



Resource Adequacy Deliverability for Distributed Generation

2019-2020 DG Deliverability Assessment Results

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1 Introduction

In accordance with the ISO tariff section 40.4.6.3, the ISO performed the 2019-2020 Distributed Generation Deliverability (DGD) assessment to determine MW quantities of Potential DGD at specific nodes of the CAISO Controlled Grid for assigning deliverability status to Distributed Generation (DG) Facilities.

Section 2 of this paper provides a high level summary of the study results for each participating transmission owner (PTO) service territory. The study model used by the ISO in conducting the annual DG deliverability assessment is described in section 3. Section 4 describes how the Potential DGD at each node is determined. Section 5 provides information intended to help make the detailed results easier to understand.

The detailed results are contained in worksheets attached to this report.

2 DG deliverability assessment results summary

The 2019-2020 renewable portfolios identified 0 MW distributed generation. The POU provided DG forecasts for their territories. The 2019-2020 DGD study evaluated the deliverability of DG at the POU provided nodes.

The 2019-2020 DG deliverability assessment results indicate that a total of 883.52 megawatts of Potential DGD is available at nodes on the ISO grid for assignment of deliverability status to DG resources¹ connected or requesting interconnection below those nodes. The total Potential DGD for each PTO service territory is summarized in the following table. Of these total quantities, some amounts of Potential DGD at specific nodes will be available to municipal utility distribution

¹ For purposes of this study, DG refers to 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 technology types or below certain size thresholds, and may even include such categories of resources when they are connected to the transmission system. For purposes of this study, however, the term “distributed generation” refers to all generation resources connected to utility distribution systems, without regard to size or resource type.

companies (UDC) for assignment of deliverability status to DG resources on their distribution systems.

PTO service territory	Total MW of Potential DGD
SCE	402.84
SDG&E	1.82
PG&E	478.86
GWT/VEA	0
Total	883.52

The detailed nodal amounts of Potential DGD within each PTO service territory are provided in worksheets attached to this report. The following three sections provide a summary of the results for each PTO service territory.

2.1 SCE service territory

There was no distributed generation identified in the 2019-2020 renewable portfolios for the SCE service territory. There were 2 nodes with updated distribution generator plan from POU's. There were 17 nodes with unassigned Potential DGD from the 2018-2019 DGD cycle. Therefore, total 19 nodes studied for Potential DGD in the SCE service territory. The study determined that a total of 402.84 megawatts of Potential DGD is available at the 19 nodes including the Potential DGD that was identified but not assigned in the previous DGD cycle.

In the SCE service territory, there are two ISO grid nodes with Potential DGD where municipal utility load is served off of their respective distribution systems.² These three nodes are

- "Etiwanda" with 56.43 MW of Potential DGD (shared between SCE and City of Rancho Cucamonga)
- "Mira Loma" with 14.50 MW of Potential DGD (shared between SCE and City of Corona)

The Potential DGD (PDGD) is allocated to each load serving entity in proportional to their load share at the node.

Node	PDGD	LSE-1			LSE-2		
		Name	%	PDGD	Name	%	PDGD
ETIWANDA	56.43	SCE	96.85%	54.65	City of Rancho Cucamonga	3.15%	1.78
MIRA LOMA	14.5	SCE	96.31%	13.96	City of Corona	3.69%	0.54

² The load represented is based on the CEC's 2020 coincident peak demand forecast.

2.2 SDG&E service territory

There was no distributed generation identified in the 2019-2020 renewable portfolios for the SDG&E service territory, and therefore, there were no nodes studied for Potential DGD (see footnote 2). There are a total of 1.82 megawatts of Potential DGD that was identified but not assigned in the previous DGD cycle.

2.3 PG&E service territory

There was no distributed generation identified in the 2019-2020 renewable portfolios for the PGE service territory. There were 3 nodes with updated distribution generator plan from POUs. There were 87 nodes with unassigned Potential DGD from the 2018-2019 DGD cycle. Therefore, a total 90 nodes were studied for Potential DGD in the PGE service territory. The study determined that a total of 478.86MWs of Potential DGD is available at the 90 nodes including the Potential DGD that was identified but not assigned in the previous DGD cycle. In the PG&E service territory, there was one node with Potential DGD where only municipal utility load is served. There were no ISO grid nodes with Potential DGD at which both PG&E and municipal utility load is served.

2.4 GWT/VEA service territory

There was no DG node in GWT/VEA service territory.

3 DG deliverability assessment study model

The study model used by the ISO in the assessment was developed from the most recent ISO generation interconnection deliverability assessment base case. The first step was to model the transmission systems and prior commitment of deliverability that generally included:

- i. Generators that are operational and have obtained Full Capacity Deliverability Status (FCDS) or Partial Capacity Deliverability Status (PCDS)³, including the ones obtained FCDS or PCDS in the previous DGD cycles;
- ii. Active generation interconnection requests in the ISO's and Participating TOs' generation interconnection queues that requested Full Capacity Deliverability Status or Partial Capacity Deliverability Status in Queue Cluster 12 window or earlier;
- iii. Generation projects that have obtained deliverability using the annual full capacity deliverability option;
- iv. Generation projects that have obtained deliverability in the previous deliverability status assignment;

³ These generators may not have achieved FCDS or PCDS due to required Network Upgrades not in service yet.

- v. The MW amount of Potential DGD that was identified but not assigned in 2018-2019 DGD cycle, i.e. 2019 unassigned PDGD;
- vi. Transmission upgrades that have been approved in ISO Transmission Planning Process;
- vii. Network Upgrades required for any generation interconnection requests that are under construction or have received regulatory permits.

Next, target DG amounts were determined and added to the study model following the steps described below.

- i. Identify all DG nodes that have non-zero distributed generation MW in one of 2019-2020 Transmission Plan renewable portfolios.
- ii. At each DG node, determine the target additional DG amount. The target additional DG amount at each node was initially set to *{total existing Energy Only DG⁴ + the greatest of the (a) and (b) below}*:
 - a. Maximum DG MW at the node among all renewable portfolios
 - b. Total MW amount of non-NEM WDAT or Rule 21 requests

The target amount was set to 0 at a node if the following condition was true:

- If the node is within an electrical area for which the Queue Cluster 12 Phase I interconnection studies have showed a need for a Delivery Network Upgrade;

The total MW modeled at a node is equal to $\{\max(\text{target MW}, 2019 \text{ unassigned PDGD})\}$.

- iii. If a DG node is found to be behind a constraint for which there is an SPS/RAS, the node may be identified to have conditional PDGD:
 - a. If the constraint is behind a future SPS/RAS, the DG node behind such constraint will be identified to have no PDGD.
 - b. If the constraint is behind an existing load-dropping SPS/RAS, the DG node behind such constraint will be identified to have no PDGD if the SPS/RAS requires modification in terms of increasing required amount of load drop. If the SPS/RAS doesn't require modification in terms of increasing required amount of load drop, the DG node behind such constraint will be identified to have PDGD.
 - c. If the constraint is behind an existing gen-dropping SPS/RAS, the DG node behind such constraint will be identified to have conditional PDGD subject to verification from PTO for whether or not any DG at that node needs to be included in the SPS/RAS from a reliability perspective and if it is feasible.

⁴ For the purpose of this study, Energy Only DG includes any DG that has requested Energy Only Deliverability Status and not previously obtained Full Capacity Deliverability Status or Partial Capacity Deliverability Status, as well as the portion of a DG that would bring the DG from Partial Capacity Deliverability Status to Full Capacity Deliverability Status.

4 DGD determination

This ISO performed deliverability assessment determined the amount of deliverable MW at each node. Part or all of the deliverable MW amount determined was then identified as Potential DGD for assigning Deliverability Status to Distributed Generation Facilities. In general, the Potential DGD is the deliverable MW amount, minus any prior commitments, that does not exceed the sum of existing Energy Only DG and future Energy Only DG. If the initially identified Potential DGD is lower than the 2019 unassigned Potential DGD, the 2019 unassigned Potential DGD is preserved.

$$\text{Potential DGD} = \max \{ 2019 \text{ unassigned PDGD}, \min \{ \text{deliverable MW}, \text{existing EO} + \max \{ \text{base portfolio}, \text{EO interconnection requests} \} \} \}$$

5 Detailed DG deliverability assessment results

The detailed results are attached to this report. There is one worksheet for each PTO service territory. The following is a listing of the column headings used in the worksheet along with a brief explanation of each.

- A. **DG Node—Substation Name.** Name of the substation representing the DG node.
- B. **DG Node—Transmission Level kV.** The transmission level voltage at the transmission/distribution interface.
- C. **DG in Base Portfolio.** The megawatts of DG at the node in the base portfolio utilized in the ISO's 2019-2020 Transmission Planning Process.
- D. **WDAT/Rule 21 non-NEM DG—EO.** The total megawatts of non-NEM DG at the node in the WDAT queue that have requested Energy Only Deliverability Status and not obtained deliverability previously.
- E. **WDAT/Rule 21 non-NEM DG—FC.** The total megawatts of non-NEM DG at the node in the WDAT or Rule 21 queue that have requested or obtained deliverability.
- F. **Existing non-NEM DG—EO.** The total megawatts of non-NEM DG at the node already in commercial operation that have not obtained deliverability.
- G. **Existing non-NEM DG—FC.** The total megawatts of non-NEM DG at the node already in commercial operation that have obtained deliverability.
- H. **2019 Unassigned PDGD.** The total megawatts of Potential DGD identified but not assigned in the 2019-2020 DG deliverability cycle.
- I. **Target DG Modeled.** The total megawatts of DG modeled at the node in the DG deliverability assessment.
- J. **DG Deliverable.** The total megawatts of DG determined to be deliverable at the node.
- K. **Potential DGD.** The total megawatt amount of Potential DGD at the node available for assignment of deliverability status to DG resources. Potential DGD is calculated as $\text{Max} (\text{Column H}, \text{Min} (\text{Column J}, \text{Column F} + \text{Max} (\text{Column C}, \text{Column D})))$.
- L. **Notes.** Comments to help understand the results.