a generator may be reduced below the level of its full capacity deliverability status in any given year, depending on system conditions, such as transmission system configuration and load levels. Such a reduction would apply for the upcoming RA compliance year only, and would be reassessed the following year for the next RA compliance year.

In some grid areas the resource portfolios used in the TPP may include some quantities of resources directly connected to the ISO grid that are considered "DG resources" based on their size or other characteristics. The ISO will not include these DG amounts in the proposed assessment because the purpose of the methodology is to assess deliverability available for distribution-connected resources. Any ISO interconnection requests that are considered "DG resources" under other definitions of that term, must participate in the ISO's GIP in the normal manner to receive their desired deliverability status. As such, for purposes of the deliverability study proposed here the ISO will model them in a manner consistent with the described treatment of the current interconnection queue.

6.2.1. Resource portfolios

Although the subject of development of the resource portfolios for the TPP is not the subject of this paper, some stakeholders have commented in this initiative that the resource portfolios used in the DG deliverability assessment should consider the DG-related input of all LRAs (i.e., the CPUC and LRAs other than the CPUC). The ISO agrees. The base resource portfolio used to determine DG deliverability as proposed in this paper should adequately reflect the DG target amounts of all LRAs that oversee procurement by LSEs within the ISO.

The ISO believes that this consideration is properly within the scope of Phase 1 of each annual TPP wherein the development of the resource portfolios takes place, and not within the scope of the present proposal. For the current 2012-2013 TPP cycle the ISO has requested information from the non-CPUC LRAs with which to supplement the DG representation in the TPP base portfolio and the TPP high DG portfolio. The ISO expects to receive this information in the near future and that these portfolios will reflect the existing and anticipated DG procurement of LSEs

[18] Those LRAs that oversee procurement by LSEs within the ISO.

overseen by non-CPUC LRAs. This will ensure that when the present initiative is first implemented at the end of 2012 it will effectively address the DG procurement needs of these LRAs.

6.3. Deliverability Methodology

During the course of the annual TPP, the ISO will perform a special DG deliverability study to determine MW amounts of deliverability available for DG resources at each of a specified set of network nodes on the ISO grid. The ISO will use the DG component of the 33 percent renewable base portfolio developed for the current TPP cycle to specify the set of network nodes and initial MW targets of DG for the MW deliverability amounts at each node. For study purposes the ISO may actually use larger MW target amounts at specific nodes as a way to provide additional information about deliverability in specific grid areas of interest,[19] but the annual allocation process described in section 6.4 will allocate no more than the MW amounts specified in the base TPP resource portfolio for that planning cycle. The development of the resource portfolio, including consideration of non-CPUC jurisdictional LRA DG plans and targets, will occur during the first phase of each annual TPP cycle. The ISO's deliverability assessment will then determine how much of the target DG amount at each node can be deliverable without any additional delivery network upgrades.[20]

It is important to understand that the study described here cannot determine the maximum amount of DG that can be connected with full deliverability at any particular network node or for the system as a whole. The proposed study will determine whether the nodal target MW amounts of DG are fully deliverable and, if not, what portion of the target is deliverable at each node. Thus if the nodal target amount is found to be fully deliverable, it may be possible that a greater amount would also be deliverable, but the proposed study would not be able to determine that.

The study results at each node will indicate:

1. DG MW amount specified in the 33 percent TPP base portfolio;
2. DG MW target amount assessed in the study, which will be at least as large as item 1;

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[19] For example, it has been suggested in some stakeholder comments that the ISO should assess deliverability for the "High DG" TPP resource portfolio, which could be done by expanding the nodal MW quantities specified in the base portfolio to the values specified in the High DG portfolio, even including any additional network nodes that may be in the High DG portfolio.

[20] The finding that a particular MW amount of DG is deliverable at a specific network node does not obviate the need to perform the transmission reliability impact assessment normally performed in conjunction with WDAT interconnection requests. Thus it is possible that some reliability network upgrades or other mitigation may be required in conjunction with the deliverable DG resources.

3. DG MW amount determined to be deliverable, which will be a value between zero and item 2; and
4. DG MW amount available for allocation, which will be the minimum of item 1 and item 3.

Another important feature of the proposed study is the protection of the deliverability of existing deliverable resources and full or partial capacity resources that are in good standing in the ISO interconnection queue. The deliverability of existing resources or generation projects in the ISO interconnection queue is based, in part, on the particular load pattern assumed in the associated deliverability studies (i.e., the amount of load modeled at each node). A different load pattern will affect transmission flows and may result in a different set of deliverability amounts. The impact of changes in the load pattern due to, for example, weather and economic trends, energy conservation programs, and energy efficiency programs, is reflected in the annual NQC determination per ISO Tariff Section 40.

Adding DG resources on distribution systems has the equivalent effect of changing the load pattern from a modeling perspective. Specifically, adding a DG resource to a distribution system reduces the load in that distribution system which, in turn, reduces the flow from the transmission grid to that distribution system. The ISO's proposed methodology recognizes this and attempts to determine how much DG can be added at each node (up to the target amounts modeled in the study) without degrading the deliverability of existing resources or generation projects in the ISO queue and the PTOs' WDAT queues. There is a common misconception that a DG resource (connected to a distribution system) should be deliverable as long as its generation output does not "backflow" onto the transmission grid (i.e., as long as its generation output is less than the load served on the same distribution system). This is not correct, as explained above in section 5. Regardless of whether the flow at the interface between the transmission system and distribution system reverses direction, the flow pattern on the transmission system will change due to the addition of the DG resource, which could result in overloads on the transmission grid where no overloads existed prior to the addition of the DG resource. This is why it is essential to assess DG deliverability through the type of study the ISO is proposing, rather than rely on the simple and intuitively-appealing – but incorrect – "no backflow" criterion.

In performing the proposed assessment the ISO will protect the deliverability of all generation in the ISO's generation interconnection queue and the PTOs' WDAT queues by ensuring that queue generation is sufficiently represented in the base case used in performing the deliverability assessment. This should not be misconstrued as a policy choice to give lower priority to DG resources relative to projects in the interconnection queue (which may, by the way, include DG resources); rather, this is a recognition that projects abiding by the established rules of the interconnection process should not be adversely impacted by the allocation of "as available" transmission to DG resources through this streamlined process.

6.3.1. Building the study model

To develop the base case for the study the ISO will start with the most recent GIP cluster Phase 2 deliverability power flow base case, and then add the generation projects that have obtained

deliverability using the annual full capacity deliverability option, as well as any transmission additions and upgrades approved in the final comprehensive transmission plan for the most recent TPP cycle. Next, the ISO will add in any generation projects in the most recent GIP Phase 1 study that have been found to be fully deliverable without any delivery network upgrades (i.e., projects that were not assigned any delivery network upgrade costs in the Phase 1 study). The following table summarizes the core modeling assumptions for the DG deliverability assessment.

Generation Assumptions	Transmission Assumptions
• Existing generators • Generation projects requesting full capacity or partial deliverability status queued earlier or in the cluster that most recently completed Phase 2 interconnection • Generation projects that obtained full capacity or partial deliverability through the annual full capacity option • DG resources assigned deliverability in previous DG deliverability study cycle • Generation projects without delivery network upgrades identified in the most recently completed Phase 1 interconnection study	• Existing transmission system • Approved transmission upgrades • Funded or permitted network upgrades for generation completed interconnection studies

The ISO will then examine the DG network nodes specified in the 33 percent renewable TPP base portfolio and will remove (i.e., zero-out the MW values for) those nodes that are in study areas for which the most recently completed Phase 1 or Phase 2 study has identified a need for delivery network upgrades. The logic here is that if the Phase 1 or Phase 2 study found a need for delivery network upgrades in a study area, then there would be no capacity available at nodes within that study area to provide deliverability for DG, without such DG adversely impacting the generation projects in the queue. Similarly, the ISO will also zero out the DG MW values for those nodes that are in the study areas for which the most recent cluster Phase 2 study identified and then removed certain delivery network upgrades to support deliverability for MW amounts in the interconnection queues.

Finally, for the remaining DG network nodes, the ISO will add the MW amounts in the 33 percent base portfolio – or larger target MW amounts as may be of interest for study purposes – to the base case model for the DG deliverability assessment. As mentioned earlier,

consideration of non-CPUC jurisdictional LRA DG plans and targets will occur during the development of the resource portfolio in the first phase of each annual TPP cycle, so this information will already be included in the 33 percent base portfolio.

6.3.2. Performing the studies

In performing the deliverability assessment using the base case as described above, the ISO will identify deliverability constraints by increasing dispatch of resources with 5 percent or more flow impact on a transmission facility including any target DG quantities, up to levels consistent with their deliverability status. If overloads of any transmission facilities are observed as a result of the dispatches, the ISO will reduce the DG quantities at effective nodes (i.e., nodes that have at least 5 percent flow factor on an overloaded transmission facility) from their target levels in a manner that balances efficiency and equity. To balance efficiency and equity the ISO will use a weighted least squares algorithm to determine the nodal DG reduction amounts.[21] Such an algorithm distributes the reduction amounts across multiple effective nodes in an equitable manner, so as to avoid applying very dramatic DG reductions at the one or two most effective nodes. As explained in section 6.2, applying such reductions to the nodal DG amounts is necessary and appropriate to maintain the effectiveness of resource adequacy capacity procurement and to protect the deliverability of existing resources and resources in the ISO generation interconnection queue and the PTOs' WDAT queues.

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[21] The ISO has considered two analytical methods that can be applied to determine the amount of deliverable DG generation at each node given the transmission configuration in any particular year. One is the approach of maximizing deliverable MWs which tends to allocate the deliverability to nodes in the order of shift factors and can create the situation where one network node may be fully reduced to zero deliverability while a nearby node may not be reduced at all, even though the shift factors on the binding deliverability constraint between the two nodes are only slightly different. The advantage of this approach is that it maximizes the system-wide amount of deliverability that is available for DG and gives more network nodes full deliverability rather than partial deliverability. A second approach is to apply a weighted least squares (WLS) formulation. The WLS approach will result in somewhat less total deliverability available system-wide by distributing needed reductions over a larger group of network nodes that have flow impacts on the constraining network facilities. In this manner the WLS approach produces a more equitable deliverability allocation; i.e., available deliverability is allocated to a greater number of nodes, rather than imposing potentially drastic reductions on only one or a small number of nodes. The ISO is proposing to use the WLS approach. For example, assume there are two DG nodes in a given area. Node 1 has 45 MW DG modeled in the study and a shift factor of 0.5 on the binding deliverability constraint. Node 2 has 25 MW DG modeled in the study and a shift factor of 0.15 on the same binding deliverability constraint. If the available deliverability is 10 MW, then under the maximizing deliverable MW approach, DG deliverability is 12.5 MW at Node 1 and 25 MW at Node 2 for a total of 37.5 MW between them. In contrast, under the WLS approach, Node 1 receives 14 MW of deliverability and Node 2 receives 20 MW of deliverability for a total of 34 MW between them.

6.3.3. Publishing the study results

At the end of the assessment, the ISO will provide the results in the form of a table listing all of the network nodes with non-zero MW amounts of deliverability for DG, the corresponding nodal MW amounts of DG determined to be deliverable, and the corresponding nodal MW amounts available for allocation to LRAs. As discussed earlier, if the study targeted and found to be deliverable a DG amount greater than the amount in the TPP base portfolio, the ISO will report both the amount found to be deliverable and the amount available for allocation, where the latter will not exceed the TPP base portfolio amount.

The deliverable amounts will be the MW amounts of DG that will be fully deliverable without any additional delivery network upgrades, without needing any further deliverability assessment, and without degrading the deliverability of existing resources or generation projects in the ISO's interconnection queue.

Finally, it is important to understand that the deliverable MW amount corresponds to an actual resource production level appropriate to the qualifying capacity determination method for each resource type specified in the deliverability assessment methodology. As such the deliverable MW amount may be less than the installed or nameplate capacity of the modeled resources. The conversion between the deliverable MW amount and the installed capacity varies depending on the mix of resources contributing to the deliverability constraints and the location of the resources. For example, a deliverable amount of 64 MW might be used for 64 MW of installed capacity of solar PV resources or 100 MW of installed capacity of wind resources, or other combinations of different resource types.

6.3.4. Initial application of the methodology

The first time that the ISO will perform the proposed DG deliverability assessment is in the 2012/2013 transmission planning cycle. This means that the ISO will provide the first results in February 2013 which the LSEs could utilize for their procurement for the 2014 RA compliance year. The following discussion illustrates how the study process would work for this first DG deliverability assessment cycle.

1. Develop the base case

    a. The base case development starts with the Cluster 3 and Cluster 4 Phase 2 deliverability assessment base case, and then adds any additional transmission additions and upgrades identified in the 2012/2013 transmission planning cycle.

    b. Next, add to the model those Cluster 5 generation projects that were found in the Phase 1 study process to be fully deliverable without requiring any additional delivery network upgrades (i.e., projects that were not allocated any delivery network upgrade costs in the Phase 1 study).

    c. Next, determine the target MW amount of DG at each network node as the maximum among the following:

i. MW amount of DG in the TPP base portfolio

ii. MW amount of DG in the TPP portfolio with the highest overall DG amounts (i.e., the "High DG" portfolio)

iii. MW amount of active WDAT and non-NEM Rule 21 resources

d. Finally, model MW amounts of DG at each network node as determined in the previous step, but then set the DG amounts to zero for (i) those network nodes located in study areas where the Cluster 5 Phase 1 studies indicated a need for additional delivery network upgrades or (ii) those network nodes located in study areas where Cluster 3 and 4 Phase 2 studies indicated a need for additional delivery network upgrades or where problematic delivery network upgrades are removed from the Cluster 3 and 4 Phase 2 study results.

2. Perform the analysis using the deliverability assessment methodology described in the ISO document identified in Section 4 above. To the extent the study reveals that the network cannot provide full deliverability to all the generation projects and DG per the modeling approach described above, the ISO will reduce the amounts of DG at each node as necessary to achieve full deliverability, using the five percent flow factor threshold and weighted least squares algorithm described above.

3. Summarize and publish the deliverable MW quantity of DG at each network node, and the amount of DG deliverability at each node that is available for allocation to LRAs. Although the deliverable MW amount at a network node may be greater than the amount in the TPP base portfolio, the MW quantity available for allocation will be less than or equal to the amount that was specified in the TPP base portfolio. As noted earlier, this information would be available in the first quarter of each year.

6.4. Allocation of Deliverability to Local Regulatory Authorities

Following the annual determination of how much deliverability is available for DG without triggering additional delivery network upgrades, as described in the previous section, the ISO will conduct a process for allocating the available DG deliverability to LSEs through their local regulatory authorities (LRAs)[22]. The ISO anticipates that the allocation process would commence in March of each year, shortly after the publication of the MW amounts of DG deliverability at each network node in February.

The ISO proposes to follow a process similar, but not identical to that used for the allocation of Maximum Import Capability (MIC) for imported RA resources per tariff section 40.4.6.2. Under the proposed approach, the ISO would allocate the available deliverability amounts at each

[22] Those LRAs that oversee procurement by LSEs that serve load within the ISO.

node on the grid to the LRAs based on the MW amount each entity requests or nominates at each node, provided such requests are shown by the requesting LRA to correspond to specific DG resources to which they or their LSEs intend to attribute deliverability status.

Although the process is conceptually similar to the MIC allocation, it is not a precise match due to some important differences between how LSEs will utilize DG resources for RA purposes and how they utilize imports. A table comparing the process for allocating MIC for imported RA resources to the present proposal can be found in Appendix Section 7. As the reader will note, the first step in the table describes the determination of the MW amounts of deliverable DG. In the context of this proposal this determination is conducted during the study process described in Section 6.3, so that the allocation process for the present proposal actually begins with step five in the table. The pertinent steps in the allocation process are described immediately below in Section 6.4.1.

6.4.1. Sequence of the allocation process

The sequential steps in the allocation process are as follows:

Determine each LRA's share. The ISO will determine (1) each LRA's share of the total system MW of DG deliverability available for allocation, and (2) each LSE's initial or provisional share[23] of nodal MW of available DG deliverability for nodes at which LSEs for more than one LRA serve load. Item (1) for the LRA will be based on the share of system peak load forecast attributable to those LSEs subject to that LRA's jurisdiction, using the load forecast for the upcoming RA compliance year (the same forecast that the ISO uses for the MIC allocation for the same RA year). This quantity will be a share of total system MW of DG deliverability, without reference to any particular nodes or locations. The ISO will determine item (2) for each relevant node and each affected LRA based on that node's share of the system peak load forecast, multiplied by the share of the nodal load attributable to the LSEs subject to each LRA's jurisdiction. The ISO will perform this step in March of each year.

Notify each LRA of its shares. By the end of March, the ISO will notify each LRA of the results of the previous step.

Transfer of shares. The proposed process allows an LRA to transfer a portion of its system-wide MW share or its nodal MW to another LRA. Both LRAs participating in a transfer will notify the ISO of the transfer. The ISO proposes to allow such transfers for each current cycle of this process at any time up to the third and final round of LRA nominations, as described further below.

[23] Nodal shares for these nodes are considered provisional at this point because they may need to be adjusted in a later step of the process, as described further below.

LRAs submit nominations. Each LRA will submit nominations or requests to the ISO to assign portions of its share of the total system MW of DG deliverability to specific network nodes. The proposed process allows for three rounds of nominations. In any given round, each LRA's total nominations cannot exceed its share of the total system MW of DG deliverability, and its nodal nomination at any node where LSEs subject to more than one LRA serve load cannot exceed its nodal share of the DG deliverability. The first round of nominations will be due to the ISO by the end of April, and in this round the LRA may only specify nodes at which its jurisdiction LSEs serve load. (Nominations at nodes at which an LRA has no load, as well as at load-free nodes, are allowed in the second nomination round, discussed later.) Following the submission of nominations, the ISO will validate that all nominations comply with the limitations just described, and will notify the submitting LRA of any invalid nominations and allow a reasonable opportunity for the LRA to make adjustments and resubmit.

ISO allocates DG deliverability based on LRA nominations. Except for nodes where the LSEs of more than one LRA serve load, the ISO will approve all first round nominations that comply with the validation rules above. For nodes where the LSEs of more than one LRA serve load, some additional considerations are required to ensure that small LRAs whose LSEs serve load at only one or two ISO network nodes are not unduly disadvantaged in their ability to utilize their full system-wide shares of DG deliverability. Although the initial provisional nodal load shares described above will be good starting points for first round LRA nominations, simply enforcing those shares may be insufficient and in some instances may actually prevent a small LRA from realizing its full system-wide share. The most obvious case is where an LRA has load at only one node, and its load-ratio share at that node provides fewer MW of DG deliverability than its system-wide share. This would occur when the ISO study indicates very limited capacity to support DG deliverability at that node. For an LRA that has a reasonably large number of nodes at which it serves load, being unable to utilize some of those nodes may have little or no adverse impact. But for an LRA that has load at only one node and wants to develop DG at its load location, providing it only its nodal load-ratio share will be insufficient.

An example will be useful to illustrate the problem and explain the ISO's proposed approach to address it. Consider the following scenario. Suppose there is a node N with 40 MW of DG deliverability, at which two LSEs subject to two different LRAs serve load. Assume that LSE #1 is a small publicly owned utility whose entire load is located at node N, whereas LSE #2 is a CPUC-jurisdictional investor owned utility with a substantial retail service territory consisting of dozens of nodes or more. Suppose for a given annual cycle that the total system MW of DG deliverability is 3,000 MW. Suppose that LSE #1 has a load ratio share of the total system MW of 2 percent or 60 MW and that LSE #2 has a load ratio share of 25 percent or 750 MW. Suppose that each of these two LSEs has a 50 percent share of the load at Node N. Applying each LRA's node N load-ratio share would result in LSE #1 obtaining only 20 MW of DG deliverability, which is 40 MW less than its 60 MW load-ratio share of the total system MW of DG deliverability. In such instances the ISO believes that the simple nodal load-share approach should be modified to help ensure that each LSE is able to obtain its load ratio share of total system MW of DG deliverability and to be able to locate its DG where its load is located. The ISO believes this is consistent with the concern the ISO identified in the previous proposal – i.e.,

the need to prevent a situation where a simple nodal load ratio share rule might impede the ability of an LRA for a smaller LSE to procure deliverable DG close to its load.

To address the above type of situation, the ISO proposes that the following formula be applied at nodes where LSEs under multiple LRAs have load, and where the geographic distribution of an affected LSE's retail load territory combined with the simple nodal load-ratio share rule would limit its ability to utilize its system-wide share of available DG deliverability. In such a case the nodal DG deliverability available to the small LSE would be determined by the following formula (the abbreviation DGD stands for DG deliverability):

> Max{(nodal load share * nodal DGD available), Min[(nodal DGD available),(system load share * system DGD available)]}

Applying this modified approach to LSE #1 (the small publicly owned utility) in this same example would have the following result:

> Max{(50% * 40 MW),Min[(40 MW),(2%*3000 MW)]} = Max{(20 MW),Min[(40 MW),(60 MW)]} = 40 MW

With this approach, LSE #1 gains an additional 20 MW of DG deliverability at node N while LSE #2 obtains 20 MW less (as compared to the simple nodal load-ratio share approach). The ISO believes that this modified approach is justified for use at nodes where LSEs under multiple LRAs have load because, as in this example, the small publicly owned utility may have few nodes, or even just a single node, at which it has load to try and obtain its share of the total system MW of DG deliverability, whereas the large investor owned utility will have many nodes available at which to obtain its share of the total system MW share of DG deliverability.

One point to understand regarding the above allocation rule is that the need to use it can be minimized by formulating the DG representation in the TPP base resource portfolio to adequately reflect the DG resources and procurement plans of the small LRAs. The need to apply the above rule could arise either because (1) the DG resources and procurement plans of small LRAs were under-represented in the TPP base portfolio, which led to small MW DG quantities being available at key small LRA nodes; or (2) their DG plans were represented adequately, but the study revealed that the grid could not support deliverability for the portfolio quantities at the small LRA nodes. The ISO believes that at least factor (1) can be eliminated by proper modeling of small LRA DG, and as noted in section 6.2.1 the ISO is pursuing this.

Notify LRAs of outcomes of first round nominations. . The ISO, by the end of May, will notify LRAs of the outcome of their first round nominations (i.e., those approved, adjusted or denied), and will post any remaining nodal DG deliverability that has not been assigned.

LRAs submit second round nominations. LRAs may submit second round nominations to the ISO to the extent that they have not yet received their full shares of the total system MW of DG deliverability. These will be due to the ISO by mid-June. In the example above, even with the modified allocation rule LSE #1 is still 20 MW short of obtaining its load share of the total system MW of DG deliverability, and LSE #2 may be short if it had requested its provisional amount of

DG deliverability at node N and was denied. This step in the allocation process would provide LRAs the opportunity to submit a second round nomination. The ISO proposes that in this second round the LRAs would be allowed to submit nominations at nodes where their LSEs have no load and even at load-free nodes. As it does with the first round submissions, the ISO will validate the second round submissions to ensure that each LRA's nominations plus its first round allocations do not exceed its system-wide MW share. Any amounts allocated in the second round would count towards each LRA's share of the total system MW of DG deliverability. If multiple LRAs nominate DG deliverability at the same load-free node and the total of these nominations exceeds the MW amount of available DG deliverability at the node, then each LRA will get an amount proportional to its share of total system MW of DG deliverability.

Notify LRAs of outcome of second round nominations. The ISO, by the end of June, will notify LRAs of the outcome of their second round nominations and will post any remaining nodal DG deliverability that has not been assigned.

LRAs submit third round nominations. If any nodal DG deliverability remains unassigned after the previous step, then the ISO will provide one last opportunity for LRAs to submit nominations if they have not yet met their full system-wide allocation amounts. Any transfers of allocated shares between LRAs must be completed and reported to the ISO by the deadline for these submissions in order to be considered in the current cycle. These nominations and any transfer reports will be due to the ISO by mid-July. The ISO will notify LRAs of the outcome by the end of July.

The following table provides a brief summary of the steps described above and the tentative timeframe in which they may occur.

Sequential steps in the allocation process	**Tentative timeframe**
ISO will determine LRA shares of the total system MW of DG deliverability determined as well as nodal LRA shares at nodes where LSEs of more than one LRA serve load.	March
ISO will notify each LRA of its available shares of DG deliverability.	End of March
LRAs will notify the ISO of any transfers of deliverability made to other LRAs. LRAs may engage in and report such transfers to the ISO up to the deadline for submitting third round nominations.	By mid-July

Sequential steps in the allocation process	Tentative timeframe
Each LRA will submit first round nominations to the ISO for allocation of nodal quantities of DG deliverability, up to its system-wide share and subject to any applicable nodal limits.	Nominations due by end of April
ISO will notify LRAs of the outcome of their first round nominations (i.e., those approved, adjusted or denied), and posts any remaining nodal DG deliverability that has not yet been allocated.	By end of May
LRAs may submit second round nominations to the ISO if they have not yet been allocated their full share of the total system MW of DG deliverability.	Nominations due by mid-June
ISO notifies LRAs of the outcome of their second round nominations and will post any remaining nodal DG deliverability that has not been allocated.	By end of June
If any nodal DG deliverability remains unallocated, the ISO will provide a third nomination round as one last opportunity in the current cycle for LRAs to submit nominations to be allocated any remaining amounts of their shares.	Nominations due by mid-July ISO will notify LRAs of outcome by end of July

6.4.2. DG deliverability as an attribute of a DG resource

Before the start of the next ISO DG deliverability study for the next annual cycle (i.e., by approximately October 15 of the year for the current allocation cycle), LRAs will report to the ISO on the assignment or attribution of deliverability by their LSEs to specific DG projects. Once such assignment is done and reported to the ISO, the RA deliverability status for the assigned MW amount becomes an attribute of the DG project[24] and is not transferable by the LRA or LSE

[24] An allocation to a DG resource does not allow that DG resource to avoid milestones, security deposits, and other requirements needed to maintain good standing in either Rule 21 or WDAT.

to another DG project. This would mean, for example, that when a DG resource's contract with a particular LSE expires, the DG resource will be eligible to provide RA capacity to another LSE. This is consistent with how RA deliverability status is treated today for ISO grid-connected resources.

The ISO will look to the responsible LRA to ensure that each DG project that was assigned deliverability is making satisfactory progress toward commercial operation and that the DG project continues to meet LRA-specified retention criteria in order to retain the RA deliverability status. In the event that a DG project fails to meet the LRA-specified retention criteria, the ISO will allow the LRA to revoke the project's deliverability status and assign it to another DG project, as long as the new project is connected to distribution circuits below the same ISO grid node and utilizes no more deliverability MW than the original project. The LRA must report any such revocations and reassignments to the ISO.

6.4.3. Unused or unassigned DG deliverability

The ISO will preserve the allocated deliverability at each node in subsequent GIP studies, even if the amount of deliverability allocated at any given node was not fully assigned by LRAs to specific DG projects. This is a change from the ISO's previous proposal, which stated that DG deliverability must be assigned to specific DG projects within the same cycle, or else the associated transmission capacity would be made available to other resources in the subsequent GIP studies (i.e., the "use it or lose it" provision). Many stakeholders expressed concern that the previous proposal provided insufficient time for LSEs to make procurement decisions within a single DG deliverability allocation cycle that fully utilize their allocations. The ISO now proposes that if any portion of the deliverable MW allocated to LRAs in a given year goes unassigned by those LRAs to specific projects in that year, the ISO will preserve the allocated deliverability in subsequent studies for use by the same LRAs in subsequent cycles of this process.

At the same time, the ISO does not believe such unassigned DG deliverability should be preserved or protected indefinitely. In particular, it may turn out that specific locations that were thought at one time to be favorable for DG development ultimately attract much less commercial interest than expected. In such cases it would be inefficient to protect unassigned deliverability in these areas indefinitely. The ISO believes that the place to address such situations is in the TPP portfolio development process. If allocated DG deliverability goes unassigned for two or more cycles, then the ISO would consult with the LRAs to consider modifying the DG component of the TPP base portfolio to reduce the amounts of DG in such areas. This would enable the TPP base portfolio to be adjusted in subsequent years if the actual pattern of DG development departs from what was expected in previous DG deliverability cycles. Of course, any such adjustments to the TPP base portfolio would not adversely affect any DG resources to which deliverability had already been assigned.

6.4.4. Relationship of the present proposal to the annual Section 8.2 full capacity deliverability option

Both the DG deliverability process and the ISO's annual full capacity option for energy only resources (Section 8.2 of ISO tariff appendix Y) are intended to provide available deliverability to generation projects without additional network upgrades. The relative priority between the two processes is a result of the timing of the studies. In a given year, the annual Section 8.2 option study completes around the same time as the GIP Phase 2 study and before the DG deliverability study. Deliverability assigned to projects under Section 8.2 is preserved in the DG deliverability study. Awarded DG deliverability is then preserved in the next cycle of GIP Phase 2 study and annual Section 8.2 study.

7. Appendix A – Comparison of RA Import Capacity (MIC) Allocation versus Proposed DG Deliverability Allocation

The following table shows how the MIC allocation methodology compares to the process for allocating DG deliverability to LRAs.[25] One fundamental difference is that the ISO allocates MIC directly to LSEs, but proposes to allocate DG deliverability to LRAs who will in turn manage the allocation to the LSEs whose procurement they oversee.

Comparison of RA Import Capacity Allocation v. Proposed DG Deliverability Allocation		
Step	**Existing RA Import Allocation Process (Tariff section 40.4.6.2)**	**Proposed DG Deliverability Allocation Process**
Step 1	Determine Maximum Import Capability (MIC)	The ISO will determine the MW amounts of deliverable DG at each network node and post those values on the ISO website. This is described in Section 6.3.
Step 2	Available Import Capability: Total Import Capability to be shared after removing ETC transmission capacity	N/A
Step 3	Existing Contract Import Capability (ETC inside loads)	N/A
Step 4	Total Pre-RA Import Commitments & ETC. Remaining Import Capability is determined in Step 4	N/A
Step 5	Allocate remaining Import Capability by Load Share Ratio	The ISO will determine LRA shares of the total system MW of DG deliverability determined in Step 1 above, as well as nodal LRA shares at nodes where LSEs of more than one LRA serve load.
Step 6	ISO posts assigned and unassigned capability per Steps 1-5	N/A
Step 7	ISO notifies scheduling coordinators (SC) of LSE assignments	ISO will notify each LRA of its available shares of DG deliverability.
Step 8	Transfer [trading] of import capability among LSEs or market participants.	LRAs will notify the ISO of any transfers of deliverability made to other LRAs. LRAs may engage in and report such transfers to the ISO up to the deadline for submitting third round nominations in step 13, below.
Step 9	Initial SC request to ISO to assign remaining import capability by intertie.	Each LRA will submit first round nominations to the ISO for allocation of nodal quantities of DG deliverability, up to its system-wide share

[25] In applying the MIC approach to DG deliverability, steps 2-4 and step 6 of the 13-step process are not applicable. These steps are required for the MIC allocation to account for existing transmission contract capacity and pre-RA energy import commitments, which are not relevant here.

Comparison of RA Import Capacity Allocation v. Proposed DG Deliverability Allocation		
		and subject to any applicable nodal limits.
Step 10	ISO notifies SCs of LSE assignments & posts unassigned available import capability	ISO will notify LRAs of the outcome of their first round nominations (i.e., those approved, adjusted or denied), and posts any remaining nodal DG deliverability that has not yet been allocated.
Step 11	Secondary SC request to ISO to assign remaining import capability by intertie.	LRAs may submit second round nominations to the ISO if they have not yet been allocated their full share of the total system MW of DG deliverability.
Step 12	ISO notifies SCs of LSE assignments & posts unassigned available import capability	ISO notifies LRAs of the outcome of their second round nominations and will post any remaining nodal DG deliverability that has not been allocated.
Step 13	SCs may submit requests for balance of year unassigned available import capability	If any nodal DG deliverability remains unallocated after Step 12, the ISO will provide a third nomination round as one last opportunity in the current cycle for LRAs to submit nominations to be allocated any remaining amounts of their shares.

8. Appendix B – Example illustrating that deliverability of a DG resource is not determined by the flow direction at the transmission-distribution interface

The following is an example extracted from an actual deliverability study, but with the names and other identifying information changed or removed to maintain confidentiality.

The following notations are used in the example:

Bus A, B, E, L, V, W: 230 kV bus of the substation that serves load from the 66 kV distribution system. The 230kV buses are part of the transmission system. The 230/66 kV transformer banks and the 66kV buses belong to the distribution system.

Line L-A, A-B, B-E, B-V, B-W, W-V: 230 kV transmission lines that are part of the transmission system.

Generator with ID "E": Existing generator at Bus A and W

Generators with ID "D": DG resources on the distribution systems, represented at Bus A, B and V for illustration purpose.

Before the DG resources are added to Bus A, B and V, all the existing generators are deliverable. Figure 1 shows the worse potential deliverability constraint. Under the single outage of Line B-E, Line A-L is loaded to just below 100% of the emergency rating.

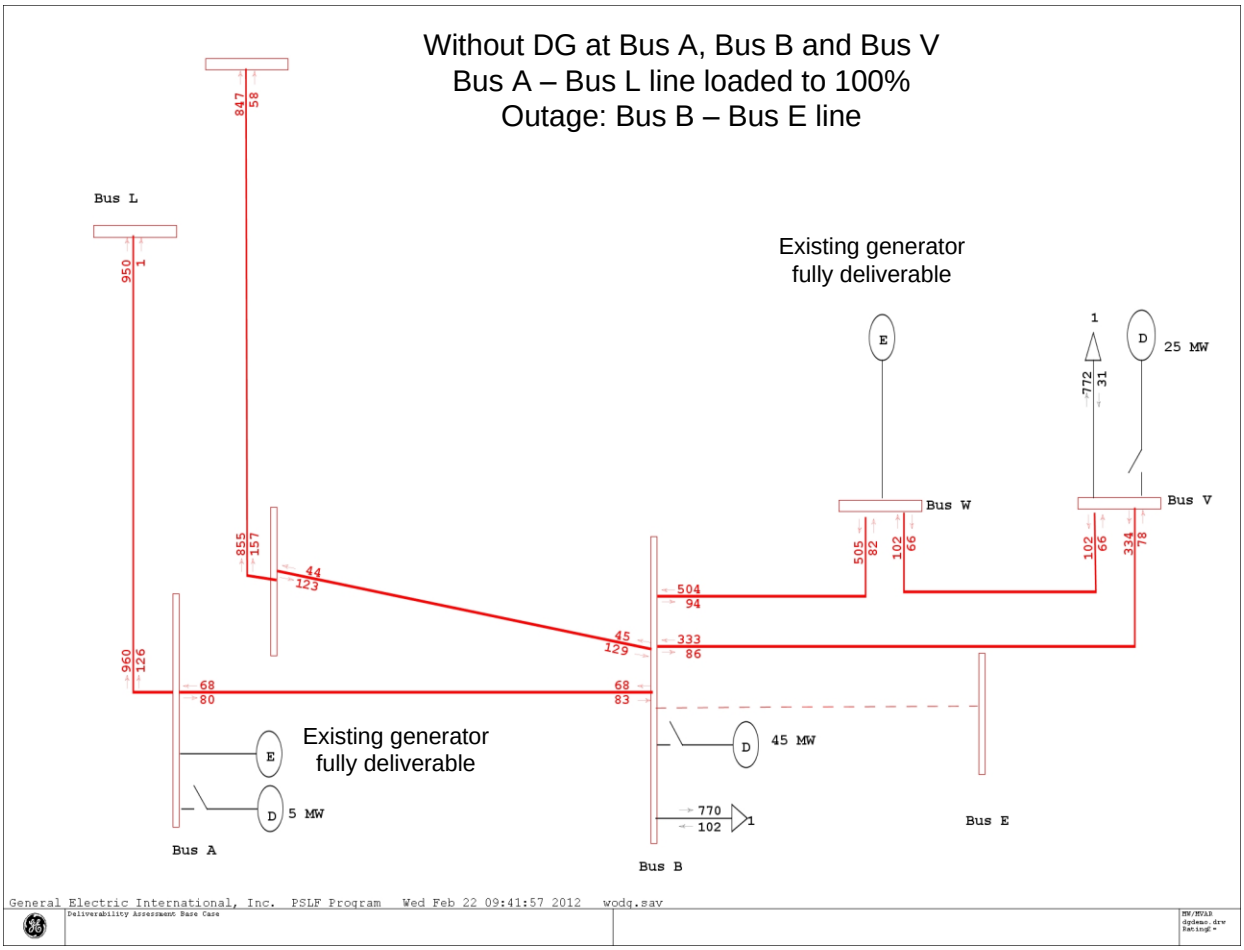

Figure 1: Existing generators deliverable before adding DG

Then the following DG resources are added to Bus A, B and V. The table below shows the load and maximum DG output at each bus.

Bus	DG Pmax (MW)	Load (MW)
A	5	0
B	45	770
V	25	772

The DG resources added are only a small fraction of the load served from Bus B and V. To balance load and generation, generation in the CAISO Controlled Grid are scaled down by about 75 MW. All other conditions remain exactly the same as the previous scenario without DG. Due to less flow into the distribution feeders at B and V, Line A-L is overloaded under the single outage of Line B-E. Figure 2 shows the overload.

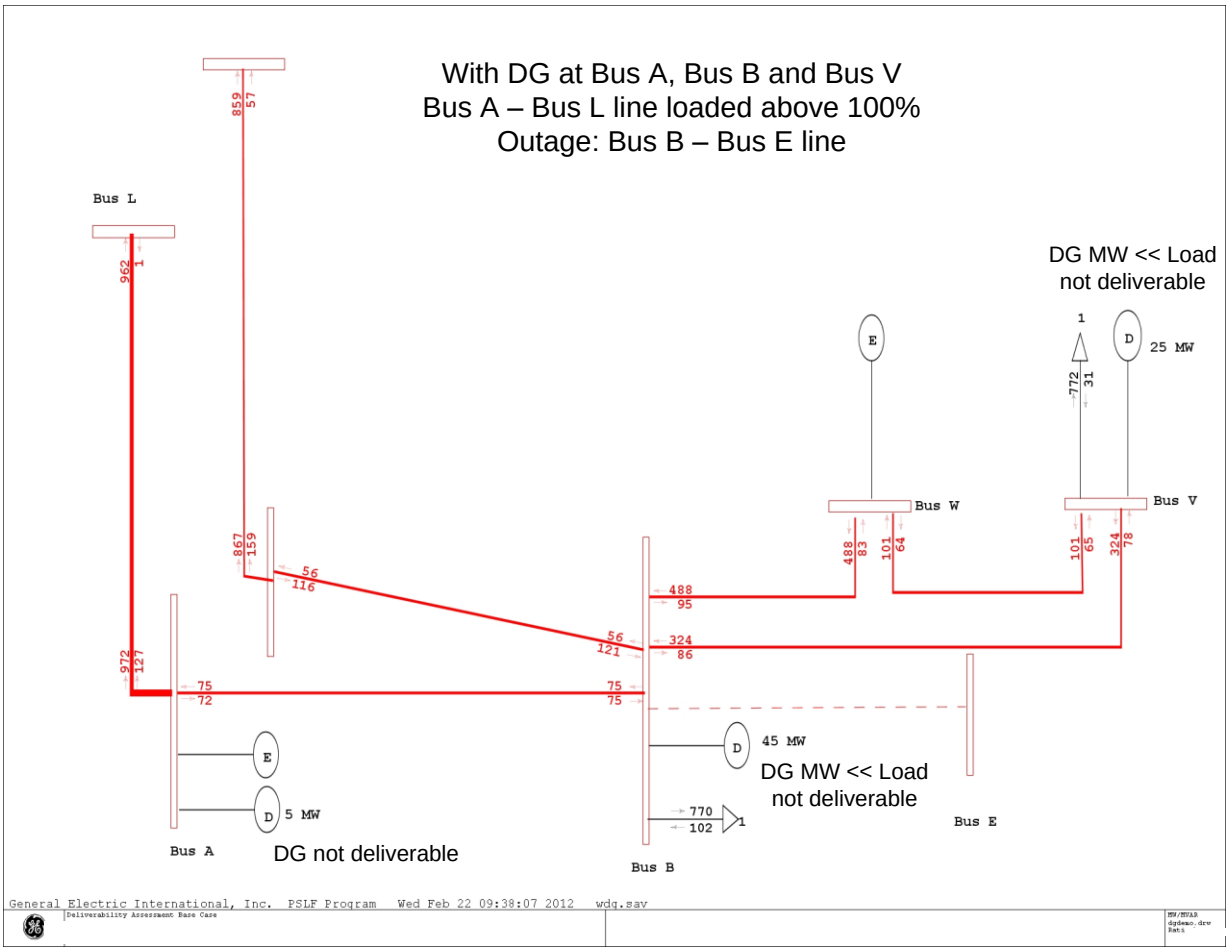

Figure 2: DG resources not fully deliverable

The deliverability of a DG resource is not determined by the flow direction at the transmission/distribution interface. Rather it depends on its contribution to the delivery constraints as defined by the flow shift factor in the deliverability assessment methodology.

If the DG resources were deemed deliverable in the example, the existing generators at Bus A and Bus W would be subject to total NQC reduction ranging from 25 MW to 95 MW.

Attachment E – Memorandum to ISO Board of Governors and Summary of Submitted Comments

Deliverability of Distributed Generation Amendment Filing

California Independent System Operator

Fifth Replacement FERC Electric Tariff

September 18, 2012

Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President, Market and Infrastructure Development

Date: May 9, 2012

Re: **Decision on Resource Adequacy Deliverability for Distributed Generation**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Management proposes an annual process for distributed generation resources to obtain resource adequacy deliverability status, so that load-serving entities can count these resources towards their annual resource adequacy requirements. Management developed this proposal to align ISO policy with the state's emphasis on distributed generation resources – relatively small-scale resources connected to utility distribution systems and located close to load – as a key element of California's strategy for increasing the share of renewable resource production in annual electricity consumption. The proposal enables distributed generation resources to obtain deliverability status in about half the time it takes to go through the normal interconnection processes, and without requiring additional delivery upgrades to the ISO grid.

Under the current process to obtain deliverability status, distribution-connected resources must enter the wholesale distribution access tariff process of one of the distribution companies and be studied for deliverability upgrades in the ISO's generator interconnection procedures. The process takes about two years, which then allows the resource to provide resource adequacy capacity in conjunction with its renewable energy contract. Both renewable project developers and load-serving entities assert that the current process is too lengthy and too cumbersome for the sheer number of small-scale projects that will be needed to meet the state's goals.

In addition, load-serving entities are expected to meet some portion of their distributed generation needs from behind-the-meter resources that interconnect under the California Public Utilities Commission's Rule 21.[1] Currently, however, there is no way

[1] California Public Utilities Commission's Rule 21 is a tariff that describes the interconnection, operating and metering requirements for generation facilities to be connected to a utility's distribution system, over which the California Public Utilities Commission has jurisdiction.

for Rule 21 resources to obtain deliverability status. Thus, there is a need for a process that will provide deliverability for Rule 21 resources as well as for wholesale distribution access tariff resources.

Management's proposal addresses these challenges by:

(1) Annually determining amounts of distributed generation at specific locations that will be fully deliverable without any additional delivery network upgrades, without needing any further deliverability assessment studies, and without degrading the deliverability of existing resources or generation projects in the ISO's interconnection queue, and then providing this information to project developers, load-serving entities, and the regulatory authorities that oversee procurement;

(2) Allocating shares of the available deliverability to regulatory authorities[2] for use by their jurisdictional load-serving entities to assign deliverability status to those projects with which they choose to execute energy and resource adequacy contracts;

(3) Enabling both wholesale distribution access tariff and Rule 21 interconnecting resources to use the deliverability made available through the proposed process; and

(4) Drawing upon and maintaining consistency with the representation of distributed generation in the annual resource portfolios developed for the ISO's transmission planning process.

Management's proposal provides a process for distribution-connected resources to obtain deliverability status that is faster and less complicated than the currently available procedures, while remaining effectively integrated with the existing generator interconnection and transmission planning processes.

For the reasons summarized above and described in greater detail in the body of this memorandum, Management recommends that the Board approve the following motion:

Moved, that the ISO Board of Governors approves the proposal regarding resource adequacy deliverability for distributed generation, as described in the memorandum dated May 9, 2012; and

Moved that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.

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[2] The relevant regulatory authorities for purposes of this proposal are the California Public Utilities Commission for the investor-owned utilities and the direct access energy service providers, and each of the local regulatory authorities that oversee the municipal utilities or other entities not under the jurisdiction of the CPUC.

DISCUSSION AND ANALYSIS

In the last few years, the issue of resource adequacy deliverability has been raised in virtually all ISO initiatives related to infrastructure development policy. As load-serving entities contract with project developers to meet the state's mandate to procure 33 percent of their retail customers' annual electricity needs from renewable resources, they want most of this procurement to count towards their resource adequacy requirements as well. As a result, when the ISO considers reforms to its generator interconnection procedures and its transmission planning process, it is imperative to include consideration of the rules and procedures whereby generation projects obtain deliverability status, so that these resources are able to offer resource adequacy capacity.

Although the ISO has been addressing deliverability issues effectively through recent infrastructure policy initiatives, most notably the transmission planning process-generator interconnection procedures integration initiative approved by the Board in March, distributed generation raises some unique issues that require targeted treatment.

- First, because distributed generation resources connect to utility distribution systems and not directly to the ISO grid, many parties have the mistaken belief that such resources should automatically be deemed deliverable as long as the resources do not produce energy in excess of the load at their location and create an energy "backflow" from the distribution system onto the ISO grid. One focus for ISO staff in the present initiative has been to educate parties as to why this belief is not correct. The basic explanation is that even without backflow, distributed generation can substantially reduce the net load at any location and thereby degrade the deliverability of ISO-grid connected generators.

  More specifically, within each electrically-defined sub-area of the grid, the ISO establishes deliverability status for generators through a study in which all such generators are dispatched simultaneously to meet peak load conditions. This test rests on a fundamental objective of the resource adequacy program, namely, the ability to fully use all resource adequacy capacity when needed under peak conditions. If additional generation is subsequently connected to the system, even at the distribution level, and deemed deliverable without going through an ISO deliverability study, it would likely lead to conditions where some portion of the resource adequacy capacity in the area would need to be curtailed at peak load, thus rendering that capacity ineffective for resource adequacy purposes. Thus the "no backflow" criterion is not a sufficient basis to establish deliverability for distributed generation.

- Second, distributed generation projects tend to be smaller and much more numerous than generation projects that connect directly to the ISO grid, and

typically want to establish deliverability and negotiate contracts with load-serving entities on a faster timetable. The current process requires each distributed generation project that seeks deliverability status to apply for interconnection to the wholesale distribution access tariff of one of the utility distribution customers, and to be studied for deliverability through the ISO's interconnection cluster study process. The whole process takes roughly two years, and stakeholders agree that a more streamlined process is needed and appropriate.

- Third, because each distributed generation resource will connect to a distribution line that typically has only one point of interconnection with the ISO grid, i.e., one "network node" on the ISO grid, the ISO can simplify its deliverability study by considering only the total amount of distributed generation connected to each node and can ignore the specific locations of individual resources on the distribution system. Moreover, this electrical fact, combined with the fact that the distribution lines are not under ISO operational control, enables the ISO to grant substantial latitude to the regulatory authorities of the load-serving entities to determine which distributed generation projects should use the deliverability the ISO makes available at each grid node.

Building on the above considerations, the ISO in working with stakeholders has developed an annual process consisting of two sequential steps to provide resource adequacy deliverability status to distributed generation resources. First, the ISO will use the distributed generation component of the most recent base case resource portfolio adopted for the transmission planning process to specify a target megawatt amount of deliverability at each grid node that could be made available to regulatory authorities in the current annual cycle. The ISO's deliverability study will then assess the extent to which each of these nodal amounts can be deliverable without requiring additional delivery network upgrades. Based on the results of this study, the ISO will calculate shares of the available deliverability for each regulatory authority's load-serving entities.

Second, each regulatory authority will submit nominations or requests to the ISO to assign portions of its share of distributed generation deliverability to specific network nodes. Although the regulatory authorities must eventually assign deliverability to specific distributed generation projects, the process does not require the regulatory authority to fully assign its allocated share within the current allocation cycle. Each regulatory authority may make such assignments in a manner that best aligns with the procurement activities of its jurisdictional load-serving entities, and may retain unassigned portions of its allocated share from one cycle to the next. An additional responsibility of the regulatory authority is to ensure that each distributed generation project that was assigned deliverability is making satisfactory progress toward commercial operation. Before the start of each subsequent cycle, the regulatory authorities will report to the ISO the assignments they have made to specific resources, any amounts not yet assigned, and assignments revoked from projects not making progress toward completion. Once deliverability is assigned to a project and that project enters commercial operation, deliverability status becomes an attribute of the project

and is not revocable or transferable by the regulatory authority or a load-serving entity as long as the project remains in commercial operation.

POSITIONS OF THE PARTIES

The ISO conducted a comprehensive stakeholder process that began in December 2011. There were three rounds of ISO proposals followed by stakeholder conference calls and written comments. The ISO also reached out to the regulatory authorities that oversee procurement by load-serving entities in the ISO balancing authority area, particularly to discuss their input into the distributed generation representation in the resource portfolios and their roles in the process for allocating deliverability.

Overall, stakeholders are very supportive of both the objectives of this initiative and the proposal developed to meet these objectives. Stakeholders widely acknowledge that the proposal offers significant benefits to facilitate the development of distributed generation resources. Within this broad general support, some stakeholders have expressed a few concerns. Southern California Edison has expressed its preference that the ISO allocate the use of such deliverability directly to the load-serving entities (such as Southern California Edison) rather than through the regulatory authorities.[3] In response, Management believes that allocation to regulatory authorities is appropriate for this initiative because the assignment of deliverability to specific distributed generation resources is completely subject to the results of bilateral contracting between load-serving entities and resources connected to non-ISO-controlled facilities. CPUC staff have been fully engaged in this initiative, support the proposal to allocate deliverability to the regulatory authorities, and have worked closely with the ISO to clarify the alignment between their procurement activities and the allocation process proposed in this initiative.

The Sierra Club and the Interstate Renewable Energy Council contend that the ISO should reconsider the existing deliverability study methodology and the policy of "once deliverable, always deliverable," because these features inappropriately preserve deliverability for greenhouse gas-intensive generation at the expense of local renewable generation**.** This is related to the point made earlier in this memorandum that the ISO's deliverability study is designed to ensure that the addition of distributed generation does not degrade the deliverability of existing grid-connected resources or other resources going through the normal interconnection queue process. Although these stakeholder comments are intuitively reasonable, Management is concerned about a serious unintended consequence that could result from relaxing the principle of preserving deliverability for existing grid-connected generation. Specifically, such a change would tend to increase the amount of resource adequacy capacity provided by non-dispatchable, variable renewable resources while decreasing the amount provided by dispatchable, flexible resources, thus jeopardizing the ISO's ability to reliably integrate large amounts of renewable generation. Management believes it would not be

[3] This is only an issue for the CPUC-jurisdictional load-serving entities, because each of the municipal regulatory authorities oversees only one load-serving entity.

appropriate at this time to reconsider these aspects of deliverability assessment, when there is much concern about how to maintain sufficient operating flexibility in the supply fleet.

One final concern raised by some parties (e.g., Bay Area Municipal Transmission Group[4], Clean Coalition) is that the ISO should not limit the allocation in any given cycle to the amount of distributed generation represented in the base case resource portfolio for the current transmission planning process, but should be willing to allocate more if the deliverability study indicates that it is available. The ISO considered this suggestion and rejected it for the present initiative because of the central role the base case resource portfolio plays in the planning process. Essentially, that portfolio represents a potential generation build-out that is sufficient to achieve 33 percent renewable energy on an annual basis, but is not excessive. As a result, the transmission planning process identifies the most cost-effective public policy-driven upgrades needed to deliver energy from the base case portfolio to ISO load. If the balance of resource types and their geographic distribution is significantly altered, in this case by expanding the amount of distributed generation, that would create a departure from the planning assumptions used as the basis of the transmission plan. Management believes that if larger amounts of distributed generation are deemed desirable by the state, then those large amounts can and should be reflected in the base case resource portfolio for the next transmission planning cycle.

The attached stakeholder comments matrix provides additional details on the positions expressed by the participants in this initiative, as well as Management responses to the concerns they have raised. Stakeholders widely support the proposal and are eager for the ISO to begin this work.

CONCLUSION

It is important for the Board to act on this proposal expeditiously. Approval would enable Management to file tariff changes with the Federal Energy Regulatory Commission on a schedule that would allow the ISO to apply the proposed approach in the 2012/2013 transmission planning cycle. Specifically, the ISO could perform the first distributed generation deliverability assessment in November, provide the first results in February 2013, and conduct the first allocation process shortly thereafter.

[4] The Bay Area Transmission Group consists of Alameda Municipal Power, City of Palo Alto Utilities, and the City of Santa Clara's Silicon Valley Power.

Attachment A

Stakeholder Process: Resource Adequacy Deliverability for Distributed Generation

Summary of Submitted Comments

Stakeholders submitted three rounds of written comments to the ISO on the following dates:

- Round One (comments on Issue Paper/Straw Proposal), 01/05/2012
- Round Two (comments on Revised Straw Proposal), 03/13/2012
- Round Three (comments on Draft Final Proposal), 04/12/2012

Stakeholder comments are posted at:
http://www.caiso.com/informed/Pages/StakeholderProcesses/DeliverabilityforDistributedGeneration.aspx

Other stakeholder efforts include:

- White Papers Issued
  - 12/13/2011 – Issue Paper/Straw Proposal
  - 02/28/2012 – Revised Straw Proposal
  - 03/29/2012 – Draft Final Proposal
- Conference Calls
  - 12/19/2011
  - 03/06/2012
  - 04/05/2012

Stakeholder Process: Resource Adequacy Deliverability for Distributed Generation

Management Proposal	PTOs and LSEs	Municipal Entities	Resource and Transmission Developers	Others	Management Response
Overall proposal: An annual process for providing resource adequacy deliverability status to distributed generation resources in a manner which achieves the initiative objectives.	PG&E – Fully supports SCE – Supports with qualification (see specific items below)	BAMx[1] – Supports Six Cities[2] – Support with qualification (see specific items below)		CPUC staff – Supports Clean Coalition – Supports IREC[3] – Supports with qualification (see specific items below) Sierra Club – Supports with qualification (see specific items below)	Management appreciates the broad support and constructive participation it has received from stakeholders in this initiative, and has attempted to address issues qualifying this support, as discussed further in this matrix. Stakeholders widely acknowledge that the proposal offers significant benefits to facilitate the development of distributed generation. Under current rules and procedures, distributed generation may request deliverability only through the wholesale distribution access tariff; there is currently no way for Rule 21 resources to obtain deliverability. This initiative provides a streamlined annual process for distributed generation resources to obtain deliverability so that load-serving entities may count them toward their annual Resource Adequacy requirements. Distributed generation resources will be able to obtain deliverability faster and without: (1) requiring additional network upgrades; (2) needing further deliverability assessment in generation interconnection procedures studies; or (3) degrading the deliverability of existing resources or active generation projects in interconnection queues. The assignment of such deliverability to specific projects would be performed by the regulatory authorities that oversee procurement by their regulated load-serving entities. The qualifications expressed by some stakeholders regarding their support are due to the inherent tension among some of these objectives.
ISO will initially		BAMx – Urges the			Management recognizes the need to inform

[1] Bay Area Municipal Transmission Group. BAMx consists of Alameda Municipal Power, City of Palo Alto Utilities, and the City of Santa Clara's Silicon Valley Power.
[2] Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California.
[3] Interstate Renewable Energy Council, Inc.

Management Proposal	PTOs and LSEs	Municipal Entities	Resource and Transmission Developers	Others	Management Response
apply the new process in the 2012/2013 transmission planning cycle.		ISO to begin performing distributed generation deliverability assessments for informational purposes sooner.			developers and resource planning and procurement processes of locations where sufficient deliverability capacity exists to accommodate distributed generation resources. However, it would be exceedingly difficult and premature to perform an "informational" assessment earlier than proposed. Such an assessment would, in effect, have to be done outside of the transmission planning process because the ISO has designed the proposed assessment in this initiative to occur at a precise point within the transmission planning process timeline that does not occur until November of each year. Such an early assessment would be of questionable value.
In performing the distributed generation deliverability assessment studies, the ISO will reduce nodal distributed generation amounts as needed to protect the deliverability of existing resources and resources that have requested deliverability in the ISO generator interconnection queue and the participating transmission owners' wholesale distribution access tariff queues.				IREC – Concerned that preserving the deliverability of existing and queued resources before the deliverability of distributed generation may result in the deliverability of distant generation taking available deliverability away from new distributed generation located next to load. Sierra Club – Concerned that this relegates distributed generation to the lowest priority for deliverability assignment. Questions the policy of "once deliverable, always deliverable."	Management appreciates these concerns, but, must point out that these concerns regard a topic that is outside the scope of this initiative. For Resource Adequacy to serve its intended purpose of ensuring sufficient supply to meet peak load, the ISO must preserve deliverability of existing resources in subsequent studies. Giving greater preference to distributed generation would reduce the deliverability status of flexible resources needed to support reliable integration of renewables, and could result in load-serving entities procuring Resource Adequacy capacity that could not be fully utilized, which in turn would be costly for ratepayers and could jeopardize reliability. Moreover, reducing the Resource Adequacy eligibility of existing resources (distributed generation or otherwise) could have adverse impacts on the financial status of such resources. Finally, to reduce full capacity generation already in queue would allow "queue jumping" by distributed generation – in violation of open access generator interconnection requirements.

Stakeholder Process: Resource Adequacy Deliverability for Distributed Generation

Management Proposal	PTOs and LSEs	Municipal Entities	Resource and Transmission Developers	Others	Management Response
ISO will allocate the use of deliverability available for distributed generation to regulatory authorities (CPUC & local regulatory authorities) that oversee procurement by their regulated load-serving entities.	SCE – Prefers that deliverability be allocated directly to load-serving entities rather than through regulatory authorities.	Six Cities – Supports.		CPUC – Supports.	Management's proposal provides a significant role for regulatory authorities. This was done by design as Management believes that the local regulatory authorities (both CPUC and publicly owned utilities) that oversee procurement by their regulated load-serving entities are in the best position to manage the assignment of available deliverability to specific distributed generation projects in a manner that is aligned with their procurement processes and timelines.
Although the ISO will study higher amounts of distributed generation for informational purposes, the ISO will limit allocation to target distributed generation amounts in the transmission planning process base resource portfolio.	PG&E – Supports the study of higher amounts of distributed generation on an informational basis.	BAMx – Does not see merit in restricting the distributed generation MW amount available for allocation to the amount assumed in the transmission planning process base resource portfolio. Six Cities – Supports.		Clean Coalition – Supports the study of higher amounts of distributed generation; but, questions why the maximum amount available for allocation should be limited by the amount assumed in the TPP base resource portfolio.	Management appreciates the desire to allocate the maximum amount possible of available deliverability to distributed generation resources. Management is concerned, however, that to allocate amounts beyond those assumed in the transmission planning process base case resource portfolio would depart from the assumptions used in the transmission planning process to identify policy-driven transmission elements in the final transmission plan. Management believes that the allocation of distributed generation deliverability should be consistent with the annual comprehensive transmission plan, which is based on the same resource portfolio as Management proposes to use in this assessment.
If any portion of deliverability allocated at a node was not fully assigned by local regulatory authorities to specific distributed generation	SCE – Believes that allocating available deliverability directly to load-serving entities (rather than through local regulatory authorities) will minimize the issue of	Six Cities – Supports "carry over" for two cycles.		Clean Coalition – Strongly supports; however suggests that such carry over expire just prior to the second subsequent study and allocation cycle (i.e., approx. 18 mos.).	Many stakeholders previously expressed concern that a prohibition against "carry over" may result in insufficient time for load-serving entities to make procurement decisions within a single distributed generation deliverability allocation cycle in order to fully utilize their allocations. Management agrees that flexibility for alignment with local regulatory authority/load-serving entity procurement

Management Proposal	PTOs and LSEs	Municipal Entities	Resource and Transmission Developers	Others	Management Response
projects, then the ISO will preserve it in subsequent studies for use by the same local regulatory authority. However, such "carry over" will not be protected indefinitely.	unused or unassigned distributed generation deliverability.				processes is warranted and is therefore proposing to allow "carry over" of unassigned distributed generation deliverability to later cycles. At the same time, Management does not believe such unassigned distributed generation deliverability should be preserved or protected indefinitely. Hence, management has proposed that if allocated distributed generation deliverability goes unassigned for two or more cycles, then the ISO would consult with the local regulatory authorities to consider modifying the distributed generation component of the transmission planning process base resource portfolio to reduce the amounts of distributed generation in such areas.