STATE OF CALIFORNIA
GAVIN NEWSOM, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE

January 19, 2022

Advice Letter 6212-E and 6212-E-A

Sidney Dietz
Director, State Regulatory Operations
Pacific Gas and Electric Company
77 Beale St., Mail Code B13U
P.O. Box 770000
San Francisco, CA 94177

SUBJECT: Disposition of PG&E 6212 E and 6212-E-A Improved ICA Data Validation Plan

Dear Mr. Dietz,

The Energy Division approves Advice Letter 6212-E and 6212-E-A, PG&E's Improved Data Validation Plans, with an effective date of May 28, 2021. Energy Division has determined that PG&E's AL 6212-E and 6212-E-A comply with the Administrative Law Judge's Ruling on the Joint Parties' Motion for an Order Requiring Refinements to the Integration Capacity Analysis (the Ruling) in the Distribution Resource Plan (DRP) proceeding, R.14-08-013, issued on January 27, 2021.

The protests of the Interstate Renewable Energy Council (IREC) and the Public Advocates Office (Cal Advocates) have either been addressed by PG&E or are dismissed by Energy Division, as discussed in Attachment 1.

Sincerely,

Simon Baker
Interim Deputy Executive Director for Energy and Climate Policy/
Interim Director, Energy Division
California Public Utilities Commission

cc: PGETariffs@pge.com
Richard Khoe, Rachel Gallegos, Chloe Lukins, Public Advocates Office
Yochanan Zakai, Interstate Renewable Energy Council, Inc
Service lists for R.21-06-017

Attachment 1: Background, Protests and Discussion

Background

On January 27, 2021, the Administrative Law Judge in R.14-08-013 issued a Ruling on the Joint Parties' Motion for an Order Requiring Refinements to the Integration Capacity Analysis (ICA). The Ruling ordered the IOUs to:

- Retain an independent technical expert (ITE) to review ICA data validation plans and review the IOU's data validation efforts.
- Submit improved ICA data validation plans and file them as a Tier 1 Advice Letter.
- Document the results of the IOUs data validation efforts to date, deficiencies discovered, or efficiencies realized in ICA implementation, and plans for ICA improvements in the Improved Data Validation Plans.
- Address how each utility's ICA could or could not address the objectives of the interconnection use case which has the goal of supporting the streamlining of Rule 21 interconnection.[1]

On May 28, 2021, PG&E filed Advice Letter 6212-E with its Improved Integration Capacity Analysis Data Validation Plan. IREC and Cal Advocates submitted protests to PG&E's AL 6212-E on June 17, 2021. On June 24, 2021, PG&E filed a response to both protests. On June 25, 2021, the Independent Technical Expert, Quanta Technology submitted a report (ITE Report) reviewing PG&E's data validation plan to Energy Division. On August 25, 2021, PG&E filed supplemental Advice Letter 6212-E-A to address the Independent Technical Expert (ITE) Report and recommendations.

Discussion of IREC's and Cal Advocates' Protests, PG&E's Reply, and Energy Division Disposition

We address the parties' protests and the PG&E's reply in the discussion below.

<u>Issue 1</u>: Request for Supplemental Advice Letter with ITE Report and Additional Time to Reply

IREC and Cal Advocates' protests requested PG&E share the ITE Report on the PG&E's data validation plan with stakeholders and asked for an additional time to respond to PG&E's Advice Letter after submission of the report. PG&E replied that the CPUC should not delay the approval of the IOUs' improved data validation plan advice letters and introduce a new step for comments on the ITE Report from stakeholders.[2]

Energy Division found it beneficial for transparency to direct PG&E to send the ITE Report to the DRP service list and to issue a supplemental advice letter to address recommendations of the ITE Report. After PG&E issued its supplemental advice letter, Energy Division re-opened the protest period, and no additional protests were received. As such, Energy Division finds that this issue has been resolved.

<u>Issue 2:</u> Future Deficiencies with ICA Data may not be Detected because PG&E's Improved Data Validations did not Include Specific Timelines or Plans to Address Load ICA Problems.

[1] ICA Refinement Ruling at 6.
[2] PG&E Reply to Protest of Advice Letter 6212-E at 2.

IREC's protest to 6212-E charges that PG&E's failure to identify errors with load ICA or develop a plan with timelines to correct errors is evidence that the data validation plans may be insufficient in detecting new issues.[3] PG&E's reply did not explain why there were no load ICA deficiencies discovered, nor did they explain why a specific plan to address load ICA issues was not included in the improved data validation plan. However, the ITE Report states that despite the assessment being focused on generation ICA, many of the findings and recommendations can be applied to load ICA.[4] PG&E's supplemental Advice Letter notes that it has already adopted the ITE Report recommendations and will continue to adopt recommendations made. The supplemental Advice Letter also included a timeline to implement the data validation plan improvements. The implementation of the ITE recommendations and other improvements by PG&E will help to detect future ICA issues. Furthermore, PG&E is required to develop a detailed load ICA workplan to address data issues and file it with the CPUC in February 2022. Energy Division and stakeholders will continue to review PG&E's data validation plans and efforts in Rulemaking 21-06-017. Therefore, Energy Division finds that Issue 2 is addressed.

Issue 3: IREC's Request for Clarifications on PG&E's Approach to Load Profile Updates

IREC's protest requested that PG&E provide clarification in a supplemental Advice Letter to clarify the maximum time between load profile updates today, and any plans to reduce this lag."[5] IREC also requested that PG&E file a supplemental Advice Letter to offer further clarification on performance targets for the PG&E's ICA and Data Validation Task.[6] IREC suggests that SCE's plan to reduce its lag time between updates from 12 months to 2-months is something PG&E should consider replicating.[7]

PG&E responded that historical load profiles are "updated once annually."[8] PG&E's response did not outline any plans to reduce any lag in load profile updates, however PG&E did commit to reviewing its approach to reducing lag time between updates. The ITE Report does not make any recommendations that suggest PG&E should change its timeline in updating load profiles. Load profile updates can be further examined in R.21-06-017. Energy Division finds that PG&E is not required to address load profile updates with specificity at this time, and therefore dismisses this protest.

Issue 4: IREC's Request for Clarifications on PG&E's Approach to Performance Targets on Data Validation Tasks

With regards to performance targets, PG&E's Reply says the fact that SCE has proposed performance targets in its Advice Letter is not sufficient justification to require PG&E to supplement its Advice Letter. PG&E's response is insufficient. The ITE Report includes recommendations for PG&E to establish both performance targets and metrics for ICA results. The ITE Report recommends that PG&E should identify ICA business owners that are responsible for establishing metrics to ensure that the ICA process is functioning as designed and that the results are of sufficient quality.[9] The ITE recommended that to ensure that there is long-term, ongoing improvement in the ICA results, each IOU should have an identified business owner solely responsible for those results. One of business owner's responsibilities should include establishing performance targets and metrics for ICA results.

[3] Id.
[4] Quanta Technology, PG&E ICA Data Validation Plan Assessment at 1.
[5] IREC Protest to 6212-E at 5.
[6] Id at 3.
[7] IREC Protest to 6212-E at 5.
[8] PGE Response at 3.
[9] Quanta Technology, PG&E ICA Data Validation Plan Assessment at 2.

PG&E's supplemental Advice Letter acknowledges seven recommendations of the ITE Report that PG&E plans to implement. However, PG&E did not fully acknowledge the ITE Report's specific recommendations for establishing performance targets and metrics for ICA results. Energy Division strongly suggests PG&E follow the ITE's recommendation for establishing performance targets and metrics described on pages 2-3 of the ITE Report. This issue is addressed, and no supplemental AL is required.

Pacific Gas and Electric Company®

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Director
Regulatory Relations

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August 25, 2021

Advice 6212-E-A
(Pacific Gas and Electric Company U 39 E)

Public Utilities Commission of the State of California

Subject: **Supplemental: PG&E Improved ICA Data Validation Plan**

Purpose

As requested by Energy Division (ED) Staff of the California Public Utilities Commission (Commission or CPUC), Pacific Gas and Electric Company (PG&E) submits this supplemental advice letter to its original Tier 1 Advice Letter 6212-E, to address the Independent Technical Expert (ITE) report and recommendations filed on June 25, 2021.

This supplemental advice letter supplements original Advice Letter 6212-E.

Background

On October 9, 2020, California Solar & Storage Association, Interstate Renewable Energy Council, Inc., and California Energy Storage Alliance (hereinafter Joint Parties) filed their Motion for an Order Requiring Refinements to the Integration Capacity Analysis (Motion), in which Joint Parties asked the Commission to order the IOUs to refine the ICA in order to "avoid the undetected presence of problems with ICA results in the future". On October 26, 2020, California Public Utilities Commission (Cal Advocates) filed its Response which supported the Motion. On November 5, 2020, Joint Parties filed their Reply in support of their Motion. On November 5, 2020, PG&E filed its Reply to Cal Advocates' Response.

The January 27, 2021 ruling ordered Investor Owned Utilities (IOUs) develop their improved ICA Data Validation Plans and file them in a Tier 1 Advice Letter (AL). Pacific Gas and Electric Company (PG&E) submitted the AL pursuant to the January 27, 2021, Administrative Law Judge's (ALJ) Ruling on the Joint Parties' Motion On May 28,2021.The investor-owned utilities (IOUs) were further ordered to retain an ITE to review their ICA data validation plans and review the IOU's data validation efforts. Quanta Technology was selected and hired as the ITE. The ITE has provided their report to the Energy Division's DRP Section at the conclusion of the IOUs ICA data

validation plan assessment on June 25, 2021. This Supplemental Advice Letter is to supplement PG&E's data validation plan with the ITE's recommendations and PG&E's plans to adopt, if applicable, those recommendations.

Recommendations

The ITE recommendations are listed in the order presented in the report. PG&E's comments, clarifications, plans to adopt the recommendations, and a timeline for implementation, if applicable, are presented for each recommendation.

Recommendation 1:

PG&E's plan designates metrics as part of model validation, and engineering analysis and results validation activities, but the plan would benefit from elaborating on metrics throughout process. Hence, PG&E should track trends of applied corrective activities within the ICA process and flag issues to upstream process business owners if metrics indicate recurrence. This would allow the flagging of recurring upstream issues (e.g., entry of incorrect conductor sizes), that may best be addressed upstream of the ICA process.

Response 1:

PG&E currently tracks the issues that happen frequently throughout the process that has a common source of the problem and resolve the issues upstream of the process. PG&E plans to continue with this process moving forward. Therefore, PG&E has already adopted this recommendation.

Recommendation 2:

It is recommended to balance and/or strengthen resource allocation according to needs to meet expectations, given the complexity and exposure of the ICA process to other internal processes, such as LoadSEER and EDGIS.

Response 2:

PG&E's ICA resource management considers the complexity of the process that involves inputs from different data sources such as LoadSEER, GIS, queue of generation, etc. The product managers, data analysts, GIS experts, IT staff, and distribution engineers have required skill sets to resolve issues. If more resources or specific skills are needed, the Business Owner can request and allocate appropriate resources from other lines of business on ad-hoc basis to fulfill the gaps. Historically, PG&E has been successful in resource allocation and is planning to continue with the same resource management plan. The ownership structure of ICA responsibilities is presented in Figure 8 and Table 3 of the Tier 1 Advice Letter 6212-E. Additionally, costs for ICA are currently tracked in the Distribution Resources Plan Tools Memorandum Account (DRPTMA) and are included in PG&E's 2023 GRC filing1. Therefore, PG&E plans to adopt the recommendation, in accordance with its 2023 GRC filing.

Recommendation 3:

It is recommended to keep track/count of input data issues for each refresh. This tracking will help identify positive or negative trends related to input data quality and inform the root cause analysis. Input data issues could be one of the metrics associated with the ICA.

Response 3:

PG&E has developed a spreadsheet according to the ITE recommendation, which lists the circuits failed in different study cycles. This lists the feeder ID, feeder name, assigned engineer, study cycle, the stage the circuit is failed at, failure message, root cause, source of issue, etc. This tracker will help identifying the positive or negative trends related to input data quality and inform the root cause analysis. Therefore, PG&E has already adopted this recommendation.

Recommendation 4:

PG&E is encouraged to continue working with the CYME developer to efficiently model temperature-controlled capacitors as part of the ICA analysis, especially if PG&E has a significant number of temperature-controlled capacitors in the field. Although modeling temperature-controlled capacitors as voltage-controlled is a practical solution, it does not necessarily capture the true state in the field. As noted in Table 1-2, the intent should be to have distribution circuit models representing true field conditions to the greatest extent possible. Otherwise, the results may overstate or understate (parts of) system hosting capacity.

Response 4:

PG&E has discussed this option with the CYME developer and GridUnity as per ITE recommendation. Modeling temperature-controlled capacitors in CYME according to ITE's request will have a positive impact on convergence since the solutions are easier with temperature-controlled capacitors compared to voltage-controlled capacitors. Temperature will be a new input that the ICA platform could ingest to set the state of such capacitors. PG&E is planning to collect historical temperature profiles (576 hours) for its different Distribution Planning Areas (DPAs). The plan is to work with GridUnity, implement required code modifications, and change the load flow parameters for each power-flow analysis. The data collection, software modifications, and validation will require approximately 9 months to be implemented.

Recommendation 5:

Another important aspect is the adverse impact of automated model conditioning. It is important to understand the potential adverse effects on ICA results when modifying regulators and capacitor settings/operations when the power flow software does not initially converge. While the process gains efficiency, the accuracy of results should not

suffer (to a certain degree). It would be beneficial if IOUs thoroughly study the adverse impact of such automated modifications and have a common approach in dealing with power flow convergence issues, preferably working with the power flow software vendor to address these convergence issues.

PG&E has already initiated software improvements activities with CYME vendor. As a result, CYME was improved to handle the pre-existing voltage and loading conditions better, identify ICA limiters, and enable power flow convergence that allows proper capture of the capacitor state. It is recommended for PG&E to continue to work with the CYME vendor to overcome challenges and eventually eliminate temporary custom scripting to enable CYME models specifically for ICA, as stated in the plan. Ultimately, CYME models used in the interconnection studies should be handled in the same way CYME models are handled for ICA. Otherwise, interconnection study and ICA outcomes may differ.

Response 5:

PG&E has started discussions with CYME to improve the logics that can enhance the convergence issues associated with device status oscillations. After identifying a solution, CYME will test the performance of its modified algorithms with PG&E circuit models as a proof of concept. If the results are promising, the changes will be rolled out to the production version of the CYME software for ICA calculations.

The solution identification, software modifications, and method validation will require approximately 12 months to be implemented. This will effectively reduce the custom scripts used in ICA process. However, PG&E does not have a plan nor timeline to "eventually eliminate temporary custom scripting to enable CYME models specifically for ICA". PG&E recommends this long-term recommendation be discussed in the Successor OIR and informed by study.

PG&E uses similar methodology and models for ICA and interconnection studies. As discussed in Section "ICA - Rule 21 Interconnection Support" of the Advice Letter 6212-E, "There is an ongoing effort to validate the ICA results comparing the ICA values with Rule 21, Screen M for screening of new interconnection application. There has not been a conflict reported to date. The PG&E ICA platform can support the streamlining of the Rule 21 interconnection process."

Recommendation 6:

Quanta Technology recommends that PG&E expand the automated checks in the ICA results validation process to account for potential upstream issues regardless of the hosting capacity value (zero or non-zero). PG&E's plans state an intent to perform system-wide statistical analysis on ICA to identify potential issues that may exist as part of the results validation process.

Response 6:

PG&E's QA/QC process accounts for potential upstream issues as explained in PG&E data validation plan, in all stages of process including Model Intake, Sanity Check, PLA, HLA, as well as ICA. PG&E continuously investigates the root causes of zero ICA results. If there is a common data quality issue that causes failure of multiple circuits, the issue is addressed at the source and the calculations are reprocessed. If it affects an individual circuit, the data is corrected at the source only for that specific network. In cases where changes are required in the process to avoid same future issues, the process is being modified accordingly. If PG&E identifies a need for a new check or data handling step in PLA, HLA, ICA, etc, it will be added to the process.

As stated in "Long-Term Plans for ICA Improvements" Section of the Tier 1 Advice Letter 6212-E, "PG&E plans to perform system-wide statistical analysis on ICA to identify potential issues that may exist. This includes but is not limited to breaking down the hosting capacity results shown for example in Fig. 7 to different buckets based on the limiting factors (steady-state voltage, thermal, voltage variation, and safety) to identify the most liming factors and investigate the root cause if an issue is identified." PG&E plans to implement this recommendation over the next 6 months.

Recommendation 7:

The plan does not indicate how to handle comments/feedback from hosting capacity map users. It is recommended to explain this feedback process in the context of the data validation process, including the roles and responsibilities of affected stakeholders. A potential enhancement in the results publication process is to use a commercial tool to validate the map's published data and functionality, minimize human error, and ensure that the map accurately displays the results.

Response 7:

PG&E has a dedicated email address (DRPdata@pge.com) to receive the comments/feedbacks from hosting capacity map users. The email is checked frequently to answer the user questions, receive their feedback, and address their concerns. User satisfaction with public maps is one of PG&E's primary goals.

If users have questions regarding the data, they can reach out to the responsible Product Manager for the Data Portal via this email alias. In case a technical issue is identified, it will be escalated to the Business Owner and the proper internal stakeholders will be assigned with an action plan to address the issue. The resolution is communicated with the users on a timely manner.

PG&E publication process is automated using commercially available technology with minimal human interactions. Before publication, the data is post-processed with software such as Microsoft SQL and Python codes to reduce human interactions and errors. The PG&E ICA map is developed based on the Google Maps.

PG&E plans to add a description to the ICA user guide to clarify how they can submit their feedbacks and concerns. Therefore, PG&E plans to implement this recommendation over the next 3 months.

The submittal would not increase any current rate or charge, cause the withdrawal of service, or conflict with any rate schedule or rule.

Protests

Pursuant to GO 96-B, General Rule 7.5.1, PG&E requests that the Commission maintain the original protest and comment period designated in Advice 6212-E and not reopen the protest period.

Effective Date

PG&E respectfully requests that this Tier 1 advice letter become effective concurrent with original Advice Letter 6212-E, which is on **May 28, 2021**.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service list for **R.14-08-013**. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: http://www.pge.com/tariffs/.

/S/
Sidney Bob Dietz II
Director, Regulatory Relations

Attachments

cc: Service List R.14-08-013

California Public Utilities Commission

ADVICE LETTER SUMMARY

ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: Pacific Gas and Electric Company (U 39 E)

Utility type:
☑ ELC ☐ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Stuart Rubio
Phone #: (415) 973-4587
E-mail: PGETariffs@pge.com
E-mail Disposition Notice to: SHR8@pge.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 6212-E-A

Tier Designation: 1

Subject of AL: Supplemental: PG&E Improved ICA Data Validation Plan

Keywords (choose from CPUC listing): Compliance

AL Type: ☐ Monthly ☐ Quarterly ☐ Annual ☑ One-Time ☐ Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: D.17-09-026

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: N/A

Confidential treatment requested? ☐ Yes ☑ No

If yes, specification of confidential information:
Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? ☐ Yes ☑ No

Requested effective date: 5/28/21

No. of tariff sheets: 0

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

[1]Discuss in AL if more space is needed.

Clear Form

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

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Name:
Title:
Utility Name:
Address:
City:
State: District of Columbia Zip:
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

Clear Form

PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV

AT&T
Albion Power Company

Alta Power Group, LLC
Anderson & Poole

Atlas ReFuel
BART

Barkovich & Yap, Inc.
California Cotton Ginners & Growers Assn
California Energy Commission

California Hub for Energy Efficiency Financing

California Alternative Energy and Advanced Transportation Financing Authority
California Public Utilities Commission
Calpine

Cameron-Daniel, P.C.
Casner, Steve
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City of San Jose
Clean Power Research
Coast Economic Consulting
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Crossborder Energy
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Davis Wright Tremaine LLP
Day Carter Murphy

Dept of General Services
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Douglass & Liddell

East Bay Community Energy Ellison Schneider & Harris LLP Energy Management Service
Engineers and Scientists of California

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Green Power Institute
Hanna & Morton
ICF
IGS Energy
International Power Technology
Intestate Gas Services, Inc.
Kelly Group
Ken Bohn Consulting
Keyes & Fox LLP
Leviton Manufacturing Co., Inc.

Los Angeles County Integrated Waste Management Task Force
MRW & Associates
Manatt Phelps Phillips
Marin Energy Authority
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Public Advocates Office

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.
SCD Energy Solutions
San Diego Gas & Electric Company

SPURR
San Francisco Water Power and Sewer
Sempra Utilities

Sierra Telephone Company, Inc.
Southern California Edison Company
Southern California Gas Company
Spark Energy
Sun Light & Power
Sunshine Design
Tecogen, Inc.
TerraVerde Renewable Partners
Tiger Natural Gas, Inc.

TransCanada
Utility Cost Management
Utility Power Solutions
Water and Energy Consulting Wellhead Electric Company
Western Manufactured Housing Communities Association (WMA)
Yep Energy