BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future.	R.21-06-017 (Filed June 24, 2021)

SAN DIEGO GAS & ELECTRIC COMPANY (U 902-E) INDEPENDENT PROFESSIONAL ENGINEER DISTRIBUTION PLANNING ADVISORY GROUP REPORT

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November 15, 2023

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Pursuant to the *Administrative Law Judge's Ruling on Recommended Reforms for the 2023 Distribution Investment Deferral Framework Process, the Partnership Pilot and the Standard-Offer-Contract Pilot* dated May 19, 2023 (the "Ruling"), and pursuant to the direction provided by the California Public Utilities Commission's Energy Division staff, San Diego Gas & Electric Company ("SDG&E") hereby submits into the record of this proceeding the Independent Professional Engineer SDG&E 2023 Distribution Planning Advisory Group ("DPAG") Report dated November 10, 2023 prepared by Resource Innovations (the "DPAG Report"). The DPAG Report is attached hereto as **Attachment A.** Concurrently with this motion, SDG&E is submitting a motion for leave to file under seal the confidential version of the DPAG Report.

Respectfully submitted,

/s/ Roger A. Cerda

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ATTACHMENT A

INDEPENDENT PROFESSIONAL ENGINEER SDGE 2023 DPAG REPORT

Independent Professional Engineer SDGE 2023 DPAG Report

PUBLIC VERSION

Submitted to California Public Utilities Commission Energy Division and SDGE

Date: November 10, 2023

Contents

1. Introduction and Background

Summary of CPUC Rulemaking 14-08-013 and Other Rulemakings

In August 2014, the CPUC issued Rulemaking (R.) 14-08-013, which established guidelines, rules, and procedures to direct California's IOUs to develop Distribution Resources Plans (DRPs).

In February 2018, the Commission issued Decision (D.) 18-02-004 which adopted the Distribution Investment Deferral Framework (DIDF) and directed the IOUs to file a Grid Needs Assessment (GNA) by June 1 of each year and a Distribution Deferral Opportunity Report (DDOR) by September 1 of each year. The GNA, as adopted by this decision, limits reported grid needs to four types of forecasted circuit level system deficiencies associated with the four distribution services that DERs can provide, as adopted in D.16-12-036: capacity, voltage support, reliability (back-tie) and resiliency (microgrid).

In May 2019, the assigned Administrative Law Judge (ALJ) issued a ruling that directed IOUs to file both the GNA report and DDOR on August 15 annually.

In April 2020, the assigned ALJ issued a ruling modifying the DIDF process and filings with respect to the Independent Professional Engineer (IPE) scope of work. This ruling also updated the 2020-2021 DIDF cycle schedule and defined the DIDF cycle to start on January 1 of each year and conclude July 31 the following year. Attachments A and B of the Ruling include a listing of the IPE-specific reforms discussed in the Ruling and the updated IPE scope of work. These attachments to the Ruling are included as Appendix A of this report. This ruling also included a new IPE Post-DPAG Report deliverable within the IPE scope of work.

In May 2020, the assigned ALJ issued a ruling modifying the DIDF process. This Ruling established 56 new reform requirements including process changes to approval for the Integrated Energy Policy Report (IEPR) dataset used for forecasting, requests for certain datasets to be hosted on the DRP Data Portals, value stacking that may result in deferral projects that exceed the cost cap, changes to how Locational Net Benefit Analysis (LNBA) data is presented, and recommendations for potential 2021-2022 DIDF cycle reforms.

In February 2021, the Commission issued IDER D. 21-02-006 which introduced the Partnership Pilot and the SOC Pilot and streamlined the DIDF RFO.

In June 2021, the assigned ALJ issued a ruling on recommended reforms to the DIDF process and revisions to some previous reforms to align with requirements adopted by D. 21-02-006.

In November 2021, the Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future (R.21-06-017) was filed to replace the 2014 Distribution Resource Plan and now stands as the OIR home for GNA and DDOR compliance.

In 2022, the Commission issued the 2022 DIDF Ruling, establishing seven reforms to three solicitation frameworks.

In May 2023, the Commission's 2023 DIDF Ruling focused primarily on updates to known load tracking and reporting, as well as terminating the Standard Offer Contract (SOC) Pilot. This Ruling also provided the revised schedule for 2023/2024 Distribution Investment Deferral Framework (DIDF) Cycle. The revised schedule as it applies to the IPE verification and validation process is provided below.

Table 1-1: DPAG Schedule for 2023-2024 DIDF Cycle (Partial table from the May 2023 Reform Ruling)

Activity	Date
Pre-DPAG 2023	
Pre-DPAG meetings and workshops, including Draft IPE Plans review	May 2023
DPAG 2023	
IOU GNA/DDOR filings Final IPE Plans Circulated	August 15, 2023
IPE Preliminary Analysis of GNA/DDOR data adequacy circulated	September 5, 2023
Utilities launch RFO	September 15, 2023
DPAG meetings with each IOU	Mid to Late September 2023
Participants provide questions and comments to IOUs and IPE	September 25*, 2023
IOU responses to questions	October 5*, 2023
Follow-up IOU meetings via webinar	Week of October 15, 2023
IPE DPAG Reports	November 8, 2023
IOU submits Tier 2 Advice Letter	November 15, 2023
Post-DPAG 2023 and 2024	
IOUs launch Partnership Pilot and second round of RFOs, if needed.	January 15, 2024 (or within 30 days of DIDF Advice Letter approval if approval is after December 15, 2023)
IPE Post-DPAG Report (covering all three Utilities)	March 15, 2024

*Note: As per the extension made by PG&E on behalf of all three utilities to the ALJ, the date for participants to provide questions and comments to utilities and IPE was changed from September 25 to October 2, and the date for utility response to questions was changed from October 5 to October 9.

Independent Professional Engineer

The California Public Utilities Commission (Commission) rulings direct Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company (Utilities or IOUs) to enter into a contract with an Independent Professional Engineer (IPE). The role of the IPE is as previously described and included as Appendix A of this report.

Through a contract with Resource Innovations, SDG&E engaged Mr. Sundar Venkataraman[1], PE, to serve as the advisory engineer (referred to as the Independent Professional Engineer (IPE)) for the scope described in the April 23, 2020 CPUC Ruling or as modified by subsequent rulings.

This report which meets the requirements included in the CPUC ruling was provided to SDG&E in sufficient time to be included in their Advice Letter seeking approval to launch the second cycle of the Partnership Pilot.

1.1. IPE Plan

As required by the April 23, 2020 Ruling, the IPE developed an IPE Plan that served to guide the IPE's steps to verify and validate the GNA/DDOR results. The plan was developed using a three-step process:

1. In step 1, IPE developed a draft IPE Plan working with the Energy Division and SDG&E by mid-May 2023.
2. The Plan was distributed to the service list and also discussed at the CPUC Distribution Forecasting Working Group meeting - both in an attempt to obtain stakeholder feedback on the plan.
3. Based upon stakeholder feedback received and under the direction of the Energy Division, the IPE revised the plan and made its IPE Final Plan available on August 15, 2023.

A copy of the Final IPE Plan is included as Appendix C.

The IPE Plan covers the business processes that the IOUs use to identify which distribution or subtransmission projects are recommended to proceed to a procurement process under which DERs are evaluated as potential cost-effective non-wires alternatives. One of the core purposes of the plan is answer the question - Are the IOUs identifying every planned distribution project that could feasibly and cost effectively be deferred by DERs?

The business processes in the Plan are organized generally in the order that they are performed. Starting with capturing the peak load values for each circuit for 2022, using the CEC IEPR forecasts to develop utility specific system level values which are then disaggregated to the circuit level,

[1] Consistent with the CPUC decision, the contract with Resource Innovations (RI), the firm where Mr. Venkataraman is employed, provides for other individuals within RI to assist Mr. Venkataraman to perform the work in the IPE contract provided that these other individuals are also bound by the same confidentiality and conflict of interest requirements that Mr. Venkataraman is required to meet.

adjusted for known loads, and then used to determine if there is an overload or other issue during the planning period. For circuits that have a need, a planned investment is selected, capital costs developed for that project and the planned investments are screened to develop a list of candidate deferral projects. These candidate deferral projects are then prioritized into tiers using several metrics. The deferral projects in the first tier are judged to have a higher likelihood of being cost-effectively deferred than projects in the second and third tiers. Pursuant to the ALJ's May 2022 reform ruling, the utilities then apply a quantitative methodology to select which of the tiered candidate deferral projects will be offered for deferral through the pilots.

1.2. Definitions of Verification and Validation

As part of the development of the IPE Plan, detailed definitions were developed to clarify the meaning of Verification and Validation as applied to the IPE scope of work. These definitions which are used and applied in all IPE deliverables, are listed below:

Verification – Is a review performed by the IPE during which an independent check is performed to determine if the results produced were developed using data assumptions and business processes that were defined and described by the utility or are based upon standard industry approaches that do not have to be defined and described. In other words, "Did the IOU follow their own processes correctly as defined by the IOU?"

Validation – Is a review performed by the IPE during which an independent assessment is performed of the appropriateness of the approach taken by the utility to perform a task from an engineering, economics, and business perspective. In other words, "Are the processes implemented by the IOU the best way to identify all planned investments that could feasibly be deferred by DERs cost effectively? And to what extent were the IOU methodologies appropriate and effective?"

1.3. Services Considered within the DDOR Framework

The CPUC, in a previous decision, approved the four services proposed by the Competitive Solicitation Framework Working Group (CSFWG) and directed the utilities to consider these services in the GNA/DDOR process. The four services as described in the decision are listed below in an excerpt from the decision:

"The following definitions for the key distribution services that distributed energy resources can provide are adopted for the Competitive Solicitation Framework:

- Distribution Capacity services are load-modifying or supply services that distributed energy resources provide via the dispatch of power output for generators or reduction in load that is capable of reliably and consistently reducing net loading on desired distribution infrastructure.
- Voltage Support services are substation and/or circuit level dynamic voltage management services provided by an individual resource and/or aggregated resources capable of dynamically correcting excursions outside voltage limits as well as

supporting conservation voltage reduction strategies in coordination with utility voltage/reactive power control systems.

- Reliability (back-tie) services are load-modifying or supply service capable of improving local distribution reliability and/or resiliency. Specifically, this service provides a fast reconnection and availability of excess reserves to reduce demand when restoring customers during abnormal configurations; and
- Resiliency (micro-grid) services are load-modifying or supply services capable of improving local distribution reliability and/or resiliency. This service provides a fast reconnection and availability of excess reserves to reduce demand when restoring customers during abnormal configurations."

1.4. Approach to Information Collection

The data required for the verification and validation of each business step, as well as the date when the data was due were specified in the Final IPE plan that was issued on August 15, 2023. This data was provided according to the Plan by SDG&E to the IPE using their secure FTP site. Additional data, if any, were obtained via the SFTP site based on the IPE's request. The IPE also used information provided by SDG&E in the DPAG meeting held on September 21, 2023. In addition, the IPE also reviewed publicly available materials referred to in the discussions with SDG&E or materials previously filed with the CPUC, as needed. A list of the data provided by SDG&E is included as Appendix D.

1.5. Report Contents

The remainder of this report includes the following sections:

- Section 2 – Review of GNA Report which briefly discusses the contents of the SDG&E GNA Report, and any significant differences noted in SDG&E's reports between the 2023 and 2022 reports. Observations, comments, and recommendations that result from the Validation review with respect to the GNA Report are included in this section.

- Section 3 – Review of DDOR Report which briefly discusses the contents of the SDG&E DDOR Report, and any significant differences noted in SDG&E's reports between the 2023 and 2022 reports. Observations, comments, and recommendations that result from the Validation review with respect to the DDOR Report are included in this section.

- Section 4 – Review of Screening and Prioritization which discusses the screening and prioritization process and results. Observations, comments, and recommendations that result from the Validation review with respect to the screening and prioritization are included in this section.

- Section 5 – Review of Candidate Deferral Projects which includes the review of projects that have been placed into the Tiers defined by SDG&E. Observations, comments, and

recommendations that result from the Validation review with respect to the placement of projects in the SDG&E defined Tiers are included in this section.

- Section 6 – Discussion of Other Topics of Interest. Observations, comments, and recommendations that result from the Validation review with respect to these topics are included in this section.
- Section 7 – Discussion of the Verification and Validation performed by the IPE.
- Appendix A – IPE Scope - Excerpt from April 23, 2020 CPUC Rulemaking 14-08-013
- Appendix B - Comments Received from the DPAG Members and IOU and IPE responses.
- Appendix C – IPE Final IPE Plan - SDG&E
- Appendix D - SDG&E Data Requests and Responses

Confidential Information

There are a number of places in this report that contain confidential Information. They may include, for example, grid needs information from the GNA or DDOR that are subject to the 15/15 Rule or contains business confidential data. This data is highlighted to show that it is Confidential but is still readable. In the Public version of the report this data is redacted.

These data elements, which are considered confidential by SDG&E because they are entries for projects that meet the 15/15 Rule or are business confidential, are treated in a similar way in the documents that are included in the appendices of this report. SDG&E has also assigned a pseudonym (such as “A” or “B”) for a circuit name whenever it appears in the filename in both the confidential and public versions of the attachments.

2. Review of GNA Report

The GNA Report submitted by SDG&E is summarized at a high level below.

2.1. Scope of SDG&E's GNA/DDOR Reports

The SDG&E GNA Report is a written report with an accompanying Excel spreadsheets of potential grid needs on its distribution system. SDG&E filed its GNA and DDOR Reports on August 15, 2023 as required by the CPUC.

SDG&E's 2023 GNA report is organized similar to the 2022 report under the following sections:

- Distribution Planning Process
- SDG&E's Distribution Resources Planning Assumptions and GNA Scope
- GNA Results
- Updates to the GNA

The report contains the following appendices:

- Appendix 1 – Load Disaggregation
- Appendix 2 – Substation Bank and Circuit Forecast Detail Summary
- Appendix 3 – DER Disaggregation Process
- Appendix 4 – Known Load Tracking Data

2.1.1. Distribution Planning Process

SDG&E's distribution planning process, which remains unchanged from 2022, begins with assessing the historical peak load review for circuits and banks. SDG&E then makes adjustments to the historical peak load considering factors such as, anticipated new load additions, load transfers, loss of a generator, and weather conditions at the time of the historical peak, etc.

SDG&E uses a third-party proprietary software forecast toolset from Integral Analytics, Inc. (LoadSEER GIS) to disaggregate the load forecast provided by the California Energy Commission (CEC) to a circuit level. SDG&E also uses another third-party software (SPIDER - Spatial Penetration & Integration of Distributed Energy Resources) to disaggregate some of the CEC's IEPR Distributed Energy Resource (DER) forecast components such as light duty electric vehicles (LDEV), photovoltaic solar and energy storage, to the zip code level. SDG&E then maps the zip code level forecast from SPIDER to circuits based on the customer counts on each circuit within the given zip code.

All of this data is used in LoadSEER to obtain 576 hourly net load circuit forecasts (typical weekday and weekend loads for each month) which are then reviewed by SDG&E's distribution planning

engineers to identify and correct errors, to address technical issues, and to validate the circuit level forecasts for overall reasonableness.

SDG&E also develops power flow models in Synergi by extracting circuit models from its Geographic Information System (GIS) and forecasts from LoadSEER. These power flow models are used to investigate voltage needs, as well as capacity needs at the line segment level.

SDG&E then identifies conventional distribution projects or Non-Wires Alternatives (NWA) (such as utility-owned battery storage) that mitigate forecast circuit performance issues revealed by the power flow results (i.e., distribution needs). SDG&E investigates if any of the forecasted grid deficiencies have operational-based solutions (which have little to no associated capital investment), contain forecast discrepancies, and/or have committed planned investments that were identified in a previous DIDF cycle. Based on this analysis, SDG&E provides a list of distribution needs that would result in new distribution capital infrastructure, if built. These are included in the DDOR as Planned Investments and, if they pass defined screens, listed in the DDOR as candidate deferral opportunities (CDOs).

2.1.2. SDG&E's Distribution Resources Planning Assumptions and GNA Scope

This section discusses the methodology and assumptions related to load forecasts, DER growth forecasts and distribution operational switching/load transfer criteria used to forecast and identify distribution needs that are reflected in SDG&E's 2023 GNA.

SDG&E's Distribution Resources Planning Horizon

SDG&E's 2023 GNA covers the 2023-2027 five-year planning horizon. As in the prior GNA's, SDG&E uses only the first three years of the five-year forecast when identifying needs associated with downstream line segments of a circuit.

SDG&E's Distribution System Load Forecast Assumptions

SDG&E used the CEC-approved Integrated Energy Policy Report (IEPR) Load Modifier Mid Baseline, High Transportation Electrification (TE), Mid Additional Achievable Energy Efficiency (AAEE) California Energy Demand (CED) 2021 forecast[2] as the starting point for forecasting circuit-level loads. SDG&E used a process to adjust the CEC's forecast[3] for known load additions and identify remaining load to be disaggregated in the forecasting models. This process was verified by the IPE and is further discussed in Section 2.4 of this report.

[2] As per CPUC Energy Division's July 28, 2022 approval of the Joint IOUs' submittal on May 11, 2022 regarding the IEPR datasets to use in the 2023 GNA/DDOR.
[3] The actual CEC file used is called "CED 2021 Load Modifiers – Mid Baseline Mid AAEE_Final_6.20.23"

The resultant system-level growth, allocated by customer class (residential, industrial, and commercial) is disaggregated to a circuit level using the LoadSEER GIS geo-spatial forecasting program which employs satellite imagery and proprietary data analytics to score each acre in SDG&E's territory for the likelihood of increased load by customer class. The circuit-level load forecasts are entered into the LoadSEER forecasting program which generates the 576-hourly load profiles for each circuit. LoadSEER applies an adverse weather factor to each circuit to create the 1-in-10 weather year forecast which is the basis for development of distribution grid needs. Another input to LoadSEER is the most recent summer weather data and historical substation loading which is then adjusted for a 1-in-2 weather year. SDG&E also employs several steps to validate and adjust historical peak loads to establish a starting point for distribution loading projections that are consistent with the existing circuit configuration on a going-forward basis. SDG&E also adjusts the circuit and transformer bank peak loads if necessary, to account for the largest distributed generation facility served by a circuit being offline during that circuit's or transformer bank's peak – also known as G-1 planning scenario.

In Appendix 2 of the GNA report, SDG&E provided a detailed summary of the substation bank and circuit peak demand forecasts that were utilized for the GNA.

SDG&E's Distribution System DER Growth Forecast Assumptions

SDG&E uses CEC's hourly system level forecasts for behind-the-meter photovoltaic solar (PV), behind-the-meter energy storage (ES), energy efficiency (AAEE), light duty electric vehicles (LDEV), medium-heavy duty electric vehicles (MDHDEV), as well as fuel switching (AAFS) as a starting point for modeling these load modifiers.

- The system-level forecasts for PV, ES and AAFS were obtained from CEC's "CED 2021 Hourly Forecast – SDGE - Mid Baseline - AAEE Scenario 3 - AAFS Scenario 3" forecast.
- The system-level forecast for EE was obtained from CEC's "CED 2021 Hourly Forecast – SDGE - Mid Baseline - AAEE Scenario 2 - AAFS Scenario 4" forecast.
- The system-level forecasts for LDEV and MDHDEV were obtained from CEC's "CED 2021 Hourly Forecast – SDGE - High Baseline - AAEE Scenario 1 - AAFS Scenario 4" forecast for the first seven years (2023-2029) of the forecast and from the HEIAWG Transport Electrification case for remaining years of the forecast (2030-2035)

SDG&E uses the SPIDER (Spatial Penetration & Integration of Distributed Energy Resources) model to disaggregate the above-mentioned system-level forecasts. The system-level incremental MW capacity by DER technology type is allocated to the circuits based on allocation methodologies specific to each DER type. Variables used to allocate incremental DER capacity geospatially include consumption by customer class, historical PV adoption by zip code, the s-curve trending model, weather zones, and many other factors specific for each type of DER, as discussed in Appendix 3 of SDG&E's GNA report.

The process used by SDG&E to disaggregate DERs was verified by the IPE and is further discussed in Section 7 of this report.

SDG&E's Load Transfers and Switching Assumptions

SDG&E's 2023 GNA included "no cost" load transfers and switching operations to arrive at the final list of needs. The operational/switching-based load transfers are normally the lowest cost options to address an identified need and utilize existing capacity on distribution circuits. The 2023 GNA deficiencies addressed through load transfers or phase balancing are shown in Table 2-1. Additional information regarding these operational procedures beyond what was provided in the GNA report were obtained from SDG&E as a part of the verification and validation process and is discussed in Section 7 of this report.

Table 2-1: SDG&E GNA deficiencies solved via load transfers and phase balancing

GNA_ID	Facility ID	Solution
GNA_2023_0001	2023_0395	Load Transfers
GNA_2023_0014	2023_0566	Load Transfers
GNA_2023_0016	2023_0101	Load Transfers
GNA_2023_0017	2023_0939	Load Transfers
GNA_2023_0023	2023_0092	Load Transfers
GNA_2023_0024	2023_0062	Load Transfers
GNA_2023_0028	2023_0357	Load Transfers
GNA_2023_0029	2023_0320	Load Transfers
GNA_2023_0008	2023_0120	Phase Balance
GNA_2023_0021	2023_0527	Phase Balance
GNA_2023_0022	2023_0081	Phase Balance

GNA Scope

SDG&E's 2023 GNA identifies distribution grid needs associated with the four distribution services that the Commission determined that DERs may be able to provide: distribution capacity, voltage support, reliability (back-tie), and resiliency (microgrid). The GNA identifies distribution capacity, and reliability (back-tie) services needs at the circuit level, substation transformer bank level and the line segment level. Since SDG&E does not have any transmission projects that come under the jurisdiction of the CPUC, no transmission level needs are identified in the GNA. Also, according to SDG&E, none of their Pre-Application and Post-Application projects include distribution components that address a distribution need identified through the distribution planning process, and none can be deferred by DERs since all are associated with transmission projects that are not subject to deferral by DERs through the DIDF.

GNA Refinements

SDG&E's 2023 GNA identified refinements subsequent to the internal dissemination of the distribution load forecast and prior to the publication of the GNA/DDOR on August 15, 2023. These refinements included the addition of five new needs as shown in the table below.

Table 2-2: SDG&E GNA Refinements

GNA_ID	Facility ID	Solution
GNA_2023_0006	2023_0353	New Need Added
GNA_2023_0009	2023_0506	New Need Added
GNA_2023_0020	2023_0386	New Need Added
GNA_2023_0025	2023_0156	New Need Added
GNA_2023_0026	2023_0539	New Need Added

Other Topics

Other topics covered in the GNA report include a discussion of data that is covered by customer confidentiality (15/15 rule), and the modeling discrepancies such as duplicated load additions and ampacity ratings that were found and corrected in the planning process. There were no modeling deficiencies identified in the 2023 GNA.

2.2. Changes to GNA for 2023

There are no changes in data formats between SDG&E's 2023 GNA and SDG&E's 2022 GNA. As required by the May 2023 Ruling, a new requirement for this cycle is a narrative summary on Known Load Metrics that are calculated based upon the Known Load Tracking Data. SDG&E provided this narrative summary as a part of the GNA report.

2.3. Discussion of GNA Results

SDG&E's 2023 GNA identified a total of 30 needs related to distribution capacity, voltage or resiliency and seven circuits that had a back-tie (reliability) need in addition to a capacity need. SDG&E has indicated in prior cycles that a back-tie need is included for any traditional project that would potentially provide additional back-tie capability. The back-tie need is not based on a separate analysis of the need for such a back-tie capability. A detailed discussion of SDG&E's back-tie analysis can be found in Section 2.4 of the 2021 IPE report. Table 2-3 shows a summary of the grid needs by distribution service type and by the type of equipment on which a constraint requiring mitigation was identified. Table 2-4 shows the dates by which the mitigation measure must in place.

Table 2-5 shows the actual list of needs from the 2023 GNA report. All the capacity, voltage, reliability needs shown in the table are new needs driven by growth in demand and DERs. Twenty

nine of the 30 needs are in the first three years of the forecast with the remaining need in the fourth year. As mentioned earlier, 11 of the needs are addressed using very low-cost load transfers or phase balancing.

Section 7 of this report includes a verification of the net loads and deficiencies (i.e., overloads) of a few circuits that are shown in Table 2-5.

Table 2-3: Summary of the Number of Grid Needs by Distribution Service Type and Equipment Type

-- Equipment Type	Distribution Service				Total
	Peak Thermal	Voltage	Back-Tie	Microgrid	
Substation Bank	4	0	0	0	4
Circuit	20	0	6	0	20
Line Segment	6	3	1	0	10
Totals	27	3	7	0	30

Note: Four circuits have both segment and circuit level thermal needs

Table 2-4: Summary of the Number of Grid Needs by Anticipated Upgrade Date

In-Service Date	Distribution Service				Total
	Peak Thermal	Voltage	Back-Tie	Microgrid	
2023	5	0	0	0	5
2024	13	2	4	0	15
2025	8	1	3	0	9
2026	1	0	0	0	1
2027	0	0	0	0	0
Totals	27	3	7	0	30

Table 2-5: List of Needs from the GNA Report

GNA_ID	Facility ID	Substation	Bank or Circuit ID	Distribution Service Identified	Primary Driver of Grid Need	Anticipated Upgrade Date
GNA_2023_0001	2023_0395	Chollas West	160	Thermal	Demand Growth	6/1/2024
GNA_2023_0002	2023_0397	Chollas West	163	Voltage	Low Voltage	6/1/2024
GNA_2023_0003	2023_0863	Border	BD3132	Thermal	Demand Growth	3/1/2025
GNA_2023_0004	2023_0210	Border	1161	Thermal, Backtie	Demand Growth	6/1/2024
GNA_2023_0005	2023_0882	Station F	F30	Thermal	Demand Growth	6/1/2024
GNA_2023_0006	2023_0353	Telegraph Canyon	1225	Thermal, Backtie	Specific Load	6/1/2025
GNA_2023_0007	2023_0320	Station F	140	Thermal	Specific Load	6/1/2024
GNA_2023_0008	2023_0120	MISSION	701	Thermal	Demand Growth	6/1/2024
GNA_2023_0009	2023_0506	Cannon	303	Thermal	Specific Load	6/1/2025
GNA_2023_0010	2023_0508	Cannon	781	Voltage	Low Voltage	6/1/2025
GNA_2023_0011	2023_0029	Friars	38	Thermal	Demand Growth	6/1/2026
GNA_2023_0012	2023_0849	Old Town	OT3031	Thermal	Demand Growth	6/1/2025
GNA_2023_0013	2023_0805	Margarita	983	Voltage	Low Voltage	6/1/2024
GNA_2023_0014	2023_0566	Palomar Airport	585	Thermal	Demand Growth	9/1/2023
GNA_2023_0015	2023_0496	Batiquitos	753	Thermal	Demand Growth	6/1/2024
GNA_2023_0016	2023_0101	Mira Sorrento	1448	Thermal	Specific Load	6/1/2024
GNA_2023_0017	2023_0939	Palomar Airport	PAR42	Thermal	Demand Growth	9/1/2023
GNA_2023_0018	2023_0556	Ocean Ranch	1406	Thermal, Backtie	Specific Load	6/1/2024
GNA_2023_0019	2023_0385	Carlton Hills	281	Thermal, Backtie	Specific Load	6/1/2024
GNA_2023_0020	2023_0386	Carlton Hills	282	Thermal, Backtie	Specific Load	6/1/2025
GNA_2023_0021	2023_0527	Melrose	205	Thermal	Demand Growth	6/1/2024
GNA_2023_0022	2023_0081	Mesa Rim	952	Thermal	Demand Growth	7/1/2023
GNA_2023_0023	2023_0092	Mesa Rim	958	Thermal	Demand Growth	9/1/2023
GNA_2023_0024	2023_0062	Kettner	137	Thermal	Demand Growth	6/1/2025
GNA_2023_0025	2023_0156	Point Loma	496	Thermal	Specific Load	11/1/2024
GNA_2023_0026	2023_0539	Morro Hill	486	Thermal	Specific Load	10/1/2024
GNA_2023_0027	2023_0279	Sampson	123	Thermal, Backtie	Specific Load	1/1/2024
GNA_2023_0028	2023_0357	Urban	425	Thermal	Demand Growth	9/1/2023
GNA_2023_0029	2023_0320	Station F	140	Thermal	Demand Growth	6/1/2025
GNA_2023_0030	2023_0211	Border	1162	Thermal, Backtie	Demand Growth	3/1/2025

2.4. Known Load Tracking Data

The ALJ's June 16, 2022 DIDF Reform order required all three utilities to track known load projects in the 2022 GNA/DDOR. The reform also required the Known Load Tracking data to include a unique project identifier, impacted circuit, initial service request date, load amount, current expected in-service date or indication if service request was cancelled, if appropriate, and type/category of load and, if appropriate, the actual date service was initially provided and the amount. Additionally, the May 2023 Reform Ruling required the utilities to develop a uniform list of type of customer and customer load categories for the Known Load Tacking Data. This unform list is shown in Table 2-6.

SDG&E provided the Known Load Tracking data as Appendix 4 of their GNA-DDOR report.

Table 2-6: Uniform List of Know Load Type and Category

Type	Category
Agriculture	Agriculture
Commercial	Business
	Education
	Healthcare
	Other
Industrial	Cultivation
	Facilities
	Plants
	Other
Residential	Home Construction
	Other
Transportation	LD EV
	MD/HD EV
Energy Storage	Retail
	Wholesale

2.5. Known Load Metrics

The May 2023 Ruling required the Utilities to provide a narrative summary report that includes metrics that are calculated using the Known Load Tracking Data and describing the implications of the calculated metrics. SDG&E made a number of observations in their narrative that are summarized below. The IPE plans to compare the methods used by the three utilities to calculate the metrics, as well as the results of these calculations in the Post-DPAG report.

Metric 1: Total of all known loads (MW or MVA and number of known loads) - SDG&E made that observation that the number of and amount of known load additions are concentrated in the first two years of the DIDF planning horizon.

Metric 2: Total of all known loads by category and type (MW or MVA and number of known loads) - SDG&E made the observation that largest share of Known Loads was from the Commercial load type.

Metric 3: Annual Change (relative to the previous Tracking Data submitted by the utility) in total of all known loads (MW or MVA, % and number of known loads) - SDG&E made the observation that the number and amount of known loads tracked and reported for the 2023 DIDF cycle, has increased for the first two years compared to the same years from the previous 2022 DPP cycle

Metric 4: Annual Change (relative to the previous Tracking Data submitted by the utility) in total of all known loads and also broken out by category and type (MW or MVA, % and number of known loads) - SDG&E calculated the metric based on load type only. SDG&E made the observation that the number and amount of known loads characterized as "Commercial" and "Residential" for the 2023 DIDF cycle, has increased compared to the previous 2022 DIDF cycle. SDG&E also noted that the "Transportation" type was not identified as a separate type in previous DIDF cycles.

Metric 5: Service Amount Deferred (MW or MVA) (MW or MVA, %) - SDG&E calculated this metric and made the observation that the service might be deferred due to a number of factors that are not within their control. SDG&E also cautioned that the small sample size might limit the usefulness of this metric.

Metric 6: Service Deferral Rate Total (%) - SDG&E calculated this metric and made the same observation as those for Metric 5.

Metric 7: Service Deferral Rate by Category and type (%) - SDG&E calculated this metric and made the same observation as those for Metric 5.

Metric 8: Cancellation Rate Total (%) – SDG&E calculated this metric and made the observation that the calculated values may not be typical across all categories of loads. SDG&E also noted that the calculation of this metric is sensitive to when the customer cancels its service request and when that cancellation is recorded in SDG&E's records.

Metric 9: Cancellation Rate by category and type (%) - SDG&E calculated this metric and made the observation that the calculated values may not be typical for that load type/category. SDG&E also noted that the calculation of this metric is sensitive to when the customer cancels its service request and when that cancellation is recorded in SDG&E's records.

Metric 10: Service Request Amount Increase Rate Total and Average Amount (%, MW or MVA) – SDG&E made the observation that the increased or decreased load amounts appeared to be a small portion of the total known loads and load amounts. SDG&E also made the observation that due to the small sample size, SDG&E does not find this metric and the associated metrics (10 through 13) meaningful or useful. Furthermore, SDG&E questioned the usefulness of the average amount (of increase or decrease) calculation.

Metric 11: Service Request Amount Increase Rate by category/type and Average Amount (%, MW or MVA) – SDG&E calculated this metric by load type only and made the same observation as those in Metric 10.

Metric 12: Service Request Amount Decrease Rate Total and Average Amount (%, MW or MVA) - SDG&E calculated this metric and made the same observation as those in Metric 10.

Metric 13: Service Request Amount Decrease Rate by category/type and Average Amount (%, MW or MVA) - SDG&E calculated this metric by load type only and made the same observation as those in Metric 10.

Metric 14: Service Deferral Rate (%) in first, second, third and fourth year after initial inclusion as a known load by type and category of known load - SDG&E stated that it was unclear how to calculate this metric because the in-service date for a given service request may have been adjusted multiple times, both in the downward and upward directions, after the service request's "initial inclusion" in the DPP, and because SDG&E does not record when these adjustments were made. The IPE plans to provide a recommendation regarding this metric in the post-DPAG report.

Metric 15: Service Cancellation Rate (%) in first, second, third and fourth year after initial inclusion as a known load, by type and category of the known load – SDG&E calculated this metric by load categories.

Metric 16: Service Reduction Rate (%) in first, second, third and fourth year after initial inclusion as known load by type and category of the known load - SDG&E stated that it was unclear how to calculate this metric since the amount of a given service request may be adjusted multiple times, both in the downward and upward directions, after the service request's first year of "initial inclusion," and the specific timing of these adjustments is not tracked.

2.6. GNA Observations, Conclusions and Recommendations

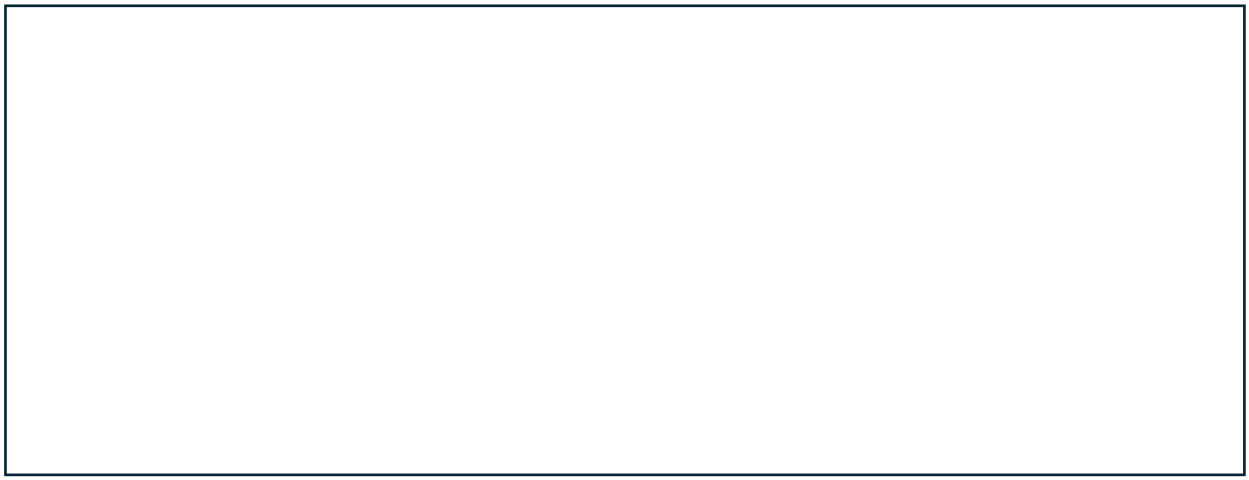
- The total number of grid needs in the 2023 GNA was higher that what was seen in the 2022 GNA, i.e., 30 needs in 2023 versus 22 needs in 2022. Eleven of the 30 needs were solved using no/low-cost transfers and phase balancing in 2023 compared to two out of 20 needs in 2022.

- In the 2023 GNA, all but one of the needs were in the first three forecast years compared to the 2022 GNA where all the needs were in the first three years.

- The total known load additions in the first three years increased from 116 MW in the 2022 GNA to 198 MW in the 2023 GNA. The majority of this increase was due to an increase in Business Customer-related loads. A pie chart of the total known load additions in the first 3 years by customer type is shown in the Figure 2-1 below for the 2022 and 2023 GNAs.

Figure 2-1: Known Load Customer Types and Load (MW) in the 2022 and 2023 GNA

(Note: The plot below contains confidential information and is redacted in the public report)



- Figure-2-2 and Figure-2-3 show a comparison of the IEPR load forecast and the load forecast used in the GNA on a cumulative and annual basis respectively. SDG&E indicated during discussions with the IPE that they are in the process of transitioning to a new methodology for accounting for any differences between the IEPR forecast and known load requests. Prior to the current cycle, SDG&E compared the cumulative IEPR forecast with the cumulative known loads each year and modeled spatial (economic) loads only when the cumulative IEPR loads exceeded the cumulative known loads. Due to this methodology, typically, there was no spatial load assigned to circuits since the cumulative known load often exceeded the cumulative IEPR forecast during the first few years.

SDG&E's new methodology compares the IEPR forecast and the sum of the known loads on an annual basis (not on a cumulative basis) and assigns spatial load if the annual IEPR forecast exceeds the annual sum of the known loads. This aspect of the new methodology was used in the current cycle. The results of this new methodology can be clearly observed in Figure-2-3. It can be seen that in the first year of the forecast (2023), there are no spatial loads assigned to circuits since the sum of the known loads for that year exceeds the IEPR forecast. Starting the second year (2024), spatial loads are assigned to circuits since the sum of the known loads in those years is lower than the IEPR forecast. The new methodology has the effect of moving spatial loads to earlier forecast years compared to the old methodology.

Figure-2-2 shows a comparison between the IEPR forecast and the load forecast used in the GNA on a cumulative basis. It can be seen that the GNA forecast starts higher since the sum of the annual known loads in the first year exceed the IEPR annual forecast for that year. SDG&E's new methodology intends to adjust the spatial loads in the later years of the forecast in the next DIDF cycle such that the cumulative GNA forecast matches with the cumulative IEPR forecast by the last year of the forecast period, similar to the methodology used in the past. In this current cycle, SDG&E did not make this adjustment to the spatial loads in the later forecast years resulting in the two curves not converging by the last year. However, according to SDG&E, this is not expected to have any impact on the results since the GNA primarily looks at a 5-year planning period and any load adjustments would likely occur beyond the 5-year planning period. A more detailed comparison of the IEPR and GNA forecasts can be found in Section 7 of this report.

Figure-2-2: Cumulative load forecast growth for the 13-year period

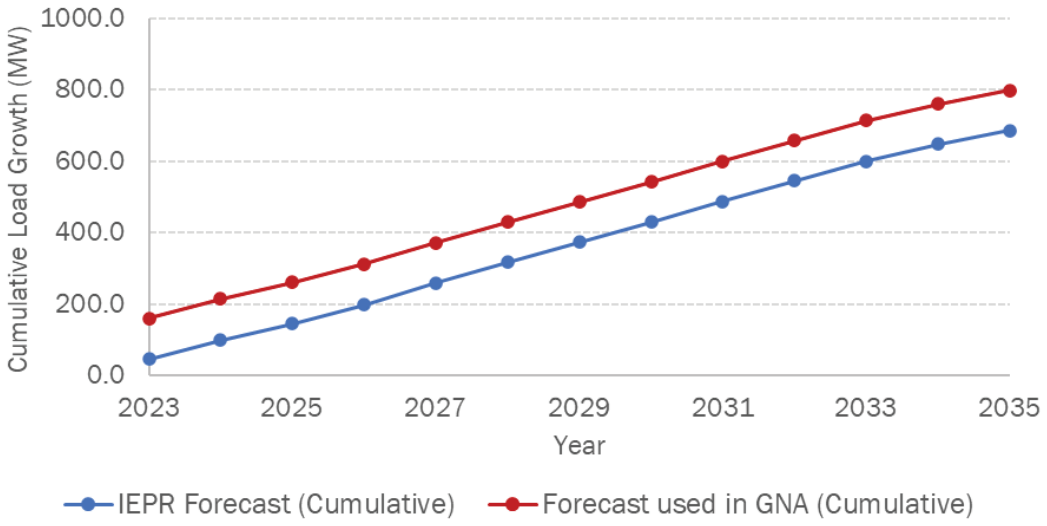
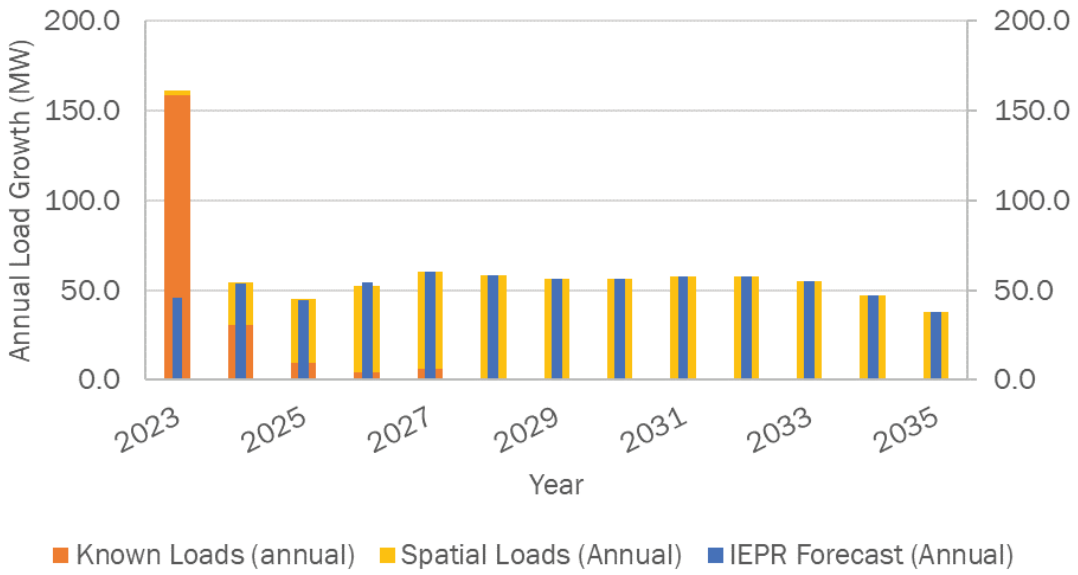


Figure-2-3: Annual load forecast growth for the 13-year period



- SDG&E calculated the Known Load metrics and provided a narrative as discussed in Section 2.5 of this report. The IPE plans to compare the methods used by the three utilities to calculate the metrics, as well as the results of these calculations in the Post-DPAG report.

3. Review of DDOR Report – Planned Investments

The DDOR begin with SDG&E's distribution planning engineers reviewing the needs identified in the GNA to determine a least cost, best fit and just-in-time solution to mitigate them. Typically, the least cost solution to resolve identified needs is to utilize existing equipment, which can also allow for rapid implementation. These include "no cost" load transfers and phase balancing which were discussed in Section 2.1.2. SDG&E engineers explore other options such as installing new circuits or reconductoring existing circuits if the needs cannot be appropriately mitigated using existing equipment.

SDG&E's 2023 DDOR provides an overview of nineteen (19) planned investments associated with the thirty (30) needs identified in the 2023 GNA. Of the thirty (30) needs identified in the GNA, eleven (11) needs are solved by load transfers or phase balancing as shown in Table 3-1. Section 7 of the report (Step 10) reviews the loading of the receiving circuit before and after the transfer. As shown in the table, eight of the needs are addressed using low-cost or no-cost transfers and three are addressed using phase balancing. The remaining nineteen (19) needs are addressed through nineteen (19) planned investments.

Table 3-1: Needs addressed by load transfers

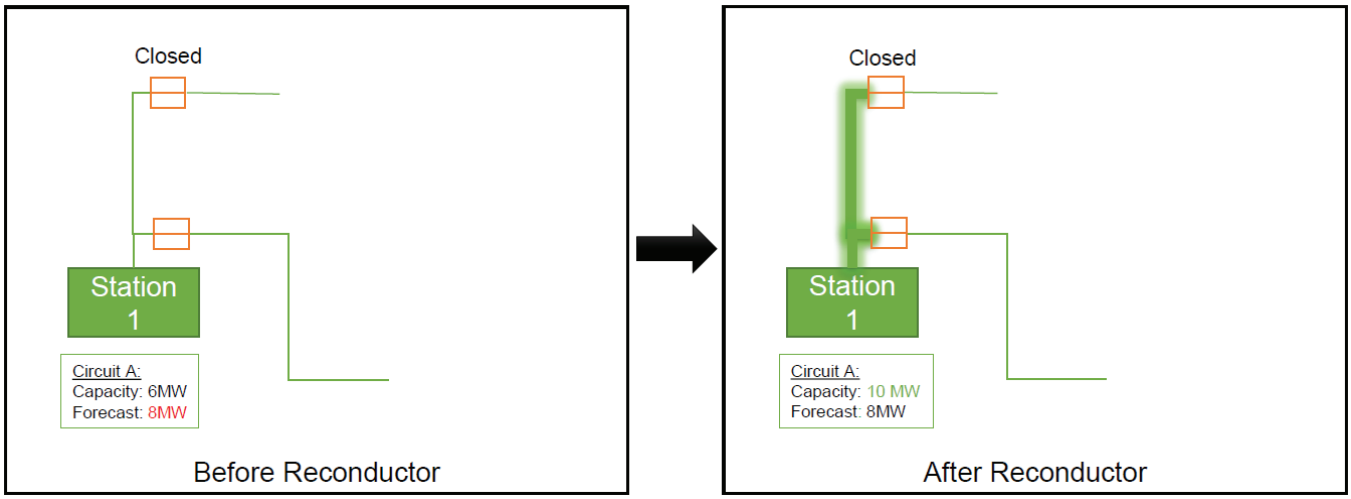
GNA_ID (From Circuit)	Facility ID (From Circuit)	Facility ID (To Circuit)	MW Transferred
GNA_2023_0001	2023_0395	2023_0330	
GNA_2023_0014	2023_0566	2023_0566	
GNA_2023_0016	2023_0101	2023_0099	
GNA_2023_0017	2023_0939	2023_0566	
GNA_2023_0023	2023_0092	2023_0100	
GNA_2023_0024	2023_0062	2023_0197	
GNA_2023_0028	2023_0357	2023_0356	
GNA_2023_0029	2023_0320	2023_0201	
GNA_2023_0008	2023_0120	N/A	Phase Balance
GNA_2023_0021	2023_0527	N/A	Phase Balance
GNA_2023_0022	2023_0081	N/A	Phase Balance

Table 3-2 shows the information for the planned investments provided in Appendix A of the DDOR report. All of the planned investment projects have an in-service date in the year 2024 or 2025, except for one project which has an in-service date of 2026. The planned projects are as follows: (i) Six new bank/circuit projects, (ii) Two projects that involve reconductoring, (iii) Three projects that involve a capacitor, and (iv) Eight projects that involve transferring load to another circuit with new equipment. SDG&E provided illustrative examples of planned project types in their DPAG meeting presentation which are reproduced below for convenience.

Reconductor

In this project type, the limiting element which is a conductor rated at 6MW is reconductored using a larger (10 MW) size conductor as show in in Figure 3-1.

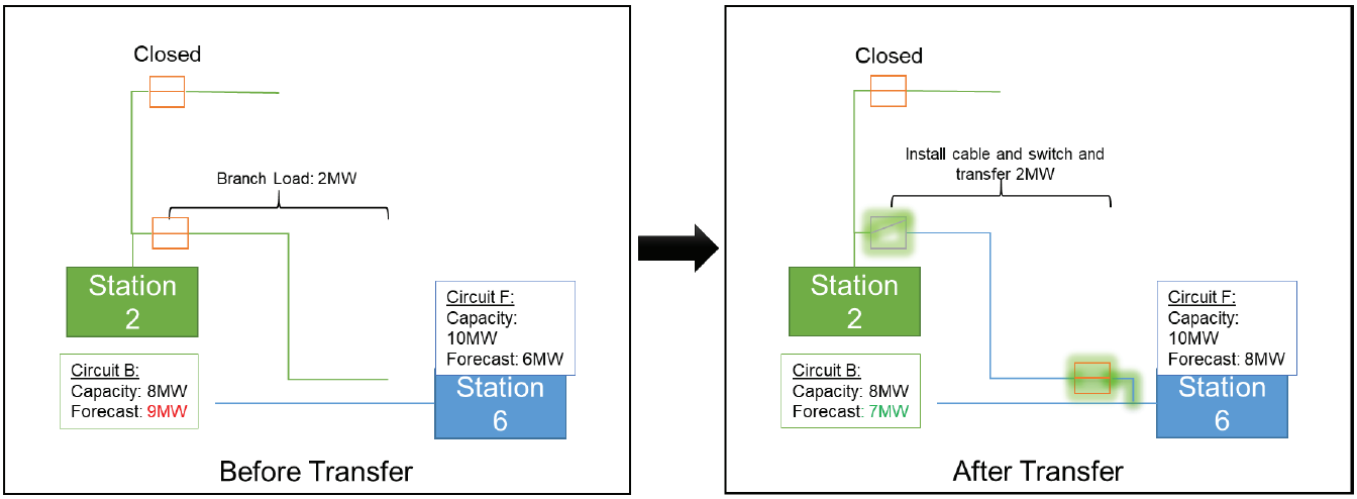
Figure 3-1: Figure showing an example project that involves reconductoring



Load Transfer with New Equipment

In this project type, Circuit B is expected to overload in the future. One of the laterals of this circuit is transferred over to a neighboring station (Station 6) using a new circuit and a switch. With this load transfer, the forecasted load remains below the rating of the circuit. This is shown in Figure 3-2.

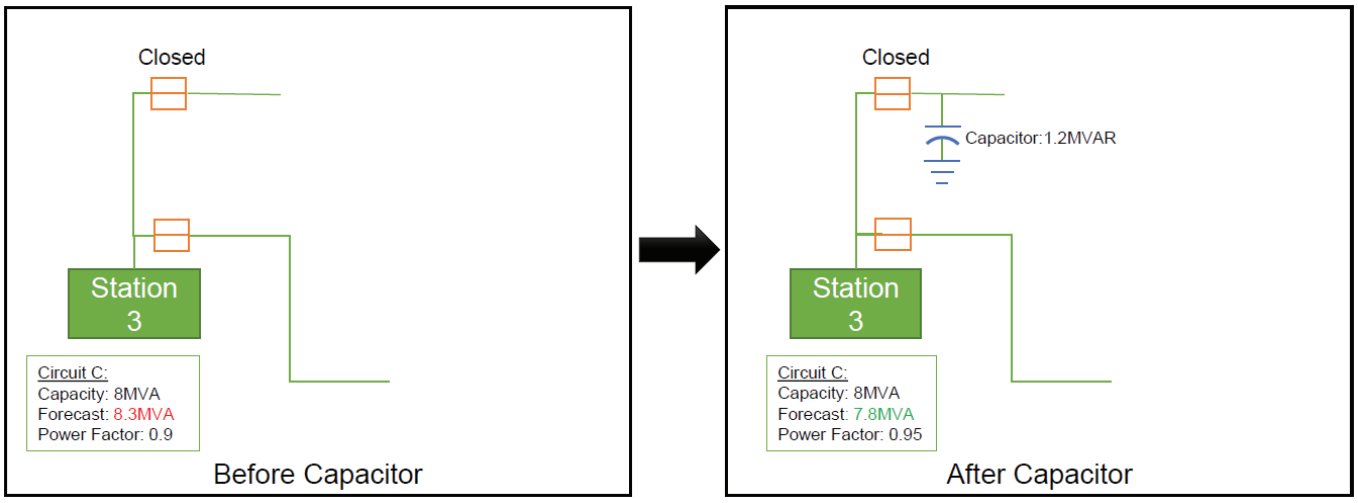
Figure 3-2: Figure showing an example project that involves a load transfer



New Capacitor

In this project type, Circuit C is expected to be above its MVA rating. The solution is to add a capacitor to the circuit to provide reactive power support. A voltage regulator project is similar to a capacitor project. This is shown in Figure 3-3.

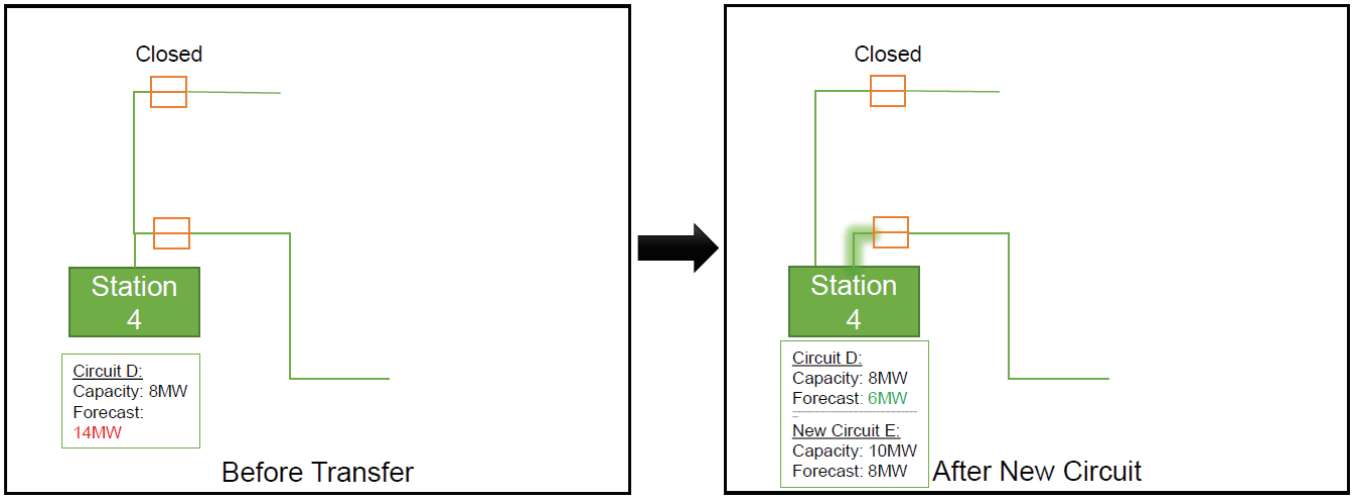
Figure 3-3: Figure showing an example project that involves a new capacitor



New Circuit/Transformers

In this project type, Circuit D is forecasted to be above its rating in the future. The solution is to add a new Circuit E to take on some of the load that was on Circuit D. This is shown in Figure 3-4.

Figure 3-4: Figure showing an example project that involves a new circuit



SDG&E's 2023 DDOR report includes a calculation of LNBA for all planned projects. SDG&E provides the estimates of LNBA values in $/KW-yr for capacity projects, $/Vpu-yr for voltage projects and $/KWh-yr for Microgrid projects. A key input for the LNBA calculation is the total cost of the planned distribution upgrade.

Table 3-2: Planned Investments

GNA ID	DDOR ID	Facility ID	Substation	Bank or Circuit	Distribution Service Identified	Description	Equipment Involved	In-Service Date
GNA_2023_0003	DDOR_2023_0001	2023_0863	Border	BD3132	Thermal	New Substation Bank	Substation Bank	3/1/2025
GNA_2023_0004	DDOR_2023_0002	2023_0210	Border	1161	Thermal, Backtie	Transfer with new equipment	Switch, Capacitor, UG Cable	6/1/2024
GNA_2023_0006	DDOR_2023_0003	2023_0353	Telegraph Canyon	1225	Thermal, Backtie	Transfer with new equipment	UG Cable, Capacitor	6/1/2025
GNA_2023_0007	DDOR_2023_0004	2023_0320	Station F	140	Thermal	Transfer with new equipment	Switch	6/1/2024
GNA_2023_0012	DDOR_2023_0005	2023_0849	Old Town	OT3031	Thermal	New Substation Bank	Substation Bank, Circuit Breaker, UG Cable	6/1/2025
GNA_2023_0011	DDOR_2023_0006	2023_0029	Friars	38	Thermal	Transfer with new equipment	Capacitor	6/1/2026
GNA_2023_0002	DDOR_2023_0007	2023_0397	Chollas West	163	Voltage	New Capacitor	Capacitor	6/1/2024
GNA_2023_0020	DDOR_2023_0008	2023_0386	Carlton Hills	282	Thermal, Backtie	New Circuit	Circuit Breaker, UG Cable, Switch	6/1/2025
GNA_2023_0018	DDOR_2023_0009	2023_0556	Ocean Ranch	1406	Thermal, Backtie	New Circuit	Circuit Breaker, UG Cable, Switch	6/1/2024
GNA_2023_0015	DDOR_2023_0010	2023_0496	Batiquitos	753	Thermal	Transfer with new equipment	UG Cable, Capacitor	6/1/2024
GNA_2023_0005	DDOR_2023_0011	2023_0882	Station F	F30	Thermal	Transfer with new equipment	Capacitor	6/1/2024
GNA_2023_0019	DDOR_2023_0012	2023_0385	Carlton Hills	281	Thermal, Backtie	New Circuit	Circuit Breaker, UG Cable, Switch	6/1/2024
GNA_2023_0009	DDOR_2023_0013	2023_0506	Cannon	303	Thermal	Reconductor	UG Cable	6/1/2025
GNA_2023_0013	DDOR_2023_0014	2023_0805	Margarita	983	Voltage	New Capacitor	Capacitor	6/1/2024
GNA_2023_0026	DDOR_2023_0015	2023_0539	Morro Hill	486	Thermal	Transfer with new equipment	Switch	10/1/2024
GNA_2023_0027	DDOR_2023_0016	2023_0279	Sampson	123	Thermal, Backtie	Transfer with new equipment	UG Cable	1/1/2024
GNA_2023_0010	DDOR_2023_0017	2023_0508	Cannon	781	Voltage	New Capacitor	Capacitor	6/1/2025
GNA_2023_0010	DDOR_2023_0017	2023_0508	Cannon	781	Voltage	New Capacitor	Capacitor	6/1/2025
GNA_2023_0010	DDOR_2023_0017	2023_0508	Cannon	781	Voltage	New Capacitor	Capacitor	6/1/2025

3.1. DDOR Report Planned Investments - Observations, Conclusions and Recommendations

The 2023 DDOR had 19 planned investments compared to 17 planned investments in the 2022 DDOR. The table below summarizes the project types for the two years.

Table 3-3: Comparison of 2022 and 2023 DDOR Project Types

Project Type	2023 DDOR	2022 DDOR
Capacitor Relocation	0	1
New Capacitor	3	3
Voltage regulator	0	1
Transfer with new equipment	8	0
Reconductor Circuit	2	6
New Circuit	4	3
New Substation Bank	2	3

4. DDOR Report – Methodology for Screening and Prioritization of CDOs

4.1. Project Screens

This section contains a discussion of the screens that SDG&E used to identify CDOs from its list of Planned Investment Projects. SDG&E used both a technical screen and a timing screen to screen projects in the process of developing a list of CDOs. The screens are the same as the ones used in prior cycles and include:

Technical Screen

The purpose of the Technical Screen is to identify the distribution services DERs can provide to potentially defer a distribution project, and whether there are any technical deferral limitations associated with certain projects.

Timing Screen

The purpose of the Timing Screen is to ensure cost-effective DER solutions can be procured with sufficient time to fully deploy and begin commercial operation in advance of the forecast need date. Three years (by Year Four) is the earliest year considered adequate to successfully procure, contract, design, develop, market, and deploy DER solutions for these services.

Based upon our review, the screening was performed in a manner that is consistent with prior CPUC rulings. Following the application of the technical and timing screens SDG&E identified one candidate deferral opportunity in the fourth year of the forecast horizon. All the other planned projects were within the first three years of the five-year forecast horizon.

4.2. Project Prioritization

This section contains a discussion of the prioritization process used by SDG&E to prioritize its candidate deferral projects and a discussion of the various metrics SDG&E used during that process. This is the third DIDF cycle in which the three utilities are using a jointly developed project prioritization methodology in the form of an Excel workbook. The calculations used in the prioritization methodology are unchanged from those used in the last cycle.

As required by CPUC Reforms #19 and #20 of the May 2020 ALJ Ruling, the IOUs were required to develop a Joint Prioritization Workbook Template for approval by the CPUC. The joint workbook was presented to the CPUC and subsequently approved by the CPUC on May 14, 2021. The Joint Workbook maintains the use of the three previously CPUC approved metrics – Cost-Effectiveness, Forecast Certainty, and Market Assessment. These three areas have quantitative metrics and

qualitative metrics. The quantitative metrics are used to rank the CDOs and to place into one of three Tiers – either Tier 1, Tier 2, or Tier 3. The qualitative metrics are used to Flag projects for project attributes that the utility believes, based upon past experience, would make a project unlikely to be deferred by a DER. The Flags are applied after the projects are ranked using the quantitative metrics and override the ranking by automatically placing them into Tier 3. These metrics are listed below.

Quantitative Metrics

For Cost-Effectiveness

- LNBA ($/MW-yr)
- LNBA ($/MWh-yr)

For Forecast Certainty

- Grid Need Certainty (SDG&E used a Level of Certainty Questionnaire completed by Planning Engineers)

For Market Assessment

- Duration of Need (Hours)
- Capacity Need (MW)/Circuit

Qualitative Metrics

For Cost-Effectiveness

- Unit Cost of Traditional Mitigation ($) (Flagged if project capital cost exceeds threshold value set by each utility)

For Forecast Certainty

- Year of Need (Flagged if Operational date is after threshold year set by utility)

For Market Assessment

- Operational Requirement (Flagged if Real Time response needed by DER)
- Number of Grid Needs (Flagged if number of needs exceed threshold value set by utility)

The Joint Prioritization Metrics Workbook template quantifies how projects are tiered by assigning a Red-Amber-Green (RAG) score to each project. This method also considers the flags applied to each project. The RAG score is calculated by assigning a +1 score to first quartile projects, a 0 score to second/third quartile projects, and a -1 score to bottom quartile projects across each prioritization metric. Projects with a total RAG score greater than 0 are assigned to Tier 1, projects with a total RAG score equal to 0 are assigned to Tier 2, and projects with a total RAG score less than 0 or a flag in any one of the prioritization metrics are assigned to Tier 3.

Since there is only one CDO, and the template is set up for ranking and tiering multiple projects, many of the entries in the template could not be populated. When there are one or two candidate deferral opportunities, the utility will exercise its judgement in assigning those projects to Tier 1, Tier 2 and/or Tier 3.

4.3. Project Prioritization - Observations Conclusions and Recommendations

- The IPE makes the observation that based upon the experience of the three IOUs that the existing prioritization system appears to prioritize more projects for procurement than are really good candidates for procurement. We make this observation on the number CDOs that are recommended for procurement versus the number that receive cost-effectively DER bids. The IPE recommends that it examines the potential to make improvements to the prioritization process to more effectively identify projects that are likely to be cost-effectively deferred by DERs. The IPE reviewed conceptual approaches that could use absolute ranking for project prioritization in the 2022 Post DPAG report. We recommend that such a concept be included in the proposed prioritization review along with the additional experience the utilities have conducted procurement and the bides they received in the last few years. The IPE plans to report on this review in the 2024 Post DPAG report.

5. Review of SDG&E's Prioritization of Candidate Deferral Projects and Pilot Selections

As previously mentioned, SDG&E has identified one candidate deferral opportunity (CDO) for deferral by cost-effective DER in this cycle. SDG&E stated that according to the language of the Commission-adopted staff proposal, this single candidate deferral opportunity must be offered for deferral through the Partnership Pilot[4]. SDG&E therefore proposed that the single Tier 1 candidate deferral opportunity be offered for deferral via the Partnership Pilot.

5.1. Determination of Operational Requirements

SDG&E uses the following process for developing the operational requirements for DER projects. This process is unchanged from prior years.

- First, SDG&E uses the P95 net load profile for the circuit/bank and its rating to determine the overloads and hours and months during which the overloads occur during the deferral years, i.e., for the years 2026 through to 2032.
- SDG&E uses the maximum overload as the Capacity (MW) that is needed from DERs. For example, if the maximum overload occurs in hour 19 in the year 2032, this overload sets the DER capacity requirement for all the overloaded hours in that year.
- The duration for which DER needs to provide this capacity is determined adding an hour before and after to the hours during which there is a forecast overload. For example, if the overload occurs in hour 19 is the year 2032, the duration for which the DER needs to operate is determine as hours 18 through 20. Similarly, if the forecast overloads occur in hours 19-22 is the year 2032, the duration for which the DER needs to operate is determined as hours 18 through 23.
- The "Energy Need (MWh)" is reported on a per-day basis and is determined by multiplying the capacity requirement by the "Duration". The "Duration" is reported as the number of hours per day. For example, if 1 MW is needed for 6 hours each day, then the energy need is 6 MWh each day.
- To calculate the "Yearly Frequency" (e.g., how many times the overload occurs and hence the number of times per year that the DER solution could be called on to provide distribution service), SDG&E assumes that if there is an overload on either a weekend or weekday of each month, then the overload has the potential to occur in any or all days of the month. For example, if the 576 data shows overload in a typical weekday in July through September, then SDG&E assumes that the frequency of occurrence of the overload is 92 (overload occurs each day in July (31 days), August (31 days) and September (30 days)).

[4] The Commission-adopted staff proposal states that the "…IOUs…pilot the [Partnership Pilot with] …one Tier 1….All other Tier 1 opportunities should be…for…RFO or the SOC". Staff proposal at p. 11.

- Since the peaks could occur in the summer months (typically, June through October), the period during which the DER needs to provide the distribution service includes all of these months.
- If the DER also needs to meet a back-tie need, then the duration of operation required for back-tie service is also included as an operational requirement. The number of hours the DER is required to operate to relieve an overload on a neighboring circuit is set to 2 hours by SDG&E as established in Appendix of the 2018 GNA Report. The period during which the back-tie service needs to be available is all hours of the year (8760 hours) since outages can occur at any time.

Table 4-1 shows the operational requirements for the CDO from this cycle that has been recommended for the Partnership Pilot.

Table 4-1: Operational Requirements for Tier 1 Projects

GNA ID	DDOR ID	Facility ID	Distribution Service Required	Capacity (MW)	Hour of Day	Duration	Time of Year	Yearly Freq	Year
GNA_2023_0011	DDOR_2023_0006	2023_0029	Thermal						2023
			Thermal						2024
			Thermal						2025
			Thermal						2026
			Thermal	[redacted]	17-22	6	June - October	36	2027
			Thermal	[redacted]	17-23	7	June - October	56	2028
			Thermal	[redacted]	17-23	7	June - October	60	2029
			Thermal	[redacted]	16-24	9	June - October	92	2030
			Thermal	[redacted]	16-24	9	June - October	120	2031
			Thermal	[redacted]	15-24	10	June-October	168	2032

6. Other Items of Interest

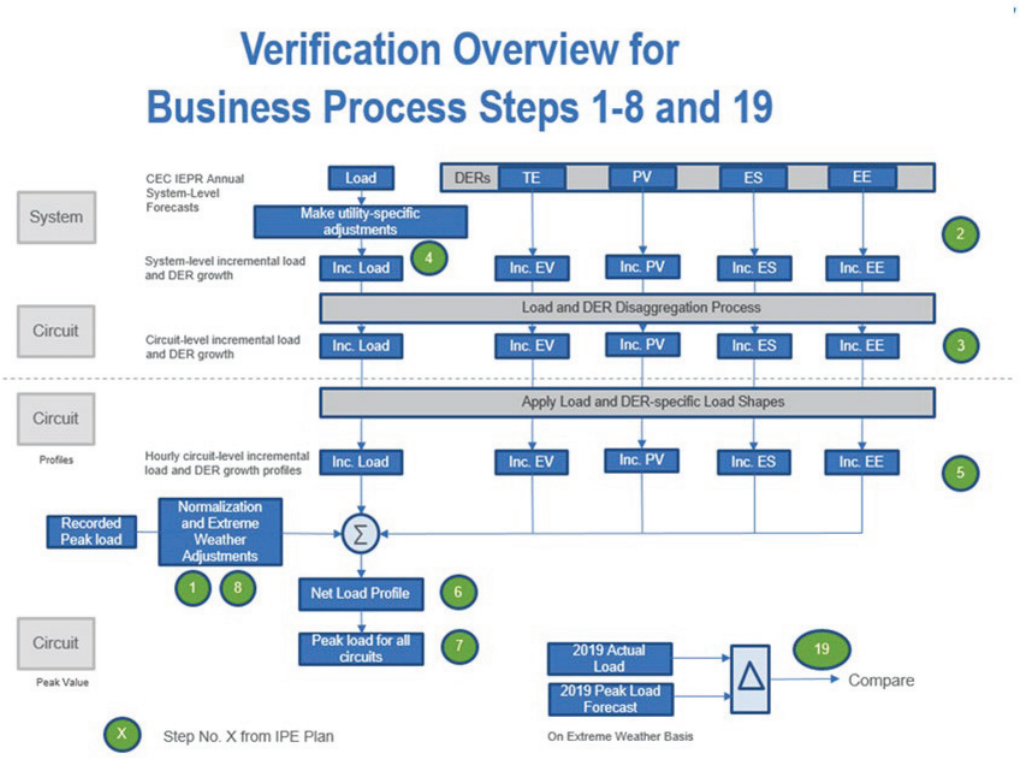
6.1. Redaction of Data in Public Version of the IPE DPAG Report

We observe that as a result of the request by SDG&E to treat some data in this report as confidential, the public version of this report will contain some figures and tables that are redacted. We recognize that this impacts the information that the public receives from the IPE report. We have tried to minimize the impact of redaction in the public report by providing both GNA and Facility IDs (which are public). We have also provided the results of our verification in a generic way without naming the circuit(s) on which the verification was performed.

7. Verification Approach and Results

The results of the step-by-step process verification process followed by the IPE is presented in this section. This verification review will follow the framework set out in the Final IPE Plan included in Appendix C. To a large extent, the verification process is same as the one performed for the previous cycle. Any differences from last year's process are discussed in this section. It should be noted that as per the IPE plan, the verification and validation of Steps 13, 14, 16 and 18 were not performed in this cycle since the business process for these are the same as the last cycle. It should also be noted that this year's V&V process included a new step (Step 20) for the verification and validation of the known load metrics calculated by the utilities. The following graphic provides an overview of the Steps 1 through 8 and 19 in the review process.

Figure 7-1: Business Steps Overview



In order to perform the step-by-step verification, the IPE gathered circuit-level data for a number of representative circuits through data requests sent to SDG&E. These representative circuits were selected using the following criteria:

- Circuits from various regions within SDG&E
- Circuits where the historical data contains discrepancies such as gaps in SCADA data, temporary transfers, etc.
- Circuits that show how the historical peak data is adjusted for 1-in-2 weather.

- Circuits with and without needs identified in the GNA
- Circuits with needs identified in the GNA that were solved by phase balancing and transfers
- Circuits with planned projects

Table 7-1 shows which circuits were used in the various steps of the verification process. In this table, the facility code or pseudonym used for identifying the circuits are also provided.

Table 7-1: List of circuits used in the verification steps

Facility ID	Facility Code	Data discre-pancies and temporary transfers	Peak load weather normalization	Known load additions	Load transfers and phase balancing	Planned projects	Candidate Deferral Opportunity	Steps verified
2023_0025	A	x	x	x				1,4, 5-9, 11,12
2023_0137	B	x	x	x				1,4, 5-9, 11,12
2023_0259	C	x	x					1
2023_0497	D	x	x					1, 5-9, 11,12
2023_0209	E	x	x					1, 5-9, 11,12
2023_0340	F	x	x					1
2023_0019	G	x	x					1
2023_0641	H	x	x	x				1,4
2023_0648	I	x	x					1
2023_0395	J				x			10
2023_0566	K			x	x			10
2023_0101	L			x	x			10
2023_0939	M				x			10
2023_0092	N				x			10
2023_0062	O			x	x			10
2023_0357	P			x	x			10
2023_0320	Q			x	x			10
2023_0330	JB				x			10
2023_0600	KB				x			10
2023_0099	LB			x	x			10
2023_0100	NB				x			10
2023_0197	OB				x			10
2023_0356	PB				x			10
2023_0201	QB							10

It should be noted that only circuit and bank level needs were verified through analysis of the detailed steps discussed below. Segment level capacity and voltage needs are determined using load flow analysis.

7.1. PROCESSES TO DEVELOP SYSTEM LEVEL FORECASTS AT CIRCUIT LEVEL

7.1.1. Collect 2022 Actual Circuit Loading, Normalize and Adjust for Extreme Weather – Steps 1 and 8

Purpose: To verify the calculation of weather-normalized peak loads for a subset of circuits selected by the IPE; Perform validation of the process.

Process: SDG&E uses the 2022 actual circuit loading data from SCADA to develop the normalized 1-in-2 peak load for each circuit. First, SDG&E uses Integral Analytics SCADA Scrubber to remove any data errors and temporary load transfers. SDG&E Engineers then review scrubbed data and identify peak load for each circuit. Generation from largest single generator (or closely coupled generators) above 0.5MW are added back based on expected generation during the peak load hour. Finally, SDG&E uses an internal tool to develop 1-in-2 weather adjusted peak load for each circuit using the peak load from the scrubbed data. This process is the same as what was used in prior years.

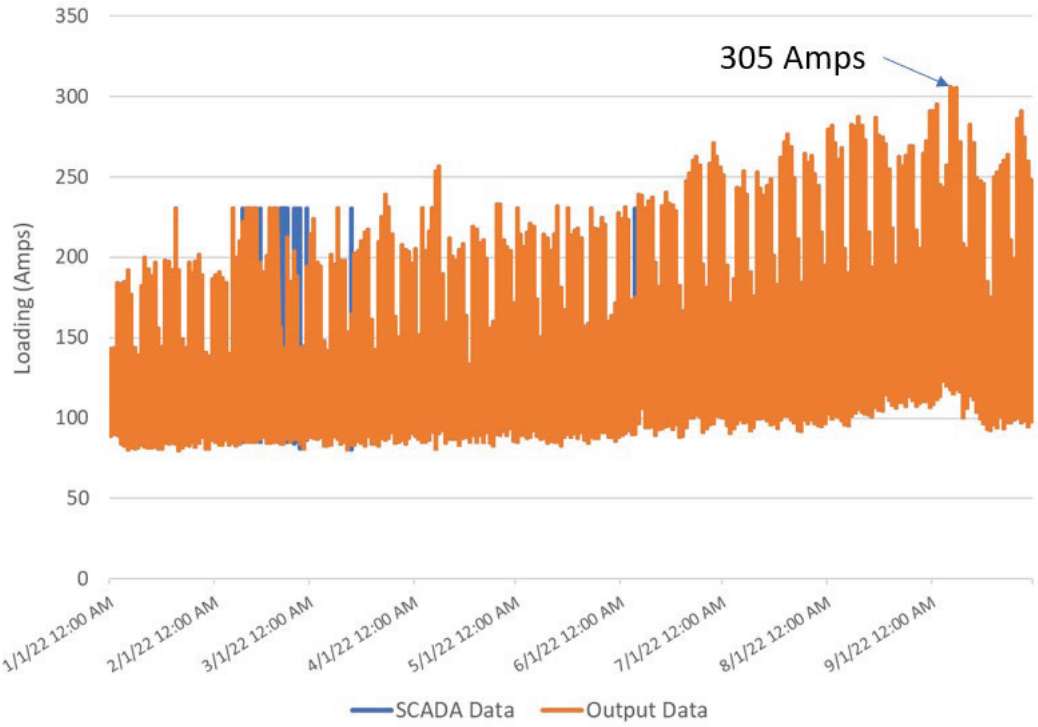
Verification: The IPE collected the observed peak load data for selected circuits that will be used in the verification of subsequent steps. This is shown in Table 7-2. This table also shows the equipment rating and the capacity with Alternate Service. SDG&E indicated that "Capacity with Alternate Service" is capacity contracted by a customer which needs to be available all the time. The loading on a circuit will be limited to the Alternate Service rating if it's lower than the equipment rating.

Table 7-2: Scrubbed 2022 Peak Load and Rating for Select Circuits

Facility ID	Facility Code	Peak Load (Amps)	Peak Date and Time	Equipment Rating	Capacity w/Alt Service
2023_0025	A				
2023_0137	B				
2023_0259	C				
2023_0497	D				
2023_0209	E				
2023_0340	F				
2023_0019	G				
2023_0641	H				
2023_0648	I				

The IPE obtained the 2022 hourly raw SCADA data, as well as scrubbed data from SCADA Scrubber for all the circuits shown in Table 7-2. The raw and scrubbed data for one of the circuits is shown in Figure 7-2. In this figure the instances of temporary load transfer can be seen in the raw SCADA data (blue). The scrubbed data is shown in orange. The peak of the scrubbed data matches with the value reported in Table 7-2 for this circuit.

Figure 7-2: Raw and Scrubbed Hourly Load (Amps) Profile for a Circuit



The IPE also verified the process used by SDG&E to normalize the peak load for 1-in-2 weather. The weather normalization is performed using average daily maximum temperature and Weighted Average Cooling Degree Days (WCDD) gathered over the last 16 years for this calculation. This is shown in Table 7-3.

Table 7-3: Weather Normalized Peak Loads for Select Circuits

Facility ID	Facility Code	Peak Loading from SCADA Scrubber (Amps)	Normalization Factor calculated by IPE	Normalized Peak Calculated by IPE (Amps)	Normalized Peak used in the GNA (Amps)
2023_0025	A		1.02		
2023_0137	B		0.975		
2023_0259	C		0.983		
2023_0497	D		0.996		
2023_0209	E		0.992		
2023_0340	F		0.971		
2023_0019	G		1.029		
2023_0641	H		1.053		
2023_0648	I		1.003		

The scrubbed peak loads and the weather normalization factor (in the form of a multiplier) are then input to LoadSEER. LoadSEER uses this information, along with the hourly circuit loads for the last three years and hourly temperature data for the last thirty years to develop weather-adjusted (1-in-10 or P95) 576-hourly load profiles. The P95 profiles translates to a 1-in-10 probability load profile and P75 translates to 1-in-2.

7.1.2. Determine Load and DER Annual Growth on System Level- Step 2

Purpose: To verify the calculation of annual system level load and DER growth using the CEC IEPR system-level forecasts as the starting point.

Process: The process used by SDG&E for determining system level load and DER forecasts is summarized below.

- SDG&E used the peak load and energy forecasts from the "CED 2021 Load Modifiers – Mid Baseline Mid AAEE" as the starting point for load forecasts.
- SDG&E models the following DERs explicitly: Additional Achievable Energy efficiency (AAEE), Photovoltaics (PV), Energy Storage (ES), Light Duty Electric Vehicles (LDEV), Medium Duty & Heavy Duty Electric Vehicles (MDHDEV) and Additional Achievable Fuel Switching (AAFS). There is no Load Modifying Demand Response (LMDR) modeled in this cycle.
- The forecasts for LDEV and MDHDEV were obtained from the following hourly forecast from the CEC:
  - CED 2021 Hourly Forecast-SDGE-High Baseline - AAEE Scenario 1 - AAFS Scenario 4 for the years 2023 to 2029, and
  - HEIAWG Hourly Forecast for the years 2030 to 2035

- The forecasts for residential PV, ES and AAFS were obtained from the following hourly forecast from the CEC:
  - CED 2021 Hourly Forecast-SDGE-Mid Baseline - AAEE Scenario 3 - AAFS Scenario 3
- The forecasts for residential AAEE were obtained from the following hourly forecast from the CEC:
  - CED 2021 Hourly Forecast-SDGE-Mid Baseline - AAEE Scenario 2 - AAFS Scenario 4
- SDG&E adjusts the IEPR peak load forecast for the following: transmission losses, other private generation and EVs. The adjusted forecast is used for determining the annual peak load growth at the system level.
- The annual peak load growth is then allocated to customer classes (residential, industrial, and commercial) proportional to their forecast annual energy consumption.
- Annual known load additions for each customer class are then subtracted from the annual peak load growth calculated in the previous step.
- The resultant system level growth forecast by customer classes is disaggregated to the circuit level using allocation factors discussed in Step 3.

This process is the same as last year's with the exception that SDG&E used a combination of CED 2021 High Baseline and the HEIAWG forecasts for forecasting peak loads due to light and medium and heavy-duty electric vehicles as mentioned above.

Verification: The IPE obtained the following IEPR forecasts and performed the calculations as described above.

- CED 2021 Load Modifiers – Mid Baseline Mid AAEE,
- CED 2021 Hourly Forecast-SDGE-High Baseline - AAEE Scenario 1 - AAFS Scenario 4,
- HEIAWG Hourly Forecast,
- CED 2021 Hourly Forecast-SDGE-Mid Baseline - AAEE Scenario 3 - AAFS Scenario 3, and
- CED 2021 Hourly Forecast-SDGE-Mid Baseline - AAEE Scenario 2 - AAFS Scenario 4

The annual load growth forecasts used by SDG&E to develop the needs in the GNA and verified by the IPE are provided in Table 7-4. The forecasts for other DERs such as EE, PV, ES, LDEV, MDHD EV and AAFS are derived from the hourly forecast for these DERs developed by the CEC. These are discussed further in Section 7.1.3.

Table 7-5 shows the calculation of system-level loads to be disaggregated to the circuits (i.e., spatial loads) after taking the Known Load growth into account which is shown on line 6. As mentioned in Section 2 of this report, SDG&E indicated that they are in the process of transitioning to a new methodology for accounting for any differences between the IEPR forecast and known load requests. Prior to the current cycle, SDG&E compared the cumulative IEPR forecast with the cumulative known loads each year and modeled spatial (economic) loads only when the cumulative IEPR loads exceeded the cumulative known loads. Due to this methodology, typically, there were no spatial load assigned to circuits in the first few years since the cumulative known loads often exceeded the cumulative IEPR forecast during the first few years. SDG&E's new methodology compares the IEPR forecast and the sum of the known loads on an annual basis (not on a cumulative basis) and assigns

spatial load if the annual IEPR forecast exceeds the annual sum of the known loads. Using this methodology, the spatial load assigned to circuits in the first year is zero[5]. From the second forecast year onwards, the annual IEPR forecast exceed the annual sum of the known loads and some spatial load (equal to the difference between the IEPR forecast and he known loads in that year) is assigned to circuits. As observed in Table 7-5, the total spatial load assigned to the circuits each year by class (rows 17-19) match very closely with the difference between the IEPR forecast and the sum of the known loads in that year (row 11)[6]. As mentioned in Section 2, SDG&E indicated that it intends to adjust the spatial loads in the later years of the forecast in the next DIDF cycle such that the cumulative GNA forecast matches with the cumulative IEPR forecast by the last year of the forecast period.

The IPE plans to obtain the methodology that SDG&E plans to use in the next cycle for adjusting the loads in the later years and include a review of it in the 2024 IPE Post-DPAG report.

[5] A negligible amount (2MW) of spatial loads were assigned to circuits in the first forecast year which should not have any impact on the results.
[6] There are some minor differences in how the spatial loads are assigned to classes in the years 2024-26. However, this is not expected to have any impact on the results since the load profiles for DOM and COM class are not very different.

Table 7-4: Developing Annual System-level Load and DER forecasts from CEC IEPR forecast

SDGE TAC Peak and Energy Forecasts: CED 2021 Mid Baseline / AAEE Scenario 3 / AAFS Scenario 3

Coincident Peak 1 in 2 (MW)			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	Peak End Use Consumption (traditional baseline end use load plus electrification and climate change impacts)		4660	4788	4854	4928	4995	5069	5149	5227	5305	5385	5471	5553	5636	5710	5779
2		1 Includes LDEVs	29	45	63	82	103	121	138	156	174	195	220	240	263	286	312
3		1 Includes Busses and Other Medium/Heavy-Duty EVs	0	0	1	2	3	5	8	10	12	15	18	21	24	27	30
4		1 Includes Other Electrification	0	1	2	3	3	4	5	6	7	8	9	10	11	12	13
5		1 Includes Incremental Climate Change Impacts	3	6	9	12	15	18	22	25	29	32	36	39	43	47	51
6																	
7	Estimated Losses		295	298	296	296	295	295	295	294	294	293	293	293	293	292	291
8	Gross Generation for Peak End Use Consumption (1 plus 7)		4955	5086	5150	5224	5290	5364	5444	5521	5599	5678	5765	5847	5929	6003	6071
9	Self-Generation Corresponding to Peak End Use Consumption		1066	1154	1239	1320	1395	1474	1556	1640	1724	1809	1895	1980	2064	2146	2227
10		9 Includes Photovoltaic	-971	-1060	-1146	-1227	-1303	-1383	-1466	-1550	-1635	-1720	-1806	-1891	-1975	-2058	-2139
11		9 Includes Other Private Generation	-95	-94	-93	-93	-92	-91	-91	-90	-89	-88	-88	-88	-88	-88	-88
12		9 includes Storage	0	0	0	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-2
13	Load-Modifying Demand Response		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14																	
15																	
16	Baseline Net Load Corresponding to Peak End Consumption (8 plus 9 plus 13)*		3888	3932	3910	3903	3894	3889	3886	3880	3873	3868	3869	3865	3863	3854	3841
17	Peak Shift Impact, Baseline Forecast		360	429	503	569	629	692	755	821	885	950	1012	1077	1139	1201	1260
18	*Baseline Net System Peak (16 plus 17)*		4248	4361	4413	4472	4523	4581	4642	4701	4758	4818	4881	4942	5003	5055	5101
19	AAEE Savings Corresponding to Peak End Use Consumption (plus losses)		0	-35	-60	-80	-101	-122	-144	-165	-185	-206	-227	-247	-267	-284	-300
20	AAFS Impacts Corresponding to Peak End Use Consumption (plus losses)		0	-1	-1	1	3	7	11	15	19	24	28	33	38	42	46
21	Managed Net Load Corresponding to Peak End Consumption (16 plus 19 plus 20)*		3888	3895	3850	3824	3796	3774	3753	3730	3707	3685	3670	3651	3634	3612	3588
22	Peak Shift Impact, Managed Forecast		360	434	516	587	651	717	784	853	920	989	1054	1122	1187	1252	1313
23	*Managed Net System Peak (21 plus 22)*		4248	4329	4365	4411	4447	4491	4537	4583	4627	4674	4724	4773	4822	4864	4901

Incremental Load growth to disaggregate by class	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
DOM			2	23	36	30	22	22	22	22	22	22	21	18	15
COM			0	0	0	18	32	36	34	35	35	36	34	29	23
IND			0	0	0	0	0	0	0	0	0	0	0	0	0
Years to disaggregate															

Table 7-5: Calculation of System-Level Loads to Disaggregate in LoadSEER

			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	IEPR Load Growth (Annual)	Total	46	54	45	54	60	58	56	56	58	58	55	47	38
2		DOM	18	21	17	21	23	23	22	22	22	23	22	18	15
3		COM	28	33	27	33	37	35	34	34	35	35	34	29	23
4		IND	0	0	0	0	0	0	0	0	0	0	0	0	0
5															
6	Known Load Additions Totals (Annual)	Total	159	31	9	4	6	0	0	0	0	0	0	0	0
7		DOM	24	5	0	0	1	0	0	0	0	0	0	0	0
8		COM	134	26	9	4	5	0	0	0	0	0	0	0	0
9		IND	0	0	0	0	0	0	0	0	0	0	0	0	0
10															
11	Annual IEPR Forecast minus Annual Known Load Additions	Total	**-113**	**23**	**35**	**50**	**54**	**58**	**56**	**56**	**58**	**58**	**55**	**47**	**38**
12		DOM	-7	16	17	21	23	23	22	22	22	23	22	18	15
13		COM	-107	7	18	29	31	35	34	34	35	35	34	29	23
14		IND	0	0	0	0	0	0	0	0	0	0	0	0	0
15															
16	Annual Load growth to disaggregate by class														
17		DOM	**2**	**23**	**36**	**30**	**22**	**22**	**22**	**22**	**22**	**22**	**21**	**18**	**15**
18		COM	**0**	**0**	**0**	**18**	**32**	**36**	**34**	**35**	**35**	**36**	**34**	**29**	**23**
19		IND	0	0	0	0	0	0	0	0	0	0	0	0	0

7.1.3. Disaggregate Load and DER Annual Growth to Circuit Level –Step 3

Purpose: To verify that the sum of the disaggregated loads and DERs match the CEC system level values (verification for Step 3a) and that the disaggregated loads and DER capacities are used to develop their respective profiles in Step 5 (verification for Step 3).

Process: A high-level summary of SDG&E's load & DER disaggregation process is given below. This process is unchanged from the prior cycle.

Load disaggregation

SDG&E uses Integral Analytics LoadSEER software to score each acre in SDG&E's territory for the likelihood of increased load by customer class. SDG&E then allocates the customer class load growth projections (verified in Step 2) to each parcel based on the ratio of the parcel score to the total score and maps the load growth to circuits based on closest proximity. Results are then reviewed by local planning engineers with specialized knowledge of local areas.

DER Disaggregation

SDG&E disaggregates system-level growth forecasts (verified in Step 2) down to the circuit level for the following five DERs: Additional Achievable Energy efficiency (AAEE), Photovoltaics (PV), Energy Storage (ES), Electric Vehicles (EV), and Additional Achievable Fuel Switching (AAFS). The system-level incremental MW capacity by DER technology type is allocated to the circuits based on methodologies specific to each DER type. Variables used to allocate incremental DER capacity geospatially include consumption by customer class, historical PV adoption by zip code, the s-curve trending model, weather zones, and many other factors specific to each type of DER. The DER disaggregation process is described in detail in Appendix 3 of the GNA report.

Verification: The IPE obtained circuit-level load and DER growth forecasts for all circuits from SDG&E. We then performed a check to see if the sum of the circuit level forecasts for load and each DER matched with the corresponding system-level values verified in Step 2. Table 7-6 to Table 7-11 show the results of the verifications performed. The results show that the sum of circuit level forecasts match with the corresponding system-level values for both load and DERs.

Table 7-6: Load growth forecast verification at the feeder level

System-level load growth forecast from CEC (MW)													
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Residential	2.0	25.4	61.0	91.2	113.6	136.0	157.7	179.5	201.7	224.1	245.4	263.7	278.4
Commercial	0.0	0.0	0.0	17.8	49.6	85.1	119.6	154.1	189.5	225.0	258.9	288.0	311.2
Industrial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.0	25.4	61.0	109.1	163.2	221.2	277.4	333.6	391.3	449.1	504.3	551.7	589.6
Sum of circuit-level load growth forecast calculated by the IPE (MW)													
Residential	2.0	25.0	61.0	91.0	114.0	136.0	158.0	179.0	202.0	224.0	245.0	264.0	278.0
Commercial	0.0	0.0	0.0	18.0	50.0	85.0	120.0	154.0	190.0	225.0	259.0	288.0	311.0
Industrial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.0	25.0	61.0	109.0	164.0	221.0	278.0	333.0	392.0	449.0	504.0	552.0	589.0

Table 7-7: EE growth forecast verification at the feeder level

System-level EE growth forecast from CEC (MW)													
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total	18.00	14.00	12.00	13.00	13.00	13.00	13.00	13.00	15.00	15.00	14.00	13.00	11.00
Sum of circuit-level EE growth forecast calculated by the IPE (MW)													
Residential	8.66	6.74	5.77	6.26	6.26	6.26	6.26	6.26	7.22	7.22	6.74	6.26	5.29
Commercial	8.84	6.88	5.90	6.39	6.39	6.39	6.39	6.39	7.37	7.37	6.88	6.39	5.40
Industrial	0.50	0.39	0.33	0.36	0.36	0.36	0.36	0.36	0.41	0.41	0.39	0.36	0.30
Total	18.00	14.00	12.00	13.00	13.00	13.00	13.00	13.00	15.00	15.00	14.00	13.00	11.00

Table 7-8: ES growth forecast verification at the feeder level

System-level ES growth forecast from CEC (MW)													
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total	7.00	8.00	7.00	8.00	7.00	9.00	7.00	9.00	7.00	7.00	8.00	8.00	8.00
Sum of circuit-level ES growth forecast calculated by the IPE (MW)													
Residential	5.30	6.21	5.53	6.41	5.67	7.35	5.74	7.40	5.76	5.75	6.56	6.53	6.51
Commercial	1.70	1.79	1.46	1.58	1.32	1.64	1.25	1.59	1.24	1.24	1.43	1.46	1.48
Total	6.99	7.99	6.99	7.99	6.99	8.99	6.99	8.99	6.99	6.99	7.99	7.99	7.99

Table 7-9: PV growth forecast verification at the feeder level

System-level PV growth forecast from CEC (MW)													
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total	127.00	121.00	113.00	118.00	123.00	125.00	125.00	126.00	126.00	125.00	123.00	122.00	118.00
Sum of circuit-level PV growth forecast calculated by the IPE (MW)													
Total	126.93	120.93	112.93	117.93	122.92	124.92	124.91	125.91	125.90	124.90	122.90	121.90	117.89

Table 7-10: EV growth forecast verification at the feeder level

System-level EV growth forecast from CEC (MW)													
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
MHDEV	3.00	4.00	3.00	5.00	6.00	6.00	8.00	25.00	16.00	15.00	17.00	17.00	14.00
LDEV	80.00	76.00	78.00	75.00	83.00	77.00	72.00	80.00	190.00	184.00	192.00	194.00	184.00
Sum of circuit-level EV growth forecast calculated by the IPE (MW)													
MHDEV	2.98	3.98	2.98	4.97	5.97	5.97	7.96	24.86	15.91	14.92	16.90	16.90	13.92
LDEV	79.91	76.05	78.05	75.05	83.05	77.05	72.04	80.05	190.10	184.10	192.09	194.09	184.08

Table 7-11: AAFS growth forecast verification at the feeder level

System-level AAFS growth forecast from CEC (MW)													
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total	5.99	5.99	5.99	4.99	3.99	4.99	4.99	4.99	5.99	5.99	4.99	4.99	4.99
Sum of circuit-level AAFS growth forecast calculated by the IPE (MW)													
Total	6.00	6.00	6.00	5.00	4.00	5.00	5.00	5.00	6.00	6.00	5.00	5.00	5.00

7.1.4. Add Known Load Growth Projects to Circuit Level Forecasts (those loads not in CEC forecast) – Step 4

Purpose: To verify the process used by SDG&E for handling known load additions in load forecasting process.

Process: Known load additions could be embedded in the CEC forecast or incremental to the CEC forecast. SDG&E does not have any loads that it considers to be "incremental" (as that term is used by SCE). Embedded known loads are subtracted from the CEC forecast in coming up with the system-level forecasts that are allocated to the circuits as verified in Step 2. Examples of known loads are given below:

- New Commercial: Business, Transportation, Hospitals, Parking, Military and Farming
- New Residential: Home construction
- New Industrial: Manufacturing and Chemical Processing

Verification: The IPE gathered known load additions by customer class at the circuit level, which are shown in Table 7-12. We then compared the cumulative circuit-level load by customer class with the system-level values used in Step 2. These values matched exactly.

Table 7-12: Known load additions by customer class

	2023	2024	2025	2026	2027
New Commercial	134.2	25.8	9.4	4.1	5.1
New Residential	24.4	5.0			0.7
Total	158.6	30.8	9.4	4.1	5.8

7.1.5. Convert Peak Growth to 576 Profile, Determine Peak Load – Steps 5, 6 and 7

Purpose: To verify that 576 hourly profiles for peak load growth, DER growth and base load forecast obtained from LoadSEER correspond to the peak load growth, DER growth and base load forecasts verified in Step 2 for select circuits.

Process: Below is a high-level summary of the process that SDG&E uses to develop 576-hourly profiles for base load, load growth and DER growth. This process is unchanged from last year's.

Peak load growth 576 hourly profile

SDG&E uses the circuit-level peak load growth forecast by customer class (verified in Step 3) and standard 576-hourly profiles for each customer class to develop the Peak load growth 576 hourly

profile for each circuit for each forecast year. This is done using LoadSEER which calculates the 576-hourly load growth profiles at different percentile levels such as P5, P25, P75, and P95.

DER growth 576 hourly profile

SDG&E uses the circuit-level DER growth forecast by customer class (if applicable) and standard 576-hourly profile for each DER to develop the DER growth 576 hourly profile for each circuit for each forecast year.

Base load 576 hourly profile

LoadSEER is also used to develop 576-hourly profiles for base load at different percentile levels such as P5, P25, P75, and P95. LoadSEER used the last three years of hourly load data for each circuit and thirty years of hourly weather data to develop these profiles.

Verification: The IPE obtained the 576 hourly base load, load growth and DER growth profile from LoadSEER for several circuits as shown in Table 7-1. The IPE also obtained standard load profiles for new loads by customer class and various DERs by customer class, as applicable. We then used the peak load and DER forecast at the circuit level (verified in Step 3) and the standard profiles to develop 576 hourly profiles and compared it with those from LoadSEER. Figure 7-3 to Figure 7-8 show the comparison of the 576 profiles from LoadSEER and those calculated by the IPE for PV, EV, ES, EE, economic load growth, and known load addition for a circuit. In these figures, the upper plot shows the results from LoadSEER and the lower plot shows the values calculated by the IPE drawn using the same scale. The actual values are not provided due to their confidential nature. It can be observed from these figures that the 576 profiles calculated by the IPE match very closely with those obtained from LoadSEER. It should be noted that a direct comparison of the base load profile calculated by LoadSEER was not possible since the software employs proprietary algorithms, using several years of historical data, to determine this profile.

Figure 7-3: PV 576-Hourly Profile (KW) Comparison for a sample circuit

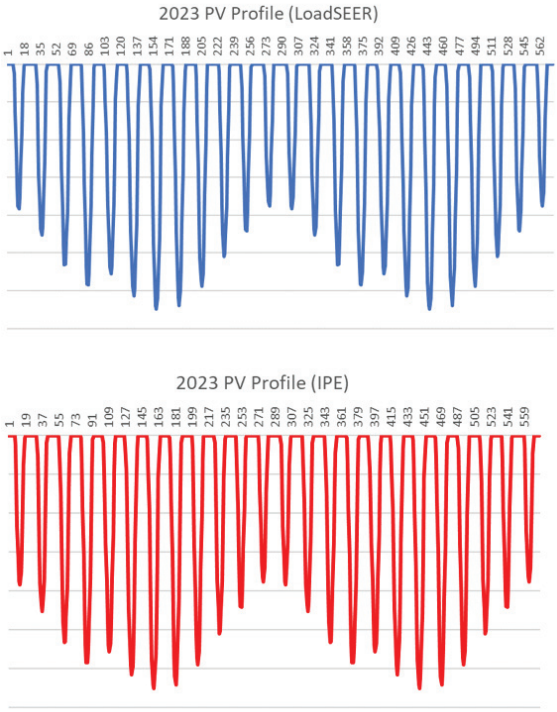


Figure 7-4: EV 576-Hourly Profile (KW) Comparison for a sample circuit

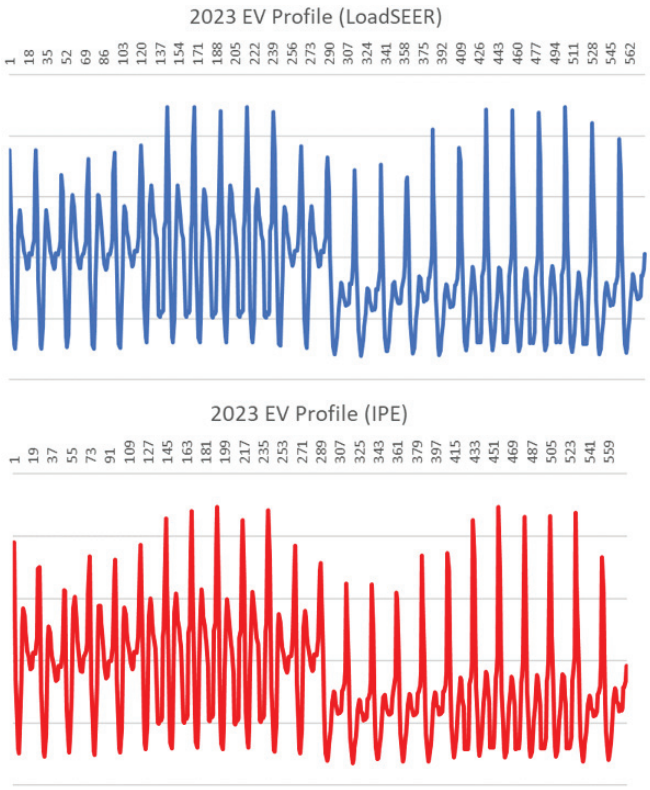


Figure 7-5: ES 576-Hourly Profile (KW) Comparison for a sample circuit

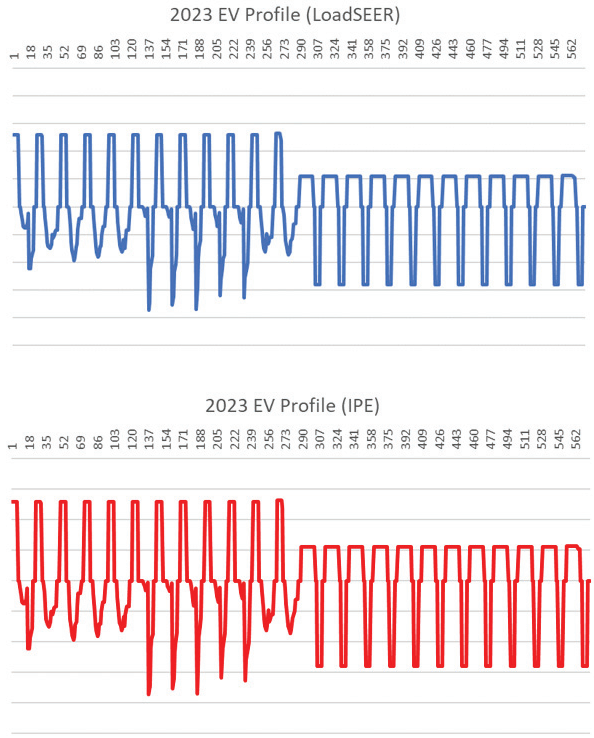


Figure 7-6: EE 576-Hourly Profile (KW) Comparison for a sample circuit

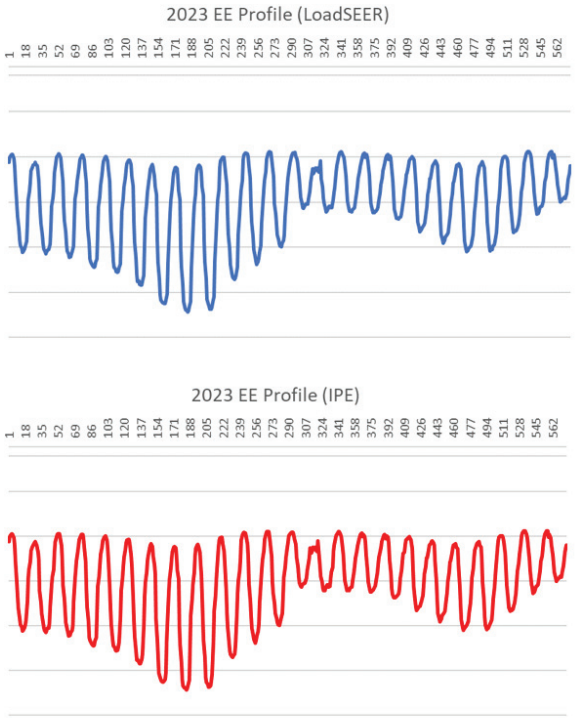


Figure 7-7: AAFS 576-Hourly Profile (KW) Comparison for a sample circuit

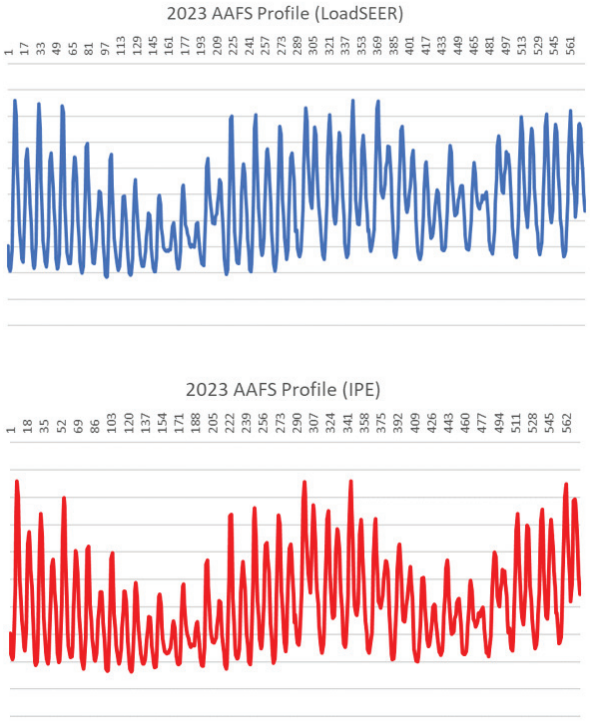
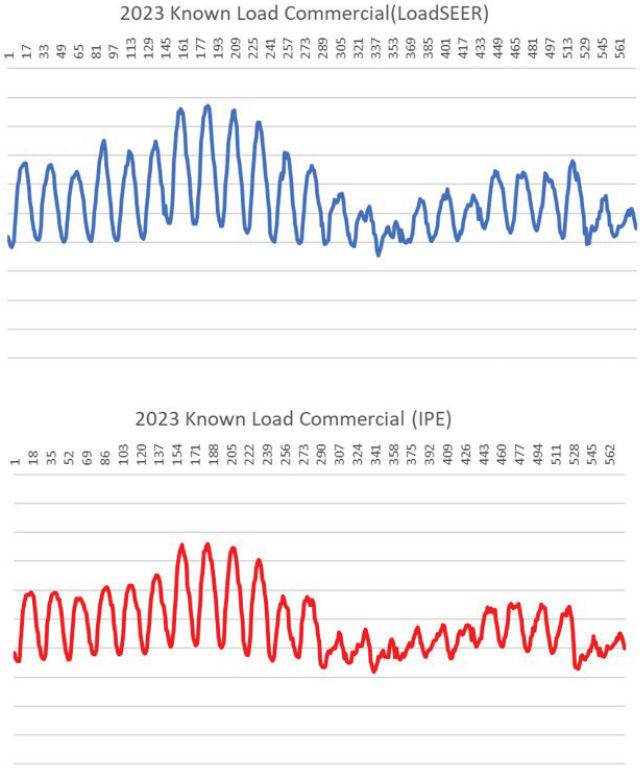
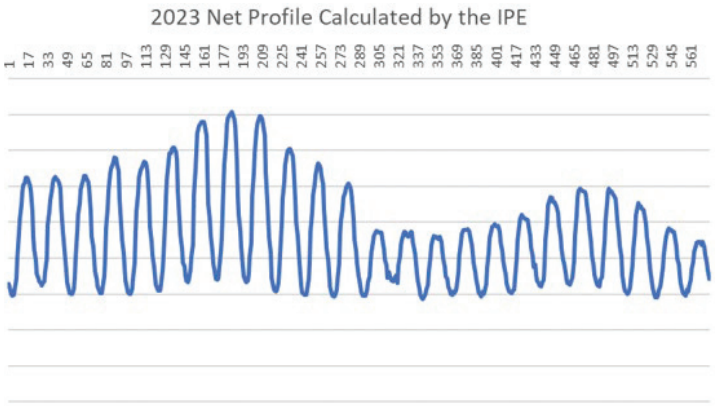


Figure 7-8: Known Load 576-Hourly Profile (KW) Comparison for a sample circuit



The IPE then derived the net load profile using the components mentioned above. The calculated net load profile matched with the one from LoadSEER. Figure 7-9 shows the net load profile for the circuit calculated by the IPE.

Figure 7-9: Net load 576-Hourly Load Profile (KW) for a sample circuit



The IPE then determined the net peak load (and net peak load hour) using the 576 hourly load profiles for a few circuits. From these load profiles, the peak load and the peak load hour were obtained as shown in Table 7-13. Information beyond the 5-year planning period is confidential for circuits other than the ones that are CDOs.

Table 7-13: Peak load (KW) for select circuits

Facility ID	2023_0025	2023_0137	2023_0497	2023_0209	2023_0395
Year					
2023	8,067		8,360	5,799	9,814
2024	8,005		8,489	5,722	9,900
2025	7,950		8,624	5,650	10,238
2026	7,920		8,757	5,674	10,659
2027	7,904		8,902	5,767	10,888
2028					
2029					
2030					
2031					
2032					
2033					
2034					
2035					

Note: Information for 2023_0137 circuit is redacted because it is a 15x15 circuit. Information beyond the GNA planning period is also redacted.

7.2. PROCESSES TO DETERMINE CIRCUIT NEEDS AND DEVELOP GNA

7.2.1. Initial Comparison to Equipment Ratings, Evaluate No Cost Solutions and Comparison to Equipment Ratings after No Cost Solutions – Steps 9, 10 and 11

Purpose: To verify the overloads calculated by SDG&E for circuits prior to load transfers, phase balancing etc.

Process: SDG&E compares the peak load determined in Step 7 against the rating of the circuit to determine any overloads at the circuit and bank level. It should be noted that this verification process is used for thermal overloads (capacity needs) on circuits and banks only.

Verification: The IPE used the peak loads for selected circuits from Step 7 and the maximum capacity of those circuits to determine the overload. The maximum capacity is the actual equipment rating, but in some cases the capacity is limited to a value that is lower than the equipment rating for providing alternate service. Table 7-14 shows the overloads that were calculated for each circuit. The overload is calculated as the loading above the capacity with alternate service expressed as a percentage of the equipment rating.

Table 7-14: Overloads calculated for selected circuits

Facility ID	2023_0025		2023_0137		2023_0497		2023_0209		2023_0395	
Equipment Rating (KW)										
	Peak Load (KW)	Over-load (%)	Peak Load (KW)	Over-load (%)	Peak Load (KW)	Over-load (%)	Peak Load (KW)	Over-load (%)	Peak Load (KW)	Over-load (%)
2023	8,067	65%			8,360	80%	5,799	47%	9,814	98%
2024	8,005	64%			8,489	82%	5,722	46%	9,900	99%
2025	7,950	64%			8,624	83%	5,650	45%	10,238	103%
2026	7,920	64%			8,757	84%	5,674	45%	10,659	107%
2027	7,904	63%			8,902	86%	5,767	46%	10,888	109%
2028										
2029										
2030										
2031										
2032										
2033										
2034										
2035										

STEP 10: Incorporate load transfers, phase transfers, correct data deficiencies

Purpose: To verify the process used to incorporate load transfers, phase transfers, correct data errors.

Process: SDG&E employs planned load transfers and switching operations which are typically the lowest cost options to address an identified need as they utilize existing capacity on distribution circuits. The GNA report identified eight needs that were addressed using planned transfers and three needs that were addressed by phase balancing.

Verification: The IPE obtained the 576 hourly load profiles from LoadSEER for the circuit the load is transferred from, as well the circuit it is transferred to, in order to verify that both circuits are below their capacities for the eight transfers reported in the GNA.

Table 7-15 shows the facility IDs for the circuits that the load is transferred from and to and Figure 7-10 and Figure 7-11 show the 576-hourly loads for the sending and receiving circuits for one of the transfers. By comparing the loading on the "Transfer to" and "Transfer from" circuits in these figures, it can be seen that the amount of load picked up by the "Transfer to" circuit is the same as the load removed from the "Transfer from" circuits.

Table 7-15: Load Transfers in 2023 GNA

GNA_ID (From Circuit)	Facility ID (From Circuit)	Facility ID (To Circuit)	MW Transferred
GNA_2023_0001	2023_0395	2023_0330	
GNA_2023_0014	2023_0566	2023_0566	
GNA_2023_0016	2023_0101	2023_0099	
GNA_2023_0017	2023_0939	2023_0566	
GNA_2023_0023	2023_0092	2023_0100	
GNA_2023_0024	2023_0062	2023_0197	
GNA_2023_0028	2023_0357	2023_0356	
GNA_2023_0029	2023_0320	2023_0201	

Figure 7-10: Before and After Loading (in KW) for Transfer from circuit

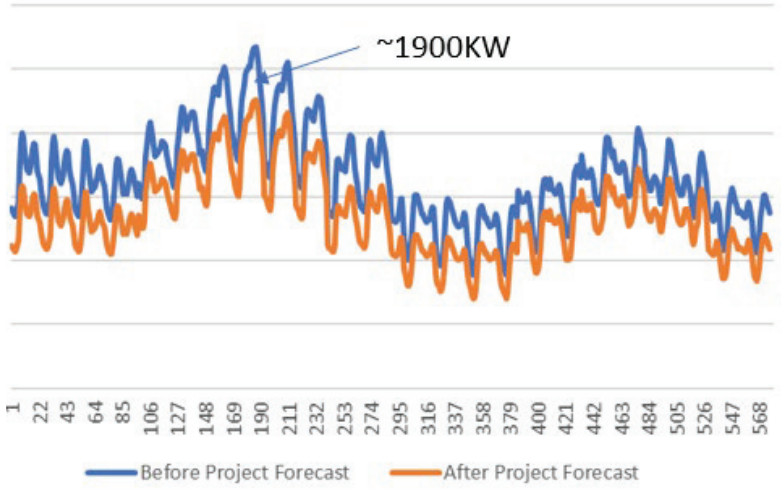
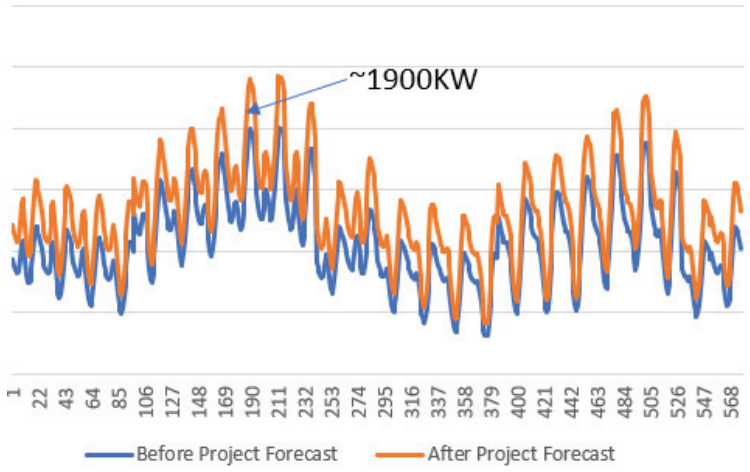


Figure 7-11: Before and After Loading (in KW) for Transfer to circuit



STEP 11: Final comparison to equip. ratings to determine if ratings exceeded.

Purpose: To verify the overloads calculated by SDG&E for circuits after load transfers, phase balancing etc.

Process: SDG&E compares the peak load determined in Step 10 (for both the transferred from and to circuits) against the rating of the circuit to determine any overloads.

Verification: As discussed earlier, eight of the 30 needs were solved using load transfers and three using phase balancing. Step 10 verified the loading on the transferred "from" and "to" circuits associated with these transfers. These transfers resulted in maintaining the peak loads on all the

circuits within their limits. The remaining 19 needs are addressed through planned projects with are verified in the next steps.

7.2.2. Compile GNA Tables Showing Need and Timing – Step 12

Purpose: To verify that the projects in the GNA tables showing need amount and need timing match with the amounts and timing determined through earlier steps.

Verification: The IPE compared the needs for the selected circuits verified in Step 9 with those reported in the GNA. As shown in Table 7-16, the overloads calculated by the IPE match exactly with those reported in the GNA report.

Table 7-16: Verification of the overloads in the GNA for select circuits

Facility ID	2023_0025		2023_0137		2023_0497		2023_0209		2023_0395	
	Overload calc by IPE (%)	Overload in GNA (%)	Overload calc by IPE (%)	Overload in GNA (%)	Overload calc by IPE (%)	Overload in GNA (%)	Overload calc by IPE (%)	Overload in GNA (%)	Overload calc by IPE (%)	Overload in GNA (%)
2023	65%	65%			80%	80%	47%	46%	98%	98%
2024	64%	64%			82%	82%	46%	46%	99%	99%
2025	64%	64%			83%	83%	45%	45%	103%	103%
2026	64%	64%			84%	84%	45%	45%	107%	107%
2027	63%	63%			86%	86%	46%	46%	109%	109%

7.3. PROCESSES TO DEVELOP PLANNED INVESTMENTS AND COSTS

7.3.1. Develop Recommended Solution – Step 13

Purpose: To verify the process used by SDGE in developing the planned investment for selected projects.

Process: The planning process involves reviewing circuit characteristics, such as phase imbalance, timing of need, available circuit ties, nearby circuits with available capacity, reactive power flow, and the relative ease with which new infrastructure could be built. SDG&E's distribution planning engineers analyze these aspects, among others, to determine a least cost, best fit and just-in-time solution to mitigate the problem.

The process involves using the load flow planning software Synergi for identifying segment-level overloads. Once the overloaded segment is identified, a feature within the model allows the user to reconductor the segment using a list of available upgrades. Once the user selects the reconductoring

option, they can use the model to recalculate the load flow and determine that the segment loading is within its new rating. This process is unchanged from the prior cycles.

Verification: As mentioned in the final IPE plan, the verification of this step was not performed in this cycle since the process used for this step is unchanged from prior cycles.

7.3.2. Estimate Capital Cost for Candidate Deferral Projects – Step 14

Purpose: To verify the project costs provided by SDG&E against other sources such as rate case filings. To verify the total project level costs provided by SDG&E with those included in the DDOR.

Background: Capital cost estimates are made and revised throughout the life of a project. Initially, cost estimates are made when a project is first envisioned (i.e., as a result of a need determined in the planning process), and the estimate is used for overall budgeting purposes. This estimate most likely is a projection of costs for a project that will be implemented several years into the future. In the case of the GNA/DDOR, the projects of most interest are those that pass the timing screen which means projects that are 3-5 years in the future. At the initial planning/budgeting state the functional needs of the project (add a new circuit, add a new bank, add a line extension, add voltage control equipment, etc.) are known but normally no engineering of the solution has been done. As time progresses, and the project moves through additional stages of development, the cost estimates are updated based upon detailed site-specific needs and further defined engineering solutions. The final cost estimates are normally developed prior to final approval of the project—well before project construction begins. These final cost estimates include a very detailed breakdown of equipment cost components (wire, breakers, transformers, bus work, conductor costs, conduit, metering, and protection etc.), labor/contracting costs (civil foundation work, excavation, soil removal, trenching, etc.) and overheads (project management, contingency, etc.).

According to the American Association of Cost Engineers (AACE) cost estimating classification system, initial cost estimate accuracy would fall into the Class Five (-50% to +100%) or Class Four (-15% to +50%) range. Thus, for projects that are in the early stages of development the overall accuracy of the estimate is expected to be about -30% to + 70% of the final cost estimate/actual costs of the project.

Verification: As mentioned in the final IPE plan, the verification of this step was not performed in this cycle since the process used for this step is unchanged from prior cycles.

7.4. PROCESSES TO DEVELOP CANDIDATE DEFFERAL LIST AND PRIORITIZE

7.4.1. Development of Candidate Deferral Projects – Step 15

Purpose: To develop a list of Candidate Deferral Opportunities and verify that this list matches the results SDG&E included in its DDOR.

Process: SDG&E applies two screens: a technical screen and a timing screen. The purpose of the Technical Screen is to identify the distribution services DERs can provide to potentially defer a distribution project, and whether there are any technical limitations associated with the ability of DERs to defer planned distribution projects. The purpose of the Timing Screen is to ensure cost-effective DER solutions can be procured with sufficient time to fully deploy and begin commercial operation in advance of the forecast need date. Three years (by Year Four), i.e., year 2026, is the earliest year considered adequate to successfully procure, contract, design, develop, market, and deploy DER solutions to address the identified distribution needs. This process is unchanged from the prior cycles.

Verification: The IPE gathered the list of planned projects and their projected in-service dates as shown in Table 7-19 and verified that SDG&E had applied the timing screen correctly. Only one of the projects passed the timing screen, as identified by SDG&E, since the in-service date for all other projects were within the first three years of the five-year planning horizon.

Table 7-17: Planned projects with in-service dates

GNA ID	DDOR ID	Facility ID	In-Service Date
GNA_2023_0003	DDOR_2023_0001	2023_0863	3/1/2025
GNA_2023_0004	DDOR_2023_0002	2023_0210	6/1/2024
GNA_2023_0006	DDOR_2023_0003	2023_0353	6/1/2025
GNA_2023_0007	DDOR_2023_0004	2023_0320	6/1/2024
GNA_2023_0012	DDOR_2023_0005	2023_0849	6/1/2025
GNA_2023_0011	DDOR_2023_0006	2023_0029	6/1/2026
GNA_2023_0002	DDOR_2023_0007	2023_0397	6/1/2024
GNA_2023_0020	DDOR_2023_0008	2023_0386	6/1/2025
GNA_2023_0018	DDOR_2023_0009	2023_0556	6/1/2024
GNA_2023_0015	DDOR_2023_0010	2023_0496	6/1/2024
GNA_2023_0005	DDOR_2023_0011	2023_0882	6/1/2024
GNA_2023_0019	DDOR_2023_0012	2023_0385	6/1/2024
GNA_2023_0009	DDOR_2023_0013	2023_0506	6/1/2025
GNA_2023_0013	DDOR_2023_0014	2023_0805	6/1/2024
GNA_2023_0026	DDOR_2023_0015	2023_0539	10/1/2024
GNA_2023_0027	DDOR_2023_0016	2023_0279	1/1/2024
GNA_2023_0010	DDOR_2023_0017	2023_0508	6/1/2025
GNA_2023_0025	DDOR_2023_0018	2023_0156	11/1/2024
GNA_2023_0030	DOOR_2023_0019	2023_0211	3/1/2025

7.4.2. Development of Operational Requirements – Step 16

Purpose: To confirm operational requirements for selected circuits are developed using the process described and that the values developed are the same as included in subsequent steps of the process (DDOR and DPAG).

Process: The process that SDG&E uses for determining the operational requirements was included in the 2022 Post-DPAG report and repeated here for convenience.

A summary of that process is shown below:

- First, SDG&E uses the 1-in-10 net load profile for the circuit/bank and its rating to determine the overloads and hours and months during which the overloads occur during the deferral years, i.e., first year of service (2026 or 2027) to 2032.

- SDG&E uses the maximum overload as the Capacity (MW) that is needed from DERs. For example, if the maximum overload occurs in hour 19 in the year 2032, this overload sets the DER capacity requirement for all the overloaded hours in that year.
- The duration for which DER needs to provide this capacity is determined adding an hour before and after to the hours during which there is a forecast overload. For example, if the overload occurs in hour 19 is the year 2032, the duration for which the DER needs to operate is determine as hours 18 through 20.
- The Energy Need (MWh) is determined by multiplying the capacity requirement by the duration. For example, if 0.5 MW is needed for 6 hours, then the energy need is 3 MWh.
- To calculate the annual frequency (i.e., how many times the overload occurs and hence the DER solution could expect to be called to provide NWA service), SDG&E assumes that if there is an overload on either a weekend or weekday of each month, then the overload has the potential to occur in any or all days of the month. For example, if the 576 data shows overload in a typical weekday in July through September, then SDG&E assumes that the frequency of occurrence of the overload is 92 (overload occurs each day in July (31 days), August (31 days) and September (30 days)).
- Since the peaks could occur in the summer months (typically, June through October), the period during which the DER needs to provide service includes these months.

Verification: As mentioned in the Final IPE plan, the verification of this step was not performed in this cycle since the process used for this step is unchanged from prior cycles.

7.4.3. Prioritization of Candidate Deferral Projects into Tiers – Step 17

Purpose: To verify that prioritization process used by SDG&E is consistent with the description of the description of the prioritization metrics, components, and tier ranking process.

Process: SDG&E prioritizes and ranks the projects based on the categories of Cost Effectiveness, Forecast Certainty, and Market Assessment using the Joint Prioritization Workbook Template developed by the IOUs. These metrics are already described in Section 5 of this report.

Verification: SDG&E provided the Joint Prioritization Workbook Template as Appendix B to the DDOR report as required by DIDF Reform #22 of the May 20 ruling. Because the template is set up for ranking and tiering multiple CDOs, and since there is only one CDO that is available for potential deferral in this DIDF cycle, some of the entries in the template cannot be populated. In their DDOR report, SDG&E stated that if there are one or two candidate deferral opportunities, the utility will exercise its judgement in assigning those projects to Tier 1, Tier 2 and/or Tier 3.

7.4.4. Calculate LNBA Ranges and Values – Step 18

Purpose: To verify the calculation of LNBA performed by SDG&E for the planned projects.

Process: The Locational Net Benefits Analysis (LNBA) value is the net present value (NPV) of the annual costs that are avoided by deferring a planned distribution project. The annual cost savings of

deferral is the difference in revenue requirements between installing the project on (i) its planned in-service date, and (ii) a later date. These savings reflect the differences in annualized capital recovery costs and annual operations and maintenance (O&M) costs. The LNBA value can be expressed in a number of ways – as an absolute present value of the savings ($), as a levelized annual savings ($/yr) or as the levelized annual savings in relation to the amount of need (e.g., the kW overload) that the planned distribution project mitigates ($/kW-year). For a thermal overload, the amount of need is the maximum overload amount during the deferral period. The deferral periods used for the LNBA calculations depend on the planned distribution upgrade's in-service date, the horizon over which the revenue requirements are considered, and varies by the type of upgrade. The LNBA value is used as an indicator of the economic feasibility of a non-wires solution. A planned distribution project with a higher LNBA value would indicate, in general, that it is a more economically feasible for DERs to defer the planned distribution project as compared to planned distribution projects that have lower LNBA values. In the DDOR report, the LNBA values may be expressed in ranges, for example values may be in one of the following ranges $0-$100, $1---$500, >$500.

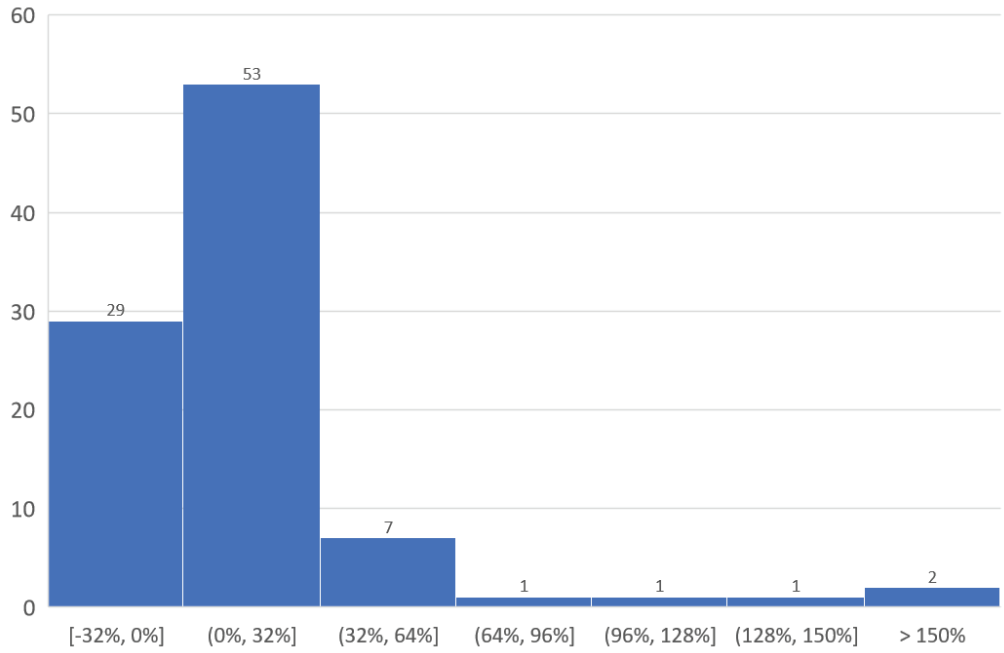
Verification: As mentioned in the final IPE plan, the verification of this step was not performed in this cycle since the process used for this step is unchanged from prior cycles.

7.4.5. Compare 2022 Forecast and Actuals at Circuit Level – Step 19

Purpose: The purpose of this step is to perform a comparison of the forecast versus actual peak load for a statistically meaningful number of circuits. If the above data for all the circuits is available with minimal effort, IPE to perform the comparison for all circuits. The purpose is to get some insight into the "accuracy" of the overall circuit planning process recognizing that there are many variables that can affect the comparison; many of these variables are beyond the control of the utility.

Verification: SDG&E provided the forecasted peak load for year 2022 for 10% of all circuit circuits (obtained from the 2022 GNA), as well as the 2022 normalized peak load. Figure 7-14 shows the comparison where the difference between the forecast and actual expressed as percentage (of actual) is shown as a histogram. It can be seen that for 29 of the 94 circuits (approximately 30%), the difference is between 0% and -32%, i.e., actuals higher than forecast by up to 32%. For most of the remaining circuits, approximately 53 of the 94 circuits (approximately, 56%), the difference is between 0% and 32%, i.e., forecasts higher than actuals by up to 32%. For eight circuits, the forecasts were higher than actuals by 32% to 100% and for four circuits, the forecasts were higher by more than 100%. This is because we were comparing forecasted loads that are based on 1-in-10 weather conditions with normalized peak loads which were under 1-in-2 weather conditions. The results of this type of comparison are highly dependent upon the weather conditions during the year, as well as transfers and G-1 included in the forecasts. The IPE plans to obtain actual 2022 loads adjusted to 1-in-10 from SDG&E and then repeat this analysis using additional circuits, if possible, and report out the results in the Post-DPAG report.

Figure 7-12: Histogram of Difference between Forecasted and Actual Loads



7.5. Known Load Tracking Data and Metrics Calculation – Step 20

Purpose: To analyze the Known Load Tracking data and verify the calculation of the Known Load metrics.

Verification: The ALJ's June 16, 2022 DIDF Reform order required all three IOUs to track known load projects in the 2022 GNA/DDOR. The May 2023 Reform Ruling required the utilities to develop a uniform list of type of customer and customer load categories for the Known Load Tacking Data. The May 2023 Ruling further required the Utilities to provide a narrative summary report that includes metrics that are calculated using the Known Load Tracking Data and describing the implications of the calculated metrics.

SDG&E included the Known Load Tacking data as Appendix 4 of their 2023 GNA-DDOR report. This data used the uniform list of type of customer and customer load categories for Known Loads developed by the utilities. The Known Load Tracking data from the prior cycle did not use the same list of customer types and categories. Therefore, the known loads for some load types (for example, transportation) could not be compared between the two cycles. As mentioned in Section 2.5 of this report, SDG&E calculated the Known Load metrics and made a number of observations regarding the calculations in their narrative. SDG&E also provided these calculations to the IPE. The IPE plans

to compare the methods used by the three utilities to calculate the metrics, as well as the results of these calculations in the Post-DPAG report.

7.6. OTHER FUTURE IPE WORK

7.6.1. Respond to and Incorporate DPAG Comments – Step 23

The IPE was available during the SDG&E DPAG meeting and the SDG&E Follow-Up DPAG meeting to respond to questions raised by stakeholders. There were no written comments or questions directly addressed to the IPE.

7.6.2. Track Solicitation Results to Inform Next Cycle – Step 24

The Independent Engineer for each utility will update the information in the tracking tool on a regular basis.

7.6.3. Treating confidential material in the IPE report – Step 25

The IPE work products have followed the process and steps included in this Business Step in developing the IPE Final Report. Additional actions were taken to minimize the material that is redacted in the public version of this report to maximize the readers ability to understand what the IPE did during this DIDF cycle.

Appendix A IPE Scope

R.14-08-013, A.15-07-005, *et al.* ALJ/RIM/nd3

Attachment A
Listing of Schedule and IPE-Specific Reforms for the 2020-2021 DIDF Cycle

1. IPE-specific reforms for the 2020-2021 DIDF Cycle are implemented within the IPE Scope of Work presented in Attachment B.

2. IOU contracts with the IPE for the full scope of work identified in Attachment B shall be executed by the IOUs to allow for IPE Plan development to begin as soon as possible, ideally on or before **April 17, 2020**.

3. The IOUs shall work with the IPE and Energy Division to develop IPE Plans specific to each IOU such that the IPE can submit the Draft IPE Plans to Energy Division for review on or before **May 15, 2020**.

4. The IPE scope of work may be modified by Energy Division as needed for the IPE to successfully complete each assignment. The IOUs will promptly submit a Tier 1 Advice Letter to notice changes in scope should a scope change differ significantly from the scope described in Attachment B. Minor changes should not necessitate an Advice Letter filing.

5. As required by Energy Division on an annual basis, Pre-DPAG and Post-DPAG activities may include workshops; new, re-opened, suspended, or modified working groups (e.g., Distribution Forecast Working Group); and IOU presentations and deliverables.

6. During the Post-DPAG period and in consultation with the IPE, Energy Division may identify exemplary GNA/DDOR documentation components, analytical approaches, or data strategies implemented by one or more IOUs and require that each IOU implement the reform in future DIDF cycles.

(end of Attachment A)

- 1 -

Attachment B
IPE Scope of Work for DIDF Implementation

Term

- January 1st each year to July 31st the following year with the term subject to update by Energy Division if needed to support each DIDF cycle.

Pre-DPAG Period

- Develop an ***IPE Plan*** for each IOU describing the GNA/DDOR review process and detailed approach to Verification and Validation of all data used by the IOUs to prepare their DIDF filing materials.
    - Verification and Validation will include a thorough investigation of the following IOU processes, among others:
        - Collecting circuit loadings and performing weather adjustments;
        - Determining load and DER annual growth on the system level;
        - Disaggregating load and DER annual growth to the circuit level;
        - Checking sum of all disaggregated load and DERs against system-level values;
        - Adding incremental known loads to circuit level forecasts;
        - Developing load, DER, and net load profiles and determining net peak loads;
        - Adjusting for extreme weather;
        - Comparisons to equipment ratings to determine if ratings will be exceeded;
        - Incorporating load transfers, phase transfers, correcting data errors;
        - Compiling GNA tables showing need amount and timing; and
        - Following the IOU's planning standard and/or planning process.
    - GNA/DDOR report review will include an in-depth analysis of the following IOU steps, among others:
        - Developing recommended solutions (planned investments);
        - Implementing the IOU's planning standards and/or planning process;
        - Estimating capital costs for planned investments;

  - Developing list of candidate deferral projects through application of screens (timing and technical);
  - Developing operational requirements;
  - Prioritization of candidate deferral projects into tiers;
  - Calculating LNBA values; and
  - Comparing prior-year forecast and actuals at circuit level for candidate deferral projects.
- Work directly with the IOUs and Energy Division to develop draft plans as needed. Development of the draft IPE Plans may include, among other activities:
  - Meeting with the IOUs and Energy Division to identify and understand each business process and tool used to complete their GNA/DDOR filings.
- Facilitate or participate in stakeholder workshops to receive feedback on the IPE Plans.
- Review and incorporate comments in the final IPE Plans.
- Submit final IPE Plans to Energy Division and the IOUs with recommendations for future improvements to the plans.
- Other technical support assignments as defined by Energy Division to ensure the IPE and Energy Division will receive from the IOUs the data and cooperation necessary to complete the required evaluation of the GNA/DDOR filings.

DPAG Period

- Participate in all workshops and meetings during the DPAG period. Prepare and deliver presentations or handouts as requested by Energy Division (*e.g.*, final IPE Plan presentations).
- Develop an ***IPE Preliminary Analysis of GNA/DDOR Data Adequacy*** for all three IOUs.
- Review any comments on the preliminary analysis that may be received and discuss the results with Energy Division.

- Facilitate meetings with Energy Division and the IOUs to correct data inadequacies and prepare further documentation and provide technical support as needed.
- Fully implement each IPE Plan as defined in the final IPE Plans.
- Develop an ***IPE DPAG Report*** for each IOU presenting GNA/DDOR review findings and Verification & Validation outcomes.
- Submit the draft reports to Energy Division for review and (if necessary) to the IOUs to check for confidential information that may be included or to clarify specific details.
- Circulate the final IPE DPAG Reports to stakeholders (public and confidential versions).
- Other technical support assignments as defined by Energy Division to ensure the DPAG process is successfully completed.

Sample Size

- The scope of review conducted by the IPE for each IOU process may encompass the full set of circuits/projects or a subset/sample of circuits or projects. Where sampling is determined to be appropriate by the IPE in consultation with Energy Division, the size of the sample set for each case will be determined by the IPE based on the application of engineering judgement.

Post-DPAG Period

- Develop a single ***IPE Post-DPAG Report*** covering all three IOUs; comparing their current and prior filings; evaluating DIDF DER procurement, operational, cost, and contingency planning outcomes; reviewing IOU compliance; and making recommendations for process improvements and DIDF reform.
- Coordinate with and support the Independent Evaluator (IE) with IE activities and the development of IE reports as needed.
- Submit the draft report to Energy Division for review and (if necessary) to the IOUs to check for confidential information that may be included.

Appendix B DPAG Survey and Comment Responses

SDG&E solicited feedback from the DPAG during their DPAG meeting on September 21, 2023 and also solicited comments by email. There were no written comments provided by Stakeholders.

Appendix C Copy of the IPE Plan

Note: The IPE Plan for SDG&E is attached below.

Final IPE Plan for 2023-24 DPAG Cycle - San Diego Gas & Electric

Submitted to California Public Utility Commission

August 15, 2023

Submitted by:

Resource Innovations

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Contents

1 Introduction and Background

This document is the draft version of the Independent Professional Engineer Plan for the 2023/2024 Distribution Investment Deferral Framework (DIDF)[1] cycle for San Diego Gas and Electric. The requirements for the plan and oversight by the Energy Division are spelled out in CPUC Ruling 14-08-013 (April 13, 2020) which is attached as Appendix A. The Ruling modified the Distribution Investment Deferral Framework (DIDF) process and previous rulings with respect to the Independent Professional Engineer (IPE) scope of work.

As a result of stakeholder comments regarding improving the effectiveness of the IPE process, schedule and expected results, a number of modifications were made by the April 2020 Ruling and implemented for the first time in the 2020-2021 DIDF cycle. These changes have been incorporated in the IPE Plans developed ever since. Some of these changes are highlighted below:

- The IPE review process now starts earlier to allow for more time for the IPE, utilities, and the Energy Division to perform the necessary production of data in response to data requests, verify and validate the data, produce reports, and address the confidentiality of data in the reports prior to the IPE Report deadline. The review process starts in the late-April timeframe.
- The IPE scope includes development of a draft IPE Plan for each utility by mid-May in each cycle. The plan goes through a stakeholder review cycle and will be issued in final form by the IPE in August.
- The scope of the IPE review was expanded to include several new business processes.
- The scope of the review was expanded to include the new CPUC Standard Offer Contract (SOC) and Partnership Pilots (PP).
- The original schedule for IPE deliverables was established in the CPUC 2020 Rulings. The schedule for the 2023/24 DIDF cycle was provided in ALJ's May 2023 Reform Ruling and is shown below:
  - Draft IPE Plan. Due Week of May 22, 2023
  - Final IPE Plan. Due August 15, 2023.
  - IPE Preliminary Analysis of GNA/DDOR Data Adequacy for all three IOUs. Due September 5, 2023.

[1] The 2023-24 DIDF cycle (or 2023 DIDF) is part of the 2022-23 Distribution Planning Process (DPP).

  - IPE DPAG Report for each IOU presenting GNA/DDOR review findings and Verification & Validation outcomes. Due November 8, 2023.

  - IPE Post DPAG Report covering all three IOUs, comparing their filings, reviewing compliance, and making recommendations for process improvements and DIDF reform. Due March 15, 2024.

- The May 2023 draft IPE Plan for 2023/2024 DIDF cycle will be distributed to stakeholders in May to facilitate stakeholder comments prior to finalizing the IPE Plan in August 2023.

2 Description of the Plan

2.1 Definitions Used in the Plan and Other Deliverables

To facilitate understanding of the IPE scope of work, the following definitions are included and will be used in the Plan and throughout all of the IPE work products and deliverables.

> Verification – Is a review performed by the IPE during which an independent check is performed to determine if the results produced were developed using data assumptions and business processes that were defined and described by the utility or are based upon standard industry approaches that do not have to be defined and described. In other words, "Did the IOU follow their own processes correctly as defined and described by the IOU?"
>
> Validation – Is a review performed by the IPE during which an independent assessment is performed of the appropriateness of the approach taken by the utility to perform a task from an engineering, economics, and business perspective. In other words, "Are the processes implemented by the IOU the best way to identify all planned investments that could feasibly be deferred by DERs cost effectively? And to what extent were the IOU methodologies appropriate and effective?"

The IPE Plan covers the business processes that the IOUs use to identify which distribution or sub-transmission projects are recommended to proceed to an RFO or a Partnership Pilot seeking DER bids to determine if there is a cost-effective non-wires alternative. One of the core purposes of the plan is to answer the question - Are the IOUs identifying every project that could feasibly and cost effectively be deferred by DERs?

The business processes in the Plan are organized generally in the order that they are performed. Starting with capturing the peak load values for each circuit for 2022, using the CEC IEPR forecasts to develop utility specific system level values which are then disaggregated to the circuit level adjusted for known loads then used to determine if there is an overload or other issue during the planning period (nominally, 2023 through 2027). For circuits that have a need, a planned investment is selected, capital costs developed for that project and the planned investments are screened to develop a list of candidate deferral projects. These candidate deferral projects are then prioritized into tiers using several metrics with the projects in the first tier normally recommended for a DER RFO. Candidate deferral projects are also considered for the Partnership Pilot program based upon the results of the prioritization process along with additional set of metrics for PP program.

In the 2021-2022 DIDF cycle, two new pilot programs were initiated for testing new mechanisms to procure DERs. They are called the Partnership Pilot and a Standard Offer Contract (SOC). The May 2023 ALJ Ruling decided that the SOC pilot will be off ramped and not launched in

year 3 (2023/24 DIDF cycle). These pilots impact other parts of the business processes covered in the IPE Plan.

3 IPE Plan

The heart of the IPE Plan is the material contained in Table 3-1. This table lists the business processes, roles of the utility and IPE, target timing and information requirements for each business process in the IPE scope. Listed below is a more detailed description of the contents:

- IOU Business Process / IPE Review Step – This column includes a number for each business process included in the table. To make it easier for readers who will be looking at more than one utility IPE Plan, the process was started with the same numbering for all three utilities and that set of numbers was maintained as much as possible. In cases where additional steps needed to be added to accommodate a utilities specific unique process a letter was added to the previous number. For example, the step after Step 3 was added and was number Step 3a. For cases where steps are not needed, they will be spelled out in the table.
- Business Process / IPE Review Step Description – This column contains a general description of the business process being reviewed.
- Plan for 2023/24 DIDF Cycle – This column includes several types of information:
  - A brief description of what the review will include and whether it would include review of a subset of the total number of elements (i.e., circuits) or all elements and what is being examined.
  - Roles which include the role of the utility overall and the role of the IPE for both the verification and validation review. For both reviews, an indication is provided for what the IPE will be checking for or confirming in the review.
    Note that there are generally two approaches to performing a verification. The first is a demonstration wherein the utility develops the necessary spreadsheet or other mechanism to show how the business process developed the results of interest and the IPE performs a walk through to view the demonstration by the utility. The second approach is wherein the IPE develops a spreadsheet or other mechanism to calculate the results of interest using data provided by the utility and then compares the results to the numerical utilities results.
- Target Timing – This column includes a target timing for the reviews in the business process in this row or in the timing that data will be provided to the IPE.
- Data/Information Requirements – This column includes the data or information that the IPE needs to perform its review and in some cases the date the information is required.

3.1 Revisions to the IPE Plan for this Cycle

The IPE reviewed the V&V steps to determine if any of the steps can be streamlined or eliminated in this cycle without compromising the intent of the V&V process. Such streamlining would allow the IOUs and the IPE to focus additional time on recent additions in the IPE's scope. Based on this review, the IPE has determined that the following steps can be skipped in this cycle:

- Step 13 - Development of planned investments using planning standards.
- Step 14 - Development of capital costs for the planned investments.
- Step 16 - Development of operational requirements for CDOs.
- Step 17 - Calculation of LNBAs for planned projects.

These steps are not being removed permanently from the IPE scope. In addition, these steps will only be skipped in this cycle if the utility states that the business process for these steps have not changed from the prior cycle.

Table 3-1 SDG&E IPE Review for 2023/24 DIDF Cycle is shown starting on the following page.

Table 3-1: SDG&E IPE Review for 2023/24 DIDF Cycle

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
	PROCESSES TO DEVELOP STARTING POINT LOAD, SYSTEM LEVEL VALUES AND DISAGGREGATE TO CIRCUIT LEVEL			
1	Collect 2022 actual circuit loading and adjust for weather as needed	Perform verification for 8-10 circuits jointly selected by the IPE and SDG&E: check results including normalization to typical weather day. Examine weather adjustment factors/relationships for SDG&E regions. Perform validation of the process. Roles: SDG&E to provide the 2022 peak load for selected circuits within their territory. SDG&E also to provide data for weather adjustment factors such as temperatures HDD, CDD, historical feeder/substation loads and other data, as applicable, that are used for the calculation of weather-adjusted peak loads, as well as a description of the general procedure used for calculating weather-adjusted peak loads. Verification:	Selection of feeders by the June 15. The information requested in the "Data/ Information Requirements" by June 15.	▪ Description of business process used to develop weather-normalized peak loads for each circuit if it is different from 2022 DIDF. ▪ 2022 peak load and the day and hour the peak load occurred for selected circuits. ▪ 8760 hourly loads before and after removal of data errors, data drops and load transfers from SCADAScrubber for selected circuits.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		IPE to verify that the weather-adjusted peak loads calculated using the data and information provided by SDG&E matches reasonably well with the values produced by SDG&E for the circuits examined. Validation: IPE to review the business process for reasonableness and consistent with the objectives of the DIDF process.		▪ Data for weather adjustment factors such as temperatures, HDD, CDD, historical feeder loads and other factors. ▪ General procedure used for calculating weather-adjusted peak loads if it is different from 2022 DIDF.
2	Determine load and DER annual growth on system level	Perform V&V on all aspects of this process. Roles: SDG&E to provide the spreadsheets used for calculating the year-to-year, cumulative change in system-level load by class, as well as the year-to-year change in DER capacity used in the next steps. Verification: IPE to verify the calculations performed by SDG&E. IPE to compare output results of this process are the same as those used in the next step of the process (Step 3).	Description and links to IEPR forecasts provided by June 15. Spreadsheet used for calculating system-level load and DER capacity growth by June 15.	▪ Provide the spreadsheet that uses the CEC IEPR forecast as the starting point and calculates year-to-year change in load (and the CEC 8760 hourly files used for calculating DER growth forecasts) used in the next steps. ▪ Identify which IEPR forecasts are being

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		Verify that the system level load and DER capacity calculated by the IPE matches reasonably well with those provided by SDG&E. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		used for load and all DERs. ▪ Provide description of the process if different than used in 2022 DIDF.
3	Disaggregate load and DER annual growth to the circuit level	Perform verification for all circuits and validation of the process. Roles: SDG&E to provide the inputs and outputs, as well as a general description of the processes used for disaggregating system-level load (changes) to circuit-level and further at a class level (Domestic, Commercial, Industrial) using LoadSEER. SDG&E to provide the inputs and outputs, as well as a general description of the processes used for disaggregating system-level DER capacity to circuit-level capacity. SDG&E to demo the software tools used in this step, as well as the inputs and outputs.	SDG&E to provide material requested in "Data/ Information Requested" by June 15.	▪ Inputs and outputs, as well as a general description of the process used for disaggregating system-level load to circuit-level loads and further at a class level (Domestic, Commercial, Industrial) using LoadSEER, if different from the process used in the 2022 DIDF.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		Verification: IPE to verify that load and DER capacity forecast for selected circuits match with those used in subsequent steps of the load forecasting process (starting in Step 4). Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		▪ Inputs and outputs, as well as a general description of the process used for disaggregating system-level DER capacity to circuit-level capacity, if different from the process used in the 2022 DIDF.
3a	Check sum of all disaggregated load and DERs same as CEC IEPR System Level values	Perform V&V on this aggregation for all circuit values, as well as cross check values used in other verification checks. Roles: SDG&E provides the needed information in the previous step. Verification: Verify that the sum of the loads (by class) and DER capacities at the circuit level matches reasonably well with the system level value from Step 2.		Use data from previous step.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
4	Add known loads to circuit level forecasts	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide circuit-level known load additions by customer class and type that were used to make the adjustments to the CEC IEPR forecast in Step 2. Verification: IPE to verify that business process demonstration by SDG&E is the same as described in SDG&E documentation. IPE to verify that the sum of the circuit-level known load additions by customer class matches with the system-level values in Step 2.	SDG&E to provide the requested information by June 15.	▪ SDG&E to provide circuit-level known load additions by customer class and type that adds up to the total known load values for each year used in Step 2.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		IPE to verify that the circuit-level known load additions for selected circuits match with those used in LoadSEER (Starting with Step 5). Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
5	Convert peak growth of load to 576 profile as needed	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide 576- hourly profile for loads (Corporate Forecast, Adjustment for Load Growth) from LoadSEER for the subset of circuits. SDG&E to also provide typical load shapes for load classes (COM, IND, and DOM). Verification: IPE to use Corporate Forecast from Step 3, known loads from Step 4 and the corresponding 576-hourly profile for loads (Corporate Forecast, typical	SDG&E and IPE to select the circuits for this analysis by July 10. SDG&E to provide the requested LoadSEER data by July 10.	▪ SDG&E to provide 576-hourly profile for loads (Corporate Forecast, Adjustment for Load Growth) for the subset of circuits. ▪ SDG&E to also provide typical load shapes for all load classes (COM, IND, and DOM).

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		load shapes for load classes) and verify it against the data provided by SDG&E. Verify that the 576-hourly forecast load profiles calculated match reasonably well with those provided by SDG&E for a subset of circuits. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
5a	Convert DER growth to 576 profile as needed	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide 576- hourly profile for DERs (Load adjustments for EV, EE, ES, PV) from LoadSEER for the subset of circuits. SDG&E to also provide typical load shapes for all the DERs, by classes as applicable. Verification: IPE to use DER forecast from Step 3 and the typical DER profiles to develop the 576-hourly	SDG&E to provide the requested LoadSEER data by July 10.	▪ SDG&E to provide 576-hourly profile for DERs (Load adjustments for EV, EE, ES, PV) from LoadSEER for the subset of circuits. ▪ SDG&E to also provide typical load shapes for all the DERs, by classes as applicable. ▪ SDG&E to also provide information on how these typical DER load

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		profiles for DER adjustments and verify it against the data provided by SDG&E. Verify that the 576-hourly load adjustment profiles calculated for EV, EE, ES and PV match reasonably well with those provided by SDG&E for a subset of circuits. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		profiles were developed.
				▪
5b	Convert base forecast and Weather normalization adjustment of load to 576 profile as needed	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide 576- hourly profile for base (load) forecast and weather normalization adjustment from LoadSEER for the subset of circuits. SDG&E to also provide typical load shapes associated with base forecast and weather normalization adjustment.	SDG&E to provide the requested LoadSEER data by July 10.	▪ SDG&E to provide 576-hourly profile for base forecast and weather normalization adjustment from LoadSEER for the subset of circuits. ▪ SDG&E to also provide typical load shapes associated with base forecast and weather

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		Verification: IPE to use load forecast from Step 8 and the typical profiles provided by SDG&E to develop the 576-hourly profile for loads (for base forecast and weather normalization adjustment) and verify it against the data provided by SDG&E. Verify that the 576-hourly base and weather normalization load profiles calculated match reasonably well with those provided by SDG&E for a subset of circuits. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		normalization adjustment.
6	Derive net load profile	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide 576- hourly net load profile for the subset of circuits before incorporating load transfers, phase transfers, and corrections for data errors.	No additional data required.	

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		Verification: IPE to use the results of Steps 5, 5a and 5b to calculate net load profile and compare with the profile provided by SDG&E. Verify that the 576-hourly net load profiles calculated match reasonably well with those provided by SDG&E for a subset of circuits. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
7	Determine net peak load	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide the peak load forecast (Before Project Forecast) for the subset of circuits for the peak load hour. Verification:	SDG&E to provide the requested LoadSEER data by July 10.	▪ SDG&E to provide the adjusted peak load forecast (Before Project Forecast) for the subset of circuits for the peak load hour

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		IPE to verify the value provided by SDG&E against the value obtained for the peak day from the 576 hourly net load profile developed in Step 6. IPE to also verify that the peak load values used in Step 9 match with the values obtained in this step for a subset of circuits. Verify that the peak value of the 576-hourly net load profile matches reasonably well with the value provided by SDG&E for selected circuits. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
8	Adjust for "extreme weather." Please note that process is completed after Step 4.	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide the P95 load forecasts (Base Forecast, Corporate Forecast and Adjustment for Weather Normalization) for selected number of circuits. SDG&E also to provide data for weather adjustment factors such as temperatures, historical	Performed along with Step 1	▪ Description of business process used to develop P95 peak loads for each circuit, if different from the process used in the 2022 DIDF. ▪ General procedure used by LoadSEER for

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		feeder/substation loads and other data that are used for the calculation of weather-adjusted peak loads in LoadSEER, as well as a description of the general procedure used by LoadSEER for calculating weather-adjusted peak loads. Verification: IPE to use the data and the procedure provided by SDG&E to independently verify the P95 load forecasts developed by LoadSEER. If the IPE is not able to verify the peak load forecasts due to the complexity of calculations or lack of data and/or documentation, SDG&E will demonstrate the tool used, its inputs and outputs. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		calculating weather-adjusted peak loads, if different from the process used in the 2022 DIDF. ▪ P95 load forecasts (Base Forecast, Corporate Forecast and Adjustment for Weather Normalization) for selected number of circuits. SDG&E also to provide data for weather adjustment factors such as temperatures, historical feeder/substation loads and other data that are used for the calculation of weather-adjusted peak loads in LoadSEER

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
	PROCESSES TO DETERMINE CIRCUIT NEEDS AND DEVELOP GNA			
9	Initial comparison to equip. ratings to determine if ratings exceeded	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to provide equipment ratings for a subset of circuits selected by the IPE. Verification: IPE to compare the net peak load from Step 7 before any load transfers, phase transfers and compare it with the rating to determine if there is an overload (and the overload matches with the value calculated by SDG&E). Verify that the overloads calculated by the IPE match reasonably well with those provided by SDG&E for a subset of circuits. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.	SDG&E to provide requested information by July 10.	▪ SDG&E to provide equipment ratings for a subset of circuits selected by the IPE.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
10	Incorporate load transfers, phase transfers, correct data errors	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E to demonstrate how it makes adjustments to load forecasting based upon phase transfers, data error corrections and load transfers. Demonstration will include what data is relied upon to predict the impact of making the proposed changes (i.e., phase transfer). Verification: IPE to verify the process reflected in the SDG&E demonstration is consistent with the SDG&E process description and the result are the same as used in subsequent steps in process of developing the GNA. IPE to also verify the before and after load profiles for both the circuits where the load is transferred from, and the load is transferred to. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.	SDG&E to provide requested information by August 10.	SDG&E to provide the LoadSEER before and after load profiles for both the circuits where the load is transferred from and the load is transferred to, as well as the amount of load (MW) that was transferred.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
11	Final comparison to equip. ratings to determine if ratings exceeded	Perform V&V for a subset of circuits selected by the IPE. Roles: SDG&E provided the needed information in the prior steps. Verification: IPE to compare the net peak load from Step 8 after any load transfers, phase transfers and compare it with the rating to determine if there is an overload (and the overload matches with the value calculated by SDG&E). Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		Data provided in Step 9.
12	Compile GNA tables showing need amount and need timing, etc. (per IOU's	Perform V&V on development of GNA table entries for select circuits also confirming that planning standard/process was followed as appropriate. Roles:	SDG&E to provide requested information by August 31.	▪ Confidential GNA tables in Excel format ▪ Copy of planning standard if different than one used in 2022/23 DIDF cycle.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
	documented planning standards and/or planning process)	SDG&E to provide confidential version of Planned Investment tables in Excel format that can be filtered by the IPE. SDG&E to provide list of planning standards/criteria that were used in the development of the GNA tables. Verification: IPE to review projects in the GNA report are consistent with the information verified in the previous steps and planning standards/criteria. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		▪ Description of process used, using excerpts from planning assumptions, GNA, and DDOR similar to approach in 2022/23 DIDF cycle. ▪ This step focuses upon an analysis concerning whether planning standards that lead to the identification of needs were followed. It does not include review of the planning standards, themselves.
	PROCESSES TO DEVELOP PLANNED INVESTMENTS AND COSTS			
13	Develop recommended solution and generate list of	Perform V&V for a subset of projects selected by the IPE confirming that planning standard/process was followed.	SDG&E to provide requested	▪ Description of process used to develop proposed planned project to address

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
	Planned Investments (follow the IOU's documented planning standards and/or planning process)	Roles: SDG&E to demonstrate/describe process used to determine recommended planned solution for a subset of projects. SDG&E to demonstrate the application of the process in developing the planned investment for selected projects. Verification: IPE to verify the SDG&E demonstration reflects the description of the process provided by SDG&E. IPE to verify that results shown in the demonstration follow the described process are same as included in DDOR. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.	information by August 31.	identified need for distribution projects.
14	Estimate capital cost for each	Perform V&V for a subset of projects selected by the IPE.	SDG&E to provide requested	▪ SDG&E to provide the cost breakdown for the planned projects. The

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
	Planned Investment	Roles: SDG&E to provide the cost breakdown for the planned projects. The breakdown should include direct material, labor, and other costs by equipment, as well as indirect material, labor, and other costs at a project level. SDG&E to describe the Expected Accuracy Level (as defined by AACE or by another method that describes the expected accuracy range in terms of % lower and higher than the estimate) of the capital costs for the projects included in the DDOR. If the Expected Accuracy is different for different projects, SDG&E to provide the accuracy range for each project.[1] SDG&E to provide supporting cost information for a subset of projects. Verification:	information by September 15.	cost breakdown should include direct material, labor, and other costs by equipment, as well as indirect material, labor, and other costs at a project level. ▪ SDG&E supporting information for costs. ▪ SDG&E to provided expected accuracy level of the cost estimates. ▪

[1] During the course of implementing the IPE Plan, the ED in coordination with the IPE will seek to understand the effort and cost associated with improving the accuracy of capital cost estimates (i.e., from a Class 4 estimate accuracy to a Class 3 estimate accuracy).

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		IPE to verify the project costs provided by SDG&E against other sources such as rate case filings. IPE to verify the total project level costs provided by SDG&E with those included in the DDOR. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
	PROCESSES TO DEVELOP CANDIDATE DEFFERAL LIST AND PRIORITIZE			
15	Development of Candidate Deferral Projects list through application of screens (timing and technical)	Perform V&V for all projects put through the screening process. Roles: SDG&E to provide confidential version of Planned Investment table in Excel format that can be filtered by the IPE. SDG&E to describe the process it used to develop its Candidate Deferral Projects.	SDG&E to provide requested information by September 15.	▪ SDG&E to provide Candidate Deferral calculation process. ▪ Confidential version of Planned Investment table in Excel format that can be filtered by the IPE. ▪

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		Verification: IPE to use the Excel tables to develop a list of Candidate Deferral Projects following the process described by SDG&E. IPE to verify its result (list of Candidate Deferral Projects) match the SDG&E results included in the DDOR. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
16	Development of operational requirements (daily, monthly annually etc.)	Perform V&V for a subset of candidate deferral projects selected by the IPE. Roles: SDG&E to provide description of the process used to determine operational requirements. (Required load, months and hours needed, duration of call and number of calls per year). Verification: IPE to utilize description to confirm operational requirements for selected circuits are developed using the process described and that the values	SDG&E to provide requested information by September 15.	▪ SDG&E to provide description of how operational requirements are established if different from the process used in 2022.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		developed are the same as included in subsequent steps of the process (DDOR and DPAG) Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		
17	Prioritization of candidate deferral projects into Tiers	Perform V&V on prioritization process for all candidate deferral projects. Roles: SDG&E to provide a version of the Excel spreadsheet containing the formula used, if applicable, that is used to determine the metrics and components used to rank the Candidate Deferral Projects overall and into tiers. SDG&E to provide active version of spreadsheet (if one is used) used to rank and select candidate deferral projects for procurement using the SOC or PP procurement programs. Verification:	SDG&E to provide requested information by September 15.	▪ Demonstrate active spreadsheet that calculates prioritization metrics, components and ranks projects on those results. To include spreadsheets for prioritization of CDOs and for ranking/selecting SOC and PP projects ▪ Description of the IOU standardized prioritization metrics, components and tier ranking methodology and process and SOC

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		IPE to verify that spreadsheet is consistent with the description of the description of the prioritization metrics, components and tier ranking process and SOC and PP ranking/selection process. IPE to verify that Excel results match the recommended Candidate Deferral Projects overall rankings and placement into tiers and recommended for RFO, SCO or PP procurement included in the DDOR and presented at the DPAG meetings. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		and PP ranking selection process.
18	Calculate LNBA ranges and values for all planned investments	Perform V&V for a subset of projects selected by the IPE. Roles: SDG&E to provide a spreadsheet (containing the formula) used for calculating all LNBA range values that are included in the DDOR. This includes the assumptions behind general inputs such as	SDG&E to provide requested information by September 30.	▪ SDG&E to provide the spreadsheet(s) used for calculating the LNBA ranges for planned projects and LNBA metric(s) used for prioritization, as well as provide the

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		discount rates, inflation factors, revenue requirement multiplier and book life. SDG&E to also provide an active spreadsheet that calculates all LNBA metrics used in the project prioritization process (if different than values in the spreadsheet previously listed). Verification: IPE to verify the LNBA values by independently calculating these values using the formula used in the E3 LNBA calculator and the input assumptions provided by SDG&E. Verify that the LNBA values calculated independently using the using the formula used in the E3 LNBA calculator matches reasonably well with those provided by SDG&E. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF.		assumptions behind general inputs such as discount rate, inflation factors, revenue requirement multiplier and book life.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
19	Compare 2022 load forecast and actuals at circuit level for selected number of distribution circuits	Perform comparison of forecasted and actual loads for a statistically meaningful number of distribution circuits to be selected by the IPE in conjunction with SDG&E. If the above data for all the circuits is available with minimal effort, IPE to perform the comparison for all circuits. Roles: SDG&E to provide recorded2022 load (adjusted to 1-in-10) from the 2023 Distribution Planning Process. IPE to obtain the forecasted 2022 load from the 2022 GNA-DDOR filing for all the circuits. Verification: IPE to compare the recorded 2022 peak load (adjusted to 1-in-10) provided by SDG&E with the forecasted 2022 peak load obtained from the 2022 GNA-DDOR by the IPE and analyze the results. Validation: IPE to review the business process for reasonableness and consistency with objectives of the DIDF	SDG&E to provide requested information by September 30.	▪ SDG&E to provide recorded 2022 peak load (adjusted to 1-in-10) for the circuits selected for this step.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
20	Analyze known load tracking dataset and verify the calculation of known load metrics	Compare the known load tracking dataset provided in the 2023 GNA-DDOR filing with that provided in the 2022 GNA_DDOR filing and analyze the comparison results. Calculate the metrics mentioned on pages 31 and 32 of the 2023 IPE Post-DPAG Report and verify against the metrics calculated by the utility that are provided in their narrative related to the known load tracking dataset included in the GNA-DDOR report. Roles: SDG&E to provide the confidential version of the known load tracking dataset included in their 2023 GNA-DDOR filing. SDG&E to also provide information on how they calculated the metrics (for example, Excel workbook showing the formula used for calculating the metrics or something similar) that were included in their narrative of the known load tracking dataset. Verification:	SDG&E to provide requested information by September 15.	▪ Confidential version of the known load tracking dataset included in their 2023 GNA-DDOR filing. ▪ SDG&E to provide a description of the data included in their most recent tracking data set. ▪ Information on the calculation of metrics (Excel workbook showing the formula used for calculating the metrics or something similar) that were included in their narrative of the known load tracking dataset.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		IPE to analyze the known load tracking dataset provided in the 2023 GNA-DDOR filing and verify the known load metrics calculated by the utility. Validation: IPE to review the approach and process used by the utility to calculate the metrics using known load tracking dataset.		
	Other IPE Work			
21	Review implementing of planning standard and/or planning process	No further review is planned for the 2023/2024 DIDF cycle.		
22	Review list of internally approved capital projects	No further review is planned for the 2023/2024 DIDF cycle.		
23	Respond to and incorporate	Include in Final IPE Plan.	Complete by November.	

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
	DPAG comments			
24	Track solicitation results to inform next cycle	Part of IPE Post-DPAG Report follow-on activities in coordination with the IE.	Q3-2023	
25	Treating confidential material in the IPE report	Confidentiality – the following steps will be followed to ensure that the IPE Reports treat confidential material consistent with the rules and procedures of the CPUC: a. The IPE will hold an early meeting with IOU (and potentially the ED) to discuss process for PG&E to flag those items they intend to request Confidentiality treatment and on what basis. IPE may provide feedback to ED in lieu of having the ED attend the meeting with the IOU and IPE. Discussion to be held by September 15. b. Date: October 23, 2023 - The IOU will review all the documents[2] sent to the IPE for the V&V process for confidential information and highlight any information (in	Target Dates listed in third column are aligned with the 2023/2024 DIDF cycle schedule and will be updated in the Final IPE Plan.	

[2] Documents refers to any document provided to the IPE by the IOU that was not included in the IOU's public version of the GNA/DDOR reports. These documents will be included as attachments to the body of the IPE report as required by a CPUC ruling.

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		addition to information that is already highlighted) that is confidential. The IOU will also develop an equivalent set of documents with the confidential information redacted. At the end of this process, there should be a set of confidential documents that can be included as a part of the confidential IPE DPAG report and a set of public documents. c. IPE will provide the confidential version of the body of the draft IPE Report to the IOU by October 30th (the body of the report to include all but the documents provided in previous item) for final IOU confidentiality review. d. IOU checks the draft confidential report for confidentiality and correctness and provides their comments/markups by November 6, 2023. e. After review and signoff, the IPE produces the final confidential and draft reports by November 10, 2023.		

IOU Business Process / IPE Review Step	Business Process / IPE Review Step Description	Plan for 2023/24 DIDF Cycle	Target Timing	Data/Information Requirements
		f. IOU requests CPUC confidential treatment using standard procedures. g. IOU files public version of the IPE report based on the schedule provided by the CPUC – DIDF Advice Letters submitted – November 15, 2023 h. IOU files revised public report if CPUC rejects any requests for confidential treatment; otherwise, process is complete, and no further action is needed. In the 2021/2022 DIDF cycle, the IPE Plan was revised to avoid the use of tables, plots, graphs, or other data in the IPE DPAG Report that end up needing to be redacted to meet the IOU's requirements. This should help to reduce the amount of redaction in the Public version of the IPE DPAG Report and make it easier for stakeholders to understand it.		

Appendix A CPUC 4/13/20 Ruling Excerpts

Attachment A
Listing of Schedule and IPE-Specific Reforms for the 2020-2021 DIDF Cycle

1. IPE-specific reforms for the 2020-2021 DIDF Cycle are implemented within the IPE Scope of Work presented in Attachment B.

2. IOU contracts with the IPE for the full scope of work identified in Attachment B shall be executed by the IOUs to allow for IPE Plan development to begin as soon as possible, ideally on or before **April 17, 2020**.

3. The IOUs shall work with the IPE and Energy Division to develop IPE Plans specific to each IOU such that the IPE can submit the Draft IPE Plans to Energy Division for review on or before **May 15, 2020**.

4. The IPE scope of work may be modified by Energy Division as needed for the IPE to successfully complete each assignment. The IOUs will promptly submit a Tier 1 Advice Letter to notice changes in scope should a scope change differ significantly from the scope described in Attachment B. Minor changes should not necessitate an Advice Letter filing.

5. As required by Energy Division on an annual basis, Pre-DPAG and Post-DPAG activities may include workshops; new, re-opened, suspended, or modified working groups (e.g., Distribution Forecast Working Group); and IOU presentations and deliverables.

6. During the Post-DPAG period and in consultation with the IPE, Energy Division may identify exemplary GNA/DDOR documentation components, analytical approaches, or data strategies implemented by one or more IOUs and require that each IOU implement the reform in future DIDF cycles.

Attachment B
IPE Scope of Work for DIDF Implementation

Term

- January 1st each year to July 31st the following year with the term subject to update by Energy Division if needed to support each DIDF cycle.

Pre-DPAG Period

- Develop an ***IPE Plan*** for each IOU describing the GNA/DDOR review process and detailed approach to Verification and Validation of all data used by the IOUs to prepare their DIDF filing materials.
    - Verification and Validation will include a thorough investigation of the following IOU processes, among others:
        - Collecting circuit loadings and performing weather adjustments;
        - Determining load and DER annual growth on the system level;
        - Disaggregating load and DER annual growth to the circuit level;
        - Checking sum of all disaggregated load and DERs against system-level values;
        - Adding incremental known loads to circuit level forecasts;
        - Developing load, DER, and net load profiles and determining net peak loads;
        - Adjusting for extreme weather;
        - Comparisons to equipment ratings to determine if ratings will be exceeded;
        - Incorporating load transfers, phase transfers, correcting data errors;
        - Compiling GNA tables showing need amount and timing; and
        - Following the IOU's planning standard and/or planning process.
    - GNA/DDOR report review will include an in-depth analysis of the following IOU steps, among others:
        - Developing recommended solutions (planned investments);
        - Implementing the IOU's planning standards and/or planning process;
        - Estimating capital costs for planned investments;

  - Developing list of candidate deferral projects through application of screens (timing and technical);
  - Developing operational requirements;
  - Prioritization of candidate deferral projects into tiers;
  - Calculating LNBA values; and
  - Comparing prior-year forecast and actuals at circuit level for candidate deferral projects.
- Work directly with the IOUs and Energy Division to develop draft plans as needed. Development of the draft IPE Plans may include, among other activities:
  - Meeting with the IOUs and Energy Division to identify and understand each business process and tool used to complete their GNA/DDOR filings.
- Facilitate or participate in stakeholder workshops to receive feedback on the IPE Plans.
- Review and incorporate comments in the final IPE Plans.
- Submit final IPE Plans to Energy Division and the IOUs with recommendations for future improvements to the plans.
- Other technical support assignments as defined by Energy Division to ensure the IPE and Energy Division will receive from the IOUs the data and cooperation necessary to complete the required evaluation of the GNA/DDOR filings.

DPAG Period

- Participate in all workshops and meetings during the DPAG period. Prepare and deliver presentations or handouts as requested by Energy Division (*e.g.*, final IPE Plan presentations).
- Develop an ***IPE Preliminary Analysis of GNA/DDOR Data Adequacy*** for all three IOUs.
- Review any comments on the preliminary analysis that may be received and discuss the results with Energy Division.

- Facilitate meetings with Energy Division and the IOUs to correct data inadequacies and prepare further documentation and provide technical support as needed.
- Fully implement each IPE Plan as defined in the final IPE Plans.
- Develop an ***IPE DPAG Report*** for each IOU presenting GNA/DDOR review findings and Verification & Validation outcomes.
- Submit the draft reports to Energy Division for review and (if necessary) to the IOUs to check for confidential information that may be included or to clarify specific details.
- Circulate the final IPE DPAG Reports to stakeholders (public and confidential versions).
- Other technical support assignments as defined by Energy Division to ensure the DPAG process is successfully completed.

Sample Size

- The scope of review conducted by the IPE for each IOU process may encompass the full set of circuits/projects or a subset/sample of circuits or projects. Where sampling is determined to be appropriate by the IPE in consultation with Energy Division, the size of the sample set for each case will be determined by the IPE based on the application of engineering judgement.

Post-DPAG Period

- Develop a single ***IPE Post-DPAG Report*** covering all three IOUs; comparing their current and prior filings; evaluating DIDF DER procurement, operational, cost, and contingency planning outcomes; reviewing IOU compliance; and making recommendations for process improvements and DIDF reform.
- Coordinate with and support the Independent Evaluator (IE) with IE activities and the development of IE reports as needed.
- Submit the draft report to Energy Division for review and (if necessary) to the IOUs to check for confidential information that may be included.

- Submit the final report to Energy Division and prepare public versions as needed.
- Support Energy Division with their review of DIDF reform comments, including comments on any IPE tasks.
- Support Energy Division's review of RFO materials and RFO outcomes.
- Attend RFO and procurement meetings and provide technical support as requested by Energy Division.
- Coordinate with the Independent Evaluator to support their evaluation and provide technical support at the discretion of Energy Division.
- Other technical support assignments as defined by Energy Division to develop and evaluate potential DIDF reforms and track and evaluate deferral opportunities that may be subject to ongoing review in other proceedings (e.g., pursuant to General Order 131-D).

List of IPE DIDF Deliverables

1. ***IPE Plan*** for each IOU describing the GNA/DDOR review process and approach to Verification & Validation for the underlying data.
2. ***IPE Preliminary Analysis of GNA/DDOR Data Adequacy*** for all three IOUs.
3. ***IPE DPAG Report*** for each IOU presenting GNA/DDOR review findings and Verification & Validation outcomes.
4. ***IPE Post-DPAG Report*** covering all three IOUs, comparing their filings, reviewing compliance, and making recommendations for process improvements and DIDF reform.

(end of Attachment B)

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Appendix D Data Requests and Responses

The IPE received many sets of data in response to requests for information to SDG&E. Listed below are the types of data provided. In most cases these data sets are spreadsheets, PDFs, Power Point presentations or Word documents. These documents are provided as separate documents from the body of this report. Please contact the IPE to obtain a copy of these files.

D.1 Data Requests

The IPE made several data requests through the course of the verification. A complete set of documents obtained through the data request are listed in D.2. The public data used in the verification and validation process can be obtained by contacting SDG&E.

D.2 IPE V&V List of Responses

- 1.8.Weather Adjustment Factors_Final_6.20.23 (Public)
- 1.SCADAScrubber Circuit Loads_Final_6.20.23 (Public)
- 2. CED 2021 Load Modifiers - Mid Baseline Mid AAEE_Final_6.20.23
- 2. CED 2021 Load Modifiers_Final_6.20.23
- 2. CED 2021_SDGE DER Growth_Final_6.20.23
- 3. Distribution Forecast Disaggregations_Final_6.20.23 (Public)
- 4. Specific Loads_Final_6.20.23(Public)
- 5. Forecast Shapes - 2023 (Public)
- 5a. 2023 SDGE DER Profiles
- 5b. Circuit Profiles - 2023 - Weather
- 10. Circuit J_Load Transfers (Public)
- 10. Circuit JB_Load Transfer (Public)
- 10. Circuit K_Load Transfer(Public)
- 10. Circuit KB_Load Transfer (Public)
- 10. Circuit L_Load Transfer(Public)
- 10. Circuit LB_Load Transfer (Public)
- 10. Circuit M_Load Transfer (Public)
- 10. Circuit N_Load Transfer (Public)
- 10. Circuit NB_Load Transfer (Public)
- 10. Circuit O_Load Transfer (Public)
- 10. Circuit OB_Load Transfer (Public)
- 10. Circuit P_Load Transfer (Public)
- 10. Circuit PB_Load Transfer (Public)
- 10. Circuit Q_Load Transfer (Public)
- 10. Circuit QC_Load Transfer (Public)
- 10. Load_ Transfers (Public)
- 19. Forecasted vs Actual(Public)
- 20.2023 Known Load Metrics Sheet(Public)