

**BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Integrate and
Refine Procurement Policies and Consider
Long-Term Procurement Plans.

R.12-03-014
(Filed March 22, 2012)

**PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
COMMENTS IN RESPONSE TO THE ENERGY DIVISION'S
REQUEST FOR INFORMAL COMMENTS**

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Dated: May 9, 2013

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In response to the Energy Division's April 30, 2013 Request for Informal Comments in Response to the April 24, 2013 CAISO Presentation on 2012 Long-Term Procurement Plan (LTPP) Track 2 – Operational Flexibility Study, Pacific Gas and Electric Company (PG&E) provides these comments and recommendations to the parties in this proceeding.

- I. WHAT ASSUMPTIONS SHOULD BE USED FOR RECENTLY AUTHORIZED RESOURCES IN SOUTHERN CALIFORNIA EDISON'S SERVICE AREA (D.13-02-015) AND SAN DIEGO GAS & ELECTRIC'S SERVICE AREA (D.13-03-029)? SEE SLIDE 16 FOR THE CURRENT ASSUMPTIONS AND RECOMMENDATION BY CEC AND CPUC STAFF.**
- A. Should The Current Assumption (900 MW CCGT, 100 MW GT, 50 MW Storage In The LA Basin, 343 MW Of GT In San Diego; Up To 697 MW Of Additional Resources¹ Available To Meet Any Residual Flexibility Need) Be Maintained Or Changed? If Changed, What Is The Recommendation?**
- B. What Influence [On] The Modeling Results Would The Proposed Change Have? For Example, Adding Baseload Resources May Increase Overgeneration In Non-Summer Months.**
- C. Is This A Change That Should Be Handled In This LTPP Or The 2014 LTPP?**

The current assumption in the California Independent System Operator's (CAISO's) model run presented at the workshop for the base case should be modified to reflect the

¹ 1400-1800 MW were authorized for the LA Basin local capacity needs; 215-290 MW were authorized for Big Creek / Ventura local capacity needs; and 343 MW for San Diego local capacity needs.

authorized procurement level adopted for SCE in the Track 1 decision (D. 13-02-015). This change should be reflected in the 2012 LTPP. If the assumption is not modified to reflect the authorized procurement level, with all else equal, it is likely that the system need finding in Track 2 will overstate the need for incremental resources. Furthermore, reflecting different modeling assumptions that those authorized in D.13-02-015 is in conflict with the Scoping Memo. The Scoping Memo indicated that “[t]o the extent that new resources are authorized in Track 1 to meet local capacity needs, we expect that any modeling would incorporate this information.”²

PG&E understands that the Energy Division’s rationale for modifying the assumption to reflect a lower procurement level is due to the uncertainty regarding the types of resources that will provide the unspecified portion of the 2012 LTPP Track 1 authorized procurement. However, this is not a valid reason to modify modeling assumptions from an authorized procurement level. To be consistent with D. 13-02-015, PG&E suggests that in addition to the 1,050 megawatts (MW) of local capacity that is modeled in the base case for Track 2, system need determination, the model be changed to include:

- 550 MW of additional capacity to reflect the mid-point of Southern California Edison Company’s (SCE) 2012 LTPP Track 1 procurement authorization to meet SCE’s local reliability requirements for Los Angeles (LA) Basin; plus
- 250 MW to reflect the mid-point of SCE’s 2012 LTPP Track 1 procurement authorization for Big Creek/Ventura local capacity needs.

The following table compares the procurement authorized in the 2012 LTPP Track 1 decision to the current California Independent System Operator (CAISO) base case modeling assumption for Track 2.³

² Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge, May 17, 2012, p. 10.

³ D.13-02-015, Ordering Paragraphs 1 and 2.

Local Reliability Resource Additions in SCE’s Service Area Authorized in 2012 LTPP Track 1 (in MW)

Local Reliability Area	2012 LTPP Track 1 Procurement Authorization (D, 13-02-015)		Mid-Point of Procurement Authorization	CAISO Track 2 Base Case Modeling Assumption	Shortfall in CAISO Track 2 Base Case Modeling Assumption Compared to Mid-Point
	Minimum	Maximum			
LA Basin, West LA	1,400	1,800	1,600	1,050	550
Big Creek/Ventura	215	290	253	0	253
Total	1,615	2,090	1,853	1,050	803

Using PG&E’s recommendation of the mid-point of the authorized amount would result in 1,853 MW of resources additions based on the 2012 LTPP Track 1 procurement authorization, rather than the 1,050 MW currently assumed.

Forecasting PG&E’s recommended amount of added resources as a result of the 2012 Track 1 authorization is more reasonable than forecasting that SCE falls far short of its procurement obligations, as would be the case if the current modeling assumptions are retained. The current modeling assumptions used for the Track 2 base case are inconsistent with the 2012 LTPP Track 1 decision as referenced above. The intent of the Track 2 analysis is to determine if there is an additional residual need for resources, beyond the local reliability needs authorized in Track 1. If this change is not made, the likelihood is increased that any finding in Track 2 has the potential to overstate the need for incremental resources.

PG&E recommends the additional resources included in CAISO’s modeling for Track 2 be consistent with D. 13-02-015, which allows up to 1,200 MW of conventional gas-fired resources for the West LA sub-area of the LA basin local reliability area.⁴

⁴ D. 13-02-015, Ordering Paragraph 1.

II. WHAT ASSUMPTIONS ARE APPROPRIATE FOR NEW OUT OF STATE RPS RESOURCES IN TERMS OF DYNAMIC SCHEDULING, INTRA-HOUR SCHEDULING, HOURLY SCHEDULING AND UNBUNDLED RECS? SEE SLIDE 20 FOR THE CURRENT ASSUMPTIONS.

- A. Should Each Of These Categories Be Additionally Classified Within The Different RPS “Buckets” For Procurement For Better Clarity?**
- B. Is This A Change That Should Be Handled In This LTPP Or The 2014 LTPP?**

Slide 20 of the CAISO’s presentation at the April 24 workshop indicates that the 2012 LTPP Track 2 analysis assumes that 30 percent of Renewable Portfolio Standards (RPS) imports are unbundled renewable energy credits (RECs), as was assumed in the 2010 LTPP.

However, pursuant to SB 2 (1X), the unbundled REC category is limited to 10 percent for RPS contracts executed after June 1, 2010. It is difficult to tell, from the information presented in slide 19, how much of the 18,000 gigawatt-hours (GWh) of out-of-state RPS⁵ is proposed to be modeled as unbundled RECs, and whether the proposed 30 percent of RPS imports complies with the 10 percent limit for RPS executed after June 1, 2010. The level of unbundled RECs assumed in the CAISO’s analysis should be checked, and revised downward to the extent it is inconsistent with the 10 percent limitation. The “intra-hour scheduling” percentage should be increased to offset any reduction in unbundled RECs to reflect this limitation. PG&E recommends that these changes be made for the 2012 LTPP.

III. FOR DEEPER ANALYSIS OF ANY OVERGENERATION ASSESSMENTS:

- A. How Should Exports Be Considered?**

Exports from California should be modeled at a realistic level, taking into account a reasonable amount of coordination between balancing areas (BAs) and keeping in mind the historical flows that have occurred on the interties.

The current CAISO analysis is not modeling exports at realistic levels. The CAISO’s current approach models “perfect” dispatch across large sub-regional “footprints,” and assumes

⁵ About 14,000 GWh of labeled as existing, and about 4,000 GWh labeled as new.

perfect coordination among BAs. Neither of these assumptions is realistic. As a result, the current model allows an unrealistically high amount of exports.

From PG&E's perspective, the current modeling assumes an unrealistic amount of BA-to-BA coordination, and an unrealistic ability of resources across the Western Electricity Coordinating Council (WECC) to ramp down to accommodate California exports during times of over-generation in the CAISO BA. For example, the model allows significant cycling of coal resources throughout WECC when high levels of renewable generation within California create situations in which California generation is in excess of California load.

While it is reasonable to assume that some amount of downward flexibility will be available from resources across WECC, the current modeling provides an over-optimistic view of such downward dispatch. As a result of this over-optimistic downward dispatch among conventional resources outside of California, the preliminary production simulation results for the base case scenario show California exporting power to neighboring BAs at levels that have not been historically observed, and at ramp rates that have not historically occurred.

For example, slide 32 of the material presented at the April 24 workshop shows net exports on March 26, 2022 in excess of 5,000 MW during the morning period, which indicates that the CAISO would be relying on neighboring BAs to absorb this 5,000 MW of power to achieve load and resource balance.

The results that were presented at the workshop reflect only the months of March and June. From an over-generation perspective, May is a more representative month of what would likely occur. PG&E anticipates that the modeling results may show even higher exports in May 2022, when loads are mild and renewable, qualifying facility and hydropower generation are high.

For these reasons, PG&E believes that a limit on exports is needed in the PLEXOS modeling used in Track 2 of the 2012 LTPP.

1. Is A Limit Appropriate? If So, At What Level?

Yes, limits on exports are appropriate. PG&E proposes the limits be incorporated as follows: 1) limit the overall level of exports from CAISO, and 2) limit the permitted hour-to-hour change, or ramp, of imports/exports. Inclusion of appropriate limits for these two variables will better simulate a reasonable level of BA to BA coordination, and better estimate the amount of potential over-generation that must be addressed within the CAISO's BA.

With respect to limiting the level of exports from California in any given hour, an hourly export limit of "net zero" should be incorporated into the analysis. The hourly net zero limit means that in any given hour, any level of exports from CAISO must be less than the imports from non-California resources contractually committed to California for that hour. This is a reasonable limit to assume given the difficulty in selling or disposing of CAISO's imports of RPS and non-RPS imports during over-generation conditions or at times when other areas are experiencing surplus conditions. Additionally, this is a reasonable assumption because historically, California has never been a net exporter of electricity.

For example, if California is importing 3,000 MW of non-California resources contractually committed to California (e.g., RPS and other dedicated imports from Palo Verde, Hoover, Intermountain, and San Juan), then the export level should be limited to no more than 3,000 MW of energy from California resources.

With respect to the second limit, to limit the permitted hour-to-hour change or ramp for imports/exports, hourly intertie ramping constraints should be imposed across each of the major California transmission interfaces with out-of-state regions (i.e., California Oregon Intertie (COI, Path 66)), Pacific DC Intertie (PDCI, Path 65) and West of River (WOR, Path 49).) In addition, a limit should be imposed on the coincidental ramp across the sum of all these interfaces. As shown in CAISO's proposal for flexible capacity requirements in the Resource Adequacy proceeding, renewable resource additions will change the shape of the net load to be served by dispatchable resources, and increase the need for ramping capacity. In the absence of better

information, PG&E recommends using historical ramping contribution rather than assuming unlimited ramping can be counted from neighboring BAs.

The individual path constraints can be implemented by calculating the monthly limit of the top 5 percent of hourly ramps on each individual tie for each month based on historical data. The coincidental ramp constraint across all of these major interfaces can be calculated from historical data. PG&E can provide these estimates based on 2010 historical data. Using historical data to limit hour-to-hour variations in this way would reflect a realistic level of BA-to-BA coordination.

2. What Would The Implications Of This Change Be?

Including a “net zero” export limitation in the modeling, in conjunction with the intertie ramping constraints, will provide more realistic modeling results. These revised assumptions will help to ensure that the model dispatches resources realistically by placing reasonable limits on the CAISO’s ability to rely on neighboring BAs to bring the CAISO BA into load-resource balance.

Effectively, a net zero export limit and intertie ramping constraints force a more realistic amount of the variability and over-generation challenges on the CAISO grid to be resolved within the CAISO’s footprint.

B. Which Scenarios/Sensitivities From D.12-12-010 Should Be Explored For Overgeneration Given Limited Time In This Proceeding?

The most relevant of the scenarios from D.12-12-010 for assessing over-generation are

- (1) Scenario 1 Base, and,
- (2) Scenario 3 High DG + High DSM.

These cases are the most appropriate scenarios to use when evaluating over-generation issues because lower loads are a key driver of over-generation. Scenario 2 Replicating Transmission Planning Process (TPP) applies a 1-in-5 peak weather condition, versus the Base Scenario’s 1-in-2 peak weather condition and thus, has higher loads than Scenarios 1 and 3.

As is discussed above, in order to properly evaluate the challenges that potential over-generation conditions are likely to place on the system, the CAISO analysis should be modified to incorporate the “net zero” export limit and intertie ramping constraints PG&E recommends.

“Wet” hydro conditions are another significant driver of over-generation. The operational flexibility of hydropower resources is reduced considerably during years when “wet” conditions prevail, which occurs with some regularity. Therefore, in order to properly evaluate the challenges that potential over-generation conditions are likely to place on the CAISO, wet hydro conditions should also be assumed as an additional sensitivity in the analysis.

C. Is This A Change That Should Be Handled In This LTPP Or The 2014 LTPP?

PG&E recommends that the changes discussed above be handled in this 2012 LTPP, and believes that they can be incorporated into the CAISO’s analysis without causing a delay in the proceeding.

IV. ADDITIONAL COMMENTS

A. Recommended Additional Sensitivities To Be Examined, Using A Deterministic Approach, In This 2012 LTPP Cycle

PG&E recommends the following two additional sensitivities be used to test the CAISO system’s adequacy in the 2012 LTPP. Each of these sensitivities captures the effects of additional uncertainties that should be considered to ensure that the system will operate reliably under reasonably expected conditions. Ignoring these sensitivities increases the potential for underestimating the requirements that the system must meet in order to operate reliably. These sensitivities should be considered for all modeling scenarios.

1. Above normal temperature peak sensitivity.

In the absence of a stochastic approach (discussed below), PG&E recommends use of stress weather conditions equal to a 1-in-10 hot summer peak. PG&E recognizes that the CAISO has plans to study a 1-in-5 weather year in the Replicating TPP Scenario. However, the use of a

1-in-10 weather year will provide greater assurance that the system has adequate resources during a year in which hot weather conditions prevail.

2. Higher forecast errors sensitivity.

PG&E recommends using a t-1 hour forecast uncertainty to estimate the load following requirements used in the planning study. This is a more accurate assumption regarding the level of forecast uncertainty that the CAISO must deal with, on an operational basis, as it dispatches resources on the CAISO grid.

Current forecast errors being used in the CAISO's operating flexibility study assume the forecast uncertainty in an operating day is limited to 30 minutes prior to delivery (t-30 minutes). The t-30 minute timeframe is based on the assumption that commitment decisions are made every 15 minutes prior to delivery time (t-15 minutes), and are made using forecasts of load, wind, and solar forecasts developed 15 minutes before unit commitment decisions are made (t-30 minutes).

The current assumption does not reflect the reality of how the CAISO grid is operated. In reality, the CAISO makes unit commitment decisions based on the start times of resources, which for many resources is one or more hours before delivery time. For example, combined cycle units have hot start times of about an hour and warm and cold start times of several hours.

The t-30 forecast uncertainty currently used in the studies would only be appropriate if all resources that CAISO needs in an operating day could be started in less than 30 minutes. This is not the case. A significant portion of CAISO's fleet in 2022 will require more than an hour to start. Therefore, at the time CAISO needs to make commitment decisions for a good portion of its fleet, the forecast uncertainty is at least one hour long.

B. Considering Path Limits Within PLEXOS For Energy And Ancillary Service Use

Based on the discussion at the April 24 workshop, it is PG&E's understanding that path limits are only enforced in PLEXOS to limit the flow of energy across areas, and that they do not

limit the quantities of ancillary service, and particularly the amount of regulation and load following, which an area can provide to other areas across path limits. As a result, the current modeling may not identify resource deficiencies in a specific area, even though the system as a whole may have adequate levels of resources.

PG&E recommends that path limits be considered in CAISO's planning studies when procuring ancillary services as well as energy. This should be implemented in this 2012 LTPP cycle for all modeling scenarios.

C. SCIT Limits And Inertia Requirements

Local minimum thermal generation requirements in southern California are an important factor which should be considered in the CAISO system analysis and should be included in the 2012 LTPP for all model runs. These requirements are currently defined as 60 percent import/40 percent thermal generation for the LA Basin, and 75 percent import/25 percent thermal generation for the San Diego Gas & Electric Company region. These requirements, along with the southern California import transmission (SCIT) nomogram, help ensure that the voltage and frequency support needs are met in these regions. It is not clear how this is modeled in the PLEXOS runs.

Enforcing a minimum generation requirement is particularly important when assessing over-generation because thermal generation that is committed to meet minimum generation requirements is not available for back down during times of over-generation.

PG&E requests clarity from the CAISO with respect to how these constraints are currently modeled. If they are not currently reflected in the model as described above, PG&E proposes that the model be changed to appropriately reflect them.

D. Stochastic Analysis

From PG&E's perspective, stochastic analysis of resource need has several potential advantages over the current deterministic approach. Stochastic analysis allows for more robust consideration of weather uncertainty, which impacts load, as well as uncertainties associated

with hydro, wind and solar generation. Additionally, stochastic methods can be used to effectively analyze uncertainty as to resource and transmission outages. For these reasons, generally accepted industry practice for integrated resource planning is to use a stochastic approach. This 2012 LTPP proceeding has the additional challenge of determining whether the system can maintain a sufficient level of reliability while being sufficiently operationally flexible with the increased reliance on intermittent renewable resources. Stochastic tools, once properly refined, will provide a better way to capture the effect of these uncertainties in the analysis.

However, PG&E recognizes that stochastic models have not been fully developed for this proceeding and, therefore, parties have not had sufficient time to evaluate stochastic models that might be used in this 2012 LTPP cycle. PG&E recommends that the Commission defer use of stochastic approaches to the 2014 LTPP cycle to allow a more thorough review of the stochastic modeling and the results. PG&E recommends that analysis of sensitivities, such as those described above, be used to consider the inherent uncertainties in resource planning in this 2012 LTPP.

Respectfully submitted,

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Dated: May 9, 2013

Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

**CERTIFICATE OF SERVICE
BY ELECTRONIC MAIL, U.S. MAIL, AND COURIER**

I, the undersigned, state that I am a citizen of the United States and am employed in the City and County of San Francisco; that I am over the age of eighteen (18) years and not a party to the within cause; and that my business address is Pacific Gas and Electric Company, Law Department B30A, 77 Beale Street, San Francisco, CA 94105.

I am readily familiar with the business practice of Pacific Gas and Electric Company for collection and processing of correspondence for mailing with the United States Postal Service. In the ordinary course of business, correspondence is deposited with the United States Postal Service the same day it is submitted for mailing.

On the 9th day of May, 2013, I caused to be served a true copy of:

**PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
COMMENTS IN RESPONSE TO THE ENERGY DIVISION'S
REQUEST FOR INFORMAL COMMENTS**

- [XX] By Electronic Mail – serving the above via e-mail transmission to each of the parties listed on the official service list for R.12-03-014 with an e-mail address.
- [XX] By U.S. Mail – by placing the above for collection and mailing, in the course of ordinary business practice, with other correspondence of Pacific Gas and Electric Company, enclosed in a sealed envelope, with postage fully prepaid, addressed to those parties listed on the official service list for R.12-03-014 without an e-mail address.
- [XX] By Courier – By serving the above document, via courier, to the following:
- | | |
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| David M. Gamson, Administrative Law Judge
California Public Utilities Commission
505 Van Ness Avenue, 5 th Floor
San Francisco, CA 94102 | Michel Peter Florio, Commissioner
California Public Utilities Commission
505 Van Ness Avenue, 5 th Floor
San Francisco, CA 94102 |
|--|--|

I certify and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on this 9th day of May, 2013, at San Francisco, California.

/s/ Stephanie Louie

STEPHANIE LOUIE