SUPPORTING DOCUMENTS FOR
DIRECT TESTIMONY OF MICHAEL BROWN

VOLUME 3
(Exhibits 18-26)

Expert Report on Issues Affecting Small Businesses

Testimony of Michael Brown

on behalf of
Small Business Utility Advocates
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California Public Utilities Commission
Application 12-11-009
May 16, 2013

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EXHIBIT 18

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8. AB 32 AND SMALL BUSINESS

Section 38561(e) of AB 32 requires the Air Resources Board to consider the potential for adverse effects on small businesses when developing its Scoping Plan. What follows in this section is an update of the economic assessment of the likely impacts in that sector.

8.1. Small Business in California

There are many ways to define what it means to be a small business.[49] For the purposes of this analysis we adopt the definition of a small business chosen by the California Legislature and administered by the state's Department of General Services. California law requires that in order for a firm to be considered eligible for small-business status and the benefits afforded to small businesses, it:[50]

- Must be independently owned and operated
- Cannot be dominant in its field of operation
- Must have its principal office located in California
- Must have its owners (or corporate officers) domiciled in California
- Together with its affiliates, must be either:
  - A business with 100 or fewer employees and average annual gross receipts of $12 million or less over the previous three tax years; or
  - A manufacturer with 100 or fewer employees.

Under this definition of a small business, it is estimated that over 98 percent of California's 1,337,920 businesses are considered eligible for small-business status.[51]

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[49] The U.S. Small Business Administration (SBA) has developed a schedule of definitions, differentiated by NAICS code, for which firms may be classified as small businesses. The schedule may be accessed on the SBA website at: http://www.sba.gov/idc/groups/public/documents/sba_homepage/serv_sstd_tablepdf.pdf. In general the definitions chosen by the SBA extend the definition of a small business to larger businesses than do California's rules.

[50] This definition and a description of the many benefits available to certified small and micro businesses may be accessed on the California Department of General Services Website: http://www.pd.dgs.ca.gov/smbus/sbcert.htm.

[51] This statistic was derived using Employment Development Department Table 1, which may be accessed at http://www.labormarketinfo.edd.ca.gov/?pageid=138.

8.2. Regulating Small Business Under AB 32

Small businesses in general will not be directly regulated by the measures recommended in the Scoping Plan. Most impacts will come from changes in the costs of goods and services that they procure—in particular, changes in energy expenditures. Therefore this analysis focuses on how implementation of the Scoping Plan could affect expenditures that small businesses make on energy and how such shifts could affect their profitability and overall economic competitiveness.

8.3. A Summary of Previous Analyses of Small-Business Impacts

For the Scoping Plan analyses, ARB staff assumed that the primary impacts on small business would come from changes in the price of energy. Staff based their assessment on the work of Energy and Environmental Economics, Inc. (E3). Prior to the adoption of the Scoping Plan, E3 estimated the impact of a package of GHG emissions reduction measures similar to those of the Scoping Plan. E3 estimated that the program could provide, in 2020, a 5 percent reduction in electricity expenditures (relative to business-as-usual) for the average California electricity customer.[52] This estimate was based largely on the assumption that increases in electricity prices would be more than offset by the continued expansion of energy-efficiency measures and that more efficient technologies would be developed and implemented.[53]

Accordingly, staff analysis indicated that implementation of the Scoping Plan's recommendations would likely have minor but positive impacts on small businesses in California. These benefits were primarily attributable to the measures in the Scoping Plan that were expected to deliver greater energy and fuel efficiencies. Thus, even when higher per-unit energy prices were taken into account, such efficiencies were expected to decrease overall energy expenditures for small businesses. Moreover, as the California economy was projected to experience continued economic growth associated with the implementation of AB 32, small businesses were expected to experience many of the benefits—more jobs, greater productive activity, and rising personal income—associated with that growth.

Since adoption of the Scoping Plan, several groups have attempted to revisit its impacts on small business. In June 2009, Professors Sanjay B. Varshney and Dennis H. Tootelian (both of California State University, Sacramento) estimated that the cost to each small business of implementing AB 32 would average $49,691.[54]

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[52] Based on their GHG calculator, CPUC/CEC GHG Docket (CPUC Rulemaking.06.04.009, CEC Docket 07-OIIP-01), and may be accessed at http://www.ethree.com/cpuc_ghg_model.html.

[53] The E3 analysis focuses on direct programmatic measures and does not include the incremental price impact of a cap-and-trade regulation, which will depend on allowance price, allocation strategy, capped-industry response, and other decisions.

[54] Varshney and Tootelian's "Cost of AB 32 on California Small Business" may be accessed at: http://suspendab32.org/AB_32_Report071309.pdf

After reviewing several critiques by independent economists,[55] staff concluded that the Varshney and Tootelian estimate was unrealistic because it was driven primarily by two problematic assumptions—that AB 32 would not induce any cost-saving increases in energy or fuel efficiency; and that all investments resulting from AB 32 should be counted as losses to the California economy.

Subsequently, others have generated alternative estimates of the impact of AB 32 on small business. In August 2009, Professor Matthew Kahn (University of California at Los Angeles) conducted a point-by-point rebuttal of the Varshney and Tootelian analysis, using his calculations of the potential increases in energy and indirect costs. Kahn concluded that the net cost to small businesses was likely to be insignificant when accounting for the potential energy savings and new business opportunities brought about from the implementation of AB 32.

Most recently, the Union of Concerned Scientists (UCS) released an analysis, conducted for it by the Brattle Group, in which the estimated impact on small businesses was a "modest" 0.1–2.0 percent increase in costs.[56] The UCS analysis built on the work of E3 by including not only the costs of implementing direct measures but also ranges of associated indirect costs resulting from increases in the prices of inputs other than energy. UCS described its estimate as conservative because it assumed that small businesses do not take advantage of any efficiency improvements.

8.4. An Updated Methodology

As part of this updated analysis, the ARB has reviewed the following: comments made by peer reviewers of the original Scoping Plan analysis; comments made by stakeholders; and the body of recent impact studies regarding small business. Where appropriate, staff has incorporated this input into the updated analysis. Additionally, staff has worked with the Economic Impacts Subcommittee of the Economic and Allocation Advisory Committee to refine assumptions and develop a

[55] The independent critiques of the Varshney and Tootelian analysis include:
Frank Ackerman, "Daydreams of Disaster: An evaluation of the Varshney-Tootelian critiques of AB 32 and other regulations, Report to the California Attorney General 2009;
http://ww.sei-us.org/climate-and-energy/Ackerman Review Dec 2009.pdf
Chris Busch, "Climate Policy and Economic Growth in California: A Comparative Analysis of Different Economic Impact Projections," December 3, 2009;
http://www.resource-solutions.org/pub_pdfs/Climate Policy and Economic Growth in California.pdf
Matthew Kahn, "A Review of Cost of AB 32 on California Small Businesses—Summary Report of Findings," September 21, 2009;
http://www.arb.ca.gov/cc/scopingplan/economics-sp/matthew_kahn.pdf
James Sweeney, "Review of Varshney/Tootelian Report: Cost Of AB 32 On California Small Businesses—Summary Report Of Findings," February 15, 2010;
http://www.stanford.edu/group/peec/cgi-bin/docs/policy/research/Sweeney%20Review%20of%20Varshney.pdf

[56] The Brattle Group analysis for UCS may be accessed at
http://www.ucsusa.org/assets/documents/global_warming/AB-32-and-CA-small-business-report.pdf.

methodology that can characterize the range of potential impacts on California small business from the implementation of AB 32.

Staff pursued three strategies for estimating the impacts of AB 32 on small business: a general equilibrium analysis; an energy price analysis; and a descriptive sensitivity analysis. While each of these analyses have distinct strengths and weaknesses, we believe that, used in conjunction, they provide a rich description of what small business may expect from AB 32.

8.5. The General Equilibrium Analysis

8.5.1. E-DRAM

The general equilibrium analysis captures both the direct and indirect impacts of each of the Scoping Plan measures. This analysis relies on the Environmental Dynamic Revenue Assessment Model (E-DRAM) for an estimation of the impacts by economic sector. More background on E-DRAM can be found in Section 4.3 of this report.

When identifying industry-level impacts, E-DRAM does not differentiate between small and large businesses. This fact prevents us from discerning the impacts of AB 32 on small business directly from E-DRAM output. In order to do so, the overall industry-level impacts must be combined with another data source that captures the distribution of economic activity by business size.

8.5.2. Employment Data

To estimate the distribution of economic activity, ARB staff used employment data from the California Employment Development Department (EDD). Employment data are used instead of alternative measures, such as the number of small businesses by size category, because we believe that employment is the best publicly available proxy for economic activities differentiated by size of business and industrial classification. For example, while over 98 percent of businesses may be classified as small businesses, it is clear that they do not produce anything approaching 98 percent of all economic output. Therefore, using the number of businesses would drastically overstate the impact of implementing AB 32 on small business.

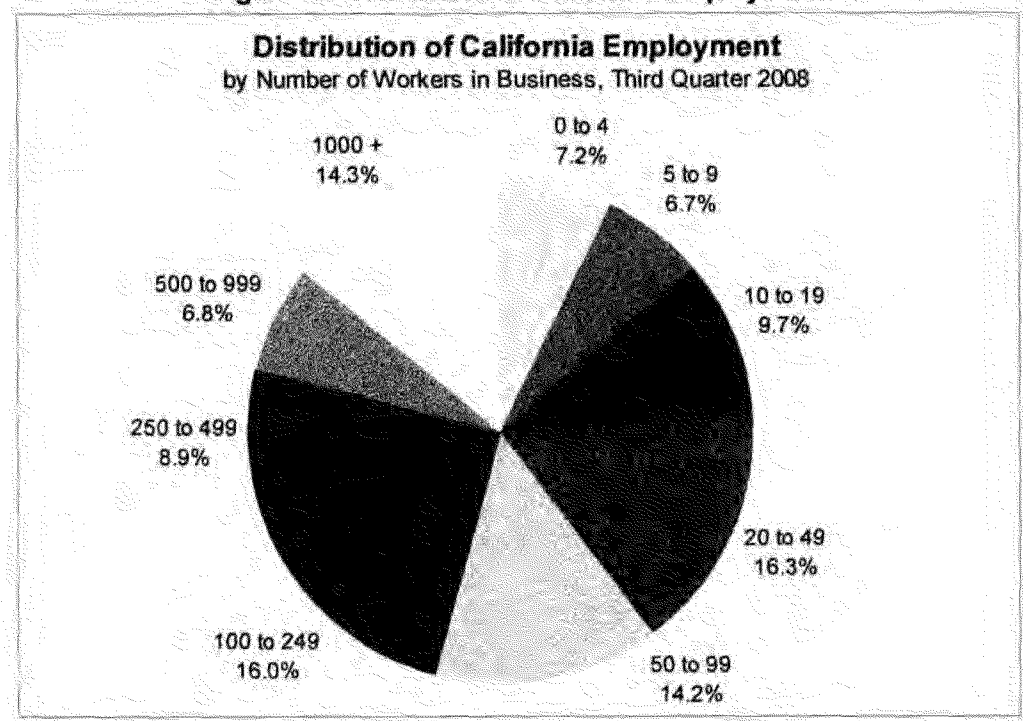
Employment data for 2008 were obtained from the EDD.[57] These data consist of third-quarter counts of employment by industrial classification and size of business. Industrial classification is in accordance with NAICS and is disaggregated to the three-digit level, which partitions the California economy into more than 90 industries such as Crop Production (111), Oil and Gas Extraction (211), and Residential Building Construction (236). Size of business is measured by employment and is

[57] 2008 is the most recent year for which employment data by industrial classification are available. Employment and business data for years 1994-2008 were obtained from EDD's Labor Market Information section and may be accessed at http://www.labormarketinfo.edd.ca.gov/?pageid=138.

partitioned into nine categories: 0-4, 5-9, 10-19, 20-49, 50-99, 100-249, 250-499, 500-999, and 1000+.[58]

Figure 12 is a pie chart representing the California employment, by size of business, in 2008. It shows, for example, that small business employed approximately 54 percent of the workforce.

Figure 12. Distribution of California Employment



8.5.3. Employment Share

Using the EDD data on total state employment partitioned by size of business and industrial classification, a small-business share is calculated for each industry. Equation (1) gives the formula for how each industry's small business share is calculated:

$$\text{Small Business Share}_i = \frac{\sum Employment\ at\ firms\ with\ fewer\ than\ 100\ employees}{\sum Employment\ at\ all\ firms} \quad (1)$$

Table 31 reports employment and small-business share aggregated to the two-digit NAICS code level for each of the major economic sectors operating in California.

[58] For certain industrial classifications and business categories (always with more than 100 employees), exact counts are omitted. This is because data are considered confidential when, for example, there are fewer than three businesses in a category, when one employer makes up 80 percent or more of the employment in a category, or when confidential data could be inferred. This omission was observed in the partitions containing the largest employers, however, and did not affect our ability to calculate a small-business share for any industrial classification.

The two-digit level, which includes sectors such as services, retail trade, and transportation, differentiates between energy-intensive (EI) and non-energy-intensive (NEI) manufacturing. Each two-digit level is computed by taking the weighted average of each of the three-digit NAICS codes within the economic sector, using the formula from equation (1).

Table 31. California Employment and Small-Business Share by Industrial Sector

Industrial Sectors (EDD 2008 Data)	Total Employment	Small-Business Employment	Small-Business Share
Agriculture, Forestry, and Fishing	459,723	176,771	38.5%
Mining	26,698	10,339	38.7%
Construction	782,432	570,328	72.9%
Utilities	58,575	14,027	24.0%
EI Manufacturing	234,161	101,369	43.3%
NEI Manufacturing	1,191,064	479,404	40.3%
Wholesale Trade	705,036	490,238	69.5%
Retail Trade	1,615,574	1,056,518	65.4%
Transportation and Warehousing	432,622	196,370	45.4%
Information	472,152	159,917	33.9%
Finance, Insurance, and Real Estate	837,914	554,873	66.2%
Services	6,232,695	3,813,832	61.2%
Total	13,048,646	7,623,986	58.4%

Note: The partition of employment activities across sub-sectors is not identical between EDD and E-DRAM. Therefore, direct comparison of employment numbers between tables in this section is not possible. However, the classification difference has a similar impact on employment in small and large firms, so small business shares are unbiased by this difference.

Across the various economic sectors, small business makes up between 24 percent and 73 percent of employment. As expected, small business accounts for a smaller share of employment in energy-intensive sectors such as utilities (24 percent), information (34 percent), agriculture (38 percent), mining (39 percent), and manufacturing (NEI 40 percent, EI 43 percent). On the other hand, small business accounts for a majority of employment in labor-intensive and service-oriented sectors such as construction (73 percent), wholesale trade (70 percent), retail trade (65 percent), and finance, insurance, and real estate (66 percent). Given the fact that labor-intensive and service-oriented sectors are less energy- and emissions-intensive, it may be expected that small business will bear a less-than-proportional share of the direct economic costs of implementing AB 32.

8.5.4. Small Business Impacts

To estimate the impacts of implementing AB 32 on small business, staff chose to focus on employment and output, given these two metrics' descriptive importance and relatively constant relationship to employment share. That is, because the identification of economic impacts relies on relationships between employment and each of the chosen metrics, it was important that staff be confident in the stability of those relationships. Clearly, this held for the employment metric.

Throughout the remainder of this analysis, staff assumed that employment and output have a fixed relationship across small and large business. Staff believed that this was conservative in the sense that the resulting small-business shares calculated are almost certainly upper bounds. That is, because larger businesses tend to be more capital-intensive, it is likely that employment share overstates the productive activity of, and therefore impacts on, small business within a given industry.[59] Without the benefit of confidential data on production by size of business and industrial classification, this assumption yielded the best estimate of the likely share of economic output generated by small business.

Sector-level changes in employment and output were generated by E-DRAM, with small-business impacts calculated by using the E-DRAM results from the iterated analysis. For each of the five modeling cases, impacts were calculated by multiplying the change in 2020 sector-level employment (output) by the sector's calculated small-business share,[60] as shown in Equation (2):

$$\text{Sector Level Impact}_i = \textit{(Sector Small Business Share) x (Change in E-DRAM Output)} \quad (2)$$

The aggregate impacts on small business were then calculated by summing all of the sector-level changes. Thus, the difference between the aggregate impacts of implementing AB 32 on small business, as compared to the whole of the California economy, results directly from the different sector-level concentrations of small business. That is, because small business is more heavily concentrated in construction and retail trade than in utilities and mining, the impacts of implementing AB 32 on the construction and retail-trade sectors are going to more strongly determine the aggregate impacts on small business.

Tables 32 and 33 report employment and output impacts aggregated to the two-digit NAICS level for each of the major economic sectors operating in California.

[59] Staff expect the difference between the estimated and true share of small business output to be most pronounced in capital-intensive sectors such as manufacturing and utilities. Because these sectors are expected to bear a disproportionate share of the costs, staff conclude that the estimate may overstate the total cost to small business.

[60] See Section 5 for a detailed description of what is included in each of the cap-and-trade cases.

Table 32. E-DRAM Small-Business Employment Changes for Modeling Cases

Small Business Employment 2020	Reference	Case 1	Case 2	Case 3	Case 4	Case 5
Agriculture, Forestry, and Fishing	172,537	174,337	169,741	171,700	169,106	167,260
Mining	10,040	8,613	9,032	8,560	9,354	9,219
Construction	676,885	670,681	651,334	655,067	647,222	638,438
Utilities	16,061	14,697	11,356	14,170	12,005	11,769
EI Manufacturing	371,253	367,755	361,654	363,484	364,521	360,274
NEI Manufacturing	478,721	473,423	469,624	472,082	473,339	472,108
Wholesale Trade	550,264	550,104	548,799	545,467	551,417	546,905
Retail Trade	1,243,348	1,239,407	1,197,456	1,227,157	1,198,524	1,190,915
Transportation and Warehousing	228,506	226,977	219,733	223,094	221,074	218,205
Information	151,855	152,657	152,963	151,893	153,223	152,279
Finance, Insurance, and Real Estate	679,132	686,370	676,952	677,107	677,729	668,557
Services	4,117,225	4,132,439	4,108,313	4,108,271	4,108,809	4,084,641
Small Business Total	8,695,827	8,697,461	8,576,955	8,618,051	8,586,323	8,520,572
All Business Total	14,915,745	14,909,831	14,700,195	14,776,316	14,723,406	14,611,776
Percent Change from Reference Case						
Agriculture, Forestry, and Fishing	-	1.0%	-1.6%	-0.5%	-2.0%	-3.1%
Mining	-	-14.2%	-10.0%	-14.7%	-6.8%	-8.2%
Construction	-	-0.9%	-3.8%	-3.2%	-4.4%	-5.7%
Utilities	-	-8.5%	-29.3%	-11.8%	-25.3%	-26.7%
EI Manufacturing	-	-0.9%	-2.6%	-2.1%	-1.8%	-3.0%
NEI Manufacturing	-	-1.1%	-1.9%	-1.4%	-1.1%	-1.4%
Wholesale Trade	-	0.0%	-0.3%	-0.9%	0.2%	-0.6%
Retail Trade	-	-0.3%	-3.7%	-1.3%	-3.6%	-4.2%
Transportation and Warehousing	-	-0.7%	-3.8%	-2.4%	-3.3%	-4.5%
Information	-	0.5%	0.7%	0.0%	0.9%	0.3%
Finance, Insurance, and Real Estate	-	1.1%	-0.3%	-0.3%	-0.2%	-1.6%
Services	-	0.4%	-0.2%	-0.2%	-0.2%	-0.8%
Small Business Total	-	0.1%	-1.4%	-0.9%	-1.3%	-2.0%
All Business Total	-	-0.1%	-1.5%	-0.9%	-1.3%	-2.0%

Table 33. E-DRAM Small-Business Output Changes for Modeling Cases

Small Business Output 2020 (Millions of 2007 $)	Reference	Case 1	Case 2	Case 3	Case 4	Case 5
Agriculture, Forestry, and Fishing	36,490	36,851	35,600	36,085	35,499	34,932
Mining	10,236	9,472	10,829	9,547	10,903	10,785
Construction	101,455	100,797	96,595	97,488	96,086	93,919
Utilities	21,157	19,236	14,486	18,460	15,403	15,043
EI Manufacturing	77,833	74,807	66,027	72,136	68,039	66,177
NEI Manufacturing	262,255	262,025	256,214	257,692	257,438	253,329
Wholesale Trade	119,051	119,344	117,830	117,412	118,502	116,637
Retail Trade	211,175	207,310	198,326	204,577	200,377	198,573
Transportation and Warehousing	56,886	56,665	54,529	55,445	55,029	53,993
Information	79,755	80,298	79,726	79,356	79,927	78,924
Finance, Insurance, and Real Estate	370,492	374,061	365,299	366,900	365,706	359,059
Services	556,946	561,552	550,926	553,286	551,446	543,271
Small Business Total	1,903,730	1,902,419	1,846,388	1,868,384	1,854,356	1,824,640
All Size of Business Total	3,505,000	3,496,000	3,383,000	3,433,000	3,401,000	3,346,000
Percent Change from Reference Case						
Agriculture, Forestry, and Fishing	-	01.0%	-2.4%	-1.1%	-2.7%	-4.3%
Mining	-	-7.5%	5.8%	-6.7%	6.5%	5.4%
Construction	-	-0.7%	-4.8%	-3.9%	-5.3%	-7.4%
Utilities	-	-9.1%	-31.5%	-12.8%	-27.2%	-28.9%
EI Manufacturing	-	-3.9%	-15.1%	-7.3%	-12.6%	-15.0%
NEI Manufacturing	-	-0.1%	-2.3%	-1.7%	-1.8%	-3.4%
Wholesale Trade	-	0.3%	-1.0%	-1.4%	-0.5%	-2.0%
Retail Trade	-	-1.8%	-6.2%	-3.1%	-5.1%	-6.0%
Transportation and Warehousing	-	-0.4%	-4.1%	-2.5%	-3.3%	-5.1%
Information	-	0.7%	0.0%	-0.5%	0.2%	-1.0%
Finance, Insurance, and Real Estate	-	1.0%	-1.4%	-1.0%	-1.3%	-3.1%
Services	-	0.8%	-1.2%	-0.7%	-1.0%	-2.5%
Small Business Total	-	-0.1%	-3.0%	-1.9%	-2.6%	-4.2%
All Size of Business Total	-	-0.3%	-3.4%	-2.0%	-3.0%	-4.5%

Observations include:

- As a percentage, aggregate impacts on small business are relatively modest in comparison to the impacts on the whole economy. This is in large part because small businesses are generally not regulated by AB 32 policies or because small businesses are able to pass through costs due to the nature of their market.
- In some sectors, small business may expect to see an increase in employment and output as consumers invest in more efficient appliances and improve the energy efficiencies of their homes.
- Some uncertainty remains as to the actual impacts on small business. This uncertainty comes from the relationships that were assumed between employment and output and output and energy use.

8.6. Energy Price Analysis

8.6.1. *Methodology*

The energy price analysis uses proprietary data from Dun & Bradstreet on the energy-use profiles of small businesses to estimate a range of potential direct effects. This analysis is a useful complement to the general equilibrium analysis because it does not rely on the assumption that inputs to small businesses are similar to those of larger businesses. However, because it does not capture indirect effects it is a partial analysis.

Changes in energy prices are an output of Energy 2020. And according to that model, Scoping Plan measures are expected to increase the energy prices to businesses in California. Because we assume throughout this analysis that businesses are not able to change their energy-use profile in the short run, each business may expect an increase in energy expenditure. This spending increase among California businesses may reduce their profitability if they are unable to pass on the cost increase. Therefore estimating the increase in energy spending by businesses provides an upper bound on the direct impact that higher energy prices may have on small businesses in California.

8.6.2. Shares of Revenue Spent on Electricity and Natural Gas

Table 34 provides a list of California industries with the greatest expenditures on retail electricity as a percentage of their revenue. These industries are mostly service-related. To the extent that small businesses predominate in these industries, small business may expect to see a greater direct effect from increased energy prices. Each industry's small-business share, as calculated using the EDD employment data, is also reported.

Table 34. List of Industries with Highest Percentage of Revenue Spent on Electricity

SIC	Industry Description	Revenue on Electricity	Small-Business Share (EDD)
8641	Civic and Social Associations	8.6%	71%
7032	Sporting and Recreational Camps	8.2%	54%
7033	Trailer Parks and Campsites	8.2%	N/A*
7021	Rooming and Boarding Houses	7.4%	40%
7219	Laundry and Garment Services	6.9%	78%
7041	Membership-Basis Organization Hotels	6.9%	40%
8231	Libraries	6.9%	44%
7241	Barber Shops	6.9%	78%
5461	Retail Bakeries	6.9%	66%
6719	Holding Companies	6.6%	78%
5813	Drinking Places	6.4%	86%
7011	Hotels and Motels	6.4%	40%
7215	Coin-Operated Laundries and Cleaning	6.2%	78%
7231	Beauty Shops	6.2%	78%
7217	Carpet and Upholstery Cleaning	6.1%	91%
5441	Candy, Nut, and Confectionery Stores	6.0%	66%
4941	Water Supply	6.0%	24%
0259	Poultry and Egg Houses	5.9%	87%
8351	Child Day-Care Services	5.9%	78%
8361	Residential Care	5.8%	49%

*Data on this industry are not reported by the Employment Development Department

Table 35 provides a description of California industries that spend the greatest percentage of their revenue on retail natural gas. As shown, this measure varies greatly, from a high of 15.89 percent to a low of 1.81 percent. Small-business share is also reported.

Table 35. List of Industries with Highest Percentage of Revenue Spent on Natural Gas

SIC	Industry Description	Revenue on Natural Gas	Small-Business Share (EDD)
7215	Coin-Operated Laundries and Cleaning	15.9%	78%
7219	Laundry and Garment Services	8.4%	78%
7021	Rooming and Boarding Houses	6.9%	40%
7041	Membership-Basis Organization Hotels	6.8%	40%
8641	Civic and Social Associations	5.8%	71%
6719	Holding Companies	5.2%	78%
7033	Trailer Parks and Campsites	5.1%	N/A*
7241	Barber Shops	5.0%	78%
7011	Hotels and Motels	4.9%	40%
8351	Child Day-Care Services	4.4%	78%
7231	Beauty Shops	3.7%	78%
5813	Drinking Places	3.6%	86%
8231	Libraries	3.3%	44%
5461	Retail Bakeries	3.2%	66%
8361	Residential Care	3.14%	49%
7032	Sporting and Recreational Camps	2.8%	54%
4941	Water Supply	2.7%	24%
7217	Carpet and Upholstery Cleaning	1.9%	91%
5441	Candy, Nut, and Confectionery Stores	1.8%	66%

*Data on this industry are not reported by the Employment Development Department

8.6.3. Energy 2020 Price Changes

From Energy 2020 we estimate that the Scoping Plan control measures may be expected to increase the commercial electricity price in California by up to 13 percent (Case 5) and to increase the commercial natural gas price by 50 percent (Case 2), relative to the reference case. Using the change in energy prices, ARB staff estimated the change in percentage of revenue spent on energy by California firms in the industries that spend the greatest share of their revenue on commercial energy, as shown in Equation (3). Table 36 reports the results, along with each industry's small-business share.

Spending Change = *(Change in 2020 prices) x (% of revenue spent on energy)* (3)

Table 36. Range of Impact on Average Percentage of Revenue Spent on Energy

SIC	Business Category	SB Share	Total Energy	Case 1	Case 2	Case 3	Case 4	Case 5
7215	Coin-Operated Laundries and Cleaning	78%	22.1%	1.8%	8.2%	3.3%	7.4%	8.6%
7219	Laundry and Garment Services	78%	15.3%	0.9%	4.5%	1.8%	4.3%	5.0%
8641	Civic and Social Associations	71%	14.4%	0.6%	3.3%	1.3%	3.4%	4.0%
7021	Rooming and Boarding Houses	40%	14.2%	0.8%	3.7%	1.5%	3.7%	4.3%
7041	Membership-Basis Organization Hotels	40%	13.6%	0.7%	3.7%	1.5%	3.6%	4.2%
7033	Trailer Parks and Campsites	N/A*	13.3%	0.6%	2.9%	1.2%	3.0%	3.6%
7241	Barber Shops	78%	11.8%	0.6%	2.8%	1.1%	2.8%	3.3%
6719	Holding Companies	78%	11.8%	0.6%	2.9%	1.2%	2.9%	3.4%
7011	Hotels and Motels	40%	11.3%	0.5%	2.7%	1.1%	2.8%	3.3%
7032	Sporting and Recreational Camps	54%	10.9%	0.3%	1.7%	0.7%	2.1%	2.4%
8351	Child Day-Care Services	78%	10.2%	0.5%	2.4%	1.0%	2.5%	2.9%
8231	Libraries	44%	10.1%	0.4%	1.9%	0.8%	2.1%	2.5%
5461	Retail Bakeries	66%	10.1%	0.4%	1.9%	0.8%	2.1%	2.5%
5813	Drinking Places	86%	10.0%	0.4%	2.1%	0.9%	2.2%	2.6%
7231	Beauty Shops	78%	9.9%	0.4%	2.1%	0.9%	2.2%	2.6%
8361	Residential Care	49%	9.0%	0.4%	1.8%	0.7%	2.0%	2.3%
4941	Water Supply	24%	8.6%	0.3%	1.6%	0.7%	1.8%	2.1%
7217	Carpet and Upholstery Cleaning	91%	8.0%	0.2%	1.2%	0.5%	1.5%	1.7%
5441	Candy, Nut, and Confectionery Stores	66%	7.8%	0.2%	1.2%	0.5%	1.4%	1.7%

*Data on this industry are not reported by the Employment Development Department

Observations include:

- Most of these business classes are in the service sector. They are predominantly comprised of small businesses and likely constitute a representative sample of small business activity.
- In general, these business classes may expect a modest increase in the percentage of revenue spent on electricity and natural gas consumption.
- In the most expensive case, only nine of these business classes can expect an increased expenditure of more than 3 percent of revenue.
- In the mildest case, only one of these business classes can expect an increased energy expenditure of more than 1 percent of revenue.

8.7. Small Business Energy-Use Patterns

This section of the analysis uses Dun & Bradstreet data to generate descriptive statistics, which are meant to serve as a form of sensitivity analysis. To the extent that energy-use patterns among small businesses are different from larger businesses, this analysis should capture those differences.

The Dun & Bradstreet classification of business spending on electricity by employee size shows that small businesses tend to spend a greater share of their business costs on electricity than do larger businesses. In general, the smaller a business, the larger its expenditure on electricity. As shown in Figure 13, small businesses with a single employee spend 3.3 percent of each dollar generated from sales on electricity, while businesses with 500 or more employees spend only 0.3 percent.

Figure 13. Percentage of Revenue Spent on Electricity by Business Employee Size

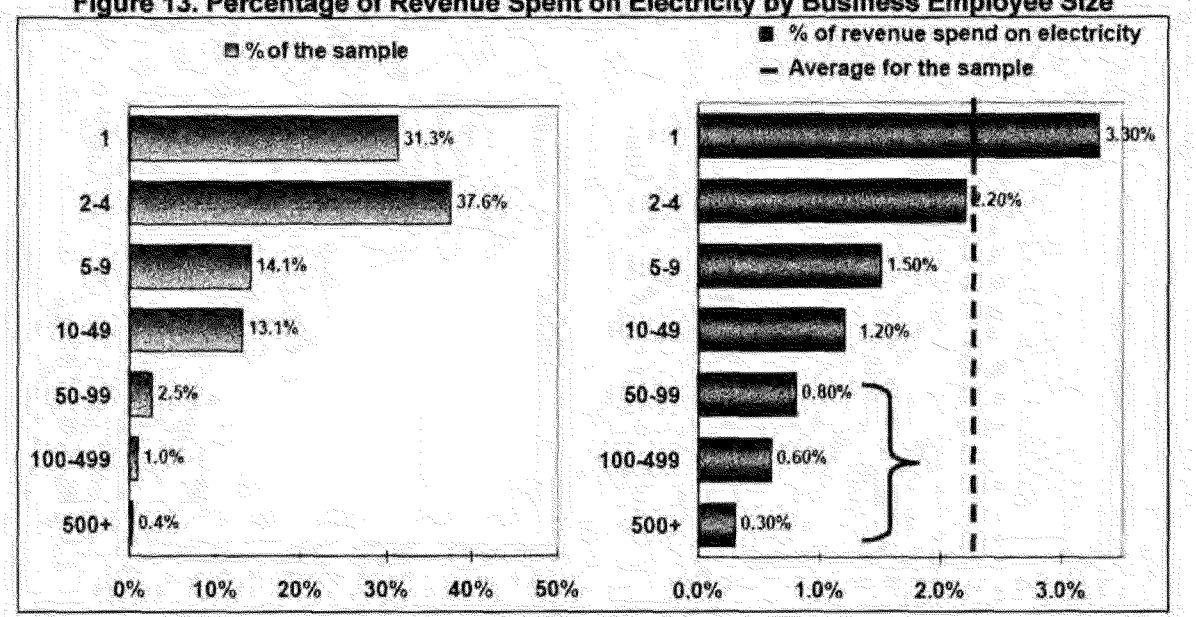


Figure 14 shows that businesses with smaller sales spend much higher percentages on electricity than do larger businesses. Small businesses with less than $50,000 in sales spend 34 times more on electricity as a percentage of revenue than larger businesses with $10 million or more in sales.

Figure 14. Percentage of Revenue Spent on Electricity by Business Revenue

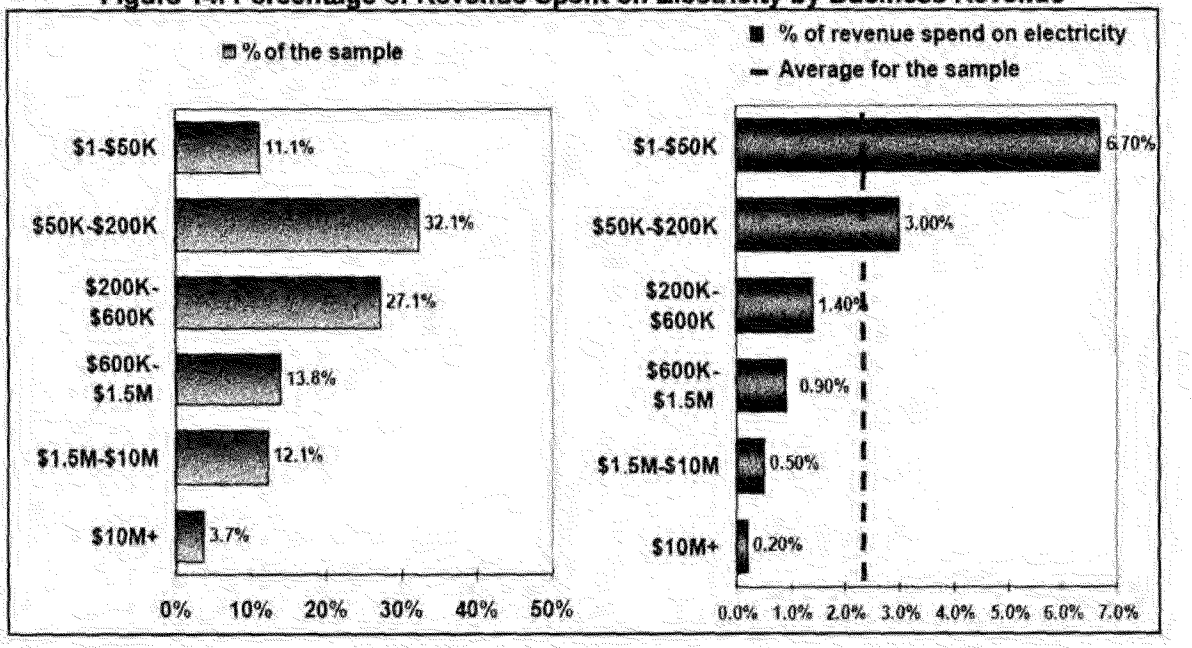


Figure 15 shows that younger businesses' spending on electricity as a percentage of revenue is about twice as great as older businesses' spending. Note that most young businesses are small businesses.

Figure 15. Percentage of Revenue Spent on Electricity by Business Age

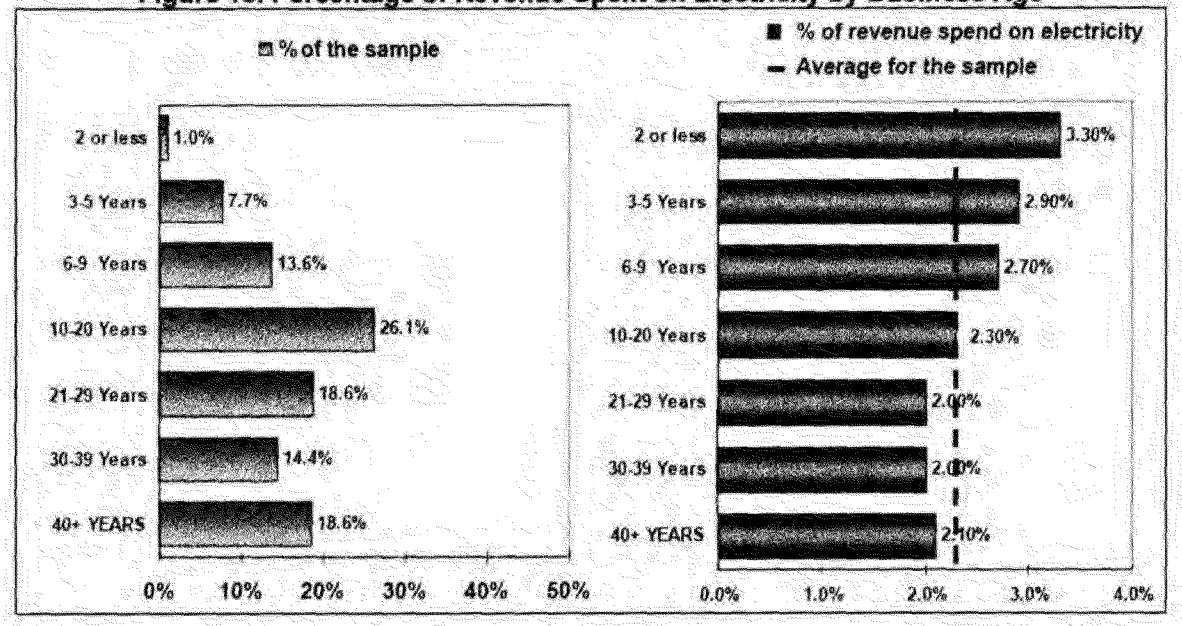


Figure 16 shows that the businesses that own their places of work spend almost as much on electricity as the businesses that rent their places of work. Both of these types of businesses, however, spend a smaller percentage of revenue on electricity than businesses that operate from home. The ownership status was not available for about 41 percent of businesses in the Dun & Bradstreet database.

Figure 16. Percentage of Revenue Spent on Electricity by Ownership Type

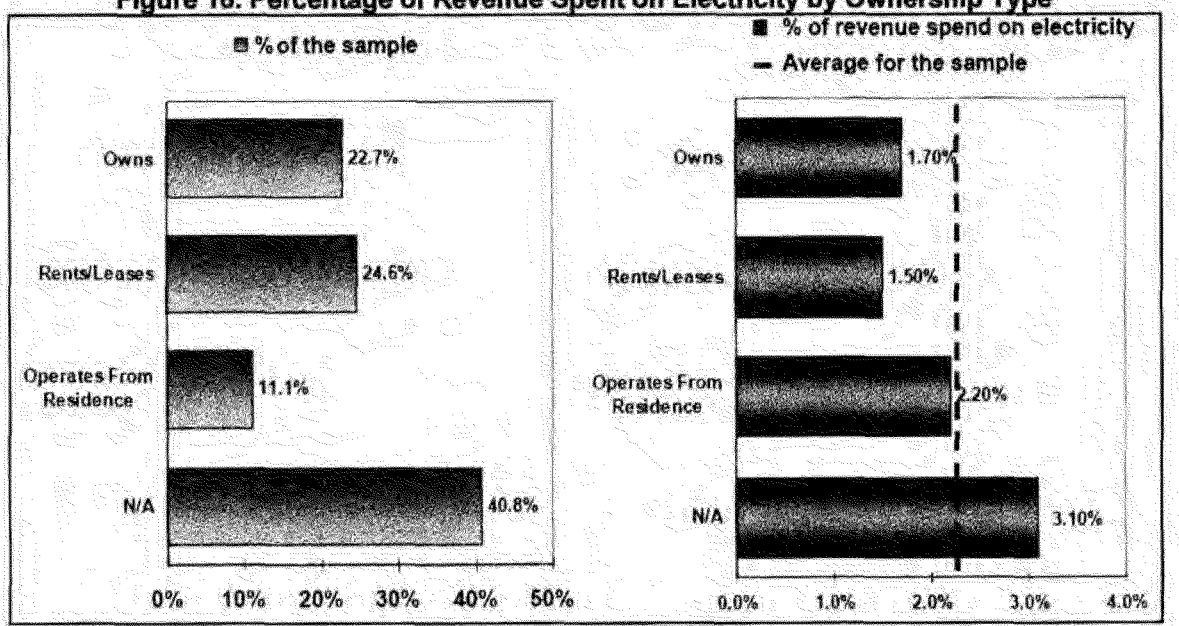


Figure 17 shows that nonprofit organizations much more on electricity than other business categories do. Corporations spend the lowest percentage of revenue on electricity; they also tend to be larger than other types of businesses.

Figure 17. Percentage of Revenue Spent on Electricity by Business Legal Status

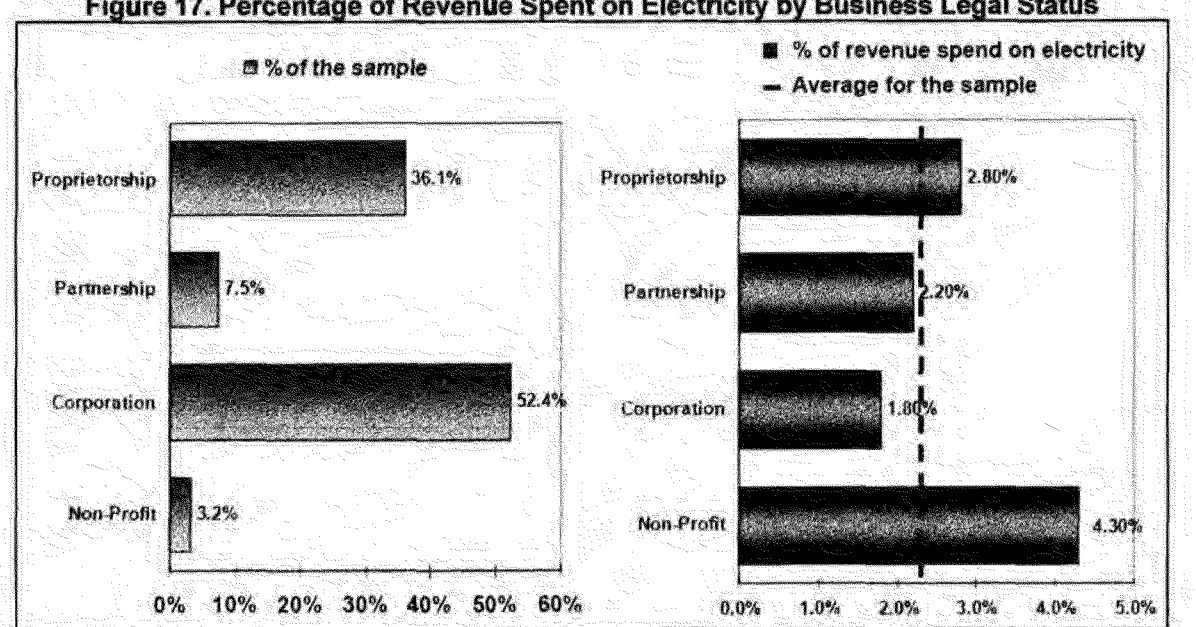
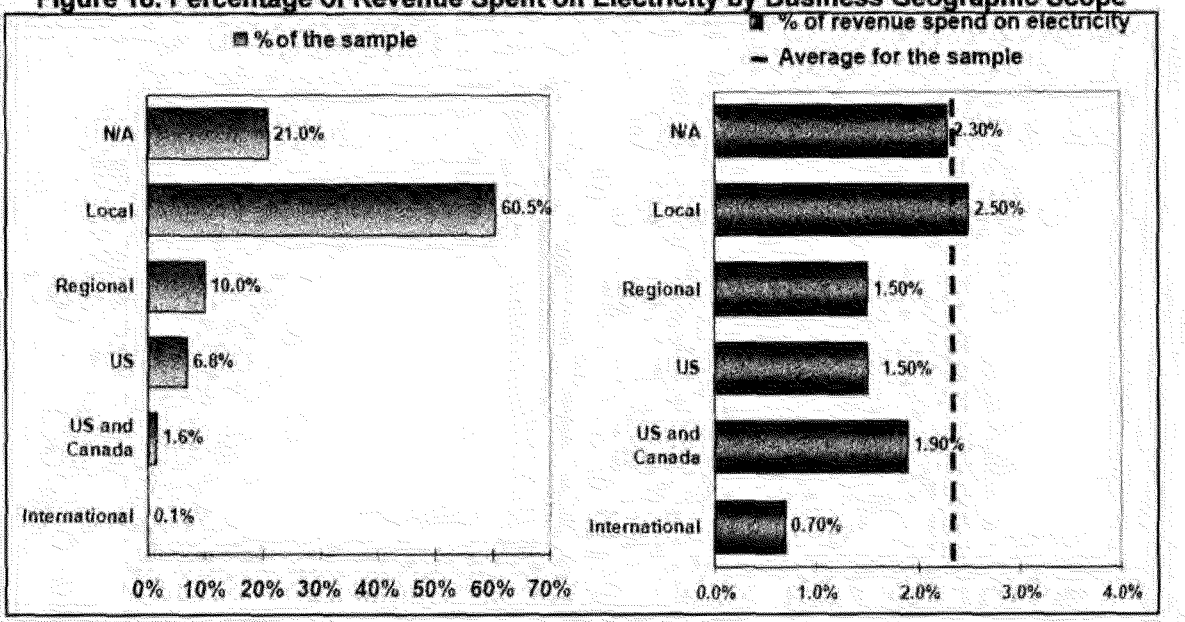


Figure 18 shows that local businesses tend to spend a larger percentage of revenue on electricity than businesses that operate regionally, nationally, or internationally. Local businesses also tend to be smaller businesses.

Figure 18. Percentage of Revenue Spent on Electricity by Business Geographic Scope



8.8. Section Conclusions

In aggregate, the Scoping Plan is unlikely to have a disproportionate impact on California's small businesses. Actually, the impact on small business is expected to be somewhat lower than the impact on the whole economy. This may be due to the fact that the cost to small businesses of implementing AB 32 will fall on them *indirectly*—through increases in energy prices. In particular, small businesses that operate in some service industries may expect to experience modest increases in their energy costs.

The majority of small businesses serve local markets and compete with entities that face similar costs. Thus, these businesses may be better able to pass on energy cost increases than those that compete regionally, nationally, and internationally. In any case, the actual impacts of energy-cost increases are likely to be lower than estimated in this analysis. Elevated energy costs tend to stimulate investment in energy-efficient products and equipment. To the extent that businesses invest in such products and equipment, their annual energy consumption will decline, thus easing the impacts of the energy-cost increases.

9. VALUATION OF THE POTENTIAL REDUCTIONS OF CRITERIA-POLLUTANT EMISSIONS

The primary objective of the AB 32 Climate Change Scoping Plan is to reduce greenhouse gas emissions. However, many of the Scoping Plan's measures also reduce criteria-pollutant emissions. We provide in this report's analysis an estimate of those latter reductions, and we estimate their economic value in terms of reduced costs of control.

9.1. Methodology

This analysis is not intended to re-create the California State Implementation Plan inventory or to estimate total statewide changes in criteria pollutants from implementing the Scoping Plan. Rather, the analysis provides a conservative estimate of the criteria-pollutant emissions reductions that could be expected to result from changes in energy demand—as stimulated by the Scoping Plan—in a subset of sectors of the California economy. As such, it gives a conservative estimate of the changes in criteria pollutants that may result from implementing the Scoping Plan.

Combined with the Energy 2020 model, which produces estimates of energy demand by economic sector and fuel type, the estimated change in criteria-pollutant emissions was estimated for 11 fuel categories: biomass, coal (electricity generation only), diesel, ethanol, motor gasoline, natural gas (electricity generation, residential use, and CHP/Other), PET coke, still gas, and biodiesel.

To estimate reductions in criteria pollutants, statewide emissions factors were multiplied by the energy demand in the sector and fuel categories that exhibited the greatest changes. Emissions reductions were not calculated for sectors or fuels that exhibited incidental changes or for which emission factors were not available. Finally, the estimated reductions in emissions were multiplied by dollars-per-ton values to estimate the avoided costs of control that could be realized under each scenario.[61]

9.2. Scenarios

This analysis evaluates the differences between a 2020 reference case and three cases representing various configurations of GHG regulations and measures. Those three scenarios are the complementary policies, the previously described Case 1 (complementary policies plus cap-and-trade with offsets), and the previously described Case 2 (complementary policies plus cap-and-trade without offsets). These three scenarios are more fully described in Sections 5.1, 5.2, and 5.3.

[61] This portion of the analysis focuses solely on the avoided costs of control and does not attempt to estimate the avoided damages that might result (e.g., avoided health costs).

Although California is a member of the Western Climate Initiative (WCI), the scenarios used in this analysis are for California alone and do not consider measures, policies, or offsets outside of California.

9.3. Fuel Equivalents

The Energy 2020 model uses trillion British thermal units (TBtu) as the universal unit of energy demand. To provide a more familiar context, however, the predicted changes in energy demand have been converted into more familiar units, such as gallons of gasoline, cubic feet of natural gas, and pounds of biomass. Most conversion values were obtained from the ARB Compendium of Emission Factors and Methods to Support Mandatory Reporting of Greenhouse Gas Emissions. Conversion values not contained in the compendium were obtained from online conversion calculators and websites. The conversion values used in this analysis are presented in Table 37.

Table 37. *Conversion Values: Common Units of Fuel Measure*

Fuel	**Btu per gallon**
Oil, unspecified	138,690
Still Gas	142,857
Motor Gasoline	124,238
Aviation Gasoline	120,190
Diesel	138,690
Ethanol (E85) [1]	90,500
Biodiesel [2]	130,000
Fuel	**Btu per pound**
Coal	9,985
Petroleum Coke	15,060
Biomass	7,690
Fuel	**Btu per cubic foot**
Natural Gas	1,027

1. University of Wisconsin, Stephens Point, Conversion Factors: Average Energy Content of Various Fuels. Available at http://www.uwsp.edu/cnr/wcee/keep/Mod1/Whatis/energyresourcetables.htm
2. North Dakota State University, Biodiesel Fuel http://www.ag.ndsu.edu/pubs/ageng/machine/ae1240w.htm

9.4. Emissions-Factor Estimates

To estimate criteria-pollutant emissions changes that could occur under the examined scenarios, ARB staff had to develop emissions factors. Because the Energy 2020 model presents energy demand for economic sectors and fuel types that are not directly comparable to more traditional ARB inventories and analyses, emissions factors were developed specifically for this analysis and should not be used for more general applications. The emissions factors used in this analysis were obtained by dividing the average statewide emissions for a given sector by the fuel consumed for each fuel type in that sector. As a result, the emissions-factor

estimates do not consider regional or local conditions and thus are not appropriate for application at those levels.

The emissions factors developed for this analysis were based on data obtained from the following sources:

- The California Emission Inventory Development and Reporting System, which was queried to obtain area- and point-source average statewide emissions.
- The California Emission Factors Model, which was used to obtain estimates of on-road emissions and fuel use for both light- and heavy-duty vehicles.
- California Energy Commission (CEC) fuel databases, which contain data from the Quarterly Fuel and Energy Reporting requirements and the Petroleum Industry Information and Reporting Act. These CEC databases provided estimates of area- and point-source fuel use.

9.5. Estimated Changes in Criteria-Pollutant Emissions

To estimate the changes in 2020 criteria-pollutant emissions, the predicted changes in energy demand from the reference case and each scenario were multiplied by appropriate criteria-pollutant emissions factors.

As noted above, these estimated changes were on altered energy demand in 11 fuel categories. The changes in TBtu from these fuel categories represent more than 90 percent of the estimated change in energy demand, calculated by the Energy 2020 model, from fuel categories that have the potential to change criteria emissions.

The complementary policies alone are estimated to reduce the 2020 energy demand by 1 percent for the source categories considered in this analysis and to reduce the corresponding criteria-pollutant emissions by 126 tons per day. Case 1 would reduce 2020 energy demand by 4 percent and the corresponding criteria-pollutant emissions by 159 tons per day total. Case 2 would reduce 2020 energy demand by 6 percent and corresponding criteria-pollutant emissions by 211 tons per day.

The primary sources of the predicted reductions in energy use include increased energy efficiency for all fuels, reduced vehicle miles traveled, and increased use of sustainable energy sources such as solar and wind. The greatest reductions are predicted to occur in motor vehicle gasoline, natural gas used for electricity generation, and ethanol. Reduced emissions from gasoline are attributed to more efficient vehicles, alternative-fuel vehicles, and reduced vehicle miles traveled. Natural gas emissions could increase as a result of increased use of combined heating and power. However, in all scenarios the Energy 2020 model predicts an overall decrease in emissions from natural gas attributable to increased efficiency of natural gas use and replacement of natural gas with sustainable sources.

9.6. Value of Avoided Costs

The estimated avoided costs that result from implementation of the examined scenarios were calculated by multiplying the reductions in tons of criteria-pollutant emissions by their respective values (expressed as dollars per ton). For comparison purposes, two sources were referenced: the South Coast Air Quality Management District (AQMD) Best Available Control Technology (BACT); and the California EPA (Cal/EPA) Climate Action Team's Updated Macroeconomic Analysis of Climate Strategies (presented in the March 2006 Climate Action Team Report and in its Final Report).

Values obtained from the AQMD's BACT guidelines are the average maximum cost-effectiveness value, expressed as control costs (dollars) per ton of air-pollutant emissions reduced. Average maximum cost-effectiveness considers the difference in cost and emissions between a proposed minor-source BACT and an uncontrolled case. It is important to note that the values of emissions reductions vary widely, depending on region and attainment status. This valuation overestimates value because it assesses all reductions (avoided control costs) at the same price, but in attainment areas no further action is needed and additional costs are not incurred.

The values from the Cal/EPA Climate Action Team's Updated Macroeconomic Analysis of Climate Strategies were calculated by ARB and represent the weighted-average cost per ton of the criteria-pollutant reductions from the 2007 State Implementation Plan measures.

Depending on the scenario examined and the selected cost-per-ton value, the estimated savings in 2020 resulting from not having to implement control actions (on avoided emissions) range from $140 million per year (complementary policies scenario, using Cal/EPA values) to $518 million per year (Case 2, using AQMD BACT values). The estimated values for all scenarios are presented in Table 38.

SUPPORTING DOCUMENTS FOR
DIRECT TESTIMONY OF MICHAEL BROWN

EXHIBIT 19

Expert Report on Issues Affecting Small Businesses

Testimony of Michael Brown

on behalf of
Small Business Utility Advocates
548 Market Street, Suite 11200
San Francisco, CA 94104
Tel: 415-602-6223 Fax: 415-789-4556

California Public Utilities Commission
Application 12-11-009
May 16, 2013

SMALL BUSINESS MAJORITY

Economic Opportunities for Small Business Under AB 32

October 18, 2010

Economic Opportunities for Small Business Under AB 32

In 2006, California enacted the Global Warming Solutions Act, commonly referred to as AB 32. This was a watershed moment for California's environmental future. AB 32 called for an ambitious reduction in California's carbon footprint. By 2020, it requires the state to cut emissions by 30%—down to 1990 levels—and by 2050, emissions will have to be at 80% of those levels. To do this, AB 32 directed the California Air Resources Board (CARB) to outline cost-effective strategies the state can use to meet those requirements. By the start of 2011, the reduction measures set forth in the plan are to be adopted, making California the national leader in the fight to offset the effects of climate change.

While spearheading environmental policy is not new to California, the controversy that accompanies policy change has been heightened by the recession. Opponents of AB 32 claim that setting carbon reduction measures and regulations will weaken an already struggling economy and cost the state jobs, while proponents argue that the legislation presents an opportunity for California to participate in a clean energy revolution that will create jobs and stimulate new investments.

Much of the discussion surrounding AB 32 has focused on complex cost-benefit estimates and whether the legislation will result in job loss or gain for the state overall.[1] This report, however, looks under the hood of these net benefit discussions to examine, specifically, the economic opportunities that AB 32 presents for small businesses in California.[2] The opportunities include:

- Increased demand for energy efficiency goods and services;
- Enhanced consumer awareness of and interest in "green" products and services;
- More resources in the hands of consumers as a result of lower overall spending on energy;
- Increased investment in clean energy production and other technologies.

California's Small Businesses

Small businesses play a vital role in the state's economy; 7.2 million Californians were employed by 718,220 small businesses (companies with 500 employees or fewer) in 2006. Of these firms, 88% had fewer than 20 employees and nearly half (47%) had between 1 and 4 employees.[3] According to analysis by The Brattle Group, 9 industries account for almost 82% of small businesses.[4] Table 1, below, details the number of small firms and their share of small business employment by sector, including descriptions of the types of businesses in each category.

Table 1: Small Business Characteristics

Industry	% of Firms	% of Employees	Example Businesses
PROFESSIONAL, SCIENTIFIC, AND TECHNICAL Services	14.4%	9.5%	LAWYERS, ACCOUNTANTS, ARCHITECTS, CONSULTANTS, VETERINARians
HEALTH CARE AND SOCIAL ASSISTANCE	11.2%	10.7%	CHILDCARE, PHYSICIANS, DENTISTS, HOME HEALTH CARE, NURSING care facilities
CONSTRUCTION	10.6%	11.0%	BUILDING CONSTRUCTION, HOME ADDITIONS, MAINTENANCE, repairs
RETAIL TRADE	10.5%	9.6%	OFFICE SUPPLY, COMPUTER, PLUMBING AND ELECTRICAL SUPPLY stores
OTHER SERVICES (EXCEPT PUBLIC ADMINIStration)	8.8%	6.5%	Auto repair, social services, dry cleaners
ACCOMMODATION AND FOOD SERVICES	7.7%	11.2%	Restaurants, food carts, bars, hotels, RV parks
WHOLESALE TRADE	7.1%	7.5%	SELLERS OF CLOTHING, BUILDING MATERIALS, ELECTRONICS TO OTHER businesses
REAL ESTATE AND RENTAL AND LEASING	5.8%	< 5%	Costume rental, car rental, video stores, real estate agents
MANUFACTURING	5.6%	11.1%	Small manufacturers
ALL OTHER	18.4%	≈ 17%	Publishers, insurance agents

Source: The Brattle Group

It is also useful to note that small business accounts for a smaller share of overall state employment in energy-intensive sectors. These include: utilities (24%), information (34%), agriculture (38%), mining (39%), non-energy intensive manufacturing (40 %), and energy-intensive manufacturing (43%).[5] Meanwhile, small business accounts for a majority of employment in labor-intensive and service-oriented sectors, such as construction (73%), wholesale trade (70%), retail trade and finance (65%), insurance and real estate (66%).

In summary, the variety of small business establishments in California means that different firms will find different opportunities from AB 32. The remaining sections of this report discuss these economic opportunities in detail.

Opportunities from Increased Investment in Energy Efficiency

AB 32 will stimulate demand for and increase investment in energy-efficient goods and services, thereby creating opportunities for small businesses that provide them.

AB 32 requires that the state significantly reduce its emissions. Small businesses provide many of the goods and services that consumers and businesses will need to achieve improved efficiency, and therefore stand to benefit. Achieving the energy efficiency milestones AB 32 sets will require a significant investment across many sectors of the economy, including zero-net energy systems for new buildings, whole-building retrofits for existing buildings, and increased use of solar roofs and water heating systems. Inside these buildings, new clean-tech appliances will also lead to improved efficiency.

As Zabin and Buffa, two researchers at the UC Berkeley Center for Labor Research and Education, write in their analysis:

> AB 32 will induce billions of dollars in private and public investment in energy efficiency retrofits, new construction, and renewable energy generation, presenting growth opportunities in traditional sectors and in new markets yet to be developed. [6]

SMALL BUSINESS OPPORTUNITY

Selim Sandoval founded Growing Green Energy, a renewable energy installation and green worforce development company in Mammoth Lakes that helps other companies increase their energy efficiency. Read about his company in the addendum.

For example, just one of the energy efficiency measures in AB 32—a requirement that new buildings have zero-net energy systems—will stimulate significant growth in California's solar water heating manufacturing and installation sectors. The state has developed a program—the Solar Hot Water and Efficiency Act of 2007 (SHWEA)—to create a self-sustaining industry by authorizing a 10-year, $250 million incentive program for solar water heaters, with the goal of installing 200,000 of these systems in California by 2017.[7] Incentives like these present opportunities for small businesses to tap new markets.

Another AB 32 focus, whole-building retrofits, presents further opportunities for small businesses. Incentives for whole-building retrofits will stimulate growth of the home performance industry, which provides a comprehensive whole-house approach to identifying and fixing energy efficiency problems. According to Efficiency First, the national trade association for home performance contractors, the industry is primarily composed of small businesses.[8] Home performance contractors mostly come from the ranks of the established home construction, remodeling, weatherization, HVAC, and insulation industries—sectors traditionally dominated by small firms. Furthermore, the Center for American Progress estimates that 90% of contractors in the construction industry, 82% of window manufacturers and installers, 90% of HVAC equipment manufacturers and installers, and 90% of lighting equipment manufacturers and installers nationwide are small businesses.[9] In California, the third largest small business sector is construction—compromising 10.6% of all small businesses.[10] Therefore, as AB 32 spurs building retrofit demands, small businesses in construction and related industries will have more business opportunities.

Similar opportunities will accrue to small businesses that manufacture, distribute, sell, and install other efficiency products, such as solar panels, combined heat and power generation systems[11] and consumer appliances. Small firms that specialize in efficiency design and consulting will also experience opportunities for growth and expansion, from architects to green designers.

Efficiency Investments Create More Jobs

According to several studies, energy efficiency investments also create more jobs than comparable purchases of traditionally-generated energy. Traditional energy purchases, such as electricity or natural gas, don't create a significant number of jobs; the jobs they create include capital-intensive refining, conveyance and electric power generation.[12] On the other hand, energy efficiency-related jobs, such as building renovations and appliance manufacturing, tend to be associated with high-tech manufacturing and high-skilled service professions.[13] That's why an analysis by the American Council for an Energy-Efficient Economy found that efficiency-related jobs employed more than twice as many people per dollar of output when compared with the employment effects of spending on traditional energy production.[14] Another study found that 8 to 11 direct jobs are created per $1 million invested in retrofitting buildings for energy efficiency.[15]

In summary, the increased investment in energy efficiency spurred by AB 32 will be an opportunity for small businesses to meet increased demand for building materials, energy and design consultations, energy-efficient appliances and electronics, and residential and commercial renovations. AB 32 will also increase demand in traditional small business strongholds such as the construction, manufacturing, retail, wholesale trade and professional services sectors.

Opportunities from Going Green

AB 32 will create savings and profit opportunities for "new Main Street" small businesses that successfully "go green" and employ brand differentiation strategies to grow their businesses.

AB 32 doesn't require businesses to "go green," but provides financial incentives for those that do. While AB 32 does not require small businesses to invest in energy efficiency improvements, it can provide opportunities for entrepreneurs that decide to make their businesses more sustainable. First, making investments in more efficient technologies will save businesses money on energy costs. And it will be easier than ever for small businesses to take advantage of these technologies thanks to the substantial resources devoted to helping them make improvements. Second, increased consumer awareness of climate change spawned by the law likely will lead to increased demand for climate-conscious products and services—simultaneously creating opportunities for companies that successfully promote the "greener" aspects of their businesses.

SMALL BUSINESS OPPORTUNITY

San Diego-based printer **Thomas Ackerman**, owner of Spirit Graphics and Printing, Inc., employed a number of sustainable practices to make his business "greener." Read about his company in the addendum.

It's Easy Going Green

CARB has focused its AB 32 implementation efforts on helping small businesses invest in better energy efficiency processes and products. It has created information campaigns and resources that present small businesses with numerous no-cost and low-cost ways in which to save money by cutting energy use. For example, small investments such as occupancy light sensors or larger investments in new Energy Star equipment or appliances will lead to reductions in the amount of energy used for lighting, refrigeration, heating and air conditioning, and computers and other equipment—thereby reducing energy purchases. Savings resulting from these investments will directly affect small businesses' bottom lines and can be reinvested to grow their businesses. Additional subsidies will be available for small businesses implementing efficiency measures, lowering the cost of going green.[16,17]

How AB 32 Will Increase Consumer Demand for "Green" Products and Services

As AB 32 implementation proceeds, consumers will likely become more aware of climate change. Heightened consumer awareness will increase demand for "green" products and services. According to a report by researcher Andrea Reyell and her co-authors, firms respond with "increasing environmental proactiveness" based on the extent of media and policy attention "on issues such as climate change, which has heightened public concern and galvanized support for urgent environmental action."[18] A study commissioned by Green Seal and EnviroMedia Social Marketing shows that sustainability is a high priority for consumers—with 82% still buying green products despite the down economy. Valerie Davis, EnviroMedia's CEO said, "There's a real opportunity for authentic green marketing, despite the tough economy. This research proves people want to do what's best for the environment..."[19]

Not only does research support the idea that increased awareness of climate change issues will spur consumer demand for green products, many consumers are in fact willing to pay a premium for products that they consider to be more environmentally friendly. According to a report by the Boston Consulting Group (BCG), "Consumers were willing to pay a higher price for green products deemed to be of higher quality."[20] The report further found that "the continuing expansion of green consciousness around the world presents a huge opportunity for smart companies." According to the survey that formed the basis of the BCG report, "most consumers...consider a store's green credentials when choosing where to shop—a clear opportunity for savvy retailers."

Other Benefits of Brand Differentiation

Successfully "going green" can help small businesses become more competitive in the market, but more important for many small businesses, recruit and retain talented employees. Not only can successful brand differentiation lead to increased sales and customer loyalty, evidence suggests that other aspects of a business can benefit, as well. According to one study, "business owners were motivated not just by the 'push' of legislation and environmental concern but by the 'pull' of potential cost savings, new customers, higher staff retention and good publicity for their firms."[21] Among these factors, it is perhaps the ability to recruit and retain talented employees that has the biggest impact. In an interview about the business case for sustainability, SAP chief sustainability officer Peter Graf said, "sustainability really re-energizes our workforce. We needed something where people say, 'Yeah, I'm proud to work for SAP. We have a huge impact. This is a great opportunity.' People need to come to work for a purpose that's bigger than selling software."[22] What's more, a group of 2009 MBA graduates from Harvard Business School created an ethical pledge that, among other things, "strives to create sustainable economic, social and environmental prosperity worldwide," as a way to enhance the value their businesses create for society over the long term.[23]

In summary, evidence suggests that small businesses have an opportunity to save money through greening their operations, and to grow and improve their businesses through successful "green" rebranding. As the BCG report concludes, "our research proves that green matters to consumers around the world, and green strategies offer companies and retailers a competitive advantage in product differentiation and cost savings."[24] As AB 32 implementation proceeds, we should expect consumer awareness of and demand for green products and services to increase, with corresponding benefits for small businesses.

Opportunities from Reduced Spending on Energy Purchases

AB 32 will benefit small businesses by lowering overall energy costs, which can lead to increased spending on other goods and services.

The energy efficiency investments put in place by AB 32 will result in increased energy efficiency and decreased household energy consumption. This means consumers will spend less money on gasoline, electricity and other forms of energy. In effect, money that consumers were spending on gas and electricity will be available to be used on other goods and services, which will lead to increased demand and production in these sectors. Overall, taking into account the recent economic downturn, CARB conservatively projects that AB 32 will save $2 billion in personal income.[25]

SMALL BUSINESS OPPORTUNITY

Husband and wife team **Kim and Monique Kelso**, owners of Toot Sweets Bakery & Café in Stockton, were able to give their bottom line a hefty boost by significantly reducing their energy costs.

Read about their company in the addendum.

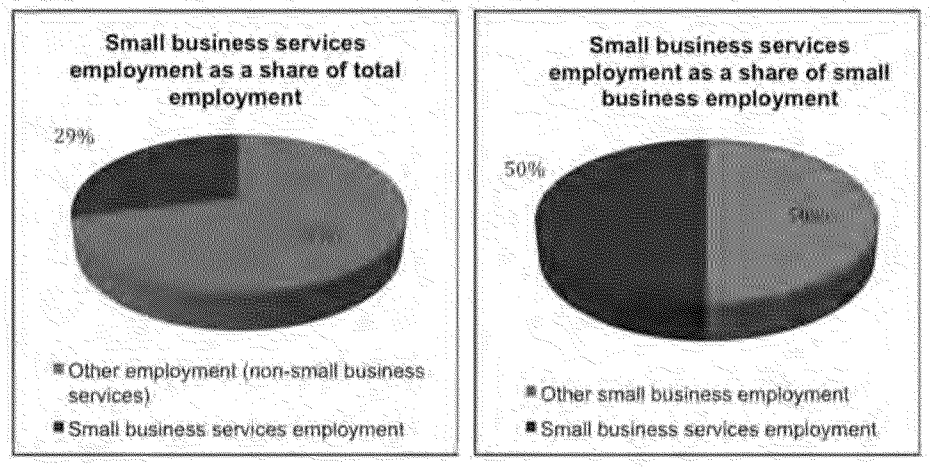
Energy efficiency savings have an additional benefit beyond the amount of money shifted from energy purchases to purchases of other goods and services. Traditional energy production supply chains do not create a significant number of jobs (relying instead on capital equipment), and for California they mainly include capital-intensive refining, conveyance and electric power generation. On the other hand, non-energy consumer spending is concentrated in job-intensive services, such as retail, consumer goods and foodstuffs.[26] As a result, a shift in consumer spending of this nature results in an increase of jobs. U.C. Berkeley economist David Roland-Holst describes this process:

> When consumers shift one dollar of demand from electricity to groceries, for example, one dollar is removed from a relatively simple, capital intensive supply chain dominated by electric power generation and carbon fuel delivery. When the dollar goes to groceries, it animates much more job intensive expenditure chains including retailers, wholesalers, food processors, transport, and farming. Moreover, a larger proportion of these supply chains (and particularly services that are the dominant part of expenditure) resides within the state, capturing more job creation from Californians for California.

This basic economic relationship explains why Roland-Holst found that, in California between 1972 and 2006, energy efficiency measures created about 1.5 million full-time equivalent jobs with a total payroll of $45 billion. It also explains earlier work by the RAND Corporation, which found that energy efficiency improvements between 1977 and 1995 increased per capita Gross State Product (GSP), a measure of economic output, by at least 3%.[27]

CARB analyzed the economic impact of full implementation of AB 32, and found that the small business service sector in particular will see significant benefits. This sector accounts for nearly 30% of the state's total employment, and 50% of all small business jobs (Chart 1).[28] Under AB 32, this sector will see an increase of $4.6 billion in net income by the year 2020, and more than 15,000 new jobs will be added. These benefits are a result of requirements in the law that spur greater energy and fuel efficiency, which will save small businesses money. CARB's analysis also found that as the California economy was projected to experience continued economic growth associated with the implementation of AB 32, small businesses were expected to experience many of the benefits—more jobs, greater productive activity, and rising personal income—associated with that growth.[29] In fact, the financial benefit of the law translates to an extra $1,115 per employee per year (Table 2).[30]

Chart 1: Small Business Service Sector Employment



Source: Table 31: California Employment and Small Business Share by Industrial Sector, *CARB's Updated Economic Analysis of California's Climate Change Scoping Plan Staff Report to the Air Resources Board*, March 24, 2010

Table 2: Small Business Sector Increased Output and Employment Under AB 32

	Baseline	AB 32	Net increase with full implementation of AB 32
Total output in small business service sector	$556.9 billion	$561.5 billion	$4.6 billion
Total employment in small business service sector	4,117,225	4,132,439	15,214
AB 32 increased economic output per small business service sector employee in 2020	$1,115		

Sources: Table 32: E-DRAM Small-Business Employment Changes for Modeling Cases and Table 33: E-DRAM Small-Business Output Changes for Modeling Cases, *CARB's Updated Economic Analysis of California's Climate Change Scoping Plan Staff Report to the Air Resources Board*, March 24, 2010

As CARB's economic modeling shows, AB 32, by reducing consumers' energy bills, will likely redirect spending away from large energy providers and toward small businesses. Whether these businesses are suppliers to other larger businesses, traditional retailers, or "Main Street" service providers, increased consumer spending on non-energy goods and services has the potential to strengthen California's small business sector.

Opportunities from Innovation

AB 32 will spur investment in and development of technological innovation, creating new economic opportunities for small businesses.

The innovative push of AB 32 may be one of its greatest economic benefits to small businesses and the state economy as a whole. Implementing AB 32 requires reductions in carbon emissions that will only be achievable through the development and implementation of new technologies. While the 2020 goals can be met mostly using existing technologies and improved efficiency, the 2050 targets—which aim to cut emissions to 80% of 1990 levels—will, according to CARB, "require California to develop new technologies that dramatically reduce dependence on fossil fuels, and shift into a landscape of new ideas, clean energy, and green technology."[31] These new technologies will present numerous opportunities for small businesses. The innovators of many of these technologies will be small businesses, which will produce direct profits. They will also profit indirectly through the statewide economic growth that follows increased investment and technological innovation.

SMALL BUSINESS OPPORTUNITY

Chris Erickson founded San Francisco-based Climate Earth, a company that sells a software service that measures and tracks greenhouse gas emissions and energy use. Read about his company in the addendum.

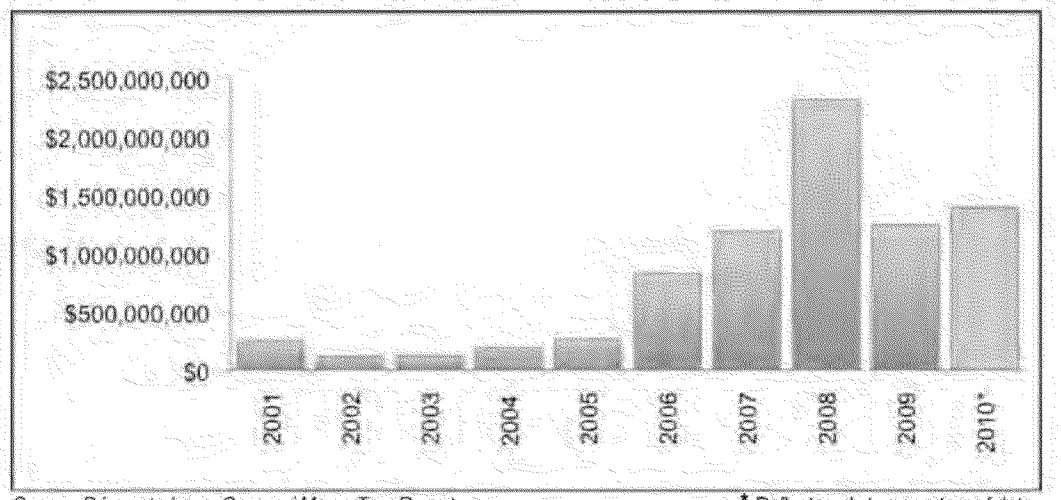
As these new technologies emerge and certain sectors of the economy grow, small businesses will be called upon to supply many of the new products and services. Therefore, they will indirectly benefit from the "trickle-down" effect of innovation. For example, as the clean tech space has grown since 2001, jobs have been created not only in the companies that have been conceived during that time, but also in many ancillary industries (accounting, law, banking, consulting, facilities maintenance, and public relations, to name a few) and even in the public sector.[32]

While CARB forecasts that AB 32 will result in an overall net increase in jobs by 2020, David Roland-Holst projects more significant job growth based on the "trickle-down" nature of innovation. By "including the potential for innovation," Roland-Holst found much more optimistic economic consequences than CARB: Gross State Product (GSP) would jump by about $76 billion, increasing real household incomes by up to $48 billion and creating as many as 400,000 new efficiency and climate action driven jobs.[33]

Innovation can be a significant driver of economic growth, both at the macro-level (states and countries) and at the individual firm level. Since renowned economist Joseph Schumpeter published his definitive work on innovation in 1942, researchers have focused on the causes and benefits of innovation—trying to spur more of it. By all indications, AB 32 has this power. It shapes the market for technological development by providing regulatory guidance, reducing regulatory uncertainty, and creating demand for new products and services.[34,35]

AB 32 has already begun spurring innovation and economic growth. Despite the recession, studies show that AB 32 has resulted in nearly $11.6 billion in investments since 2006. Venture capital, a lead indicator of economic growth in a sector, has been flooding into California since AB 32's passage in 2006. In 2008, CARB measured venture capital investment in the industrial/energy industry as a proxy for green technology investment. According to data supplied by PricewaterhouseCoopers (as shown in Figure 1), venture capital investment has exploded since 2006. Even with the economic downturn, these investments have grown from $262 million in 2005 to $1.4 billion in just the first two quarters of 2010.[36] In the same period, California's share of the nation's total venture capital investment in the industrial/energy industry has risen from 32% in 2005 to 53% in 2009.

Figure 1: Venture Capital Investment in Energy Innovation in California Before and After Passsage of AB 32 in 2006



Source: PricewaterhouseCoopers' MoneyTree Report * Reflects only two quarters of data

The Cleantech Group, LLC, provides another measure of technology innovation funding. Their clean technology venture capital figures are based on data for a broader range of investments outside of the energy sector, including recycling, waste, agriculture, materials and transportation. In 2010, they reported that California clean technology firms received 60% of total North American venture capital investment in 2008 and 2009, at $3.4 billion and $2.1 billion respectively.[37] Between 2005 and 2009, venture capital investment in clean technology grew 360%. At its peak in 2008, investment was up 623% over 2005.[38] These increased investments fuel innovation and stimulate economic growth. As former U.S. Secretary of State George Shultz noted, since passage of the law, "a whole industry is developing here, and I might say a lot of jobs are connected with it."[39]

How Small Businesses Benefit

Historically, small businesses have been a major source of innovation. According to the U.S. Small Business Administration, small firms are a significant source of innovation and patent activity: They produce more patents per employee than larger businesses; outperform large business patents in growth, citation impact and originality; and tend to specialize in high tech, high-growth industries, such as bio-technology, information technology and semiconductors.[40] Most studies find that small firms can keep up with larger firms in terms of innovation, and show no difference in the quality and significance of the innovation produced.[41] All in all, small businesses are set up well to enter this market demand with new ideas, new products and processes, and compete for venture capital dollars and increased consumer demand.[42]

The process of innovation itself will financially benefit small businesses. Schumpeter's original theory has led to numerous economic studies showing innovation is a source of economic growth. A considerable body of evidence now exists that shows the level of technological innovation contributes significantly to economic performance, particularly at the firm and industry levels.[43] Think, for example, of the new economic activity created by the dot com revolution and the multiplicity of new products and services that resulted: Google was started by two college students, as was Facebook, and countless new eBay entrepreneurs make their fortunes online every day. Then think of all the companies that profit by providing goods and services in these areas. All this firm-level growth then filters throughout the economy as innovators and their customers buy products and services from other businesses, and their employees spend their paychecks on consumer goods.

Clean Technology Production Creates More Jobs

The clean technology sector is spawning tremendous innovation. Clean energy technology will create more jobs than the traditional energy sector, and there is strong evidence that clean energy production can generate more jobs than its fossil fuel-based counterpart.[44,45]

AB 32 can help create significant opportunities for entrepreneurs to introduce new products and services to a growing market, to drive change and spur innovation. Despite the fact that not all small businesses are innovators, the majority of small businesses will benefit from innovation because it stimulates wider economic growth.

Conclusion

AB 32 provides small businesses with numerous economic opportunities for growth and success. Increased investments in energy efficiency products and services will provide new markets for small businesses. Many of these businesses will be in the construction, manufacturing, retail and professional services sectors. More traditional "Main Street" businesses, such as the local dry cleaner and florist shop, can also benefit by going green. Investing in energy efficiency improvements will not only boost their bottom line, but will help them retain qualified employees and attract new customers interested in sustainable products and services. Still another type of small business, the "clean tech" entrepreneur, is set to benefit from increased demand for innovation in clean energy technology. All small businesses stand to benefit as AB 32 creates demand for new products and services that have yet to be designed and whose effects may be more wide-ranging than anticipated.

In the end, the overall economic growth from increased investment and innovation will benefit a wide swath of small businesses across the state. Similarly, almost all small businesses will benefit from decreased consumer spending on traditional energy, and the increased spending on other consumer goods and services. These goods and services are more likely to be produced in California and provide more jobs for Californians than the energy purchases they replace. Almost every small business has something to gain from California's commitment to a more sustainable economy.

Endnotes

1 Although there have been numerous studies on the economic effects of AB 32, the most credible research to date has been completed by the California Air Resources Board. According to this research, the state can expect to experience a small net increase in employment by 2020 as a result of the implementation of AB 32.

2 It should be noted that when we speak of AB 32 throughout this report, we mean California's climate change policies as set out in California's Global Warming Solutions Act of 2006 (AB 32) and the standards and programs that are adopted by California's administrative agencies, including the California Air Resources Board, to implement the AB 32 Scoping Plan. Thus, we consider, for example, the Renewable Portfolio Standard and the Pavley Light-Duty Vehicle Emissions Standards part of "AB 32."

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29 Section 8.3-A Summary of Previous Analyses of Small-Business Impacts, CARB's Updated Economic Analysis of California's Climate Change Scoping Plan Staff Report to the Air Resources Board, March 24, 2010

30 California Air Resources Board, E-DRAM Small-Business Employment Changes for Modeling Cases, Updated Economic Analysis of California's Climate Change Scoping Plan, Mar 24, 2010

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Acknowledgements

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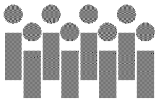
Small Business Majority

Small Business Majority is a California-based, national nonprofit, nonpartisan small business advocacy organization founded and run by small business owners and focused on solving the biggest problems facing small businesses today. We speak for the nearly 28 million Americans who are self-employed or own businesses of up to 100 employees. Our organization sponsors scientific research that guides us to understand and advocate on behalf of the interests of small businesses across the country.



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SUPPORTING DOCUMENTS FOR
DIRECT TESTIMONY OF MICHAEL BROWN

EXHIBIT 20

Expert Report on Issues Affecting Small Businesses

Testimony of Michael Brown

on behalf of
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California Public Utilities Commission
Application 12-11-009
May 16, 2013

CPUC
Small Business
Web Resources

Welcome to the Small Business resource page of the California Public Utilities Commission.

The California Public Utilities Commission Small Business Program promotes small business economic vitality by offering programs and iniatives that support small businesses with utility-related issues, policies and practices. The CPUC program;

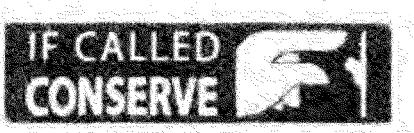
- Promotes economic development of the small business community by providing resources and information about state and utility contracting opportunities.
- Ensures the competitive nature of small business requests for state contracting and CPUC service needs.
- Provides the education and outreach necessary to raise internal and external awareness of various regulatory and legislative policy issues impacting the small business community.

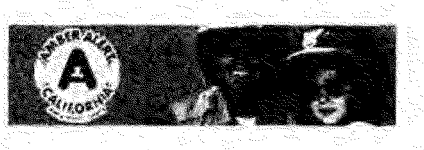
The major components of the program are:

1. Expos
2. Education and Outreach
3. Certification and Procurement
4. Resources
   - Doing Business with California State Agencies and Utilities
   - Small Business Program
   - Utility Supplier Diversity Program
5. Small Business Liaison/Contact Us

In November 2012, new pricing plans will be in effect for small- and medium-sized business customers of PG&E.

- Read our press release
- Read our Fact Sheet





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NEWS AND PERSPECTIVES FROM PACIFIC GAS AND ELECTRIC COMPANY
MAY 12, 2013

NEXT 100 A DIALOGUE ON THE NEXT CENTURY OF ENERGY

August 3, 2010

Dueling Subsidies

Having caused the largest oil spill in history, BP recently said it would take a $32 billion write-off for cleanup costs–saving $10 billion on its tax bill and incurring the wrath of many members of Congress who are now moving to amend the tax laws.

"The tax code shouldn't protect, and certainly shouldn't reward, companies that do extensive damage to the American economy," said Arizona Rep. Raúl Grijalva.

The issue puts into stark relief a new report by Bloomberg New Energy Finance that global subsidies to the fossil fuel industry—many in the form of tax breaks—dwarf those offered by governments to the renewable energy sector.

Bloomberg estimates that wind, solar, biofuels and other forms of renewable energy received about $45 billion last year in tax credits and price supports, compared to the International Energy Agency's estimate of $557 billion in subsidies for fossil fuels in 2008.

The comparison is somewhat misleading. Since the world uses vastly more fossil fuels, the subsidy *per unit of energy* is likely greater for many renewables. On the other hand, it's hard to see any argument for subsidizing highly profitable, mature technologies like oil and gas extraction. (Supporting R&D on carbon capture and storage—a new technology—is another matter.)

The Group of 20 countries have pledged to phase out fossil subsidies but haven't made much progress to that end. The IEA says simply ending those subsidies would cut global carbon emissions by 7 percent. It would also help bring deficit-plagued national budgets back into balance, a win-win.

In its comparison of government support to the fossil fuel and renewable industries, Bloomberg left out one critical fact. Subsidies to both energy sectors in effect represent a tax on the most environmentally friendly technology of all: energy efficiency. It's time more governments put that resource at the top of their energy priorities.

Keywords: Legislation, Next100, Renewables

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NEWS AND PERSPECTIVES FROM PACIFIC GAS AND ELECTRIC COMPANY
MAY 10, 2013

Posted on May 6, 2013

PG&E 'Deeply Concerned' about Proposed San Bruno Fines

PG&E released the following statement from PG&E Corporation Chairman and CEO Tony Earley today (May 6) in response to filings by parties proposing fines and penalties related to the San Bruno accident, PG&E's operation of its gas transmission pipeline system in or near locations of higher population density, and recordkeeping investigations before the California Public Utilities Commission:

"I understand the desire to punish PG&E. However, the penalties proposed by the Commission staff and others far exceed anything that I have seen in my 30 years in the industry and fail to appropriately account for the actions taken by the company.

Tony Earley says PG&E "has been clear in its commitment to take full accountabiity" since San Bruno.

"I am deeply concerned that an excessive penalty, such as those proposed, could dramatically set back our efforts to do the right thing by making it harder and more costly to finance the remaining improvements that are needed in our gas system. To avoid this, it is essential that the Commission take a more balanced approach in rendering its final decision.

"Since this tragic event occurred, PG&E has been clear in its commitment to take full accountability, to address the needs of victims, and, most importantly, to transform this company into the safest gas provider in the country.

"We recruited a leadership team comprised of the best gas operators in the industry, including Executive Vice President of Gas Operations Nick Stavropoulos, who is one of the most respected names in the business.

"This team has made remarkable progress toward our goal of building the safest system. In just over two years, we have completed seven of the 12 recommendations made by the National Transportation Safety Board. PG&E's shareholders have funded $1.4 billion of these improvements. No other gas utility has completed safety work on this scale.

"I am very pleased by this progress, but we have much more work to do. Our pipeline network is massive. If

built in a straight line, it would run from here to Boston and back 15 times."

As part of its work to improve the safety of its gas system, PG&E has:

- Validated the maximum allowable operating pressure for all 6,750 miles of gas transmission pipelines
- Converted more than 3.7 million paper records going back 50 years and added them to PG&E's new Geographic Information System so field technicians have improved access to data
- Strength-tested or validated prior strength testing for 435 miles of transmission pipeline
- Replaced 45 miles of pipeline
- Retrofitted 78 miles of pipeline to accommodate in-line inspections
- Automated 67 valves
- Improved leak response time from fourth quartile nationally to first quartile

As part of its scheduled work in 2013, PG&E plans to:

- Strength-test or validate with prior strength testing for an additional 189 miles
- Replace an additional 59 miles of pipeline
- Automate an additional 67 valves
- Retrofit an additional 121 miles of pipeline for in-line inspections
- Perform in-line inspections of 78 miles of pipeline

Keywords: CPUC, Pipeline Safety, San Bruno, Tony Earley

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EXHIBIT 24

(intentionally omitted)

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May 16, 2013

PACIFIC GAS AND ELECTRIC COMPANY

2011 ANNUAL ELECTRIC DISTRIBUTION RELIABILITY REPORT (D.96-09-045 AND D.04-10-034)

MARCH 1, 2012

TABLE OF CONTENTS

NOTE: Some graphics provided in this report are photocopies of graphics used in earlier reports and are not completely legible. Please contact PG&E if you have any questions about the information provided in those graphics.

General

This is the 2011 Reliability Report for Pacific Gas & Electric Company as required by Decision 96-09-045. This report also includes system reliability data based on the IEEE Standard 1366 as stated in the CPUC approved PG&E Advice Letter 3812-E (approved on July 25, 2011). In addition, this report includes some additional reporting requirements as specified in Decision 04-10-034 and its Appendix A. The report consists of the following:

Section	Description
1.	System Indices For The Last 10 Years (2002-2011)
2.	Significant Outage Events Of 2011
3.	Customers Experiencing >12 Sustained Outages In 2011
4.	Attachment 1 - Division Reliability Indices (Per D. 04-10-034, Appendix A, Agreement 1)
5.	Attachment 2 - PG&E Service Territory Map
6.	Attachment 3 - Summary list of Excludable Major Events per D. 96-09-045
7.	Attachment 4 - System Indices For The Last 10 Years (2002-2011) Based on IEEE 1366
8.	Attachment 5 – Governor Proclamations
9.	Attachment 6 - Historical (2001-2010) Outage Information From Prior Reports

PG&E maintains account specific information for customers affected by outages that are recorded in PG&E's outage reporting system (OUTAGE). This system tracks outages at the generation, transmission, substation, primary distribution, and individual transformer levels. Additionally, OUTAGE models the actual electric switching operations during the circuit restoration process (which is useful for determining accurate customer outage minutes for calculating SAIDI and CAIDI). PG&E used its most current outage data to compile the information contained in this report.

SECTION 1

System Indices (2002-2011)

Table 1 lists the required SAIDI, SAIFI, and MAIFI values in accordance with Appendix A of D. 96-09-045. As required by Decision 04-10-034, CAIDI values are also included in this report.

Table 1 - System Indices (2002-2011)
(Includes Transmission, Distribution and Generation related outages)

	Major Events Included				Major Events Excluded			
YEAR	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2002	400.8	1.763	2.698	227.3	146.7	1.174	2.095	125.0
2003	208.0	1.411	1.878	147.5	201.8	1.389	1.874	145.3
2004	205.3	1.426	1.875	143.9	205.1	1.425	1.872	143.9
2005	249.3	1.549	1.895	161.0	187.1	1.407	1.782	132.9
2006	280.5	1.728	1.768	162.3	150.9	1.273	1.532	118.5
2007	159.9	1.249	1.565	128.0	159.9	1.249	1.565	128.0
2008	416.4	1.563	1.829	266.4	166.7	1.254	1.634	132.9
2009	208.2	1.308	1.540	159.1	163.1	1.193	1.474	136.7
2010	246.3	1.384	1.488	178.0	168.6	1.167	1.311	144.4
2011	275.7	1.261	1.478	218.6	235.9	1.193	1.434	197.8

Included in this annual report is supplemental information noted in Tables 2 and 3 representing the corresponding indexes separated for both the distribution and transmission systems. It should be noted that the totals from these two tables will not exactly match Table 1 for the following reasons:

(a) Generation related outages are included in Table 1 but not in Tables 2 and 3;
(b) There are database limitations related to the major event exclusion process when separating the transmission and distribution systems.

Please also note, the MAIFI information is not included in these tables since the existing non-SCADA automatic recording devices (EON[1] or Smart Meters) do not distinguish between the two systems.

Table 2 - Distribution System Indices (2002-2011)
(Excludes transmission and generation related outages)

	Major Events Included			Major Events Excluded		
YEAR	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
2002	358.1	1.615	221.7	136.2	1.086	125.4
2003	187.6	1.283	146.3	181.6	1.263	143.9
2004	181.7	1.277	142.2	181.5	1.277	142.1
2005	210.9	1.352	156.0	157.7	1.222	129.0
2006	251.0	1.534	163.6	136.5	1.137	120.1
2007	138.6	1.117	124.0	138.6	1.117	124.0
2008	377.8	1.428	264.6	150.3	1.155	130.1
2009	192.8	1.204	160.2	149.9	1.099	136.3
2010	220.0	1.251	175.9	153.4	1.066	143.9
2011	243.9	1.115	218.8	215.5	1.085	198.7

Table 3 - Transmission System Indices (2002-2011)
(Excludes distribution and generation related outages)

	Major Events Included			Major Events Excluded		
YEAR	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
2001	21.6	0.138	156.7	20.3	0.132	154.5
2002	42.1	0.147	285.9	10.5	0.088	120.1
2003	20.4	0.128	159.7	20.2	0.127	159.5
2004	23.3	0.148	157.7	23.3	0.148	157.8
2005	38.3	0.197	195.1	29.3	0.185	158.8
2006	29.5	0.193	152.5	14.4	0.136	105.4
2007	21.3	0.132	161.5	21.3	0.132	161.5
2008	38.3	0.135	284.3	16.2	0.099	163.6
2009	15.4	0.105	147.0	13.2	0.094	140.7
2010	26.4	0.133	198.4	15.2	0.101	149.8
2011	31.7	0.144	219.7	29.1	0.129	225.2

Excludable Major Events

Appendix A to D. 96-09-045 defines Excludable Major Events as follows:

> Each utility will exclude from calculation of its reliability indices major events that meet either of the two following criteria: (a) the event is caused by earthquake, fire, or storms of sufficient intensity to give rise to a state of emergency being declared by the government, or (b) any other disaster not in (a) that affects more than 15% of the system facilities or 10% of the utility's customers, whichever is less for each event.

[1] On November 18, 2011 the EON recording system was removed from service. Momentary outage data is now being collected from SCADA devices and through the use of Smart Meters. Data collection from the Smart Meters is more effective than the previous EON system since Smart Meters don't rely on customer volunteers having EON devices securely connected inside their buildings. PG&E anticipates that the number of future momentary outages recorded will increase slightly as a result of this more effective approach.

SUPPORTING DOCUMENTS FOR
DIRECT TESTIMONY OF MICHAEL BROWN

EXHIBIT 26

Expert Report on Issues Affecting Small Businesses

Testimony of Michael Brown

on behalf of
Small Business Utility Advocates
548 Market Street, Suite 11200
San Francisco, CA 94104
Tel: 415-602-6223 Fax: 415-789-4556

California Public Utilities Commission
Application 12-11-009
May 16, 2013

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_001-02		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_001-Q02		
Request Date:	April 22, 2013	Requester DR No.:	PGE-SBUA-001
Date Sent:	April 26, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Kelly Everidge	Requester:	James Birkelund

QUESTION 2

Please provide the names and contact information for all small generation companies that provide energy to PG&E.

a. Please identify those small generation companies in (2) above that have 10MW of electricity capacity or less.

b. Please identify those small generation companies in (2) above that provide renewable energy and, if so, the type of energy.

c. Please describe how small generation companies factor into PG&E's revenue requirements and costs related to PG&E's 2014 GRC Phase I application.

ANSWER 2

a. PG&E objects because this request is overbroad and does not seek information that is reasonably calculated to lead to the discovery of admissible evidence.

b. PG&E objects because this request is overbroad and does not seek information that is reasonably calculated to lead to the discovery of admissible evidence.

c. PG&E recovers costs associated with power purchase agreements (including those with small generation companies) through the Energy Resource Recovery Account (ERRA). To determine rates used to collect ERRA revenues, each year the CPUC approves a forecasted revenue requirement. In addition, the CPUC performs an annual compliance review of ERRA costs. ERRA proceedings are separate from GRC proceedings.

PACIFIC GAS AND ELECTRIC COMPANY
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Data Response

PG&E Data Request No.:	SBUA_001-03		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_001-Q03		
Request Date:	April 22, 2013	Requester DR No.:	PGE-SBUA-001
Date Sent:	April 29, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Jess Brown	Requester:	James Birkelund

QUESTION 3

California generally defines small businesses to include those businesses with 100 or fewer employees and with average annual gross receipts of $14 million or less over the last three tax years.

a. Please identify the criteria PG&E uses to identify or classify small businesses in PG&E's territory.

b. Based on 3(a) above, please provide the total number of small businesses that are within PG&E's service territory.

ANSWER 3

a. PG&E generally uses a non-residential customer's annual energy usage or rate schedule to identify or classify a customer's size. Customer Energy Solutions, Exhibit (PG&E-5) Chapter 7 generally defines a customer as small commercial or industrial (CI) if annual electric usage is less than 40,000 kWh or annual gas usage is less than 10,000 therms. A customer is generally defined as small agricultural (Ag) based on their rate schedule (e.g. AG-1A).

Based on Rule 1 definitions in PG&E's Tariff Book http://www.pge.com/tariffs/, PG&E defines a small business customer as follows:

PG&E's Electric Rule No. 1 Definition
SMALL BUSINESS CUSTOMER: A non-residential Customer who: (1) has a maximum billing demand of 20 kW, or less, per meter during the most recent 12 month period, or (2) has an annual usage of 40,000 kWh, or less, during the most recent 12 month period, or (3) meets the definition of a "micro-business" under California Government Code 14837. This definition does not include non-residential Customers who are on a fixed usage or unmetered usage rate schedule.

PG&E's Gas Rule No. 1 Definition

SMALL BUSINESS CUSTOMER: A non-residential Customer with annual gas usage of 10,000 therms, or less, per meter during the most recent 12 month period, or who meets the definition of a "micro-business" under California Government Code 14837. This definition does not include non-residential Customers who are on a fixed usage or unmetered usage rate schedule.

PG&E may also identify or classify a customer's size based on Decisions or rulemakings from the Commission as it relates to certain programs and rate tariffs.

PG&E recognizes the need to continually build greater customer awareness of rate options, energy tools, and resources while providing a higher level of direct support so customers can better understand, monitor and manage their energy costs. PG&E's Customer and Community Services GRC request in Customer Energy Solutions, Exhibit (PG&E-5) Chapter 7 will allow PG&E to increase engagement with SMB customers, as well as enhance support to local communities.

b. Based on the general Customer Energy Solutions, Exhibit (PG&E-5) Chapter 7 definition for small business provided in response to part a), PG&E provides the number of small business commercial, industrial and agricultural (CIA) customers within PG&E's service territory for each year, 2007-2012, in the table below. Note: the number of small business customers is based on the Person ID that is established in PG&E's customer billing system.

Number of Small Businesses						
Year	2012	2011	2010	2009	2008	2007
Total	280,601	284,399	285,720	289,600	294,831	307,558

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_001-04		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_001-Q04		
Request Date:	April 22, 2013	Requester DR No.:	PGE-SBUA-001
Date Sent:	April 29, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Jess Brown	Requester:	James Birkelund

QUESTION 4

The California Public Utilities Commission has a Small Business Program. See www.cpuc.ca.gov/smbus. Please identify whether PG&E funds this Small Business Program and how the 2014 GRC Phase I application will impact funding for this CPUC program.

ANSWER 4

PG&E does not currently fund, and is not requesting funding in its 2014 GRC Phase I application, for the Small Business Program referenced on the Commission's website www.cpuc.ca.gov/smbus.

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_002-01		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q01		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	April 29, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Jess Brown	Requester:	James Birkelund

QUESTION 1

According to the United States Small Business Association a small business is generally defined as $7.0 million as an appropriate size standard for the services, retail trade, construction, and other industries with receipts based size standards; 500 employees for the manufacturing, mining and other industries with employee based size standards; and 100 employees for the wholesale trade industries.[1] California generally defines a small business as a business with 100 or fewer employees; an average annual gross receipts of $14 million or less, over the last three tax years.[2]

a. SBUA wishes to standardize the way in which small businesses are tracked. Are small business customers currently tracked by PG&E separately from other customers? If not, does PG&E have a preference in the definition of what constitutes a small business in its service territory?

ANSWER 1

PG&E tracks the number of small business customers separately from other customers (e.g. medium and large business customers, residential customers) in PG&E's service territory based on annual energy usage and rate schedules.

Based on Rule 1 definitions in PG&E's Tariff Book http://www.pge.com/tariffs/, PG&E defines a small business customer as follows:

PG&E's Electric Rule No. 1 Definition
SMALL BUSINESS CUSTOMER: A non-residential Customer who: (1) has a maximum billing demand of 20 kW, or less, per meter during the most recent 12 month period, or (2) has an annual usage of 40,000 kWh, or less, during the most recent 12 month period, or (3) meets the definition of a "micro-business" under California Government

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1 see http://www.sba.gov/sites/default/files/size_standards_methodology.pdf

2 see http://www.dgs.ca.gov/pd/Programs/OSDS/SBEligibilityBenefits.aspx

Code 14837. This definition does not include non-residential Customers who are on a fixed usage or unmetered usage rate schedule.

PG&E's Gas Rule No. 1 Definition
SMALL BUSINESS CUSTOMER: A non-residential Customer with annual gas usage of 10,000 therms, or less, per meter during the most recent 12 month period, or who meets the definition of a "micro-business" under California Government Code 14837. This definition does not include non-residential Customers who are on a fixed usage or unmetered usage rate schedule.

Customer Energy Solutions, Exhibit (PG&E-5) Chapter 7 generally uses a non-residential customer's annual energy usage and rate schedule to identify or classify customer size. A customer is generally defined as small commercial or industrial (CI) if annual electric usage is less than 40,000 kWh or annual gas usage is less than 10,000 therms. A customer is generally defined as small agricultural (Ag) based their rate schedule (e.g. AG-1A).

PG&E may also identify or classify a customer's size based on Decisions or rulemakings from the Commission as it relates to certain programs and rate tariffs. In these cases, small business customers may be tracked accordingly for program reporting purposes.

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_002-02		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q02		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	May 6, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Patricia Gideon	Requester:	James Birkelund

QUESTION 2

In the GRC Phase II Application of PG&E on April 18, 2013, PG&E proposes to make progress in moving electric rates closer to cost of service, in order to send more economically efficient price signals and promote more equitable treatment among all customers.

SBUA requests that PG&E provide an estimate of the average cost that small businesses will pay for bundled electric service under PG&E's proposed rate design.

a. SBUA asks for an estimate by PG&E of the average electric usage of a small business in PG&E's service territory.

b. SBUA requests that PG&E specify the electric rate categories under which small businesses fall.

c. SBUA asks for an estimate of the average cost in kilowatt-hours per month of electricity for a small business. SBUA realizes there is not one single bundled rate used for small businesses. Rather SBUA asks that PG&E provide a estimate of a blended rate for small businesses in PG&E's service territory.

ANSWER 2

a. 19,000 kWh per year

b. Schedule A-1: general service seasonal
Schedule A-1 TOU: general service TOU
Schedule A-6: general service TOU
Schedule A-15: direct current service
Schedule TC-1: traffic control

c. This question is better-answered in PG&E's GRC Phase II proceeding (A.13-04-012). This question has been forwarded to PG&E's GRC Phase II team and they will respond to the question through that proceeding.

PACIFIC GAS AND ELECTRIC COMPANY
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Data Response

PG&E Data Request No.:	SBUA_002-03		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q03		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	May 6, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Kenneth E. Niemi	Requester:	James Birkelund

QUESTION 3

SBUA requests that PG&E provide an estimate of the average cost that small business will pay for bundled natural gas delivery under the proposed rate design.

a. SBUA requests that PG&E provide the average natural gas use of a small business in PG&E's service territory.

b. SBUA requests that PG&E provide the average price paid for natural gas in therms/month for a small business in PG&E's service territory.

c. SBUA requests an approximation of the number of small businesses which are provided natural gas delivery in PG&E's service territory.

ANSWER 3

a. A small business on Rate Schedule G-NR1 is estimated to use an average of 287 therms per month. See the workpapers supporting Exhibit (PG&E-10), Chapter 7, WP 7-16, line 27, column E.

b. A small business on Rate Schedule G-NR1 is estimated to pay an average of $1.079 per therm. See the workpapers supporting Exhibit (PG&E-10), Chapter 7, WP 7-16, line 26, column E.

c. There are an estimated 199,689 bundled small business G-NR1 customers in PG&E's territory. See the workpapers supporting Exhibit (PG&E-10), Chapter 7, WP 7-28, line 28, column I.

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_002-04		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q04		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	April 25, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	N/A	Requester:	James Birkelund

QUESTION 4

SBUA requests that PG&E provide an estimate of the total revenue necessary to purchase natural gas, as a commodity, for small businesses in its service territory in 2014 through 2016.

ANSWER 4

PG&E objects because this request is not reasonably calculated to lead to the discovery of admissible evidence in this proceeding. The General Rate Case does not seek recovery of costs associated with the purchase of natural gas as a commodity for PG&E customers. These costs are recovered in separate proceedings. Therefore, this request seeks information that is not relevant to this proceeding and is not reasonably calculated to lead to the discovery of admissible evidence.

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_002-05		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q05		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	April 26, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Jess Brown	Requester:	James Birkelund

QUESTION 5

SBUA asks if there are any programs which small businesses may take to provide certainty in the cost they will pay in therms/month for the 2014-2016 time frame?

ANSWER 5

The customer's monthly energy bills are based on their energy usage during that month and the rate schedule they are on. There is no certainty on what the rate per therm per month will be for the 2014-2016 timeframe. Rates are set by the CPUC in public processes.

PG&E offers a Balanced Payment Plan program to customers on gas GNR1 and electric A-1 and A-6 rate schedules. The Balanced Payment Plan program is designed to minimize the variations in monthly bills. Under the Balanced Payment Plan, the monthly bill amount is generally one-twelfth of the annual bill as estimated by PG&E, based on the customer's historical billings for the most recent year at the time of the calculation. Customers on GNR1, A-1 or A-6 rate schedules are typically small business customers.

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_002-06		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q06		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	May 7, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Nina Bubnova	Requester:	James Birkelund

QUESTION 6

In PG&E 2014 General Rate Case Exhibit (PG&E-4) 9-14 and 9-15, PG&E states, "PG&E Generation Interconnection Services (GIS) is the single point of contact for managing the electric interconnection process for CPUC and Federal Energy Regulatory Commission (FERC) jurisdictional customer generation projects connected at PG&E's (PG&E-4) distribution service level."

SBUA requests PG&E to provide an estimate of the difference in cost between electrically connecting a small commercial business versus a larger commercial business.

a. In order to verify this request, SBUA requests the average cost of electric interconnection of a small commercial customer.
b. In order to verify this request, SBUA requests the average cost of electric interconnection of a medium commercial customer.
c. In order to verify this request, SBUA requests the average cost of electric interconnection of a large commercial customer.

ANSWER 6

Specific costs are not tracked by customer size. Interconnection of third party generation to PG&E's distribution system is dependent upon a large number of variables, including, but not limited to, the size of the generator, the service delivery voltage at which the generator is interconnected, the technology used for the actual generation (for example solar, wind, or cogeneration), and the location of the generator interconnection on PG&E's system. Another significant cost variable is whether the interconnection is for a wholesale generator or is completed under the net energy metering (NEM) program or for a solar facility 1 MW or smaller that does not export generation to the grid for sale (Small Solar). NEM, Small Solar, other non-exporting generators, and some wholesale generators selling all their output to PG&E under a PURPA PPA are under CPUC jurisdiction and are interconnected in accordance with PG&E's filed tariff Electric Rule 21, which is included as attachment GRC2014-Ph-

I_DR_SBUA_002-Q06Atch01. The cost responsibility for making these third party interconnections can vary from 100 percent PG&E to 100 percent of the requesting customer, as specified in Electric Rule 21.Wholesale generators typically pay 100 percent of their interconnection costs. NEM customers do not pay for interconnection fees, study costs or for distribution system modifications but will pay for interconnection facilities, if any. Small Solar generators do not pay the first $5,000 of interconnection costs. A review of Rule 21 interconnection projects for the 2011 to 2012 period shows an average net project cost (total project cost less customer contribution) for PG&E of $44,500. This applies to all size generation projects and customers.

Most wholesale generators fall under FERC jurisdiction and are interconnected under the FERC jurisdictional interconnection tariffs. Like wholesale generators interconnecting under Rule 21, FERC jurisdictional wholesale generators interconnecting at distribution pay 100 percent of the cost of their interconnections.

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Revised Cal. P.U.C. Sheet No. 31865-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30177-E

ELECTRIC RULE NO. 21 Sheet 1
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (N)

(N)

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Pacific Gas and Electric Company
San Francisco, California
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Revised Cal. P.U.C. Sheet No. 31866-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30178-E

ELECTRIC RULE NO. 21 Sheet 2
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(Continued)

Pacific Gas and Electric Company
San Francisco, California
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Revised Cal. P.U.C. Sheet No. 31867-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30179-E

ELECTRIC RULE NO. 21 Sheet 3
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

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Pacific Gas and Electric Company
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Revised Cal. P.U.C. Sheet No. 31868-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30180-E

ELECTRIC RULE NO. 21 Sheet 4
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(N)

(Continued)

Pacific Gas and Electric Company
San Francisco, California
U 39

Revised Cal. P.U.C. Sheet No. 31869-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30181-E

ELECTRIC RULE NO. 21 Sheet 5
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(N)

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Pacific Gas and Electric Company
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Revised Cal. P.U.C. Sheet No. 31870-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30182-E

ELECTRIC RULE NO. 21 Sheet 6
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(N)

(Continued)

Pacific Gas and Electric Company
San Francisco, California
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Revised Cal. P.U.C. Sheet No. 31871-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30183-E

ELECTRIC RULE NO. 21 Sheet 7
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

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Pacific Gas and Electric Company
San Francisco, California
U 39

Revised Cal. P.U.C. Sheet No. 31872-E
Cancelling Revised Cal. P.U.C. Sheet No. 30184-E

ELECTRIC RULE NO. 21 Sheet 8
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(N)

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Pacific Gas and Electric Company
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Revised Cal. P.U.C. Sheet No. 31873-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30185-E

ELECTRIC RULE NO. 21 Sheet 9
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(Continued)

Pacific Gas and Electric Company
San Francisco, California
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Revised *Cal. P.U.C. Sheet No.* 31874-E*
Cancelling Revised *Cal. P.U.C. Sheet No.* 30186-E

ELECTRIC RULE NO. 21 Sheet 10
GENERATING FACILITY INTERCONNECTIONS

TABLE OF CONTENTS (CONT'D.) (N)

(Continued)

Pacific Gas and Electric Company
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Revised Cal. P.U.C. Sheet No. 31875-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30187-E

ELECTRIC RULE NO. 21 Sheet 11
GENERATING FACILITY INTERCONNECTIONS

B. APPLICABILITY (N)

1. APPLICABILITY

THIS RULE DESCRIBES THE INTERCONNECTION, OPERATING AND METERING requirements for those Generating Facilities to be connected to Distribution Provider's Distribution System and Transmission System over which the California Public Utilities Commission (Commission) has jurisdiction. All Generating Facilities seeking Interconnection with Distribution Provider's Transmission System shall apply to the California Independent System Operator (CAISO) for Interconnection and be subject to CAISO Tariff except for 1) Net Energy Metering Generating Facilities and 2) Generating Facilities that do not export to the grid or sell any exports sent to the grid (Non-Export Generating Facilities). NEM Generating Facilities and Non-Export Generating Facilities subject to Commission jurisdiction shall interconnect under this Rule regardless of whether they interconnect to Distribution Provider's Distribution or Transmission System. Subject to the requirements of this Rule, DISTRIBUTION PROVIDER WILL ALLOW THE INTERCONNECTION OF GENERATING FACILITIES with its Distribution or Transmission System.

GENERATING FACILITY INTERCONNECTIONS TO Distribution Provider's Distribution System that are subject to Federal Energy Regulatory Commission (FERC) jurisdiction shall apply under Distribution Provider's Wholesale Distribution Tariff (WDT) whether they interconnect to Distribution Provider's Distribution or Transmission System.

2. DEFINITIONS

CAPITALIZED TERMS USED IN THIS RULE, AND NOT DEFINED IN DISTRIBUTION Provider's other tariffs shall have the meaning ascribed to such terms in Section C of this Rule. The definitions set forth in Section C of this Rule shall only apply to this Rule, the Interconnection Request, study agreements and Generator Interconnection Agreements, and may not apply to Distribution Provider's other tariffs. (N)

(Continued)

Pacific Gas and Electric Company
San Francisco, California
U 39

Revised Cal. P.U.C. Sheet No. 31876-E
Cancelling Revised Cal. P.U.C. Sheet No. 30188-E

ELECTRIC RULE NO. 21 Sheet 12
GENERATING FACILITY INTERCONNECTIONS

B. APPLICABILITY (CONT'D.) (N)

3. APPLICABLE CODES AND STANDARDS

THIS RULE HAS BEEN HARMONIZED WITH THE REQUIREMENTS OF AMERICAN NATIONAL Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) 1547-2003 Standards for Interconnecting Distributed Resources with Electric Power Systems. In some sections, IEEE 1547 language has been adopted directly, in others, IEEE 1547 requirements were interpreted and this Rule's language was changed to maintain the spirit of both documents.

THE LANGUAGE FROM IEEE 1547 THAT HAS BEEN ADOPTED DIRECTLY (AS OPPOSED TO paraphrased language or previous language that was determined to be consistent with IEEE 1547) is followed by a citation that lists the clause from which the language derived. For example, IEEE 1547-4.1.1 is a reference to Clause 4.1.1.

IN THE EVENT OF ANY CONFLICT BETWEEN THIS RULE, ANY OF THE STANDARDS LISTED HEREIN, or any other applicable standards or codes, the requirements of this Rule shall take precedence.

C. DEFINITIONS

THE DEFINITIONS IN THIS SECTION C ARE APPLICABLE ONLY TO THIS RULE, THE Interconnection Request, Study Agreements and Generator Interconnection Agreements.

Added Facilities: See Special Facilities.

Affected System: An electric system other than Distribution Provider's Distribution or Transmission System that may be affected by the proposed Interconnection.

Affected System Operator: The entity that operates an Affected System.

Affiliate: With respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity. (N)

(Continued)

Pacific Gas and Electric Company
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ELECTRIC RULE NO. 21 Sheet 13
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Allocated Capacity: Existing aggregate generation capacity in megawatts (MW) interconnected to a substation/area bus, bank or circuit (i.e., amount of generation online).

Anti-Islanding: A control scheme installed as part of the Generating or Interconnection Facility that senses and prevents the formation of an Unintended Island.

Applicant: The entity submitting an Interconnection Request pursuant to this Rule.

Application: See Interconnection Request.

Available Capacity: Total Capacity less the sum of Allocated Capacity and Queued Capacity.

Base Case: Data including, but not limited to, base power flow, short circuit and stability data bases, underlying load, generation, and transmission facility assumptions, contingency lists, including relevant special protection systems, and transmission diagrams used to perform the Interconnection Studies. The Base Case may include Critical Energy Infrastructure Information (as that term is defined by FERC). The Base Case shall include (a) transmission facilities as approved by Distribution Provider or CAISO, as applicable, (b) planned Distribution Upgrades that may have an impact on the Interconnection Request, (c) Distribution Upgrades and Network Upgrades associated with generating facilities in (iv) below, and (d) generating facilities that (i) are directly interconnected to the Distribution System or CAISO Controlled Grid; (ii) are interconnected to Affected Systems and may have an impact on the Interconnection Request; (iii) have a pending request to interconnect to the Distribution System or an Affected System; or (iv) are not interconnected to the Distribution System or CAISO Controlled Grid, but are subject to a fully executed Generator Interconnection Agreement (or its equivalent predecessor agreement) or for which an unexecuted Generator Interconnection Agreement (or its equivalent predecessor agreement) has been requested to be filed with FERC. (N)

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ELECTRIC RULE NO. 21 Sheet 14
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Business Day: Monday through Friday, excluding Federal and State Holidays.

CAISO Controlled Grid: The system of transmission lines and associated facilities that have been placed under the CAISO's Operational Control.

CAISO Tariff: The California Independent System Operator FERC Electric Tariff.

Calendar Day: Any day, including Saturday, Sunday or a Federal and State Holiday.

Certification Test: A test pursuant to this Rule that verifies conformance of certain equipment with Commission-approved performance standards in order to be classified as Certified Equipment. Certification Tests are performed by Nationally Recognized Test Laboratories (NRTLs).

Certification; Certified; Certificate: The documented results of a successful Certification Testing.

Certified Equipment: Equipment that has passed all required Certification Tests.

Commercial Operation: The status of a Generating Facility that has commenced generating electricity, excluding electricity generated during the period which Producer is engaged in on-site test operations and commissioning of the Generating Facility prior to Commercial Operation.

Commercial Operation Date: The date on which a Generator at a Generating Facility commences Commercial Operation, as agreed to by the Parties.

Commission: The Public Utilities Commission of the State of California. (N)

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ELECTRIC RULE NO. 21 Sheet 15
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Commissioning Test: A test performed during the commissioning of all or part of a Generating Facility to achieve one or more of the following:

VERIFY specific aspects of its performance;

CALIBRATE its instrumentation;

ESTABLISH instrument or Protective Function set-points.

CONFIDENTIAL Information: See Section D.7.

Conservation Voltage Regulation (CVR): The CVR program that the Commission directed Distribution Provider to implement as applicable to the operation and design of distribution circuits and related service voltages.

Construction Activities: Actions by Distribution Provider that result in irrevocable financial commitments for the purchase of major electrical equipment or land for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades assigned to the Interconnection Customer that occur after receipt of all appropriate governmental approvals needed for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades.

Control Area: As defined in the CAISO Tariff.

Customer: The entity that receives or is entitled to receive Distribution Service through Distribution Provider's Distribution System or is a retail Customer of Distribution Provider connected to the Transmission System.

Dedicated Transformer; Dedicated Distribution Transformer: A transformer that provides electricity service to a single Customer. The Customer may or may not have a Generating Facility. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Delivery Network Upgrades: The transmission facilities at or beyond the point where Distribution Provider's Distribution System interconnects to the CAISO Controlled Grid, other than Reliability Network Upgrades, as defined in the CAISO Tariff.

Detailed Study: An Independent Study, a Distribution Group Study or a Transmission Cluster Study.

Device: A mechanism or piece of equipment designed to serve a purpose or perform a function. The term may be used interchangeably with the terms "equipment" and function without intentional difference in meaning. See also Function and Protective Function.

Dispute Resolution: See Section K.

Distribution Group Study Process: The study process defined in Section F.3.b.

Distribution Provider: Pacific Gas and Electric Company

Distribution Service: The service of delivering energy over the Distribution System pursuant to the approved tariffs of Distribution Provider other than services directly related to the Interconnection of a Generating Facility under this Rule.

Distribution System: All electrical wires, equipment, and other facilities owned or provided by Distribution Provider, other than Interconnection Facilities or the Transmission System, by which Distribution Provider provides Distribution Service to its Customers.

Distribution Upgrades: The additions, modifications, and upgrades to Distribution Provider's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the Distribution Service. Distribution Upgrades do not include Interconnection Facilities. (N)

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ELECTRIC RULE NO. 21 Sheet 17
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Electrical Independence Test: The tests set forth in Section G.3 used to determine eligibility for the Independent Study Process.

Emergency: Whenever in Distribution Provider's discretion an Unsafe Operating Condition or other hazardous condition exists or whenever access is necessary for emergency service restoration, and such immediate action is necessary to protect persons, Distribution Provider's facilities or property of others from damage or interference caused by Interconnection Customer's Generating Facility, or the failure of protective device to operate properly, or a malfunction of any electrical system equipment or a component part thereof.

Energy-Only Deliverability Status: A condition elected by an Interconnection Customer for a Generating Facility interconnected to Distribution System, the result of which is that the Interconnection Customer is responsible only for the costs of Reliability Network Upgrades and is not responsible for the costs of Delivery Network Upgrades, but the Generating Facility will be deemed to have a Net Qualifying Capacity as defined in the CAISO Tariff of zero.

Engineering and Procurement Agreement: An agreement that authorizes Distribution Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the Interconnection in order to advance the implementation of the Interconnection Request.

Exporting Generating Facility: Any Generating Facility other than a Non-Export Generating Facility, NEM Generating Facility, or uncompensated Generating Facility.

Fast Track Process: THE interconnection study process set forth in Section F.2.

Federal Energy Regulatory Commission: Referred to herein as FERC. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Field Testing: Testing performed in the field to determine whether equipment meets Distribution Provider's requirements for safe and reliable Interconnection.

Function: Some combination of hardware and software designed to provide specific features or capabilities. Its use, as in Protective Function, is intended to encompass a range of implementations from a single-purpose device to a section of software and specific pieces of hardware within a larger piece of equipment to a collection of devices and software.

Generating Facility: All Generators, electrical wires, equipment, and other facilities, excluding Interconnection Facilities, owned or provided by Producer for the purpose of producing electric power, including storage.

Generating Facility Capacity: The net capacity of the Generating Facility and the aggregate net capacity of the Generating Facility where it includes multiple Generators.

Generator: A device converting mechanical, chemical, or solar energy into electrical energy, including all of its protective and control functions and structural appurtenances. One or more Generators comprise a Generating Facility.

Generator Interconnection Agreement: An agreement between Distribution Provider and Producer providing for the Interconnection of a Generating Facility that gives certain rights and obligations to effect or end Interconnection. For the purpose of this Rule, Net Energy Metering or power purchase agreements authorized by the Commission are also defined as Generator Interconnection Agreements. (N)

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ELECTRIC RULE NO. 21 Sheet 19
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Good Utility Practice: Any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority: Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include Interconnection Customer, Distribution Provider, or any Affiliate thereof.

Gross Rating; Gross Nameplate Rating; Gross Capacity or Gross Nameplate Capacity: The total gross generating capacity of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Host Load: The electrical power, less the Generator auxiliary load, consumed by the Customer, to which the Generating Facility is connected.

Independent Study Process: The interconnection study process set forth in Section F.3.d.

Independent Study Process Study Agreement: The agreement entered into by the Interconnection Customer and Distribution Provider which sets forth the Parties' agreement to perform Interconnection Studies under the Independent Study Process.

Initial Review: See Section F.2.a. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

In-rush Current: The current determined by the In-rush Current Test.

In-Service Date: The estimated date upon which Applicant reasonably expects it will be ready to begin use of Distribution Provider's Interconnection Facilities.

Interconnection; Interconnected: The physical connection of a Generating Facility in accordance with the requirements of this Rule so that Parallel Operation with Distribution Provider's Distribution or Transmission System can occur (has occurred).

Interconnection Agreement: See Generator Interconnection Agreement.

Interconnection Customer: See Applicant.

Interconnection Facilities: The electrical wires, switches and related equipment that are required in addition to the facilities required to provide electric Distribution Service to a Customer to allow Interconnection. Interconnection Facilities may be located on either side of the Point of Common Coupling as appropriate to their purpose and design. Interconnection Facilities may be integral to a Generating Facility or provided separately. Interconnection Facilities may be owned by either Producer or Distribution Provider.

Interconnection Facilities Study: A study conducted by Distribution Provider for an Interconnection Customer under the Independent Study Process to determine a list of facilities (including Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with Distribution Provider's Distribution or Transmission System. The scope of the study is defined in Section G.3.c.

Interconnection Financial Security: Any of the financial instruments listed in Section F.4.a. (N)

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ELECTRIC RULE NO. 21 Sheet 21
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Interconnection Request: An Applicant's request to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with Distribution Provider's Distribution or Transmission System.

Interconnection Study: A study to establish the requirements for Interconnection of a Generating Facility with Distribution Provider's Distribution System or Transmission System, pursuant to this Rule.

Interconnection System Impact Study: An engineering study conducted by Distribution Provider for an Interconnection Customer under the Independent Study Process that evaluates the impact of the proposed interconnection on the safety and reliability of Distribution Provider's Distribution and/or Transmission System and, if applicable, an Affected System. The scope of the study is defined in Section G.3.c.i.

Island; Islanding: A condition on Distribution Provider's Distribution System in which one or more Generating Facilities deliver power to Customers using a portion of Distribution Provider's Distribution System that is electrically isolated from the remainder of Distribution Provider's Distribution System.

Large Generating Facility: A Generating Facility having a Generating Facility Capacity of more than 20 MW.

Line Section: That portion of Distribution Provider's Distribution or Transmission System connected to a Customer bounded by automatic sectionalizing devices or the end of the distribution line.

Local Furnishing Bond: Tax-exempt bonds utilized to finance facilities for the local furnishing of electric energy, as described in Internal Revenue Code, 26 U.S.C. § 142(f).

Local Furnishing Distribution Provider: Any Distribution Provider that owns facilities financed by Local Furnishing Bonds. (N)

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ELECTRIC RULE NO. 21 Sheet 22
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Material Modification: Those modifications that have a material impact on cost or timing of any Interconnection Request with a later queue priority date or a change in Point of Interconnection. A Material Modification does not include a change in ownership of a Generating Facility.

Metering: The measurement of electrical power in kilowatts (kW) and/or energy in kilowatt-hours (kWh), and if necessary, reactive power in kVAR at a point, and its display to Distribution Provider, as required by this Rule.

Metering Equipment: All equipment, hardware, software including meter cabinets, conduit, etc., that are necessary for Metering.

Momentary Parallel Operation: The Interconnection of a Generating Facility to the Distribution and Transmission System for one second (60 cycles) or less.

Nationally Recognized Testing Laboratory (NRTL): A laboratory accredited to perform the Certification Testing requirements under this Rule.

Net Energy Metering (NEM): Metering for the receipt and delivery of electricity between Producer and Distribution Provider pursuant to California Public Utilities Code (PUC) sections 2827, 2827.8, or 2827.10.

Net Generation Output Metering: Metering of the net electrical power output in kW or energy in kWh, from a given Generating Facility. This may also be the measurement of the difference between the total electrical energy produced by a Generator and the electrical energy consumed by the auxiliary equipment necessary to operate the Generator. For a Generator with no Host Load and/or Section 218 Load, Metering that is located at the Point of Common Coupling. For a Generator with Host Load and/or Section 218 Load, Metering that is located at the Generator but after the point of auxiliary load(s) and prior to serving Host Load and/or Section 218 Load.

Net Rating or Net Nameplate Rating: The Gross Rating minus the consumption of electrical power of the auxiliary load. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Network Upgrades: Delivery Network Upgrades and Reliability Network Upgrades.

Networked Secondary System: An AC distribution system where the secondaries of the distribution transformers are connected to a common bus for supplying electricity directly to consumers. There are two types of secondary networks: grid networks (also referred to as area networks or street networks) and Spot Networks. Synonyms: Secondary Network. Refer to IEEE 1547.6 for additional detail.

Non-Emergency: Conditions or situations that are not Emergencies, including but not limited to meter reading, inspection, testing, routine repairs, replacement, and maintenance.

Non-Export; Non-Exporting: When the Generating Facility is sized and designed such that the Generator output is used for Host Load only and is designed to prevent the transfer of electrical energy from the Generating Facility to Distribution Provider's Distribution or Transmission System as described in Appendix One.

Non-Islanding: Designed to detect and disconnect from a stable Unintended Island with matched load and generation. Reliance solely on under/over voltage and frequency trip is not considered sufficient to qualify as Non-Islanding.

Parallel Operation: The simultaneous operation of a Generator with power delivered or received by Distribution Provider while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generating Facilities that are Interconnected with Distribution Provider's Distribution or Transmission System for more than 60 cycles (one second).

Paralleling Device: An electrical device, typically a circuit breaker, operating under the control of a synchronization relay or by a qualified operator to connect an energized generator to an energized electric power system or two energized power systems to each other. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Party, Parties: Applicant or Distribution Provider.

Periodic Test: A test performed on part or all of a Generating Facility/Interconnection Facilities at pre-determined time or operational intervals to achieve one or more of the following: 1) verify specific aspects of its performance; 2) calibrate instrumentation; and 3) verify and re-establish instrument or Protective Function set-points.

Point of Common Coupling (PCC): The transfer point for electricity between the electrical conductors of Distribution Provider and the electrical conductors of Producer.

Point of Interconnection: The point where the Interconnection Facilities connect with Distribution Provider's Distribution or Transmission System. This may or may not be coincident with the Point of Common Coupling.

Pre-Construction Activities: The actions by Distribution Provider, other than those required by an Engineering and Procurement Agreement under Section F.3.f, undertaken prior to Construction Activities in order to prepare for the construction of Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades assigned to the Interconnection Customer, including, but not limited to, preliminary engineering, permitting activities, environmental analysis, or other activities specifically needed to obtain governmental approvals for Distribution Provider's Interconnection Facilities, Distribution Upgrades, or Network Upgrades.

Producer: The entity that executes a Generator Interconnection Agreement with Distribution Provider. Producer may or may not own or operate the Generating Facility, but is responsible for the rights and obligations related to the Generator Interconnection Agreement.

Production Test: A test performed on each device coming off the production line to verify certain aspects of its performance. (N)

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ELECTRIC RULE NO. 21 Sheet 25
GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Protective Function(s): The equipment, hardware and/or software in a Generating Facility (whether discrete or integrated with other functions) whose purpose is to protect against Unsafe Operating Conditions.

Prudent Electrical Practices: Those practices, methods, and equipment, as changed from time to time, that are commonly used in prudent electrical engineering and operations to design and operate electric equipment lawfully and with safety, dependability, efficiency, and economy.

Queue Position: SEE Section E.5.C.

Queued Capacity: Aggregate queued generation capacity (in MW) for a substation/area bus, bank or circuit (i.e., amount of generation in the queue).

Reasonable Efforts: With respect to an action required to be attempted or taken by a Party under this Rule, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Reliability Network Upgrades: The transmission facilities at or beyond the point where Distribution Provider's Distribution System interconnects to the CAISO Controlled Grid, necessary to interconnect one or more Generating Facility(ies) safely and reliably to the CAISO Controlled Grid, as defined in the CAISO Tariff.

Section 218 Load: Electrical power that is supplied in compliance with California PUC section 218. PUC section 218 defines an "Electric Corporation" and provides conditions under which a transaction involving a Generating Facility would not classify a Producer as an Electric Corporation. These conditions relate to "over-the-fence" sale of electricity from a Generating Facility without using Distribution Provider's Distribution or Transmission System. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Short Circuit Contribution Ratio (SCCR): The ratio of the Generating Facility's short circuit contribution to the short circuit contribution provided through Distribution Provider's Distribution System for a three-phase fault at the high voltage side of the distribution transformer connecting the Generating Facility to Distribution Provider's Distribution System.

Single Line Diagram; Single Line Drawing: A schematic drawing, showing the major electric switchgear, Protective Function devices (including relays, current transformer and potential transformer configurations/wiring in addition to circuit breakers/fuses), wires, Generators, transformers, meters and other devices, providing relevant details to communicate to a qualified engineer the essential design and safety of the system being considered.

Small Generating Facility: A Generating Facility that has a Generating Facility Capacity of no more than 20 MW.

Site Exclusivity: Documentation reasonably demonstrating: (1) For private land: (a) Ownership of, a leasehold interest in, or a right to develop property upon which the Generating Facility will be located consisting of a minimum of 50% of the acreage reasonably necessary to accommodate the Generating Facility; or (b) an option to purchase or acquire a leasehold interest in property upon which the Generating Facility will be located consisting of a minimum of 50% of the acreage reasonably necessary to accommodate the Generating Facility. (2) For public land, including that controlled or managed by any federal, state or local agency, a final, non-appealable permit, license, or other right to use the property for the purpose of generating electric power and in acreage reasonably necessary to accommodate the Generating Facility, which exclusive right to use public land under the management of the federal Bureau of Land Management shall be in a form specified by the Bureau of Land Management. The demonstration of Site Exclusivity, at a minimum, must be through the Commercial Operation Date of the new Generating Facility or increase in capacity of the existing Generating Facility.

Special Facilities: As defined in Distribution Provider's Rule 2. (N)

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Spot Network: For purposes of this Rule, a Spot Network is a type of distribution system found within modern commercial buildings to provide high reliability of service to a single customer.

Starting Voltage Drop: The percentage voltage drop at a specified point resulting from In-rush Current. The Starting Voltage Drop can also be expressed in volts on a particular base voltage, (e.g. 6 volts on a 120-volt base, yielding a 5% drop).

Supplemental Review: See Section F.2.c.

System Integrity: The condition under which Distribution Provider's Distribution and Transmission System is deemed safe and can reliably perform its intended functions in accordance with the safety and reliability rules of Distribution Provider.

Telemetering: The electrical or electronic transmittal of Metering data on a real-time basis to Distribution Provider.

Total Capacity: CAPACITY (in MW) of substation/area bus, bank or circuit based on normal or operating ratings.

Transfer Trip: A Protective Function that trips a Generating Facility remotely by means of an automated communications link controlled by Distribution Provider.

Transient Stability: The ability of an electrical system to withstand disturbances. Transient Stability studies are performed to ensure power system stability and are time-based simulations that assess the performance of the power system during and shortly following system disturbances.

Transmission Cluster Study Process: The cluster study process as defined in Distribution Provider's Wholesale Distribution Tariff. (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30204-E

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GENERATING FACILITY INTERCONNECTIONS

C. DEFINITIONS (Cont'd.) (N)

Transmission System: Transmission facilities owned by Distribution Provider that have been placed under the CAISO's operational control and are part of the CAISO Controlled Grid, as defined in the CAISO Tariff.

Type Test: A test performed on a sample of a particular model of a device to verify specific aspects of its design, construction and performance.

Unintended Island: The creation of an Island, usually following a loss of a portion of Distribution Provider's Distribution System, without the approval of Distribution Provider.

Unsafe Operating Conditions: Conditions that, if left uncorrected, could result in harm to personnel, damage to equipment, loss of System Integrity or operation outside pre-established parameters required by the Generator Interconnection Agreement.

Wholesale Distribution Tariff: PG&E's Wholesale Distribution Tariff (WDT)

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS

1. AUTHORIZATION REQUIRED TO OPERATE

A Producer must comply with this Rule, execute a Generator Interconnection Agreement with Distribution Provider, and receive Distribution Provider's express written permission before Parallel Operation of its Generating Facility with Distribution Provider's Distribution or Transmission System. Distribution Provider shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for Parallel Operation of Producer's Generating Facility with Distribution Provider's Distribution or Transmission System. (N)

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ELECTRIC RULE NO. 21 Sheet 29
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

2. SEPARATE AGREEMENTS REQUIRED FOR OTHER SERVICES

A PRODUCER REQUIRING OTHER ELECTRIC SErvices from Distribution Provider including, but not limited to, Distribution Service during periods of curtailment or interruption of Producer's Generating Facility, must enter into agreements with Distribution Provider for such services in accordance with Distribution Provider's Commission-approved tariffs.

3. SERVICES UNDER THIS TARIFF LIMITED TO INTERCONNECTION

INTERCONNECTION WITH DISTRIBUTION PROVIder's Distribution or Transmission System under this Rule does not provide a Producer any rights to utilize Distribution Provider's Distribution or Transmission System for the transmission, distribution, or wheeling of electric power, nor does it limit those rights.

4. COMPLIANCE WITH LAWS, RULES, AND TARIFFS

A PRODUCER SHALL ASCERTAIN AND COMPLY WITH APPLICABLE COMMISSION-approved tariffs of Distribution Provider; applicable FERC-approved rules, tariffs, and regulations; and any local, state or federal law, statute or regulation which applies to the design, siting, construction, installation, operation, or any other aspect of Producer's Generating Facility and Interconnection Facilities. (N)

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ELECTRIC RULE NO. 21 Sheet 30
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

5. DESIGN REVIEWS AND INSPECTIONS

DISTRIBUTION PROVIDER SHALL HAVE THE right to review the design of a Producer's Generating and Interconnection Facilities and to inspect a Producer's Generating and/or Interconnection Facilities prior to the commencement of Parallel Operation with Distribution Provider's Distribution or Transmission System. Distribution Provider may require a Producer to make modifications as necessary to comply with the requirements of this Rule. Distribution Provider's review and authorization for Parallel Operation shall not be construed as confirming or endorsing Producer's design or as warranting the Generating Facilities' and/or Interconnection Facilities' safety, durability or reliability. Distribution Provider shall not, by reason of such review or lack of review, be responsible for the strength, adequacy, or capacity of such equipment.

6. RIGHT TO ACCESS

A PRODUCER'S GENERATING FACILITY AND/OR Interconnection Facilities shall be reasonably accessible to Distribution Provider personnel as necessary for Distribution Provider to perform its duties and exercise its rights under its tariffs approved by the Commission, and under any Generator Interconnection Agreement between Distribution Provider and Producer.

7. CONFIDENTIALITY

A. SCOPE

CONFIDENTIAL INFORMATION SHALL INCLUDE, without limitation, confidential, proprietary or trade secret information relating to the present or planned business of Applicant, Customer, Producer, or Distribution Provider (individually referred to in Section D.7 as Party or collectively as Parties), including all information relating to a Party's technology, research and development, business affairs, and pricing. Distribution Provider shall not use the information contained in the Interconnection Request to propose discounted tariffs to the Customer unless authorized to do so by the Customer or the information is provided to Distribution Provider by the Customer through other means. (N)

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ELECTRIC RULE NO. 21 Sheet 31
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

7. CONFIDENTIALITY (CONT'D)

A. SCOPE (CONT'D)

INFORMATION IS CONFIDENTIAL INFORMATION ONLY if it is clearly designated or marked in writing as confidential on the face of the document (including electronic materials), or, if the information is conveyed orally or by inspection, if the Party providing the information orally informs the Party receiving the information that the information is confidential. For purposes of this Rule all design, operating specifications, and metering data provided by Applicant shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such, except as provided in section D.7.b. below.

IF REQUESTED BY EITHER PARTY, THE OTHER Party shall provide in writing, the basis for asserting that the information referred to in this Article warrants confidential treatment, and the requesting Party may disclose such writing to the appropriate Governmental Authority. Each Party shall be responsible for the costs associated with affording confidential treatment to its information.

B. LIMITATIONS ON SCOPE

CONFIDENTIAL INFORMATION SHALL NOT INCLUDE INFORMATION PERTAINING TO each Interconnection Request that may be provided in a publicly-posted queue pursuant to Section E.5.d of this Rule.

CONFIDENTIAL INFORMATION SHALL NOT INCLUDE INFORMATION THAT: (1) IS generally available to the public other than as a result of a disclosure by the receiving Party; (2) was in the lawful possession of the receiving Party on a non-confidential basis before receiving it from the disclosing Party; (3) was supplied to the receiving Party without restriction by a third party, who, to the knowledge of the receiving Party after due inquiry, was under no obligation to the disclosing Party to keep such information confidential; (4) was independently developed by the (N)

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GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

7. CONFIDENTIALITY (CONT'D.)

B. LIMITATIONS ON SCOPE (CONT'D.)

RECEIVING PARTY WITHOUT REFERENCE TO Confidential Information of the disclosing Party; (5) is, or becomes, publicly known, through no wrongful act or omission of the receiving Party; or (6) is required, in accordance with Section D.7.d, Required Disclosure, to be disclosed by any Governmental Authority or is otherwise required to be disclosed by law or subpoena.

INFORMATION DESIGNATED AS CONFIDENTIAL INFORMATION WILL NO LONGER BE deemed confidential if the Party that designated the information as confidential notifies the other Party that it no longer is confidential.

C. DISCLOSURE TO COMMISSION, FERC, or their respective Staff

NOTWITHSTANDING ANYTHING IN THIS SEction D.7 to the contrary, and pursuant to 18 CFR section 1b.20 in the case of disclosure to FERC, if the Commission, FERC, or their respective staff, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Rule, the Party shall provide the requested information to the Commission, FERC, or their respective staff, within the time provided for in the request for information. In providing the information to the Commission, FERC, or their respective staff, the Party shall, pursuant to PUC section 583 and General Order 66-C in the case of disclosure to the Commission, and consistent with 18 CFR section 388.112 in the case of disclosure to FERC, request that the information be treated as confidential and non-public by the Commission, FERC, and their respective staff and that the information be withheld from public disclosure. Requests from another state regulatory body with jurisdiction conducting a confidential investigation shall be treated in a similar manner, consistent with applicable state rules and regulations. (N)

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ELECTRIC RULE NO. 21 Sheet 33
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

7. CONFIDENTIALITY (CONT'D.)

D. REQUIRED DISCLOSURE

SUBJECT TO THE EXCEPTION IN SECTION D.7.c, any information that a Party claims is Confidential Information shall not be disclosed by the other Party to any person not employed or retained by the other Party, except to the extent disclosure is (i) required by law or pursuant to an order of the Commission or FERC; (ii) reasonably deemed by the disclosing Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the other Party, such consent not to be unreasonably withheld; (iv) necessary to fulfill its obligations under this Rule; or (v) as a transmission or distribution service provider or a Control Area operator, including disclosing the Confidential Information to a Regional Transmission Organization or CAISO, or to a sub-regional, regional or national reliability organization or planning group under the applicable confidentiality provisions in the relevant tariffs. Prior to any disclosures of the other Party's Confidential Information under this subparagraph, or if any third party or Governmental Authority makes any request or demand for any of the information described in this subparagraph, the disclosing Party agrees to assert confidentiality and cooperate with the other Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

8. PRUDENT OPERATION AND MAINTENANCE REQUIRED

A PRODUCER SHALL OPERATE AND MAINTAin its Generating Facility and Interconnection Facilities in accordance with Prudent Electrical Practices and shall maintain compliance with this Rule. (N)

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ELECTRIC RULE NO. 21 Sheet 34
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (N)

9. CURTAILMENT AND DISCONNECTION

DISTRIBUTION PROVIDER MAY LIMIT THE operation or disconnect or require the disconnection of a Producer's Generating Facility from Distribution Provider's Distribution or Transmission System at any time, with or without notice, in the event of an Emergency, or to correct Unsafe Operating Conditions. Distribution Provider may also limit the operation or disconnect or require the disconnection of a Producer's Generating Facility from Distribution Provider's Distribution or Transmission System upon the provision of reasonable written notice: 1) to allow for routine maintenance, repairs or modifications to Distribution Provider's Distribution or Transmission System; 2) upon Distribution Provider's determination that a Producer's Generating Facility is not in compliance with this Rule; or 3) upon termination of the Generator Interconnection Agreement. Upon Producer's written request, Distribution Provider shall provide a written explanation of the reason for such curtailment or disconnection.

10. LOCAL FURNISHING BONDS

IF A PROPOSED INTERCONNECTION OF A GENERating Facility would impair the tax-exempt status of interest on the Local Furnishing Bonds or the deductibility of interest expense on the Local Furnishing Bonds to the Local Furnishing Distribution Provider under the Internal Revenue Code, Treasury Regulations and/or applicable IRS rulings, the Interconnection Customer will be required to pay the costs properly attributable to the proposed Interconnection of such Generating Facility. The Interconnection Study shall specify and estimate the cost of all remedial measures that address the financial impacts, if any, on Local Furnishing Bonds that would result from an Interconnection. (N)

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ELECTRIC RULE NO. 21 Sheet 35
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

11. COORDINATION WITH AFFECTED SYSTEMS

DISTRIBUTION PROVIDER WILL notify the Affected System Operators that are potentially affected by an Applicant's Interconnection Request or group of Interconnection Requests. Distribution Provider will coordinate the conduct of any studies required to determine the impact of the Interconnection Request on Affected Systems with Affected System Operators and, if possible, include those results (if available) in its applicable Interconnection Study within the time frame specified in this Rule. Distribution Provider will include such Affected System Operators in all meetings held with Applicant as required by this Rule. Applicant will cooperate with Distribution Provider in all matters related to the conduct of studies and the determination of modifications to Affected Systems. A transmission provider which may be an Affected System shall cooperate with Distribution Provider with whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems. Applicant shall enter into an agreement with the owner of the Affected System, as applicable. The agreement shall specify the terms governing payments to be made by Applicant to the owner of the Affected System as well as the repayment, if applicable, by the owner of the Affected System.

12. TRANSFERABILITY OF INTERCONNECTION REQUEST

AN APPLICANT MAY TRANSFER ITS INTERCONNECTION REQUEST TO ANOTHER ENTITY only if such entity acquires the proposed Generating Facility identified in the Interconnection Request and the Point of Interconnection does not change.

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS

NOTWITHSTANDING ANY OTHER PROVISION IN THIS RULE:

1. FOR GENERATING FACILITIES QUALIFYING FOR SERVICE UNDER PUC SECTIONS 2827, 2827.8 and 2827.10 Distribution Provider may proceed from Initial to Supplemental Review to Independent Study Process to further study without waiting for Applicant concurrence, since Applicant is not responsible for payment of study costs. (N)

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ELECTRIC RULE NO. 21 Sheet 36
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (CONT'D.) (N)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

2. FOR GENERATING FACILITIES QUALIFYING FOR SERVICE UNDER PUC SECTIONS 2827 and 2827.8 Distribution Provider approval for Interconnection shall normally be processed not later than thirty (30) Business Days following Distribution Provider's receipt of 1) a completed Net Energy Metering Interconnection Request including all supporting documents and required payments; 2) a completed signed Net Energy Metering Generator Interconnection Agreement; and 3) evidence of Applicant's final electric inspection clearance from the Governmental Authority having jurisdiction over the Generating Facility. If the 30-day period cannot be met, Distribution Provider shall notify Applicant and the Commission of the reason for the inability to process the Interconnection Request and the expected completion date. However, Applicants with PUC section 2827 Generating Facilities that include non-inverter based Generators and/or Generators with non-Certified Equipment should plan to submit a completed Net Energy Metering Interconnection Request including all supporting documents sufficient for Distribution Provider to start the review process in Section F.2.a without waiting for the final inspection clearance. Applicants with such Generating Facilities are advised to submit their Interconnection Request at least six (6) months in advance of their planned Commercial Operation Date. Depending on the size and location of these Generating Facilities, additional time for review may be required and could include Supplemental Review (twenty (20) Business Days), a System Impact Study (sixty (60) Calendar Days), and a Facilities Study (sixty (60) to ninety (90) Calendar Days depending on whether upgrades to the electric system are identified) as set out in Section F. The advance submission of the Interconnection Request will better accommodate Distribution Provider's review and studies in a manner consistent with the timelines established in this Rule that may be required to complete the processing for interconnection of non-inverter based Generators and/or Generators with non-Certified Equipment. (N)

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ELECTRIC RULE NO. 21 Sheet 37
GENERATING FACILITY INTERCONNECTIONS

D. GENERAL, RULES, RIGHTS AND OBLIGATIONS (Cont'd.) (N)

13. SPECIAL PROVISIONS APPLICABLE TO NET ENERGY METERED APPLICANTS (Cont'd.)

3. Unless Net Generator Output Metering is required, Metering Equipment necessary to obtain service under PUC sections 2827 and 2827.8 shall be installed and operational within the timeframe required to complete Interconnection.

4. An Applicant with a Fast Track Interconnection Request for a Net Energy Metering or Non-Export Generating Facility that 1) goes for more than one year from the date of Distribution Provider's written notification that the Interconnection Request is valid without a signed Generator Interconnection Agreement, or 2) has a Generating Facility that has not been approved for Parallel Operation within one year of completion of all applicable review and/or studies, is subject to withdrawal by Distribution Provider; however, Distribution Provider may not deem the Interconnection Request to be withdrawn if the i) Applicant provides reasonable evidence that the Interconnection Request is still active or ii) if the delay is at no fault of Applicant.

14. COMPLIANCE WITH ESTABLISHED TIMELINES

Distribution Provider shall use Reasonable Efforts in meeting all the timelines provided for under this Rule. In the event Distribution Provider is not able to meet a particular timeline set forth in this Rule, Distribution Provider shall notify Applicant as soon as practicable and provide an estimated completion date with an explanation of the reasons why additional time is needed. Any Applicant dissatisfied with the Reasonable Efforts of Distribution Provider may use the informal procedures set out in Section F.1.d and/or the Dispute Resolution process in Section K.

15. MODIFICATION OF TIMELINES

Distribution Provider and Applicant, for good cause, may agree to modify any of the timelines in this Rule. The modified timeline shall be mutually agreed upon, in writing, between Distribution Provider and Applicant. (N)

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ELECTRIC RULE NO. 21 Sheet 38
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (N)

1. OPTIONAL PRE-APPLICATION REPORT

Upon receipt of a completed Pre-Application Report Request and a non-refundable processing fee of $300, Distribution Provider shall provide pre-application data described in this section within ten (10) Business Days of receipt. The Pre-Application Report Request shall include a proposed Point of Interconnection, generation technology and fuel source. The proposed Point of Interconnection shall be defined by latitude and longitude, site map, street address, utility equipment number (e.g. pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the point of interconnection.

The Pre-Application Report will include the following information if available:

a. Total Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.

b. Allocated Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.

c. Queued Capacity (MW) of substation/area bus or bank and circuit likely to serve proposed site.

d. Available Capacity (MW) of substation/area bus or bank and circuit most likely to serve proposed site.

e. Substation nominal distribution voltage or transmission nominal voltage if applicable.

f. Nominal distribution circuit voltage at the proposed site. (N)

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ELECTRIC RULE NO. 21 Sheet 39
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

1. PRE-APPLICATION REPORT (Cont'd.)

g. Approximate circuit distance between the proposed site and the substation.

h. Relevant Line Section(s) peak load estimate, and minimum load data, when available.

i. Number of protective devices and number of voltage regulating devices between the proposed site and the substation/area.

j. Whether or not three-phase power is available at the site.

k. Limiting conductor rating from proposed Point of Interconnection to distribution substation.

l. Based on proposed Point of Interconnection, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.

The Pre-Application Report need only include pre-existing data. A Pre-Application Report request does not obligate Distribution Provider to conduct a study or other analysis of the proposed project in the event that data is not available. If Distribution Provider cannot complete all or some of a Pre-Application Report due to lack of available data, Distribution Provider will provide Applicant with a Pre-Application Report that includes the information that is available. (N)

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ELECTRIC RULE NO. 21 Sheet 40
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

1. PRE-APPLICATION REPORT (Cont'd.)

In requesting a Pre-Application Report, Applicant understands that 1) the existence of "Available Capacity" in no way implies that an interconnection up to this level may be completed without impacts since there are many variables studied as part of the interconnection review process, 2) the distribution system is dynamic and subject to change and 3) data provided in the Pre-Application Report may become outdated and not useful at the time of submission of the complete Interconnection Request. Notwithstanding any of the provisions of this Section, Distribution Provider shall, in good faith, provide Pre- Application Report data that represents the best available information at the time of reporting.

2. INTERCONNECTION REQUEST PROCESS

a. Applicant Initiates Contact with Distribution Provider

Upon request, Distribution Provider will provide information and documents (such as sample agreements, Interconnection Request, technical information, listing of Certified Equipment, Initial and Supplemental Review fee information, applicable tariff schedules and Metering requirements) to a potential Applicant. Unless otherwise agreed upon, all such information shall normally be sent to an Applicant within three (3) Business Days following the initial request from Applicant. Distribution Provider will establish an individual representative as the single point of contact for Applicant, but may allocate responsibilities among its staff to best coordinate the Interconnection of an Applicant's Generating Facility.

b. Applicant Selects a Study Process

An Applicant may select one of two interconnection evaluation processes in accordance with the following eligibility requirements: (N)

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ELECTRIC RULE NO. 21 Sheet 41
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

b. Applicant Selects a Study Process (Cont'd.)

i) Fast Track Eligibility

Non-Exporting and Net Energy Metered Generating Facilities are eligible for Fast Track evaluation regardless of the Gross Nameplate Rating of the proposed Generating Facility. Exporting Generating Facilities with a Gross Nameplate Rating no larger than 3.0 MW on a 12 kV or higher voltage interconnection point for PG&E are also eligible for Fast Track evaluation.

For an Exporting Generating Facility that agrees to the installation of Distribution Provider-approved protective devices at Applicant's cost such that the Exporting Generating Facility's net export will never exceed the Fast Track eligibility limits, the Generating Facility's net export will be considered for purposes of Fast Track eligibility. However, these Interconnection Requests will be required to complete Supplemental Review and should pre-pay for Supplemental Review at the time the Interconnection Request is submitted.

ii) Detailed Study Eligibility

Interconnection Requests that are not eligible for Fast Track evaluation must apply for Detailed Study. An Applicant may also choose to apply directly for Detailed Studies. Detailed Study shall require (i) an Independent Study Process, (ii) a Distribution Group Study Process, or (iii) a Transmission Cluster Study Process. The specific study process used will depend on the results of the Electrical Independence Tests for the Transmission and Distribution Systems. (N)

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ELECTRIC RULE NO. 21 Sheet 42
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

b. Applicant Selects a Study Process (Cont'd.)

iii) Request for Deliverability Assessment

Unless specified otherwise in the Interconnection Request, Generating Facilities eligible to be studied under the Fast Track Process, Independent Study Process or Distribution Group Study Process will be assumed to have selected Energy-Only Deliverability Status. Nothing herein will prohibit an Applicant from seeking a deliverability assessment in accordance with the WDT. Applicants studied under the Transmission Cluster Study Process may seek a deliverability assessment in accordance with the applicable provisions of the WDT.

c. Applicant Completes an Interconnection Request

All Applicants shall submit a complete and valid Interconnection Request. When applicable per Table E.1, a nonrefundable $800 Interconnection Request fee, and for Applicants that elect Detailed Study in the Interconnection Request, a study deposit shall be required per instructions in the Interconnection Request. Applicants who proceed to Detailed Study after Fast Track will provide a Detailed Study deposit as specified in Section E.3.a.

Applicant shall submit a separate Interconnection Request for each Point of Interconnection. An Interconnection Request for the expansion of capacity of an existing operating Generating Facility shall be treated the same as an Interconnection Request for a new Generating Facility pursuant to this Rule. (N)

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ELECTRIC RULE NO. 21 Sheet 43
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

c. Applicant Completes an Interconnection Request (Cont'd.)

TABLE E-1

Summary of Interconnection Request Fees, Deposits and Exemptions

Generating Facility Type	Interconnection Request Fee	Supplemental Review Fee	Detailed Study Deposit	Additional Commissioning Test Verification
Non-Net Energy Metering	$800	$2,500	For a Generating Facility with a Gross Nameplate Rating of 5 MW or less and applying to the Independent Study Process or the Distribution Group Study Process, $10,000 for a System Impact Study and $15,000 for a Facilities Study. For a Generating Facility with a Gross Nameplate Rating above 5 MW, $50,000 plus $1,000 per MW of electrical output of the Generating Facility, or the increase in electrical output of the existing Generation Facility, as applicable, rounded up to the nearest whole MW, up to a maximum of $250,000.	$150/Person Hour *
Net Energy Metering (per PUC sections 2827, 2827.8, or 2827.10 (per D.02-03-057)	$0	$0	$0	N/A
Solar 1MW or less that does not sell power to Distribution Provider (per D.01-07-027)	First $5,000 of study fees waived			$150/Person Hour *

*Plus additional costs for travel, lodging and meals. (N)

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GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

2. INTERCONNECTION REQUEST PROCESS (Cont'd.)

d. Site Exclusivity

Documentation of Site Exclusivity must be submitted with the Interconnection Request. This requirement does not apply to Applicants with NEM or Non-Export Generating Facilities.

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT

The Interconnection Request fee shall be waived for Interconnection Requests pursuant to PUC Sections 2827, 2827.8, or 2827.10, per Commission Decision 02-03-057 and for solar-powered Generating Facilities that do not sell power to Distribution Provider per Commission Decision 01-07-027. Generating Facilities eligible for Net Energy Metering under Sections 2827, 2827.8, or 2827.10 are exempt from any costs associated with Interconnection Studies. Interconnection Study fees for solar Generating Facilities up to 1 MW interconnecting to the Distribution System that do not sell power to the grid will be waived up to the amount of $5,000.

a. Detailed Study Deposit

i) Detailed Study Deposit

To proceed with Detailed Study, Applicant must submit a detailed study deposit.

For a Generating Facility with a Gross Nameplate Rating of 5 MW or less, Applicant must submit a Detailed Study deposit of $10,000 for the Interconnection System Impact Study, and where an Interconnection Facilities Study is required, an additional $15,000 deposit must be submitted as required in Section F.3.d.viii.

For a Generating Facility with a Gross Nameplate Rating above 5 MW, Applicant must submit a Detailed Study deposit equal to $50,000 plus $1,000 per MW of electrical output of the Generating Facility, or the increase in electrical output of the existing Generating Facility, as applicable, rounded up to the nearest whole MW, up to a maximum of $250,000. (N)

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ELECTRIC RULE NO. 21 Sheet 45
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

ii) Use of Detailed Study Deposit

The Detailed Study deposit shall be applied to pay for prudent costs incurred by Distribution Provider, the CAISO, or third parties at the direction of Distribution Provider or CAISO, as applicable, to perform and administer the Interconnection Studies. Deposit amounts that exceed the prudent costs incurred by Distribution Provider shall be refunded to Applicant within sixty (60) Calendar Days following the issuance of the final study applicable to the Interconnection Request.

The Detailed Study deposits shall be refundable as follows:

(1) Should an Interconnection Request be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 on or before thirty (30) Calendar Days following the scoping meeting, Distribution Provider shall refund to Applicant any portion of Applicant's detailed study deposit that exceeds the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate).

(2) Should an Interconnection Request that has been moved into the Detailed Study Process be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 more than thirty (30) Calendar Days after the scoping meeting, but on or before thirty (30) Calendar Days following the results meeting for the Interconnection System Impact Study, Distribution Provider shall refund to Applicant the difference between (i) Applicant's detailed (N)

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ELECTRIC RULE NO. 21 Sheet 46
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

ii) Use of Detailed Study Deposit (Cont'd.)

(2) study deposit and (ii) the greater of the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf or one-half of the original detailed study deposit up to a maximum of $100,000, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate).

(3) Should an Interconnection Request be withdrawn by Applicant or be deemed withdrawn by Distribution Provider by written notice under Section F.6 at any time more than thirty (30) Calendar Days after the results meeting for the Interconnection System Impact Study, the detailed study deposit shall be non-refundable.

(4) Upon execution of a Generator Interconnection Agreement by an Applicant and Distribution Provider, Distribution Provider shall refund to Applicant any portion of Applicant's detailed study deposit that exceeds the costs Distribution Provider, CAISO, and third parties have incurred on Applicant's behalf, including interest from the date of receipt by Distribution Provider to the date of payment to Applicant. The applicable interest shall be one-twelfth of the Federal Reserve three-month Commercial Paper Rate – Non-Financial, from the Federal Reserve Statistical Release H.15 (expressed as an annual rate). (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30223-E

ELECTRIC RULE NO. 21 Sheet 47
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

3. INTERCONNECTION REQUEST FEE AND STUDY DEPOSIT (Cont'd.)

a. Detailed Study Deposit (Cont'd.)

iii) Impact of Withdrawal

Notwithstanding the foregoing, an Applicant that withdraws or is deemed to have withdrawn its Interconnection Request shall be obligated to pay to Distribution Provider all costs in excess of the detailed study deposit that have been prudently incurred or irrevocably have been committed to be incurred with respect to that Interconnection Request prior to withdrawal. Distribution Provider will reimburse the CAISO or third parties, as applicable, for all work performed on behalf of the withdrawn Interconnection Request at Distribution Provider's direction. Applicant must pay all monies due before it is allowed to obtain any Interconnection Study data or results. Any proceeds of the Detailed Study deposit not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed to be incurred for the interconnection studies shall be applied as directed by the Commission. Where an Applicant with remaining proceeds from a Detailed Study deposit cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500.

iv) Special Circumstances

Applicant may propose, and Distribution Provider may agree to reduced costs for reviewing atypical Interconnection Requests, such as Interconnection Requests submitted for multiple Generating Facilities, multiple sites, or otherwise as conditions warrant. (N)

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ELECTRIC RULE NO. 21 Sheet 48
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

4. INTERCONNECTION COST RESPONSIBILITY

An Applicant, or a Producer where those are different entities, is responsible for all fees and/or costs, including Commissioning Testing, required to complete the interconnection process. A Producer that interconnects to Distribution Provider's Distribution or Transmission System is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System. Generating Facilities eligible for Net Energy Metering under California PUC sections 2827, 2827.8 or 2827.10 are exempt from any costs associated with Distribution or Network Upgrades.

a. Costs of Interconnection and Parallel Operation

The Interconnection and Parallel Operation of a Producer may trigger the need for Interconnection Facilities, Special Facilities or Added Facilities, Upgrades, Delivery Network Upgrades, and/or Reliability Network Upgrades. Interconnection Facilities installed on Producer's side of the PCC may be owned, operated and maintained by Producer or Distribution Provider. Interconnection Facilities installed on Distribution Provider's side of the PCC and Distribution System modifications shall be owned, operated, and maintained only by Distribution Provider.

b. Methodology and Timing of Cost Identification

Any costs triggered by a Producer are based on Producer's unique Interconnection requirements, Producer's impact on the Distribution System and/or Transmission System following allocation of capacity to earlier-queued interconnection requests, and Producer's electrical interdependence with any earlier-queued interconnection requests. Earlier-queued interconnection requests include interconnection requests under any applicable tariff. (N)

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ELECTRIC RULE NO. 21 Sheet 49
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

c. Timing of Cost Identification

For Applicants to Fast Track, Independent Study Process, or Distribution Group Study Process, costs may be identified during the study process, or after the study process is complete and a Generator Interconnection Agreement is executed. The purpose of later identification of costs is to facilitate Applicant's Interconnection while accommodating incomplete interconnection studies for earlier-queued interconnection requests to the same Line Section, distribution circuit, and/or substation, incomplete interconnection studies for earlier-queued interconnection requests with which Applicant is electrically interdependent with respect to short circuit duty, withdrawal of earlier-queued interconnection requests for Interconnection to the Distribution or Transmission System, and delay or cancellation of planned Distribution System Upgrades.

d. Producer Costs During Parallel Operation

All Producers are required to provide and maintain Interconnection Facilities, for the duration of the Generator Interconnection Agreement, that meet Distribution Provider's technical design and operating standards for Parallel Operation as set out in Section H, including any updates to those standards. This includes Producer responsibility for costs associated with changes to the operating characteristics at the Point of Interconnection necessitated by Distribution Provider's upgrades to the Transmission or Distribution System from time to time.

e. Cost Allocation

Except where exempt by law or Commission decision, costs triggered by an Interconnection Request under the Fast Track process or the Independent Study Process are the responsibility of the triggering Interconnection Request. Costs triggered by an Interconnection Request under this Rule that transitions to the Transmission Cluster Study Process are allocated pursuant to the terms of Distribution Provider's WDT or other applicable tariff. (N)

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Original Cal. P.U.C. Sheet No. 30226-E

ELECTRIC RULE NO. 21 Sheet 50
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

f. Summary Tables

Table E.2 summarizes cost responsibility for costs and fees that may arise in the course of the interconnection process for NEM and non-NEM Applicants. Table E.3 summarizes cost responsibility for costs and fees that may arise in the course of the interconnection process for NEM Applicants under various sequences of interconnecting NEM and non-NEM Generators on the same PCC interconnecting to the Distribution or Transmission System.

Table E.2 Summary of Producer Cost Responsibility

Generating Facility Type	Interconnection Request Fee		Supplemental Review Fee		Detailed Study Cost (Independent Study Process, Distribution Group Study Process, or Transmission Cluster Study Process)		Interconnection Facilities Cost		Distribution Upgrades Cost		Transmission Network Upgrade Cost (CAISO Tariff Section 12.3.2 of Appendix Y)	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Non-NEM	X		X		X		X		X		X	
NEM		X		X		X	X			X		X

(N)

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ELECTRIC RULE NO. 21 Sheet 51
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

4. INTERCONNECTION COST RESPONSIBILITY (Cont'd.)

f. Summary Tables (Cont'd.)

Table E.3 Summary of Producer Cost Responsibility for Multiple Tariff Interconnections

Existing Generating Facility	New Generating Facility	Interconnection Request Fee		Supplemental Review Fee		Detailed Study Cost		Interconnection Facilities Cost		Distribution Upgrades Cost	
		YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
NEM	Non-NEM	X		X		X		X		X[a]	
NEM	NEM		X		X		X	X			X
Non-NEM	NEM		X[b]		X[b]		X[b]	X			X[a,b]
Simultaneous NEM and Non-NEM		X		X		X		X		X[a]	

a) Proration will be based upon the annual expected energy output (kWh) derived from the nameplate of the Generator(s) modified by technology-specific capacity/availability factors of all NEM eligible versus non-NEM eligible Generators for the costs that cannot be clearly assigned to either type of tariff.

b) Change of operation of a non-NEM eligible Generator at any time to export is treated as a simultaneous NEM and non-NEM Interconnection Request, resulting in associated costs being allocated to Producer. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 30228-E

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GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION

Any Applicant for Interconnection to Distribution Provider's Distribution or Transmission System must submit a complete and valid Interconnection Request. An Interconnection Request will be considered complete and valid when all items required for an Interconnection Request have been received by Distribution Provider and deemed valid by Distribution Provider.

a. Acknowledgement of Interconnection Request

Distribution Provider shall provide a first written notification to the Interconnection Customer within ten (10) Business Days of receipt of the Interconnection Request, which notice shall state whether the Interconnection Request is deemed complete and valid.

b. Deficiencies in Interconnection Request

i) First Notification of Deficiency

If an Interconnection Request fails to meet the requirements, Distribution Provider shall state in its first written notification the reasons for such failure and that the Interconnection Request does not constitute a valid request.

Applicant shall provide Distribution Provider the additional requested information needed to constitute a complete and valid request within ten (10) Business Days from the date of the first written notification that the Interconnection Request is invalid. (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30229-E

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GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

b. Deficiencies in Interconnection Request (Cont'd.)

ii) Second Notification of Deficiency

Distribution Provider shall provide a second written notification to Applicant within ten (10) Business Days of receipt of the additional requested information, stating whether the Interconnection Request is valid or the reasons for any failure.

Applicant shall provide Distribution Provider the additional requested information needed to constitute a complete and valid request within five (5) Business Days from the date of the second written notification that the Interconnection Request is invalid.

iii) Extension Request

Upon request, Applicant can receive one extension of up to twenty (20) Business Days to resolve deficiencies in the Interconnection Request.

iv) Failure to Resolve Deficiencies

If Applicant does not resolve deficiencies in the Interconnection Request within the time frames set out above, Distribution Provider will deem the Interconnection Request withdrawn. Applicant may submit a new Interconnection Request.

Applicants with invalid Interconnection Requests under this Section may seek relief under the dispute resolution provisions in Section K by so notifying Distribution Provider within two (2) Business Days of receipt of the first or second written notification that the Interconnection Request is incomplete and/or invalid. (N)

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ELECTRIC RULE NO. 21 Sheet 54
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

c. Assignment of Queue Position

Distribution Provider shall assign a queue position to all non-Net Energy Metering Applicants. If there were no deficiencies in the Interconnection Request, the queue position will be based on the date Distribution Provider received the Interconnection Request. If there were deficiencies in the Interconnection Request, the queue position will be based on the date Distribution Provider determines an Interconnection Request to be complete and valid. Should Distribution Provider not meet any deadline for providing the first (Section E.5.b.i) or second written notification (Section E.5.b.ii) to Applicant regarding the Interconnection Request, Applicant's queue position shall be set on the final day of the period in which Distribution Provider was obligated to provide such written notification, provided, however, that Applicant meets deadlines as set out above to submit any additional information required for a valid Interconnection Request following such written notification under Section E.5.b.i or E.5.b.ii, and that Distribution Provider determines that the Interconnection Request is valid.

Distribution Provider shall maintain a single queue for all non-Net Energy Metering Interconnection Requests governed by this Rule with a Point of Interconnection on Distribution Provider's Distribution System. For Interconnection Requests that are studied under the Transmission Cluster Study Process, the queue position will be the applicable cluster's queue position. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 30231-E

ELECTRIC RULE NO. 21 Sheet 55
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

d. Publication of the Interconnection Queue

Distribution Provider shall publish and update monthly on its website the interconnection queue for all Interconnection Requests governed by this Rule with a Point of Interconnection on Distribution Provider's Distribution System that have been assigned a queue position. Nothing here prohibits Distribution Provider from publishing this queue combined with other interconnection requests to Distribution Provider's Distribution System. The published interconnection queue may include the following information for each Interconnection Request governed by this Rule, subject to Energy Division approval:

i) Interconnection Request and Queue Position Data

(i) The assigned number, if any;

(ii) the queue position;

(iii) the date the Interconnection Request was received by Distribution Provider;

(iv) the date the Interconnection Request was determined to be complete and valid;

(v) the review process to which Applicant originally applied (Fast Track, Independent Study Process, Transmission Cluster Study Process);

(vi) the original requested In-Service Date;

(vii) the currently requested In-Service Date;

(viii) the agreed-upon Commercial Operation Date or actual Commercial Operation Date. (N)

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ELECTRIC RULE NO. 21 Sheet 56
GENERATING FACILITY INTERCONNECTIONS

E. INTERCONNECTION REQUEST SUBMISSION PROCESS (Cont'd.) (N)

5. INTERCONNECTION REQUEST VALIDATION AND ASSIGNMENT OF QUEUE POSITION (Cont'd.)

d. Publication of the Interconnection Queue (Cont'd.)

ii) Applicant Generating Facility/Storage System and Point of Interconnection Data

(ix) the maximum summer and winter MW electrical output;

(x) the type of generating or storage facility to be constructed;

(xi) the fuel source;

(xii) the proposed Point of Interconnection location by county;

(xiii) the proposed Point of Interconnection location by substation/area and, if applicable, circuit;

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS

a. Valid Interconnection Request

After an Interconnection Request is deemed complete and valid, Distribution Provider will perform Fast Track evaluation unless an Applicant applies for Detailed Study or is not eligible for Fast Track evaluation. The eligibility requirements for Fast Track evaluation are set forth in Section E.2.b. See Section D.13 for special provisions related to the timeframe and costs applicable to NEM Applicants. (N)

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ELECTRIC RULE NO. 21 Sheet 57
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Fast Track Review

Fast Track evaluation allows for rapid review of the Interconnection of those Generating Facilities that do not require Detailed Study. Regardless of study process, all Generating Facilities shall be designed to meet the applicable requirements of Section H which identifies Generating Facility Design and Operation Requirements.

Fast Track review consists of an Initial Review and, if required, a Supplemental Review. The need for Supplemental Review will be determined based on the results of Initial Review Screens A through M in Section G.1. Applicants that successfully pass Initial Review Screens A through M will be allowed to interconnect without Supplemental Review.

If Supplemental Review is required, Distribution Provider will notify Applicant and Applicant must pay a nonrefundable Supplemental Review fee or withdraw its Interconnection Request. Supplemental Review shall consist of the application of Screens N through P in Section G.2. Applicants that pass Screens N through P will be allowed to interconnect without additional review.

If Supplemental Review reveals that a proposed Generating Facility cannot be interconnected to Distribution Provider's Distribution System by means of Fast Track evaluation, Distribution Provider will notify Applicant that Detailed Study will be required.

Failure to pass Fast Track evaluation means only that further review and/or study are required before the Generating Facility can be interconnected with Distribution Provider's Distribution System. It does not mean that the Generating Facility cannot be interconnected. (N)

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ELECTRIC RULE NO. 21 Sheet 58
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Detailed Studies

Detailed Study will be required for Interconnection Requests that apply directly for Detailed Study, are not eligible for Fast Track evaluation, or do not pass Fast Track evaluation. Detailed Study shall consist of one of three study processes: (i) Independent Study Process; (ii) Distribution Group Study Process; or (iii) Transmission Cluster Study Process. The specific study process that is applied will depend on the results of Screens Q and R in Section G.3. Interconnection Requests that are found to be electrically interdependent with earlier-queued interconnection requests with impacts on the Transmission System, and thereby fail screen Q, will proceed to the Transmission Cluster Study Process. Interconnection Requests that are not electrically interdependent with earlier-queued interconnection requests with impacts on the Transmission System, and thereby pass Screen Q, will be studied under either the Independent Study Process or the Distribution Group Study Process.

d. Compliance with Timelines

Distribution Provider shall use Reasonable Efforts in meeting all the timelines set out in this Rule, or mutually modified by Distribution Provider and Applicant pursuant to Section D.15. Each Distribution Provider shall designate an ombudsman with authority to resolve disputes over missed timelines. The identity, role, and contact information of the ombudsman shall be available on Distribution Provider's website.

If at any time an Applicant is dissatisfied with the Reasonable Efforts of Distribution Provider to meet the timelines in this Section, Applicant may use the following procedures: (N)

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ELECTRIC RULE NO. 21 Sheet 59
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

1. OVERVIEW OF THE INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Compliance with Timelines (Cont'd.)

(i) Contact the ombudsman designated by Distribution Provider;

(ii) If the Distribution Provider ombudsman is unable to resolve the dispute within ten (10) Business Days, Applicant may either:

a) Contact the Consumer Affairs Branch (CAB) at the Commission.

b) Upon mutual agreement with Distribution Provider, make a written request for mediation to the Alternative Dispute Resolution (ADR) Coordinator in the Commission's Administrative Law (ALJ) Division. The request may be made by electronic mail to adr_program@cpuc.ca.gov, and shall state "Rule 21" in the subject line. The request shall contain the relevant facts of the timeline dispute. A copy of the request shall be sent to the Distribution Provider ombudsman. Provided that resources are available, the mediator assigned shall schedule a mediation with Applicant and Distribution Provider within ten (10) Business Days of receiving the request.

At any time, Applicant may file a formal complaint before the Commission pursuant to California PUC section 1702 and Article 4 of the Commission's Rules of Practice and Procedure. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 30236-E

ELECTRIC RULE NO. 21 Sheet 60
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review

Upon receipt of a complete and valid Interconnection Request, Distribution Provider shall perform Initial Review using the process in Section G.1. The Initial Review determines if (i) the Generating Facility qualifies for Fast Track Interconnection through Initial Review, or (ii) the Generating Facility requires a Supplemental Review. Absent extraordinary circumstances, Distribution Provider shall notify Applicant in writing of the results of Initial Review within fifteen (15) Business Days following validation of an Interconnection Request.

For Interconnection Requests that pass Initial Review and do not require Interconnection Facilities or Distribution Upgrades, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of providing notice of Initial Review results. For Interconnection Requests that pass Initial Review but do require Interconnection Facilities or Distribution Upgrades, within fifteen (15) Business Days of providing notice of Initial Review results, Distribution Provider shall provide Applicant with a non-binding cost estimate of the Interconnection Facilities or Distribution Upgrades.

For all Interconnection Requests that pass Initial Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (N)

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Revised Cal. P.U.C. Sheet No. 31925-E
Cancelling Revised Cal. P.U.C. Sheet No. 30237-E

ELECTRIC RULE NO. 21 Sheet 61
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS

a. Initial Review (Cont'd.)

For Interconnection Requests that fail Initial Review, Distribution Provider shall provide the technical reason, data and analysis supporting the Initial Review results in writing and provide Applicant the option to either attend an Initial Review results meeting or proceed directly to Supplemental Review. Net Energy Metering Applicants covered under Section D.13.1 shall proceed directly to Supplemental Review without an Initial Review results meeting. Applicant shall notify Distribution Provider within ten (10) Business Days following such notification whether to (i) proceed to an Initial Review results meeting, (ii) proceed to Supplemental Review, or (iii) withdraw the Interconnection Request. Applicant may request one extension of no more than ten (10) Business Days to respond. If Applicant fails to notify Distribution Provider within ten (10) Business Days of such notification, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

No changes may be made to the planned Point of Interconnection or Generating Facility size included in the Interconnection Request during the Initial Review Process, unless such changes are agreed to by Distribution Provider. Where agreement has not been reached, Applicants choosing to change the Point of Interconnection or Generating Facility size must reapply and submit a new Interconnection Request.

Applicants that elect to proceed to Supplemental Review shall provide a nonrefundable Supplemental Review fee set forth in Section E.2.c with their response. The Supplemental Review fee shall be waived for Interconnection Requests requesting Interconnection pursuant to PUC sections 2827, 2827.8, or 2827.10, per Commission Decision D. 02-03-057 and for solar-powered Generating Facilities that do not sell power to Distribution Provider, per Commission Decision D. 01-07-027. (N)

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Revised Cal. P.U.C. Sheet No. 31926-E
Cancelling Revised Cal. P.U.C. Sheet No. 30238-E

ELECTRIC RULE NO. 21 Sheet 62
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Optional Initial Review Results Meeting

Within five (5) Business Days of Applicant's request for an Initial Review results meeting, Distribution Provider shall contact Applicant and offer to convene a meeting at a mutually acceptable time to review the Initial Review screen analysis and related results to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably without Supplemental Review.

If modifications that obviate the need for Supplemental Review are identified, and Applicant and Distribution Provider agree to such modifications, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of the Initial Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Initial Review results meeting. For all Interconnection Requests that pass Initial Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

If Applicant and Distribution Provider are unable to identify or agree to modifications that enable Applicant to pass Initial Review, Applicant shall notify Distribution Provider within five (5) Business Days of the Initial Review results meeting whether it would like to proceed with Supplemental Review or withdraw its Interconnection Request. Applicant may request one extension of no more than five (5) Business Days to respond. If Applicant fails to notify Distribution Provider within five (5) Business Days of the Initial Review results meeting, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30239-E

ELECTRIC RULE NO. 21 Sheet 63
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review

If Applicant requests Supplemental Review and submits a nonrefundable Supplemental Review fee, if required, Distribution Provider shall complete Supplemental Review within twenty (20) Business Days, absent extraordinary circumstances, following authorization and receipt of the fee. Supplemental Review determines if (i) the Generating Facility qualifies for Fast Track Interconnection, or (ii) the Generating Facility requires Detailed Study.

For Interconnection Requests that pass Supplemental Review and do not require Interconnection Facilities or Distribution Upgrades, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of providing notice of Supplemental Review results. For Interconnection Requests that pass Supplemental Review and do require Interconnection Facilities or Distribution Upgrades, within fifteen (15) Business Days of providing notice of Supplemental Review results, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades. For all Interconnection Requests that pass Supplemental Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (N)

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ELECTRIC RULE NO. 21 Sheet 64
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Supplemental Review (Cont'd.)

For Interconnection Requests that fail Supplemental Review, Distribution Provider shall provide the technical reason, data and analysis supporting the Supplemental Review results in writing, including, if Distribution Provider can make the determination, which Detailed Study track Applicant qualifies for, and provide Applicant the option to attend a Supplemental Review results meeting or proceed directly to Detailed Study. Applicant shall notify Distribution Provider within fifteen (15) Business Days following such notification whether to (i) proceed to a Supplemental Review results meeting, (ii) proceed to Detailed Study, or (iii) withdraw the Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days of such notification, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

Applicants that elect to proceed to Detailed Study shall provide the applicable study deposit set forth in Section E.3.a with their response. Detailed Study fees for solar Generating Facilities up to 1 MW interconnecting to the Distribution System that do not sell power to Distribution Provider will be waived up to the amount of $5,000. Generating Facilities eligible for Net Energy Metering under PUC sections 2827, 2827.8, or 2827.10 are exempt from any costs associated with Detailed Studies. (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30241-E

ELECTRIC RULE NO. 21 Sheet 65
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Optional Supplemental Review Results Meeting

Within five (5) Business Days of Applicant's request for a Supplemental Review results meeting, Distribution Provider shall contact Applicant and offer to convene a meeting at a mutually acceptable time to review the Supplemental Review screen analysis and related results to determine what modifications, if any, may permit the Generating Facility to be connected safely and reliably without Detailed Study.

If modifications that obviate the need for Detailed Study are identified and Applicant and Distribution Provider agree to such modifications, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement within fifteen (15) Business Days of the Supplemental Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required, Distribution Provider shall provide Applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Supplemental Review results meeting. For all Interconnection Requests that pass Supplemental Review, refer to Section F.2.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

If Applicant and Distribution Provider are unable to identify or agree to modifications, Applicant shall notify Distribution Provider within twenty (20) Business Days of the Supplemental Review Results Meeting whether it would like to proceed with Detailed Study or withdraw its Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. If Applicant fails to notify Distribution Provider within twenty (20) Business Days of the Supplemental Review results meeting, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. Applicants that elect to proceed to Detailed Study shall provide the applicable study deposit set forth in Section E.3.a. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 30242-E

ELECTRIC RULE NO. 21 Sheet 66
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Execution of the Generator Interconnection Agreement

Following the receipt of a cost estimate for any Distribution Upgrades and/or Interconnection Facilities that have been identified (Applicants that did not require a cost estimate may proceed directly to the paragraph below), Applicant shall notify Distribution Provider within fifteen (15) Business Days whether Applicant: (i) requests a Generator Interconnection Agreement, or (ii) withdraws its Interconnection Request. Applicant may request one extension of no more than fifteen (15) Business Days to respond. If Applicant fails to notify Distribution Provider within fifteen (15) Business Days, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. If Applicant elects to proceed to a Generator Interconnection Agreement, Distribution Provider shall provide Applicant with a Generator Interconnection Agreement for Applicant's signature within fifteen (15) Business Days of Applicant's request.

Upon receipt of a draft Generator Interconnection Agreement, Applicant has ninety (90) Calendar Days to sign and return the Generator Interconnection Agreement. Applicant shall provide written comments, or notification of no comments, to the draft Generator Interconnection Agreement and appendices within thirty (30) Calendar Days. At the request of Applicant, Distribution Provider shall begin negotiations with Applicant at any time after Distribution Provider provides Applicant with the draft Generator Interconnection Agreement, which contains in its appendices the cost estimate for any Distribution Upgrades and/or Interconnection Facilities that have been identified by Distribution Provider. Distribution Provider and Applicant shall (N)

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ELECTRIC RULE NO. 21 Sheet 67
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

2. FAST TRACK INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Execution of the Generator Interconnection Agreement (Cont'd.)

negotiate concerning the cost estimate, or any disputed provisions of the appendices to a draft Generator Interconnection Agreement, for not more than ninety (90) Calendar Days after Distribution Provider provides Applicant with the Generator Interconnection Agreement. If Applicant determines that negotiations are at an impasse, it may request termination of the negotiations and initiate Dispute Resolution procedures pursuant to Section K. If Applicant fails to sign the Generator Interconnection Agreement or initiate Dispute Resolution within ninety (90) Calendar Days, the Interconnection Request shall be deemed withdrawn.

After Applicant, or a Producer where those are different entities, has executed the Generator Interconnection Agreement, Distribution Provider will commence design, procurement, construction and installation of Distribution Provider's Distribution Upgrades and/or Interconnection Facilities that have been identified in the Generator Interconnection Agreement. Distribution Provider and Producer will use good faith efforts to meet schedules in accordance with the requirements of the Generator Interconnection Agreement and estimated costs as appropriate. Producer is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution System and Transmission System as set forth in Section E.4.

Distribution Provider and Producer shall negotiate in good faith concerning a schedule for the construction of Distribution Provider's Interconnection Facilities and Distribution Upgrades. (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30244-E

ELECTRIC RULE NO. 21 Sheet 68
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS

a. Detailed Study Track Selection Process

Applicants that apply directly for Detailed Study may elect to enter the Transmission Cluster Study Process without the application of Screens Q and R. For Applicants that applied for Fast Track evaluation but failed the Supplemental Review, Distribution Provider shall determine, to the extent practicable, the Detailed Study track for which Applicant is eligible and provide that information with the Supplemental Review Results as set out in section F.2.c. For all other Applicants, the specific Detailed Study track for which Applicant is eligible will be determined by the application of Screens Q and R. For Applicants that require application of Screens Q and R, absent extraordinary circumstances, within twenty (20) Business Days following validation of an Interconnection Request and receipt of the appropriate study deposit set forth in Section E.3.a, Distribution Provider will apply Screen Q, and if applicable, Screen R and provide Applicant with the screen results as set forth below.

If Applicant fails Screen Q, Distribution Provider shall provide the data and analysis supporting Screen Q results in writing and provide Applicant the option to proceed to the Transmission Cluster Study Process. Applicant shall notify Distribution Provider within twenty (20) Business Days following such notification whether it would like to (i) proceed to the Transmission Cluster Study Process or (ii) withdraw the Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. If Applicant fails to notify Distribution Provider within twenty (20) Business Days of receiving the Screen Q results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn. (N)

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Cancelling Revised Cal. P.U.C. Sheet No. 30245-E

ELECTRIC RULE NO. 21 Sheet 69
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

a. Detailed Study Track Selection Process (Cont'd.)

If Applicant passes Screen Q, but fails Screen R, Distribution Provider shall provide the data and analysis supporting the Screen R results in writing and provide Applicant the option to proceed to the Distribution Group Study Process. Applicant shall notify Distribution Provider within twenty (20) Business Days following such notification whether it would like to (i) proceed to the Distribution Group Study Process or (ii) withdraw the Interconnection Request. Applicant may request one extension of no more than twenty (20) Business Days to respond. If Applicant fails to notify Distribution Provider within twenty (20) Business Days of receiving Screen R results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed withdrawn.

If Applicant passes Screens Q and R, the Interconnection Request will be processed in accordance with Section F.3.d below.

If Applicant elects to proceed to the Distribution Group Study Process, the Interconnection Request will be processed in accordance with Section F.3.b below.

If Applicant elects to proceed to the Transmission Cluster Study Process, Interconnection Request will be processed in accordance with Section F.3.c below.

b. Distribution Group Study Process

Interconnection Requests that would otherwise qualify for the Distribution Group Study Process will be studied under the Transmission Cluster Study pursuant to Section F.3.c except as described below: (N)

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ELECTRIC RULE NO. 21 Sheet 70
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

b. Distribution Group Study Process (Cont'd.)

i. If Applicant fails Screen R because there is only one (1) earlier-queued interconnection request with which Applicant is electrically interdependent and that is currently undergoing an independent study process, Distribution Provider shall notify Applicant at the same time that it provides the Screen R results of the expected completion date for the earlier-queued interconnection request. Distribution Provider shall provide Applicant the option of (1) waiting until the earlier-queued interconnection request has completed the independent study process and then initiating the Independent Study Process at that time, or (2) proceeding directly to the Transmission Cluster Study Process pursuant to Section F.3.c. If Applicant chooses option 1, the timeline for completing Applicant's Independent Study Process will not begin until the earlier-queued interconnection request has completed the independent study process.

ii. At Distribution Provider's option, it may offer to study any Applicant that qualifies under this Section F.3.b under the Independent Study Process; provided that Applicant and Distribution Provider agree on a revised study timeline.

c. Transmission Cluster Study Process

If Applicant's Interconnection Request fails Screen Q or elects to be studied under the Transmission Cluster Study Process, Applicant shall have the option of applying for Interconnection under the Transmission Cluster Study Process of the Wholesale Distribution Tariff in accordance with its provisions. If Applicant fails Screen Q, Applicant's Interconnection Request shall be deemed withdrawn under this Rule regardless of whether Applicant applies for Interconnection under the WDT. (N)

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ELECTRIC RULE NO. 21 Sheet 71
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

c. Transmission Cluster Study Process (Cont'd.)

An Applicant that chooses to apply under the Transmission Cluster Study Process of the WDT must file a valid Interconnection Request and post the applicable study deposit as set out in Distribution Provider's WDT. If Applicant chooses to apply under the WDT, then Applicant's Interconnection Request will be subject to the terms of Distribution Provider's WDT applicable to the Transmission Cluster Study Process, including those provisions establishing cost responsibility. Upon completion of the Transmission Cluster Study Process under the WDT, Applicants that are eligible for a State-jurisdictional Interconnection can, in accordance with the WDT, either execute the applicable Commission-approved Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities or the WDT Generator Interconnection Agreement. Such Commission-approved Generator Interconnection Agreement for Exporting Generating Facilities will include the cost responsibility established in the Transmission Cluster Study.

If and when an Applicant submits a new interconnection request under the WDT, Applicant is under the jurisdiction of FERC. On the date the applicable Commission-approved Rule 21 Generator Interconnection Agreement for Exporting Generating Facilities is executed by Applicant, or Producer where those are different entities, and Distribution Provider, jurisdiction over the Interconnection reverts back to the Commission.

d. Independent Study Process

i) Scoping Meeting

Within five (5) Business Days after Distribution Provider notifies Applicant that the Interconnection Request has passed Screens Q and R and is thus eligible for the Independent Study Process, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant and Distribution Provider for a scoping meeting. (N)

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Revised Cal. P.U.C. Sheet No. 31936-E
Cancelling Revised Cal. P.U.C. Sheet No. 30248-E

ELECTRIC RULE NO. 21 Sheet 72
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

i) Scoping Meeting (Cont'd.)

The purpose of the scoping meeting shall be: (i) to discuss reasonable Commercial Operation Dates and alternative interconnection options; (ii) to exchange information, including any transmission data that would reasonably be expected to impact Applicant's interconnection options; (iii) to analyze such information; and (iv) to determine feasible Points of Interconnection and eliminate alternatives given resources and available information.

Distribution Provider will bring to the scoping meeting, as reasonably necessary to accomplish its purpose, such already available technical data, including, but not limited to; (i) general facility loadings, (ii) general instability issues, (iii) general short circuit issues, (iv) general voltage issues, and (v) general reliability issues.

Applicant will bring to the scoping meeting, in addition to the technical data in Attachment A of the Rule 21 Exporting Generating Facility Interconnection Request form, any system studies previously performed. Distribution Provider, the CAISO, if applicable, and Applicant will also bring to the meeting personnel and other resources as may be reasonably required to accomplish the purpose of the meeting in the time allocated for the meeting. On the basis of the meeting, Applicant shall designate its Point of Interconnection. The duration of the meeting shall be only what is sufficient to accomplish its purpose. (N)

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Revised Cal. P.U.C. Sheet No. 31937-E*
Cancelling Revised Cal. P.U.C. Sheet No. 30249-E

ELECTRIC RULE NO. 21 Sheet 73
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

i) Scoping Meeting (Cont'd.)

Within fifteen (15) Business Days after the scoping meeting, Distribution Provider shall provide Applicant with an Independent Study Process Study Agreement, which shall contain an outline of the scope of the Interconnection System Impact Study and Interconnection Facilities Study, contain a non-binding good faith estimate of the cost to perform such studies, and shall specify that Applicant is responsible for the actual cost of the Interconnection Studies, including reasonable administrative costs. Applicant shall execute and deliver to Distribution Provider the Independent Study Process Study Agreement no later than thirty (30) Business Days after the scoping meeting, or the Interconnection Request shall be deemed withdrawn.

ii) Timing of the Interconnection System Impact Study Results.

Absent extraordinary circumstances, Distribution Provider shall complete and issue a final Interconnection System Impact Study report within sixty (60) Business Days after the execution of an Independent Study Process Study Agreement. If the System Impact Study indicates a need for Network Upgrades, Distribution Provider will share applicable study results with the CAISO for review and comment and will incorporate comments into the final Interconnection System Impact Study report.

At any time Distribution Provider determines that it will not meet the required time frame for completing the Interconnection System Impact Study, Distribution Provider shall notify Applicant as to the status of the Interconnection System Impact Study and provide an estimated completion date with an explanation of the reasons why additional time is required. (N)

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Revised Cal. P.U.C. Sheet No. 31938-E
Cancelling Revised Cal. P.U.C. Sheet No. 30250-E

ELECTRIC RULE NO. 21 Sheet 74
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

ii) Timing of the Interconnection System Impact Study Results. (Cont'd.)

Upon request, Distribution Provider shall provide Applicant all relevant supporting documentation, workpapers and pre-Interconnection Request and post-Interconnection Request power flow, short circuit and stability databases, and currently planned Distribution Upgrades relevant to the Interconnection Request for the Interconnection System Impact Study. Applicant may be required to sign a non-disclosure agreement with terms consistent with Section D.7 regarding Confidentiality.

iii) Interconnection System Impact Study Results Meeting.

If requested by Applicant, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and Applicant to discuss the results of the Interconnection System Impact Study, including assigned cost responsibility. Within five (5) Business Days of such request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting.

iv) Initial Posting of Interconnection Financial Security.

Applicant shall make its initial posting of Interconnection Financial Security in accordance with the requirements of Section F.4.b, within sixty (60) Calendar Days after being provided with the final Interconnection System Impact Study report, or its Interconnection Request shall be deemed withdrawn. The initial posting of Interconnection Financial Security will be based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final Interconnection System Impact Study report. (N)

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Revised Cal. P.U.C. Sheet No. 31939-E
Cancelling Revised Cal. P.U.C. Sheet No. 30251-E

ELECTRIC RULE NO. 21 Sheet 75
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

v) Modifications

At any time during the course of the Interconnection Studies, Applicant, Distribution Provider, or the CAISO, as applicable, may identify changes to the planned Interconnection that may improve the costs and benefits (including reliability) of the Interconnection, and the ability of the proposed change to accommodate the Interconnection Request. To the extent the identified changes are acceptable to Distribution Provider, the CAISO, as applicable, and Applicant, such acceptance not to be unreasonably withheld, Distribution Provider shall modify the Point of Interconnection and/or configuration in accordance with such changes without altering the Interconnection Request's eligibility for participating in Interconnection Studies.

At the Interconnection System Impact Study results meeting, Applicant should be prepared to discuss any desired modifications to the Interconnection Request. After the publication of the final Interconnection System Impact Study report, but no later than five (5) Business Days following the Interconnection System Impact Study results meeting, Applicant shall submit to Distribution Provider, in writing, modifications to any information provided in the Interconnection Request. Distribution Provider will forward Applicant's request for modification to the CAISO, if applicable, within two (2) Business Days of receipt. If no Interconnection System Impact Study results meeting is held, Applicant shall submit to Distribution Provider any requested modifications within twenty-five (25) Business Days of the receipt of the final Interconnection System Impact Study report. (N)

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Original Cal. P.U.C. Sheet No. 31940-E*
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 76
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

v) Modifications (Cont'd.)

Modifications permitted under this Section F.3.d.v shall include specifically: (a) a decrease in the electrical output (MW) of the proposed Generating Facility; (b) modifying the technical parameters associated with the Generating Facility technology or the Generating Facility step-up transformer impedance characteristics; and (c) modifying the interconnection configuration. Distribution Provider, in coordination with CAISO, if applicable, will evaluate whether the proposed modification to the Interconnection Request constitutes a Material Modification. Distribution Provider will inform Applicant in writing whether the modifications would constitute a Material Modification within 10 Business Days of receipt of the proposed request for modification. Any change to the Point of Interconnection, except for that specified by Distribution Provider in an Interconnection Study or otherwise allowed under this Section F.3.d.v, shall constitute a Material Modification.

If the proposed modification is determined to be a Material Modification, Applicant may either withdraw the proposed modification or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification determination results.

Proposed modifications determined not to be Material Modifications may still necessitate the need to re-evaluate the System Impact Study to determine modifications to the Interconnection Facilities and Distribution Upgrades. Distribution Provider will provide Applicant an estimate of time to complete the re-evaluation and the associated incremental cost required to complete the re-evaluation. Applicant may either accept the (N)

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ELECTRIC RULE NO. 21 Sheet 77
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

v) Modifications (Cont'd.)

additional time and cost to complete the re-evaluation, withdraw the proposed modification request, or proceed with a new Interconnection Request for such modification. Applicant shall make such determination within ten (10) Business Days after being provided the Material Modification results.

vi) Scope and Purpose of the Interconnection Facilities Study and Study Deposit.

Within either (i) five (5) Business Days following the results meeting, or (ii) within twenty-five (25) Business Days of the receipt of the final Interconnection System Impact Study report if no Interconnection System Impact Study results meeting is held, Applicant shall submit to Distribution Provider the data required by Distribution Provider. At that time, for Generating Facilities 5 MW or less, Applicant shall also submit the Facilities Study deposit, as set out in Section E.3.a, unless the Facilities Study will be waived in accordance with Section F.3.d.vii.

vii) Waiver of the Interconnection Facilities Study

The Facilities Study may be waived if Distribution Provider and Applicant mutually agree to such waiver. Within thirty (30) Calendar Days after Distribution Provider provides the final Interconnection System Impact Study report to Applicant (if the Interconnection Facilities Study is waived), Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. If Applicant chooses to forgo the (N)

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F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

vii) Waiver of the Interconnection Facilities Study. (Cont'd.)

Facilities Study and move directly to a Generator Interconnection Agreement, Applicant must agree in writing to be responsible for all actual costs of all required facilities deemed necessary by Distribution Provider. Applicant is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution and Transmission System as set forth in Section E.4. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

viii) Timing of the Interconnection Facilities Study.

The Interconnection Facilities Study shall be completed and provided to Applicant within sixty (60) Business Days after Applicant posts the initial Interconnection Financial Security in accordance with Section F.4.b where Distribution Upgrades or Network Upgrades are identified and, for Generating Facilities with a Gross Nameplate Rating of 5 MW or less, Applicant submits the Facilities Study deposit in accordance with Section E.3.a and F.3.d.vi. In cases where no Distribution Upgrades and/or Network Upgrades are identified and the required facilities are limited to Distribution Provider's Interconnection Facilities only, the Interconnection Facilities Study shall be completed within forty-five (45) Business Days after Applicant posts the initial Interconnection Financial Security and, for Generating Facilities with a Gross Nameplate Rating of 5 MW or less, Applicant submits the Facilities Study deposit.

If applicable, Distribution Provider will share the applicable study results with the CAISO for review and comment, and will incorporate CAISO comments, if any, into the study report prior to issuing a final Interconnection Facilities Study report to Applicant. (N)

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Original Cal. P.U.C. Sheet No. 31943-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 79
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

viii) Timing of the Interconnection Facilities Study. (Cont'd.)

Within thirty (30) Calendar Days after Distribution Provider provides the final Interconnection Facilities Study report to Applicant, or within thirty (30) Calendar Days of an Interconnection Facilities Study results meeting, if requested, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, unless Applicant requests an Interconnection Facilities Study results meeting. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement.

At any time Distribution Provider determines that it will not meet the required time frame for completing the Interconnection Facilities Study, Distribution Provider shall notify Applicant in writing as to the status of the Interconnection Facilities Study and provide an estimated completion date with an explanation of the reasons why additional time is required.

ix) Interconnection Facilities Study Results Meeting.

If requested by Applicant, a results meeting shall be held among Distribution Provider, the CAISO, if applicable, and Applicant to discuss the results of the Interconnection Facilities Study, including assigned cost responsibility. Within five (5) Business Days of the request, Distribution Provider shall contact Applicant to establish a date agreeable to Applicant, Distribution Provider and the CAISO, if applicable, for the results meeting. Within thirty (30) Calendar Days after the Interconnection Facilities Study results meeting, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices, to Applicant. Refer to Section F.3.e for cost responsibility and time frames for completing the Generator Interconnection Agreement. (N)

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ELECTRIC RULE NO. 21 Sheet 80
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

d. Independent Study Process (Cont'd.)

x) Second and Third Postings of Interconnection Financial Security

Applicant will post its second and third postings of Interconnection Financial Security as set forth in Sections F.4.c and F.4.d based on the cost responsibility for Network Upgrades, Distribution Upgrades, and Distribution Provider's Interconnection Facilities set forth in the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived in accordance with Section F.3.d.vii.

e. Generator Interconnection Agreement

i) Tender

Within thirty (30) Calendar Days after the later of i) Distribution Provider provides the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived) to Applicant, or ii) the Interconnection Facilities Study results meeting, Distribution Provider shall tender a draft Generator Interconnection Agreement, together with draft appendices. Applicant shall provide written comments, or notification of no comments, to the draft appendices within thirty (30) Calendar Days.

ii) Negotiation

Notwithstanding Section F.3.e.i, at the request of Applicant, Distribution Provider shall begin negotiations with Applicant concerning the appendices to the Generator Interconnection Agreement at any time after Distribution Provider provides Applicant with the final Interconnection Facilities Study report (or (N)

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Original Cal. P.U.C. Sheet No. 31945-E
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ELECTRIC RULE NO. 21 Sheet 81
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement (Cont'd.)

ii) Negotiation (Cont'd.)

final Interconnection System Impact Study report if the Interconnection Facilities Study is waived). Distribution Provider and Applicant shall negotiate concerning any disputed provisions of the appendices to the draft Generator Interconnection Agreement for not more than ninety (90) Calendar Days after Distribution Provider provides Applicant with the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived). Producer is responsible for all costs associated with Parallel Operation to support the safe and reliable operation of the Distribution System and Transmission System as set forth in Section E.4.

If Applicant determines that negotiations are at an impasse, it may request termination of the negotiations at any time after tender of the draft Generator Interconnection Agreement pursuant to Section F.3.e.i and initiate Dispute Resolution procedures pursuant to Section K. Unless otherwise agreed by the Parties, if Applicant or Producer, where those are different entities, has not executed the Generator Interconnection Agreement, or initiated Dispute Resolution procedures pursuant to Section K, within ninety (90) Calendar Days after issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), it shall be deemed to have withdrawn its Interconnection Request. Distribution Provider shall provide to Producer a final Generator Interconnection Agreement within fifteen (15) Business Days after the completion of the negotiation process. (N)

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Original Cal. P.U.C. Sheet No. 31946-E*
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 82
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

e. Generator Interconnection Agreement (Cont'd.)

iii) Extensions of Commercial Operation Date.

Extensions of the Commercial Operation Date will be agreed upon in the executed Generator Interconnection Agreement. Reasonable Commercial Operation Dates will be discussed at the Interconnection Facilities Study results meeting or the System Impact Study results meeting if the Facilities Study is waived. Interconnection Requests under the Independent Study Process will not be granted extensions except in circumstances beyond the control of Producer. This provision has no impact on any power purchase agreement terms

f. Engineering & Procurement (E&P) Agreement

Prior to executing a Generator Interconnection Agreement, in order to advance the implementation of its interconnection, an Applicant may request, and Distribution Provider shall offer, an E&P Agreement that authorizes Distribution Provider to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection. However, Distribution Provider shall not be obligated to offer an E&P Agreement if Applicant is in Dispute Resolution as a result of an allegation that Applicant has failed to meet any milestones or comply with any prerequisites specified in other parts of this Rule. The E&P Agreement is an optional procedure. The E&P Agreement shall provide for Applicant to pay the cost of all activities authorized by Applicant and to make advance payments or provide other satisfactory security for such costs. (N)

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Original Cal. P.U.C. Sheet No. 31947-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 83
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

f. Engineering & Procurement (E&P) Agreement (Cont'd.)

Applicant shall pay the cost of such authorized activities and any cancellation costs for equipment that is already ordered for its interconnection, which cannot be mitigated as hereafter described, whether or not such items or equipment later become unnecessary. If Applicant withdraws its Interconnection Request, or either Applicant or Distribution Provider terminates the E&P Agreement, to the extent the equipment ordered can be canceled under reasonable terms, Applicant shall be obligated to pay the associated cancellation costs. To the extent that the equipment cannot be reasonably canceled, Distribution Provider may elect: (i) to take title to the equipment, in which event Distribution Provider shall refund Applicant any amounts paid by Applicant for such equipment and shall pay the cost of delivery of such equipment, or (ii) to transfer title to and deliver such equipment to Applicant, in which event Applicant shall pay any unpaid balance and cost of delivery of such equipment.

4. INTERCONNECTION FINANCIAL SECURITY

a. Types of Interconnection Financial Security.

The Interconnection Financial Security posted by an Applicant may be any combination of the following types of Interconnection Financial Security provided in favor of Distribution Provider:

(a) an irrevocable and unconditional letter of credit issued by a bank or financial institution that has a credit rating of A or better by Standard and Poor's or A2 or better by Moody's;

(b) an unconditional and irrevocable guaranty issued by a company has a credit rating of A or better by Standard and Poor's or A2 or better by Moody's; (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31948-E
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F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

3. DETAILED STUDY INTERCONNECTION REVIEW PROCESS (Cont'd.)

(c) a cash deposit standing to the credit of Distribution Provider and in an interest-bearing escrow account maintained at a bank or financial institution that is reasonably acceptable to Distribution Provider;

Interconnection Financial Security instruments as listed above shall be in such form as Distribution Provider may reasonably require from time to time by notice to Applicants, or in such other form as has been evaluated and approved as reasonably acceptable by Distribution Provider.

Distribution Provider shall require the use of standardized forms of Interconnection Financial Security to the greatest extent possible. If at any time the guarantor of the Interconnection Financial Security fails to maintain the credit rating required by this Section F.4.a, Applicant shall provide to Distribution Provider replacement Interconnection Financial Security meeting the requirements of this Section F.4.a within five (5) Business Days of the change in credit rating.

Interest on a cash deposit standing to the credit of Distribution Provider in an interest-bearing escrow account under subpart (d) of this Section F.4.a will accrue to Applicant's benefit.

b. Initial Posting of Interconnection Financial Security

On or before sixty (60) Calendar Days after publication of the final Interconnection System Impact Study report, Applicant must post, with notice to Distribution Provider, two separate Interconnection Financial Security instruments. (N)

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Cancelling

Original Cal. P.U.C. Sheet No. 31949-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 85
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

b. Initial Posting of Interconnection Financial Security (Cont'd.)

First, Applicant proposing to interconnect a Large Generating Facility shall post an Interconnection Financial Security instrument in an amount equal to the lesser of (i) fifteen percent (15%) of the total cost responsibility assigned to Applicant in the final Interconnection System Impact Study for Network Upgrades, (ii) $20,000 per MW of electrical output of the Large Generating Facility or the amount of megawatt increase in the generating capacity of each existing Generating Facility as listed by Applicant in its Interconnection Request, including any requested modifications thereto, or (iii) $7,500,000.

Applicant proposing to interconnect a Small Generating Facility shall post an Interconnection Financial Security instrument in an amount equal to the lesser of (i) fifteen percent (15%) of the total cost responsibility assigned to Applicant in the final Interconnection System Impact Study for Network Upgrades, or (ii) $20,000 per MW of electrical output of the Small Generating Facility or the amount of megawatt increase in the generating capacity of each existing Generating Facility as listed by Applicant in its Interconnection Request.

Second, Applicant shall also post an Interconnection Financial Security instrument in the amount of twenty percent (20%) of the total estimated cost responsibility assigned to Applicant in the final Interconnection System Impact Study for Distribution Provider's Interconnection Facilities and Distribution Upgrades.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.b shall result in the Interconnection Request being deemed withdrawn subject to Section F.6.

Applicant shall provide Distribution Provider with written notice that it has posted the required Interconnection Financial Security no later than the applicable final day for posting. (N)

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Original Cal. P.U.C. Sheet No. 31950-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 86
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

c. Second Posting of Interconnection Financial Security

On or before one hundred twenty (120) Calendar Days after publication of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), Applicant shall post two separate Interconnection Financial Security instruments.

First, Applicant proposing to interconnect a Large Generating Facility shall post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Network Upgrades equals the lesser of (i) $15 million, or (ii) thirty percent (30%) of the total cost responsibility assigned to Applicant for Network Upgrades in either the final Interconnection System Impact Study or final Interconnection Facilities Study, whichever is lower.

Applicant proposing to interconnect a Small Generating Facility shall post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Network Upgrades equals the lesser of (i) $1 million, or (ii) thirty percent (30%) of the total cost responsibility assigned to Applicant for Network Upgrades in either the final Interconnection System Impact Study or final Interconnection Facilities Study, whichever is lower.

Second, Applicant shall also post an Interconnection Financial Security instrument such that the total Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades equals thirty percent (30%) of the total cost responsibility assigned to Applicant in the final Interconnection Facilities Study, or final Interconnection System Impact Study if the Interconnection Facilities Study is waived, for Distribution Provider's Interconnection Facilities and Distribution Upgrades. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31951-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 87
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

c. Second Posting of Interconnection Financial Security (Cont'd.)

If the start date for Construction Activities of Network Upgrades, Distribution Provider's Interconnection Facilities and Distribution Upgrades on behalf of Applicant is prior to one hundred twenty (120) Calendar Days after publication of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), that start date must be set forth in Applicant's Generator Interconnection Agreement and Applicant shall make its second posting of Interconnection Financial Security pursuant to Section F.4.d rather than Section F.4.c.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.c shall result in the Interconnection Request being deemed withdrawn and subject to Section F.6 or, if applicable, shall constitute grounds for termination of the Generator Interconnection Agreement.

d. Third Posting of Interconnection Financial Security.

On or before the start of Construction Activities for Network Upgrades or Distribution Provider's Interconnection Facilities or Distribution Upgrades on behalf of Applicant, whichever is earlier, Applicant shall modify the two separate Interconnection Financial Security instruments posted as follows.

With respect to the Interconnection Financial Security instrument for Network Upgrades, Applicant shall modify this instrument so that it equals one hundred percent (100%) of the total cost responsibility assigned to Applicant for Network Upgrades in the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived. (N)

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Original Cal. P.U.C. Sheet No. 31952-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 88
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

d. Third Posting of Interconnection Financial Security. (Cont'd.)

With respect to the Interconnection Financial Security instrument for Distribution Provider's Interconnection Facilities or Distribution Upgrades, Applicant shall modify this instrument so that it equals one hundred percent (100%) of the total cost responsibility assigned to Applicant for Distribution Provider's Interconnection Facilities in the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived.

The failure by an Applicant to timely post the Interconnection Financial Security required by this Section F.4.d shall constitute grounds for termination of the Generator Interconnection Agreement.

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security.

Except as set forth in Section F.4.e.i, withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall allow Distribution Provider to liquidate the Interconnection Financial Security, or balance thereof, posted by Applicant for Network Upgrades at the time of withdrawal. To the extent the amount of the liquidated Interconnection Financial Security plus capital, if any, separately provided by Applicant to satisfy its obligation to finance Network Upgrades in accordance with Section E.4 exceeds the total cost responsibility for Network Upgrades assigned to Applicant by the final Interconnection Facilities Study, or the final Interconnection System Impact Study if the Interconnection Facilities Study is waived, Distribution Provider shall remit to Applicant the excess amount. (N)

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Original Cal. P.U.C. Sheet No. 31953-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 89
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security. (Cont'd.)

Withdrawal of an Interconnection Request or termination of a Generator Interconnection Agreement shall result in the release to Applicant of any Interconnection Financial Security posted by Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades, except with respect to any amounts necessary to pay for costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant for Distribution Provider's Interconnection Facilities and Distribution Upgrades and for which Distribution Provider has not been reimbursed.

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement.

A portion of the Interconnection Financial Security shall be released to Applicant, consistent with Section F.4.e.ii, if the withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement occurs for any of the following reasons:

(1) Failure to Secure a Power Purchase Agreement.

At the time of withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement, Applicant demonstrates to Distribution Provider that it has failed to secure an acceptable power purchase agreement for the energy or capacity of the Generating Facility after a good faith effort to do so. A good faith effort can be established by demonstrating participation in a competitive solicitation process or bilateral negotiations with an entity other than an Affiliate that progressed, at minimum, to the mutual exchange by all counter-parties of proposed term sheets. (N)

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Original Cal. P.U.C. Sheet No. 31954-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 90
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security. (Cont'd.)

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement. (Cont'd.)

(2) Failure to Secure a Necessary Permit.

At the time of withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement, Applicant demonstrates to Distribution Provider that it has received a final denial from the primary issuing Governmental Authority of any permit or other authorization necessary for the construction or operation of the Generating Facility.

(3) Increase in the Cost of Distribution Provider's Interconnection Facilities or Distribution Upgrades.

Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement based on an increase of: (i) more than 30% or $300,000, whichever is greater, in the estimated cost of Distribution Provider's Interconnection Facilities; or (ii) more than 30% or $300,000, whichever is greater, in the estimated cost of Distribution Upgrades allocated to Applicant from the Interconnection System Impact Study to the Interconnection Facilities Study. This Section F.4.e.i.(3) shall not apply if the cause of the cost increase under (i) or (ii) above is the result of a change requested by Applicant pursuant to Section F.3.d.v. (N)

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Cancelling

Original Cal. P.U.C. Sheet No. 31955-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 91
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security. (Cont'd.)

i) Conditions for Partial Recovery of Interconnection Financial Security Upon Withdrawal of Interconnection Request or Termination of Generator Interconnection Agreement. (Cont'd.)

(4) Material Change in Applicant's Interconnection Facilities Created by Distribution Provider's Change in the Point of Interconnection.

Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement based on a material change from the Interconnection System Impact Study in the Point of Interconnection for the Generating Facility mandated by Distribution Provider and included in the final Interconnection Facilities Study. A material change in the Point of Interconnection shall be where the Point of Interconnection has moved to (i) a different substation, (ii) a different line on a different right of way, or (iii) a materially different location than previously identified on the same line.

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades.

(1) Up to One Hundred Twenty (120) Calendar Days After the Final Interconnection Facilities Study Report (or Final Interconnection System Impact Study Report if the Interconnection Facilities Study is Waived).

If, at any time after the initial posting of the Interconnection Financial Security for Network Upgrades under Section F.4.b and on or before one hundred twenty (120) Calendar Days (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31956-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 92
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades (Cont'd.)

(1) Up to One Hundred Twenty (120) Calendar Days After the Final Interconnection Facilities Study Report (or Final Interconnection System Impact Study Report if the Interconnection Facilities Study is Waived). (Cont'd.)

after the date of issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived),Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement, as applicable, in accordance with Section F.4.e.i, Distribution Provider shall liquidate the Interconnection Financial Security for Network Upgrades under Section F.4.b and reimburse Applicant in an amount of (i) any posted amount less fifty percent (50%) of the value of the posted Interconnection Financial Security for Network Upgrades (with a maximum of $10,000 per requested and approved MW value of the Generating Facility Capacity at the time of withdrawal being retained by Distribution Provider), or (ii) if the Interconnection Financial Security has been drawn down to finance Pre-Construction Activities for Network Upgrades on behalf of Applicant, the lesser of the remaining balance of the Interconnection Financial Security or the amount calculated under (i) above. If Applicant has separately provided capital apart from the Interconnection Financial Security to finance Pre-Construction Activities for Network Upgrades, Distribution Provider will credit the capital provided as if drawn from the Interconnection Financial Security and apply (ii) above. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31957-E
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ELECTRIC RULE NO. 21 Sheet 93
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades. (Cont'd.)

(2) Between One Hundred Twenty-One (121) Calendar Days and After Final Interconnection Facilities Study Report and the Commencement of Construction Activities.

If, at any time between one hundred twenty-one (121) Calendar Days and after the date of issuance of the final Interconnection Facilities Study report (or final Interconnection System Impact Study report if the Interconnection Facilities Study is waived), and the commencement of Construction Activities for either Network Upgrades or Distribution Provider's Interconnection Facilities or Distribution Upgrades, Applicant withdraws the Interconnection Request or terminates the Generator Interconnection Agreement, as applicable, in accordance with Section F.4.e.i, Distribution Provider shall liquidate the Interconnection Financial Security for Network Upgrades under Section F.4.c and reimburse Applicant in an amount of (i) any posted amounts less fifty percent (50%) of the value of the posted Interconnection Financial Security for Network Upgrades (with a maximum of $20,000 per requested and approved MW value of the Generating Facility Capacity at the time of withdrawal being retained by Distribution Provider), or, (ii) if the Interconnection Financial Security has been drawn down to finance Pre-Construction Activities for Network Upgrades on behalf of Applicant, the lesser of the remaining balance of the Interconnection Financial Security or the amount calculated under (i) above. If Applicant has separately provided capital apart from the Interconnection Financial Security to finance Pre-Construction Activities for Network Upgrades, Distribution Provider will credit the capital provided as if drawn from the Interconnection Financial Security and apply (ii) above. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31958-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 94
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

4. INTERCONNECTION FINANCIAL SECURITY (Cont'd.)

e. General Effect of Withdrawal of Interconnection Request or Termination of the Generator Interconnection Agreement on Interconnection Financial Security. (Cont'd.)

ii) Schedule for Determining Non-Refundable Portion of the Interconnection Financial Security for Network Upgrades. (Cont'd.)

(3) After Commencement of Construction Activities.

Once Construction Activities on Network Upgrades on behalf of Applicant commence, any withdrawal of the Interconnection Request or termination of the Generator Interconnection Agreement by Applicant will be treated in accordance with this Section F.4.e.

(4) Notification and Accounting by Distribution Provider.

Distribution Provider will notify Applicant within three (3) Business Days of liquidating any Interconnection Financial Security. Within seventy-five (75) Calendar Days of any liquidating event, Distribution Provider will provide Applicant with an accounting of the disposition of the proceeds of the liquidated Interconnection Financial Security and all proceeds not otherwise reimbursed to Applicant or applied to costs incurred or irrevocably committed by Distribution Provider on behalf of Applicant in accordance with this Section F.4.e shall be applied as directed by the Commission. Where an Applicant with remaining proceeds from Interconnection Financial Security cannot be located, such remaining proceeds shall escheat to the State pursuant to the Unclaimed Property Law commencing with the California Code of Civil Procedure § 1500. (N)

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Original Cal. P.U.C. Sheet No. 31959-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 95
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

5. COMMISSIONING TESTING AND PARALLEL OPERATION

a. Commissioning Testing

Producer Arranges for and Completes Commissioning Testing of Generating Facility and Producer's Interconnection Facilities: Producer is responsible for testing new Generating Facilities and associated Interconnection Facilities according to Section L.5 to ensure compliance with the safety and reliability provisions of this Rule prior to being operated in parallel with Distribution Provider's Distribution or Transmission System. For non-Certified Equipment, Producer shall develop a written testing plan to be submitted to Distribution Provider for its review and acceptance. Alternatively, Producer and Distribution Provider may agree to have Distribution Provider conduct the required testing at Producer's expense. Where applicable, the test plan shall include the installation test procedures published by the manufacturer of the Generating Facility or Interconnection Facilities. Facility testing shall be conducted at a mutually agreeable time, and depending on who conducts the test, Distribution Provider or Producer shall be given the opportunity to witness the tests.

b. Parallel Operation or Momentary Parallel Operation

Producer shall not commence Parallel Operation of its Generating Facility with Distribution Provider's system unless it has received Distribution Provider's express written permission to do so. Distribution Provider shall authorize Producer's Generating Facility for Parallel Operation or Momentary Parallel Operation with Distribution Provider's Distribution or Transmission System, in writing, within five (5) Calendar Days of satisfactory compliance with the terms of all applicable agreements. Compliance may include, but not be limited to, provision of any required documentation and satisfactorily completing any required inspections or tests as described herein or in the agreements formed between Producer and Distribution Provider. (N)

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Original Cal. P.U.C. Sheet No. 31960-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 96
GENERATING FACILITY INTERCONNECTIONS

F. REVIEW PROCESS FOR INTERCONNECTION REQUESTS (Cont'd.) (N)

6. WITHDRAWAL

Applicant may withdraw its Interconnection Request at any time by written notice of such withdrawal to Distribution Provider. In addition, after receipt of the Interconnection Request, if Applicant fails to adhere to the requirements and timelines of this tariff, except as provided in Section K (Disputes), Distribution Provider shall deem the Interconnection Request to be withdrawn and shall provide written notice to Applicant of the deemed withdrawal within five (5) Business Days and an explanation of the reasons for such deemed withdrawal. Upon receipt of such written notice, Applicant shall have five (5) Business Days in which to either respond with information or action that either cures the deficiency or supports its position that the deemed withdrawal was erroneous and notifies Distribution Provider of its intent to pursue Dispute Resolution. If Applicant cures the deficiency or supports its position that the deemed withdrawal was erroneous, Applicant shall not lose its queue position established pursuant to Section E.5.

Withdrawal shall result in the removal of the Interconnection Request from the Interconnection Study process. If Applicant disputes the withdrawal and removal from the Interconnection Study process and has elected to pursue Dispute Resolution as set forth in Section K, Applicant's Interconnection Request will not be considered in any ongoing Interconnection Study during the Dispute Resolution process.

In the event of such withdrawal, Distribution Provider, subject to the provisions in Section D.7 and Sections E.3.a, as applicable, shall provide, at Applicant's request, all information that Distribution Provider developed for any completed study conducted up to the date of withdrawal of the Interconnection Request. (N)

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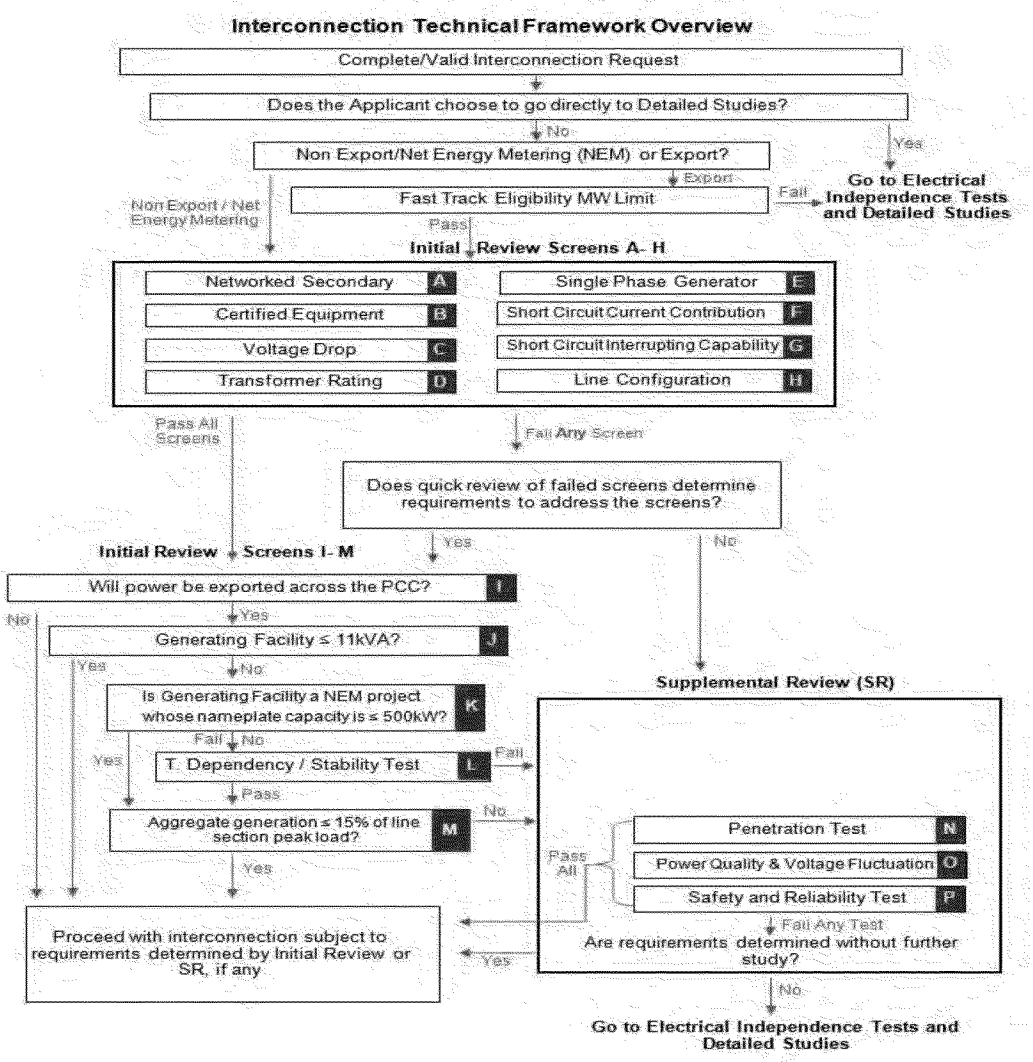
Cancelling Original Cal. P.U.C. Sheet No. 31961-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 97
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (N)



(N)

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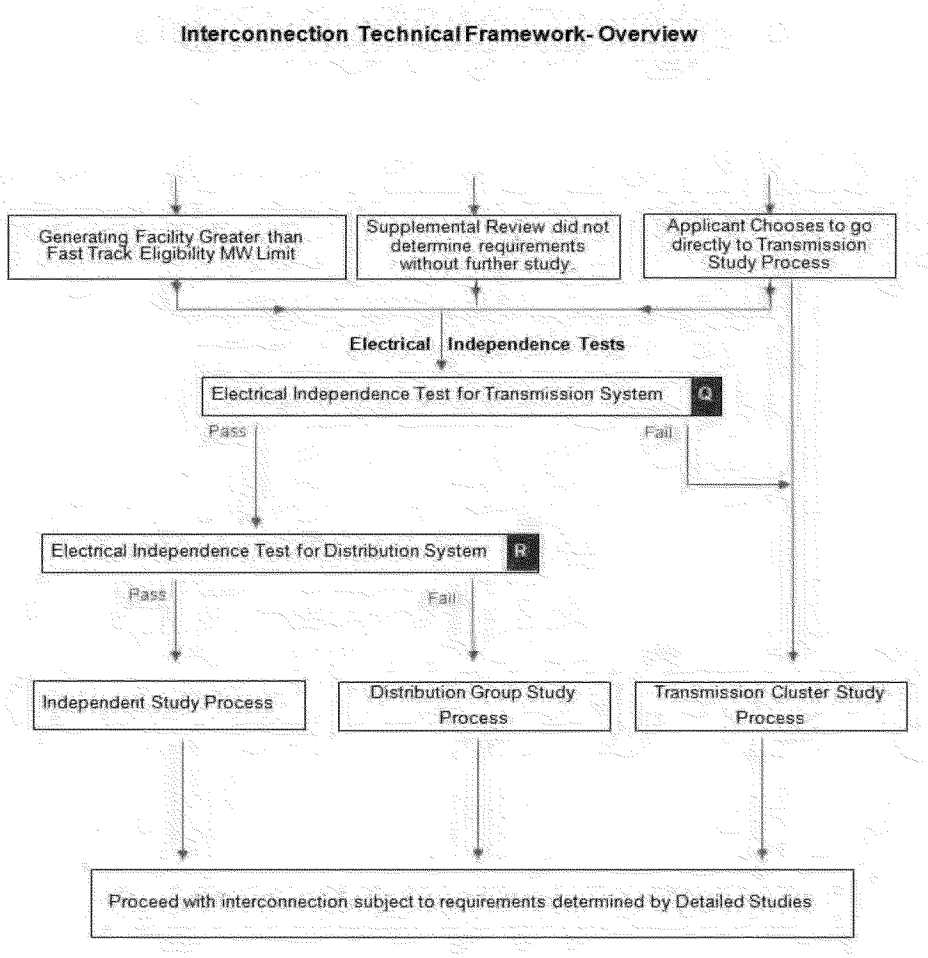
Cancelling Original Cal. P.U.C. Sheet No. 31962-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 98
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)



(N)

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Original *Cal. P.U.C. Sheet No.* 31963-E*
Cancelling *Cal. P.U.C. Sheet No.*

ELECTRIC RULE NO. 21 Sheet 99
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS

The Initial Review consists of Screens A through M. If any of the Screens A through H are not passed, a quick review of the failed Screen(s) may determine the requirements to address the failure(s). Otherwise, Supplemental Review is required.

Some examples of solutions that may be available to mitigate the impact of a failed Screen A through H are:

1. Replace an overloaded distribution transformer with a larger transformer.
2. Replace overloaded secondary conductors with larger conductor.
3. Determine if phase balancing on the transformer is possible with minimal review.
4. If possible without further study check if the Generating Facility will actually overstress equipment.

a. Screen A: Is the PCC on a Networked Secondary System?

- If Yes (fail), must go to Supplemental Review except if the Generating Facility is on a Spot Network and meets the following criteria. If the Generating Facility meets the following criteria, continue to Screen B pursuant to Section G.1.

  The proposed Generating Facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of 5 % of a Spot Network's maximum load or 50 kW. Under no condition shall the interconnection of a Generating Facility result in a backfeed of a Spot Network protectors. (N)

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Original Cal. P.U.C. Sheet No. 31964-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 100
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

a. Screen A: Is the PCC on a Networked Secondary System? (Cont'd.)

- If No (pass), continue to Screen B.

Significance: Special considerations must be given to Generating Facilities proposed to be installed on Networked Secondary Systems because of the design and operational aspects of network protectors. There are no such considerations for radial distribution systems.

b. Screen B: Is Certified Equipment used?

Does the Interconnection Request propose to use Certified Equipment as set out in Section L or does the equipment have interim Distribution Provider approval?

- If Yes (pass), continue to Screen C.

- If No (fail) continue to Screen C pursuant to Section G.1.

Interim approval allows Distribution Provider to treat equipment that has not completed this Rule's Certification requirements as having met the intent of this screen. Interim approval is granted at Distribution Provider's discretion on case by case bases, and approval for one Generating Facility does not guarantee approval for any other Generating Facility.

Significance: If the Generating and/or Interconnection Facility has been Certified or previously approved by Distribution Provider, Distribution Provider does not need to repeat its full review and/or test of the Generating and/or Interconnection Facility's Protective Functions. Site Commissioning Testing may still be required to ensure that the Protective Functions are working properly.

Certification indicates that the criteria in Section L, as appropriate, have been tested and verified. (N)

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Original Cal. P.U.C. Sheet No. 31965-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 101
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

c. Screen C: Is the Starting Voltage Drop within acceptable limits?

- If Yes (pass), continue to Screen D.
- If No (fail), continue to Screen D pursuant to Section G.1.

Note: This Screen only applies to Generating Facilities that start by motoring the Generator(s).

Distribution Provider has two options in determining whether Starting Voltage Drop is acceptable. The option to be used is at Distribution Provider's discretion.

Option 1: Distribution Provider may determine that the Generating Facility's starting In-rush Current is equal to or less than the continuous ampere rating of the Customer's service equipment.

Option 2: Distribution Provider may determine the impedances of the service distribution transformer (if present) and the secondary conductors to Customer's service equipment and perform a voltage drop calculation. Alternatively, Distribution Provider may use tables or nomographs to determine the voltage drop. Voltage drops caused by starting a Generator must be less than 2.5% for primary Interconnections and 5% for secondary Interconnections.

Significance:

1. This Screen addresses potential voltage fluctuation problems that may be caused by Generators that start by motoring.

2. When starting, Generating Facilities should have minimal impact on the service voltage to other Distribution Provider Customers.

3. Passing this Screen does not relieve Producer from ensuring that its Generating Facility complies with the flicker requirements of this Rule, Section H.2.d. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31966-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 102
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

d. Screen D: Is the transformer or secondary conductor rating exceeded?

Do the maximum aggregated Gross Ratings for all the Generating Facilities connected to a secondary distribution transformer exceed the transformer or secondary conductor rating, modified per established Distribution Provider practice, absent any Generating Facilities?

- If Yes (fail), continue to Screen E pursuant to Section G.1.
- If No (pass), continue to screen E.

Significance: This screen addresses potential secondary transformer or secondary conductor overloads. When Distribution Provider's analysis determines a transformer or conductor change is required, Distribution Provider will furnish Applicant with an explanation of why the change is needed.

e. Screen E: Does the Single-Phase Generator cause unacceptable imbalance?

If the proposed Generating Facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, does it cause unacceptable imbalance between the two phases of the 240 volt service?

- If Yes (fail), continue to Screen F pursuant to Section G.1.
- If No (pass), continue to screen F. (N)

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Original Cal. P.U.C. Sheet No. 31967-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 103
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

e. Screen E: Does the Single-Phase Generator cause unacceptable imbalance? (Cont'd.)

Significance: Generating Facilities connected to a single-phase transformer with 120/240 V secondary voltage must be installed such that the aggregated gross output is as balanced as practicable between the two phases of the 240 volt service. When Distribution Provider's analysis determines a transformer change is required. Distribution Provider will furnish the customer with an explanation of why the change is needed.

f. Screen F: Is the Short Circuit Current Contribution Ratio within acceptable limits?

- If Yes (pass), continue to Screen G.
- If No (fail), continue to Screen G pursuant to Section G.1.

Note: This Screen does not apply to Generating Facilities with a Gross Rating of 11 kVA or less.

When measured at primary side (high side) of the Dedicated Distribution Transformer serving a Generating Facility, the sum of the Short Circuit Contribution Ratios of all Generating Facilities connected to Distribution Provider's Distribution System circuit that serves the Generating Facility must be less than or equal to 0.1.

Significance: If the Generating Facility passes this Screen, it can be expected that it will have no significant impact on Distribution Provider's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 31968-E*
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 104
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

g. Screen G: Is the Short Circuit Interrupting Capability Exceeded?

Does the proposed Generating Facility, in aggregate with other Generating Facilities on the distribution circuit, cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Request equipment on the system to exceed 87.5 % of the short circuit interrupting capability; or is the Interconnection proposed for a circuit that already exceeds 87.5 % of the short circuit interrupting capability?

- If Yes (fail) continue to Screen H pursuant to Section G.1.
- If No (pass), continue to Screen H

Note: This Screen does not apply to Generating Facilities with a Gross Rating of 11 kVA or less.

Significance: If the Generating Facility passes this screen, it can be expected that it will not cause any of Distribution Provider's equipment to be overstressed. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 31969-E*
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 105
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

h. Screen H: Is the line configuration compatible with the Interconnection type?

- If Yes (pass), continue to Screen I.
- If No (fail), continue to Screen I pursuant to Section G.1.

Note: This Screen does not apply to Generating Facilities with a Gross Rating of 11 kVA or less

Line Configuration Screen: Identify primary distribution line configuration that will serve the Generating Facility. Based on the type of Interconnection to be used for the Generating Facility, determine from Table G.1 if the proposed Generating Facility passes the Screen.

Table G-1
Type of Interconnection

Primary Distribution Line Type Configuration	Type of Interconnection to be made to Primary Distribution Line	Result/Criteria
Three-phase, three-wire	Any type	Pass Screen
Three-phase, four-wire	Single-phase, line-to-neutral	Pass Screen
Three-phase, four-wire (For any line that has such a section OR mixed three-wire & four-wire)	All others	To pass, aggregate Generating Facility nameplate rating must be less than or equal to 10% of Line Section peak load

(N)

(Continued)

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Cancelling Original Cal. P.U.C. Sheet No. 31970-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 106
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

h. Screen H: Is the line configuration compatible with the Interconnection type? (Cont'd.)

Significance: If the primary distribution line serving the Generating Facility is of a "three-wire" configuration, or if the Generating Facility's distribution transformer is single-phase and connected in a line-to-neutral configuration, then there is no concern about overvoltages to Distribution Provider's, or other Customer's equipment caused by loss of system neutral grounding during the operating time of the Non-Islanding Protective Function.

i. Screen I: Will power be exported across the PCC?

- If Yes, Continue to Screen J.
- If No, then to ensure that the Generating Facility does not export across the PCC, the Generating Facility must incorporate one of the following five options. Following that selection, Initial Review is complete.

Option 1 ("Reverse Power Protection"): To ensure power is never exported across the PCC, a reverse power Protective Function may be provided. The default setting for this Protective Function shall be 0.1% (export) of the service transformer's rating, with a maximum 2.0 second time delay. For multiple tariff interconnections refer to Section J.8. (N)

(Continued)

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Cancelling Original Cal. P.U.C. Sheet No. 31971-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 107
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

i. Screen I: Will power be exported across the PCC? (Cont'd.)

Option 2 ("Minimum Power Protection"): To ensure at least a minimum amount of power is imported across the PCC at all times (and, therefore, that power is not exported), an under-power Protective Function may be provided. The default setting for this Protective Function shall be 5% (import) of Generating Facility's total Gross Rating, with a maximum 2.0 second time delay.

Option 3 (Certified Non-Islanding Protection): To ensure the incidental export of power is limited to acceptable levels, this option requires that all of the following conditions be met: a) the total Gross Capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of Producer's service equipment; b) the total Gross Capacity of the Generating Facility must be no more than 50% of Producer's service transformer capacity rating (this capacity requirement does not apply to Customers taking primary service without an intervening transformer); and c) the Generating Facility must be Certified as Non-Islanding.

The ampere rating of the Customer's service equipment to be used in this evaluation will be that rating for which the customer's utility service was originally sized or for which an upgrade has been approved. It is not the intent of this provision to allow increased export simply by increasing the size of the customer's service panel, without separate approval for the resize. (N)

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Original Cal. P.U.C. Sheet No. 31972-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 108
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

i. Screen I: Will power be exported across the PCC? (Cont'd.)

Option 4 (Relative Generating Facility Rating): This option, when used, requires the Net Rating of the Generating Facility to be so small in comparison to its host facility's minimum load, that the use of additional Protective Functions is not required to ensure that power will not be exported to Distribution Provider's Distribution or Transmission System. This option requires the Generating Facility capacity to be no greater than 50% of Producer's verifiable minimum Host Load over the past 12 months.

Option 5: Inadvertent Export as described in Appendix One.

Significance:

1. If it can be assured that the Generating Facility will not export power, Distribution Provider's Distribution or Transmission System does not need to be studied for load-carrying capability or Generating Facility power flow effects on Distribution Provider voltage regulators.

2. This Screen permits the use of reverse-power or minimum-power relaying as a Non-Islanding Protective Function (Option 1, 2, and 3).

3. This Screen allows, under certain defined conditions, for Generating Facilities that incorporate Certified Non-Islanding protection to qualify for interconnection through the Fast Track process without implementing reverse power or minimum power Protective Functions (Option 3). (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31973-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 109
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

j. Screen J: Is the Gross Rating of the Generating Facility 11 kVA or less?

- If Yes (pass), skip Screens K, L. and M and Initial Review is complete.
- If No (fail), continue to Screen K.

Significance: The Generating Facility will have a minimal impact on fault current levels and any potential line overvoltages from loss of Distribution Provider's Distribution System neutral grounding.

k. Screen K: Is the Generating Facility a Net Energy Metering (NEM) Generating Facility with nameplate capacity less than or equal to 500 kW?

- If Yes (pass), skip screen L and continue to screen M.
- If No (fail), continue to screen L.

Significance: The purpose of this Screen is solely to facilitate interconnection of NEM facilities below this size threshold by allowing such facilities to bypass Screen M. The use of nameplate capacity expedites the Initial Review analysis. In Supplemental Review, the net export will be analyzed. (N)

(Continued)

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Cancelling Original Cal. P.U.C. Sheet No. 31974-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 110
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

l. Screen L: Transmission Dependency and Transmission Stability Test

Is the Interconnection Request for an area where: (i) there are known, or posted, transient stability limitations, or (ii) the proposed Generating Facility has interdependencies, known to Distribution Provider, with earlier-queued Transmission System interconnection requests. Where (i) or (ii) above are met, the impacts of this Interconnection Request to the Transmission System may require Detailed Study.

- If Yes (fail), Supplemental Review is required.
- If No (pass), continue to Screen M.

Significance: Special consideration must be given to those areas identified as having current or future (due to currently-queued interconnection requests) grid stability concerns.

m. Screen M: Is the aggregate Generating Facility capacity on the Line Section less than 15% of Line Section peak load for all line sections bounded by automatic sectionalizing devices?

- If Yes (pass), Initial Review is complete.
- If No (fail), Supplemental Review is required.

Significance:

1. Low penetration of Generating Facility capacity will have a minimal impact on the operation and load restoration efforts of Distribution Provider's Distribution System. (N)

(Continued)

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Cancelling

Original Cal. P.U.C. Sheet No. 31975-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 111
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

1. INITIAL REVIEW SCREENS (Cont'd.)

m. Screen M: Is the aggregate Generating Facility capacity on the Line Section less than 15% of Line Section peak load for all line sections bounded by automatic sectionalizing devices? (Cont'd.)

2. The operating requirements for a high penetration of Generating Facility capacity may be different since the impact on Distribution Provider's Distribution System will no longer be minimal, therefore requiring additional study or controls.

The purpose of this Screen is solely to identify if the Generating Facility needs additional study and is not intended as justification for limiting the penetration of generation on a line section.

2. SUPPLEMENTAL REVIEW SCREENS

The Supplemental Review consists of Screens N through P. If any of the Screens are not passed, a quick review of the failed Screen(s) will determine the requirements to address the failure(s) or that Detailed Studies are required. In certain instances, Distribution Provider may be able to identify the necessary solution and determine that Detailed Studies are unnecessary. Some examples of solutions that may be available to mitigate the impact of a failed Screen are:

1. Replacing a fixed capacitor bank with a switched capacitor bank.

2. Adjustment of line regulation settings.

3. Simple reconfiguration of the distribution circuit. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 31976-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 112
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test

Where 12 months of line section minimum load data is available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate Generating Facility capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the Generating Facility?

- If yes (pass), continue to Screen O.
- If no (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen O. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens, if Applicant elects to proceed.)

Note 1: If none of the above options are available, this screen defaults to Screen N.

Note 2: The type of Generating Facility technology will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. For solar Generating Facilities with no battery storage, daytime minimum load will be used (i.e., 10 am to 4 pm for fixed panel solar Generating Facilities and 8 am to 6 pm for solar Generating Facilities utilizing tracking systems), while absolute minimum load will be used for all other Generating Facility technologies.

Note 3: When this screen is being applied to a NEM Generating Facility, the net export in kW, if known, that may flow across the Point of Common Coupling into Distribution Provider's Distribution System will be considered as part of the aggregate generation. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31977-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 113
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

a. Screen N: Penetration Test (Cont'd.)

Note 4: Distribution Provider will not consider as part of the aggregate Generating Facility capacity for purposes of this screen Generating Facility capacity known to be already reflected in the minimum load data.

Note 5: NEM Generating Facilities with net export less than or equal to 500 kW that may flow across the Point of Common Coupling into Distribution Provider's Distribution or Transmission System will not be studied in the Transmission Cluster Study Process, but may be studied under the Independent Study Process.

Significance: Penetration of Generating Facility capacity that does not result in power flow from the circuit back toward the substation will have a minimal impact on equipment loading, operation, and protection of the Distribution System.

b. Screen O: Power Quality and Voltage Tests

In aggregate with existing Generating Facility capacity on the Line Section, distribution circuit, and/or substation.

a) Can it be determined within the Supplemental Review that the voltage regulation on the line section can be maintained in compliance with Commission Rule 2 and/or Conservation Voltage Regulation voltage requirements under all system conditions?

b) Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE 1453 or utility practice similar to IEEE1453? (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31978-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 114
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

b. Screen O: Power Quality and Voltage Tests

In aggregate with existing generation on the line section (Cont'd.)

c) Can it be determined within the Supplemental Review that the harmonic levels meet IEEE 519 limits at the Point of Common Coupling (PCC)?

- If yes to all of the above (pass), continue to Screen P.
- If no to any of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Screen P. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens.)

Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider's Distribution System caused by operation of the Generating Facility(ies).

c. Screen P: Safety and Reliability Tests

Does the location of the proposed Generating Facility or the aggregate generation capacity on the Line Section create impacts to safety or reliability that cannot be adequately addressed without Detailed Study?

- If yes (fail), review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Section G.3.
- If no (pass), Supplemental Review is complete. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31979-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 115
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

c. Screen P: Safety and Reliability Tests (Cont'd.)

Significance: In the safety and reliability test, there are several factors that may affect the nature and performance of an Interconnection. These include, but are not limited to:

1. Generating Facility energy source
2. Modes of synchronization
3. Unique system topology
4. Possible impacts to critical load customers
5. Possible safety impacts

The specific combination of these factors will determine if any system study requirements are needed. The following are some examples of the items that may be considered under this screen:

1. Does the Line Section have significant minimum loading levels dominated by a small number of customers (i.e. several large commercial customers)?
2. Is there an even or uneven distribution of loading along the feeder?
3. Is the proposed Generating Facility located in close proximity to the substation (i.e. <2.5 electrical line miles), and is the distribution line from the substation to the customer composed of large conductor/cable (i.e. 600A class cable)? (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31980-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 116
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

2. SUPPLEMENTAL REVIEW SCREENS (Cont'd.)

c. Screen P: Safety and Reliability Tests (Cont'd.)

4. Does the Generating Facility incorporate a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time?

5. Is operational flexibility reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues?

6. Does the Generating Facility utilize Certified anti-islanding functions and equipment?

3. DETAILED STUDY SCREENS

a. Screen Q: Is the Interconnection Request electrically Independent of the Transmission System?

Distribution Provider, in consultation with the CAISO, will determine, based on knowledge of the interdependencies with earlier-queued interconnection requests under any tariff, whether the Interconnection Request to the Distribution System is of sufficient MW size and located at a point of interconnection such that it is reasonably anticipated to require or contribute to the need for Network Upgrades. If Distribution Provider determines that no interdependencies exist as described above, then the Interconnection Request will be deemed to have passed Distribution Provider's Determination of Electrical Independence for the CAISO Controlled Grid. If Distribution Provider determines that interdependencies exist as described above, then Applicant may be studied under the Transmission Cluster Study Process as set forth in Section F.3.c. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31981-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 117
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

3. DETAILED STUDY SCREENS (Cont'd.)

a. Screen Q: Is the Interconnection Request electrically Independent of the Transmission System? (Cont'd.)

Distribution Provider will coordinate with the CAISO if necessary to conduct the Determination of Electrical Independence for the CAISO Controlled Grid as set forth in Section 4.2 of Appendix Y to the CAISO Tariff. The results of the incremental power flow, aggregate power flow, and short-circuit current contribution tests set out in Section 4.2 of Appendix Y to the CAISO Tariff will determine whether the Interconnection Request is electrically independent from the CAISO Controlled Grid.

- If Yes (pass), continue to Screen R.
- If No (fail), proceed to Section F.3.c.

Note 1: NEM Generating Facilities with net export less than or equal to 500 kW that may flow across the Point of Common Coupling will not be studied in the Transmission Cluster Study Process, but may be studied under the Independent Study Process.

Significance: Generating Facilities that are interdependent with the Transmission System must be studied with other interconnection requests that have Transmission System interdependencies. It is possible to pass this Screen Q (i.e., be found to have no electrical interdependencies with earlier-queued Distribution System and/or Transmission System interconnection requests as set out above), be studied under the Independent Study Process, and still trigger a Reliability Network Upgrade. (N)

(Continued)

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Cancelling Original Cal. P.U.C. Sheet No. 31982-E*
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 118
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

3. DETAILED STUDY SCREENS (Cont'd.)

b. Screen R: Is the Interconnection Request independent of other earlier-queued and yet to be studied interconnection requests interconnecting to the Distribution System?

For Interconnection Requests that are electrically independent from the CAISO Controlled Grid, Distribution Provider will evaluate each Interconnection Request for known or reasonably anticipated relationships between the Interconnection Request and any earlier-queued interconnection requests in the Distribution Group Study Process, the Independent Study Process, or interconnection requests studied under predecessor interconnection procedures that have yet to complete their respective interconnection studies. Distribution Provider may conduct incremental power flow, aggregate power flow, and/or short-circuit duty tests using existing interconnection studies, Base Case data, overall system knowledge, and engineering judgment to determine whether an Interconnection Request can be studied independently of earlier-queued interconnection requests. If the Interconnection Request being evaluated for electrical independence on the Distribution System may be electrically related to earlier-queued interconnection requests that have yet to complete interconnection studies, then it fails the evaluation of electrical independence for the Distribution System.

- If Yes (pass), continue to Independent Study Process
- If No (fail), continue to the Distribution Group Study Process

Significance: Interconnection Requests that are electrically related to earlier-queued interconnection requests that have not yet been studied do not qualify for independent study. (N)

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Original Cal. P.U.C. Sheet No. 31983-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 119
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process Interconnection Studies

The Interconnection Studies shall consist of an Interconnection System Impact Study and an Interconnection Facilities Study. The Interconnection Studies will identify Interconnection Facilities, Distribution Upgrades and Reliability Network Upgrades necessary to mitigate thermal overloads and voltage violations, and address short circuit, stability, and reliability issues associated with the requested Interconnection Service. If Distribution Provider anticipates that Reliability Network Upgrades will be required, or the Interconnection Studies identify the need for Reliability Network Upgrades, then Distribution Provider will coordinate with the CAISO during the study process as set forth in Section F.3.d above.

i) Interconnection System Impact Study.

(1) Scope of the Interconnection System Impact Study.

The Interconnection System Impact Study may consist of a localized short circuit analysis, a stability analysis, a power flow analysis, and any other studies that are deemed necessary. The localized short circuit analysis will evaluate impacts to the Distribution and Transmission System only with any local short circuit-duty related Reliability Network Upgrades allocated to the Generating Facility that requires the upgrades. Short circuit duty impacts to the CAISO Controlled Grid are appropriately evaluated only in the Transmission Cluster Study Process as set forth in Section F.3.c. The short circuit duty contribution of any Interconnection Requests studied in the Independent Study Process that are subsequently identified in the Cluster Study Process will be allocated its pro rata share of the short circuit duty-related Reliability Network Upgrades on the basis of the short circuit duty contribution of each Generating Facility. (N)

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Original Cal. P.U.C. Sheet No. 31984-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 120
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process Interconnection Studies (Cont'd.)

i) Interconnection System Impact Study. (Cont'd.)

(1) Scope of the Interconnection System Impact Study. (Cont'd.)

The Interconnection System Impact Study shall state the assumptions upon which it is based, state the results of the analyses, and provide the requirement or potential impediments to providing the requested Interconnection Service, including a preliminary indication of the cost and length of time that would be necessary to correct any problems identified in those analyses and implement the Interconnection.

The Interconnection System Impact Study shall provide a list of Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Reliability Network Upgrades that are required as a result of the Interconnection Request along with a non-binding good faith estimate of cost responsibility and the amount of construction time required. (N)

(Continued)

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Cancelling Original Cal. P.U.C. Sheet No. 31985-E
Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 121
GENERATING FACILITY INTERCONNECTIONS

G. ENGINEERING REVIEW DETAILS (Cont'd.) (N)

3. DETAILED STUDY SCREENS (Cont'd.)

c. Independent Study Process Interconnection Studies (Cont'd.)

ii) Interconnection Facilities Study.

(1) Scope and Purpose of the Interconnection Facilities Study.

The Interconnection Facilities Study shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the Interconnection System Impact Study technical analyses in accordance with Good Utility Practice to physically and electrically connect the Generating Facility to the Distribution or Transmission System. The Interconnection Facilities Study shall also identify (i) the electrical switching configuration of the connection equipment, including, without limitation: the transformer, switchgear, meters, and other station equipment; the nature and estimated cost of any Distribution Provider's Interconnection Facilities, Distribution Upgrades, and Network Upgrades necessary to accomplish the interconnection; and an estimate of the time required to complete the construction and installation of such facilities.

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS

This section is consistent with the requirements of ANSI/IEEE 1547-2003 Standard for Interconnecting Distributed Resources with Electric Power Systems (IEEE 1547). Exceptions are taken to IEEE 1547 Clauses 4.1.4.2 Distribution Secondary Spot Networks and Clauses 4.1.8.1 or 5.1.3.1, which address Protection from Electromagnetic Interference. These are being studied for inclusion in a subsequent version of this Rule. Also, Rule 21 does not adopt the Generating Facility power limitation of 10 MW incorporated in IEEE 1547. (N)

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Original *Cal. P.U.C. Sheet No.* 31986-E
Cancelling *Cal. P.U.C. Sheet No.*

ELECTRIC RULE NO. 21 Sheet 122
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS

The Protective Functions and requirements of this Rule are designed to protect Distribution Provider's Distribution and Transmission System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. Producer's Protective Functions shall not impact the operation of other Protective Functions on Distribution Provider's Distribution and Transmission System in a manner that would affect Distribution Provider's capability of providing reliable service to its customers.

a. Protective Functions Required

Generating Facilities operating in parallel with Distribution Provider's Distribution or Transmission System shall be equipped with the following Protective Functions to sense abnormal conditions on Distribution Provider's Distribution or Transmission System and cause the Generating Facility to be automatically disconnected from Distribution Provider's Distribution or Transmission System or to prevent the Generating Facility from being connected to Distribution Provider's Distribution or Transmission System inappropriately:

(1) Over and under voltage trip functions and over and under frequency trip functions;

(2) A voltage and frequency sensing and time-delay function to prevent the Generating Facility from energizing a de-energized Distribution or Transmission System circuit and to prevent the Generating Facility from reconnecting with Distribution Provider's Distribution or Transmission System unless Distribution Provider's Distribution System service voltage and frequency is within the ANSI C84.1-1995 Table 1 Range B voltage Range of 106 volts to 127 volts (on a 120 volt basis), inclusive, and a frequency range of 59.3 Hz to 60.5 Hz, inclusive, and are stable for at least 60 seconds; and (N)

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Original Cal. P.U.C. Sheet No. 31987-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 123
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

a. Protective Functions Required (Cont'd.)

(3) A function to prevent the Generating Facility from contributing to the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution System within two seconds of the formation of an Unintended Island.

The Generating Facility shall cease to energize Distribution Provider's Distribution System for faults on Distribution Provider's Distribution System circuit to which it is connected (IEEE 1547-4.2.1). The Generating Facility shall cease to energize Distribution Provider's Distribution circuit prior to re-closure by Distribution Provider's Distribution System equipment (IEEE 1547-4.2.2).

b. Momentary Paralleling Generating Facilities

With Distribution Provider's approval, the transfer switch or scheme used to transfer Producer's loads from Distribution Provider's Distribution or Transmission System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation. (N)

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Original Cal. P.U.C. Sheet No. 31988-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 124
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

c. Suitable Equipment Required

Circuit breakers or other interrupting equipment located at the Point of Common Coupling (PCC) must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being capable of interrupting the maximum available fault current expected at their location. Producer's Generating Facility and Interconnection Facilities shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of Distribution Provider's Distribution and Transmission System. The Generating Facility paralleling-device shall be capable of withstanding 220% of the Interconnection Facility rated voltage (IEEE 1547-4.1.8.3). The Interconnection Facility shall have the capability to withstand voltage and current surges in accordance with the environments defined in IEEE Std C62.41.2-2002 or IEEE Std C37.90.1-2002 as applicable and as described in L.3.e (IEEE 1547-4.1.8.2).

d. Visible Disconnect Required

When required by Distribution Provider's operating practices, Producer shall furnish and install a ganged, manually-operated isolating switch (or a comparable device mutually agreed upon by Distribution Provider and Producer) near the Point of Interconnection to isolate the Generating Facility from Distribution Provider's Distribution or Transmission System. The device does not have to be rated for load break nor provide over-current protection. (N)

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ELECTRIC RULE NO. 21 Sheet 125
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

d. Visible Disconnect Required (Cont'd.)

The device must:

(1) allow visible verification that separation has been accomplished. (This requirement may be met by opening the enclosure to observe contact separation.)

(2) include markings or signage that clearly indicates open and closed positions.

(3) a) for Emergency purposes be capable of being reached quickly and conveniently 24 hours a day by Distribution Provider personnel for construction, operation, maintenance, inspection, testing or to isolate the Generating Facility from Distribution Provider's Distribution or Transmission System without obstacles or requiring those seeking access to obtain keys, special permission, or security clearances.

(3) b) for Non-Emergency purposes be capable of being reached during normal business hours. Distribution Provider, where possible, will provide notice to Customer for gaining access to Customer's premises.

(4) be capable of being locked in the open position (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

1. GENERAL INTERCONNECTION AND PROTECTIVE FUNCTION REQUIREMENTS (Cont'd.)

d. Visible Disconnect Required (Cont'd.)

(5) be clearly marked on the submitted single line diagram and its type and location approved by Distribution Provider prior to installation. If the device is not adjacent to the PCC, permanent signage must be installed at a Distribution Provider approved location providing a clear description of the location of the device. If the switch is not accessible outside the locked premises, signage with contact information and a Distribution Provider approved locking device for the premises shall be installed.

Generating Facilities with Non-Islanding inverters totaling one (1) kilovolt-ampere (kVA) or less are exempt from this requirement.

e. Drawings Required

Prior to Parallel Operation or Momentary Parallel Operation of the Generating Facility, Distribution Provider shall approve Producer's Protective Function and control diagrams. Generating Facilities equipped with Protective Functions and a control scheme previously approved by Distribution Provider for system-wide application or only Certified Equipment may satisfy this requirement by reference to previously approved drawings and diagrams.

f. Generating Facility Conditions Not Identified

In the event this Rule does not address the Interconnection conditions for a particular Generating Facility, Distribution Provider and Producer may agree upon other arrangements. (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE

Producer shall not operate Generating or Interconnection Facilities that superimpose a voltage or current upon Distribution Provider's Distribution or Transmission System that interferes with Distribution Provider operations, service to Distribution Provider Customers, or communication facilities. If such interference occurs, Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by Distribution Provider. If Producer does not take corrective action in a timely manner, or continues to operate the facilities causing interference without restriction or limit, Distribution Provider may, without liability, disconnect Producer's facilities from Distribution Provider's Distribution or Transmission System, in accordance with Section D.9 of this Rule. To eliminate undesirable interference caused by its operation, each Generating Facility shall meet the following criteria:

a. Voltage Regulation

The Generating Facility shall not actively regulate the voltage at the PCC while in parallel with Distribution Provider's Distribution System. The Generating Facility shall not cause the service voltage at other customers to go outside the requirements of ANSI C84.1-1995, Range A (IEEE 1547-4.1.1). (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting

The voltage ranges in Table H.1 define protective trip limits for the Protective Function and are not intended to define or imply a voltage regulation Function. Generating Facilities shall cease to energize Distribution Provider's Distribution System within the prescribed trip time whenever the voltage at the PCC deviates from the allowable voltage operating range. The Protection Function shall detect and respond to voltage on all phases to which the Generating Facility is connected.

i) Generating Facilities (30 kVA or less)

Generating Facilities with a Gross Rating of 30 kVA or less shall be capable of operating within the voltage range normally experienced on Distribution Provider's Distribution System from plus to minus 5% of the nominal voltage (e.g. 114 volts to 126 volts, on a 120 volt base), at the service panel or PCC. The trip settings at the generator terminals may be selected in a manner that minimizes nuisance tripping between 106 volts and 132 volts on a 120-volt base (88%-110% of nominal voltage) to compensate for voltage drop between the generator terminals and the PCC. Voltage may be detected at either the PCC or the Point of Interconnection. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal. (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting (Cont'd.)

ii) Generating Facilities (greater than 30 kVA)

Distribution Provider may have specific operating voltage ranges for Generating Facilities with Gross Ratings greater than 30 kVA, and may require adjustable operating voltage settings. In the absence of such requirements, the Generating Facility shall be capable of operating at a range between 88% and 110% of the applicable interconnection voltage. Voltage shall be detected at either the PCC or the Point of Interconnection, with settings compensated to account for the voltage at the PCC. However, the voltage range at the PCC, with the generator on-line, shall stay within +/-5% of nominal.

iii) Voltage Disturbances

Whenever Distribution Provider's Distribution System voltage at the PCC varies from and remains outside normal (Nominally 120 volts) for the predetermined parameters set forth in Table H-1, the Generating Facility's Protective Functions shall cause the Generator(s) to become isolated from Distribution Provider's Distribution System: (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

b. Voltage Trip Setting (Cont'd.)

iii) Voltage Disturbances (Cont'd.)

Table H.1: Voltage Trip Settings for Generating Facilities*			
Voltage at Point of Common Coupling (the ranges below are used to trip the generator during abnormal distribution system conditions)		Maximum Trip Time**	
Assuming 120 Volt Base	% of Nominal Voltage	# of Cycles (Assuming 60 Hz Nominal)	Seconds
Less than 60 volts	Less than 50%	10 Cycles	0.16 Seconds
Greater than or equal to 60 volts but less than 106 volts	Greater than or equal to 50% but less than 88%	120 Cycles	2 Seconds
Greater than 132 volts but less than or equal to 144 volts	Greater than 110% but less than or equal to 120%	60 Cycles	1 Second
Greater than 144 volts	Greater than 120%	10 Cycles	0.16 Seconds

**For Generating Facilities with a Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table H.1 may be negotiated with Distribution Provider*

*** "Maximum Trip Time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize Distribution Provider's Distribution System. Protective Function equipment and circuits may remain connected to Distribution Provider's Distribution System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow for a Generating Facility to minimize tripping during short term system disturbances. Set points shall not be user adjustable for generating facilities less than 30 kW.*

(N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

c. Paralleling

The Generating Facility shall parallel with Distribution Provider's Distribution or Transmission System without causing a voltage fluctuation at the PCC greater than plus/minus 5% of the prevailing voltage level of Distribution Provider's Distribution or Transmission System at the PCC, and meet the flicker requirements of Section H.2.d. Section L, Certification and Testing Criteria, provides technology-specific tests for evaluating the paralleling Function. (IEEE 1547-4.1.3)

d. Flicker

The Generating Facility shall not create objectionable flicker for other customers on Distribution Provider's Distribution or Transmission System. To minimize the adverse voltage effects experienced by other customers (IEEE 1547-4.3.2), flicker at the PCC caused by the Generating Facility should not exceed the limits defined by the "Maximum Borderline of Irritation Curve" identified in IEEE 519-1992 (IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, IEEE STD 519-1992). This requirement is necessary to minimize the adverse voltage affects experienced by other Customers on Distribution Provider's Distribution or Transmission System. Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded. (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

e. Integration with Distribution Provider's Distribution System Grounding

The grounding scheme of the Generating Facility shall not cause over-voltages that exceed the rating of the equipment connected to Distribution Provider's Distribution System and shall not disrupt the coordination of the ground fault protection on Distribution Provider's Distribution System (IEEE 1547-4.1.2) (See Section G.1.i, line configuration).

f. Frequency

Distribution Provider controls system frequency, and the Generating Facility shall operate in synchronism with Distribution Provider's Distribution or Transmission System. Whenever Distribution Provider's Distribution or Transmission System frequency at the PCC varies from and remains outside normal (nominally 60 Hz) by the predetermined amounts set forth in Table H.2, the Generating Facility's Protective Functions shall cease to energize Distribution Provider's Distribution or Transmission System within the stated maximum trip time. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 31997-E
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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

f. Frequency (Cont'd.)

Table H.2
Frequency Trip Settings

Generating Facility Rating	Frequency Range (Assuming 60Hz Nominal)	Maximum Trip Time *[1]* (Assuming 60 Cycles per Second)
Less or equal to 30kW	Less than 59.3 Hz	10 Cycles
	Greater than 60.5 Hz	10 Cycles
Greater than 30 kW	Less than 57.0 Hz	10 Cycles
	Less than an adjustable value between 59.8 Hz and 57 Hz but greater than 57 Hz. *[2]*	Adjustable between 10 and 18,000 Cycles. *[2, 3]*
	Greater than 60.5 Hz.	10 Cycles

[1] – "Maximum Trip time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize Distribution Provider's Distribution or Transmission System. Protective Function sensing equipment and circuits may remain connected to Distribution Provider's Distribution or Transmission System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow a Generating Facility to "ride through" short-term disturbances to avoid nuisance tripping. Set points shall not be user adjustable (though they may be field adjustable by qualified personnel). For Generating Facilities with a Gross Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table H.2 may be negotiated with Distribution Provider.

[2] – Unless otherwise required by Distribution Provider, a trip frequency of 59.3 Hz and a maximum trip time of 10 cycles shall be used.

[3] – When a 10 cycle Maximum trip time is used, a second under frequency trip setting is not required. (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

g. Harmonics

When the Generating Facility is serving balanced linear loads, harmonic current injection into Distribution Provider's Distribution or Transmission System at the PCC shall not exceed the limits stated in Table H.3. The harmonic current injections shall be exclusive of any harmonic currents due to harmonic voltage distortion present in Distribution Provider's Distribution or Transmission System without the Generating Facility connected (IEEE 1547-4.3.3.). The harmonic distortion of a Generating Facility shall be evaluated using the same criteria as for the Host Loads.

Table H.3

Maximum harmonic current distortion in percent of current (I) [1,2]

Individual harmonic order, h (odd harmonics) [3]	h<11	11≤ h<17	17≤ h<23	23≤ h<35	35≤ h	Total demand distortion
Max Distortion (%)	4.0	2.0	1.5	0.6	0.3	5.0

[1] – IEEE1547-4.3.3
[2] – I = the greater of the maximum Host Load current average demand over 15 or 30 minutes without the GF, or the GF rated current capacity (transformed to the PCC when a transformer exists between the GF and the PCC).
[3] – Even harmonics are limited to 25% of the odd harmonic limits above. (N)

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ELECTRIC RULE NO. 21 Sheet 135
GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

2. PREVENTION OF INTERFERENCE (Cont'd.)

h. Direct Current Injection

Generating Facilities should not inject direct current greater than 0.5% of rated output current into Distribution Provider's Distribution or Transmission System.

i. Power Factor

Producer shall provide adequate reactive power compensation on site to maintain the Generating Facility power factor near unity at rated output or a Distribution Provider specified power factor within a power factor range from 0.9 leading to 0.9 lagging, based on local system conditions. While not required, for generators that do not have inherent reactive power control capability Distribution Provider at its option may offer reactive power support in the form of power factor correction capacitors on its Distribution or Transmission System, under a Generator Interconnection Agreement or an Added Facilities or Special Facilities agreement, as described in Rule 2.H, as applicable. (N)

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Original Cal. P.U.C. Sheet No. 32000-E
Cancelling Cal. P.U.C. Sheet No.

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

3. TECHNOLOGY SPECIFIC REQUIREMENTS

a. Technology Specific Requirements

Three-Phase Synchronous Generators: For three phase Generators, the Generating Facility circuit breakers shall be three-phase devices with electronic or electromechanical control. Producer shall be responsible for properly synchronizing its Generating Facility with Distribution Provider's Distribution or Transmission System by means of either manual or automatic synchronous equipment. Automatic synchronizing is required for all synchronous Generators that have a Short Circuit Contribution Ratio (SCCR) exceeding 0.05. Loss of synchronism protection is not required except as may be necessary to meet Section H.2.d (Flicker) (IEEE1547-4.2.5). Unless otherwise agreed upon by Producer and Distribution Provider, synchronous Generators shall automatically regulate power factor, not voltage, while operating in parallel with Distribution Provider's Distribution System. A power system stabilization Function is specifically not required for Generating Facilities under 10 MW Net Rating.

b. Induction Generators

Induction Generators (except self-excited Induction Generators) do not require a synchronizing Function. Starting or rapid load fluctuations on induction Generators can adversely impact Distribution Provider's Distribution or Transmission System voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferro-resonance. When these counter measures (e.g. additional capacitors) are installed on Producer's side of the PCC, Distribution Provider must review these measures. Additional equipment may be required as determined in a Supplemental Review or an Interconnection Study. (N)

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Cancelling Original Cal. P.U.C. Sheet No. 32001-E
Cal. P.U.C. Sheet No.

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

3. TECHNOLOGY SPECIFIC REQUIREMENTS (Cont'd.)

c. Inverters

Grid-interactive inverters do not require separate synchronizing equipment. Non-grid-interactive or "stand-alone" inverters shall not be used for Parallel Operation with Distribution Provider's Distribution or Transmission System.

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS

a. Fault Detection

A Generating Facility with an SCCR exceeding 0.1 or one that does not cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the formation of an Unintended Island shall be equipped with Protective Functions designed to detect Distribution or Transmission System faults, both line-to-line and line-to-ground, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds of the initiation of a fault.

b. Transfer Trip

For a Generating Facility that cannot detect Distribution or Transmission System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize Distribution Provider's Distribution or Transmission System within two seconds, Distribution Provider may require a Transfer Trip system or an equivalent Protective Function. (N)

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Original Cal. P.U.C. Sheet No. 32002-E
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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (Cont'd.) (N)

4. SUPPLEMENTAL GENERATING FACILITY REQUIREMENTS (Cont'd.)

c. Reclose Blocking

Where the aggregate Generating Facility capacity exceeds 15% of the peak load on any automatic reclosing device, Distribution Provider may require additional Protective Functions, including, but not limited to recluse-blocking on some of the automatic reclosing devices.

I. THIRD-PARTY INSTALLATIONS, RESERVATION OF UNUSED FACILITIES, AND REFUND OF SALVAGE VALUE

1. INTERCONNECTION FACILITIES AND DISTRIBUTION UPGRADES

Except as provided for in the Generator Interconnection Agreement of this Rule, Interconnection Facilities connected to Distribution Provider's side of the PCC and Distribution Upgrades shall be provided, installed, owned, and maintained by Distribution Provider at Producer's expense.

2. THIRD-PARTY INSTALLATIONS

Subject to the approval of Distribution Provider, a Producer may, at its option, employ a qualified contractor to provide and install Interconnection Facilities or Distribution Upgrades, to be owned and operated by Distribution Provider, on Distribution Provider's side of the PCC. Such Interconnection Facilities and Distribution Upgrades shall be installed in accordance with Distribution Provider's design and specifications. Upon final inspection and acceptance by Distribution Provider, Producer shall transfer ownership of such Producer installed Interconnection Facilities or Distribution Upgrades to Distribution Provider and such facilities shall thereafter be owned and maintained by Distribution Provider at Producer's expense. Producer shall pay Distribution Provider's reasonable cost of design, administration, and monitoring of the installation for such facilities to ensure compliance with Distribution Provider's requirements. Producer shall also be responsible for all costs, including any income tax liability, associated with the transfer of Producer installed Interconnection Facilities and Distribution Upgrades to Distribution Provider. (N)

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GENERATING FACILITY INTERCONNECTIONS

H. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS (N)
(Cont'd.)

3. RESERVATION OF UNUSED FACILITIES

When a Producer wishes to reserve Distribution Provider-owned Interconnection Facilities or Distribution Upgrades installed and operated as Added Facilities for Producer at Producer's expense, but idled by a change in the operation of Producer's Generating Facility or otherwise, Producer may elect to abandon or reserve such facilities consistent with the terms of its agreement with Distribution Provider. If Producer elects to reserve idle Interconnection Facilities or Distribution Upgrades, Distribution Provider shall be entitled to continue to charge Producer for the costs related to the ongoing operation and maintenance of the Added Facilities.

4. REFUND OF SALVAGE VALUE

When a Producer elects to abandon the Special Facilities or Added Facilities for which it has either advanced the installed costs or constructed and transferred to Distribution Provider, Producer shall, at a minimum, receive from Distribution Provider a credit for the net salvage value of the Added Facilities.

J. METERING, MONITORING AND TELEMETERING

1. GENERAL REQUIREMENTS

All Generating Facilities shall be metered in accordance with this Section J and shall meet all applicable standards of Distribution Provider contained in Distribution Provider's applicable tariffs and published Distribution Provider manuals dealing with Metering specifications.

2. METERING BY NON-DISTRIBUTION PROVIDER PARTIES

The ownership, installation, operation, reading, and testing of revenue Metering Equipment for Generating Facilities shall be by Distribution Provider except to the extent that the Commission authorizes any or all these services be performed by others. (N)

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Cancelling

Original Cal. P.U.C. Sheet No. 32004-E
Cal. P.U.C. Sheet No.

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GENERATING FACILITY INTERCONNECTIONS

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (N)

3. NET GENERATION OUTPUT METERING

Generating Facility customers may be required to install Net Generation Output Metering for evaluation, monitoring, and verification purposes and to determine applicable standby and non-bypassable charges as defined in Distribution Provider's tariffs, to satisfy applicable California Independent System Operator (CAISO) reliability requirements, and for Distribution System planning and operations.

However, Generating Facility customers do not need to install Net Generation Output Metering where less intrusive and/or more cost effective options, for Producer/Customer, are available for providing generator data to Distribution Provider. These Generating Facilities may opt to have Distribution Provider estimate load data in accordance with Distribution Provider's applicable tariffs to determine or meet applicable standby and non-bypassable and other applicable charges and tariff requirements. However, if a Generating Facility customer objects to Distribution Provider's estimate of the Generator(s) output, the customer may elect to install the Net Generation Output Metering, or have Distribution Provider install Net Generation Output Metering at the customer's expense.

(a) All metering options available to the customer must conform to the requirements set forth in Distribution Provider's Rule 22. If Distribution Provider does not receive meter data in accordance with Rule 22, Distribution Provider shall have the right to install Distribution Provider-owned Net Generation Output Metering at the customer's expense. The relevant factors in determining the need for Net Generation Output Metering are as listed below:

(a) Data requirements in proportion to need for information;

(b) Producer's election to install equipment that adequately addresses Distribution Provider's operational requirements; (N)

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J. METERING, MONITORING AND TELEMETERING (Cont'd.) (N)

3. NET GENERATION OUTPUT METERING (Cont'd.)

(c) Accuracy and type of required Metering consistent with purposes of collecting data;

(d) Cost of Metering relative to the need for and accuracy of the data;

(e) The Generating Facility's size relative to the cost of the Metering/monitoring;

(f) Other means of obtaining the data (e.g. Generating Facility logs, proxy data, etc.);

(g) Requirements under any Generator Interconnection Agreement with Producer.

The requirements in this Section may not apply to Metering of Generating Facilities operating under Distribution Provider's Net Energy Metering tariff pursuant to California PUC section 2827, et seq. Nothing in this Section J.3 supersedes Section D.4, Compliance with Laws, Rules and Tariff Schedules.

Distribution Provider will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Net Generation Output Metering equipment in each instance along with the size and location of the facility.

4. POINT OF COMMON COUPLING (PCC) METERING

For purposes of assessing Distribution Provider's charges for retail service, Producer's PCC Metering shall be reviewed by Distribution Provider, and if required, replaced to ensure that it will appropriately measure electric power according to the provisions of the Customer's electric service Tariff. Where required, the Customer's existing meter may be replaced with a bi-directional meter so that power deliveries to and from Producer's site can be separately recorded. Alternately, (N)

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GENERATING FACILITY INTERCONNECTIONS

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (N)

4. POINT OF COMMON COUPLING (PCC) METERING (Cont'd.)

Producer may, at its sole option and cost, require Distribution Provider to install multi-metering equipment to separately record power deliveries to Distribution Provider's Distribution System and retail purchases from Distribution Provider. Where necessary, such PCC Metering shall be designed to prevent reverse registration.

Generating Facilities for Net Energy Metering under PUC sections 2827, et seq. shall have metering provided pursuant to the terms of the applicable Net Energy Metering Tariff Schedule.

5. TELEMETERING

If the nameplate rating of the Generating Facility is 1 MW or greater, Telemetering equipment at the Net Generation Output Metering location may be required at Producer's expense. If the Generating Facility is Interconnected to a portion of Distribution Provider's Distribution System operating at a voltage below 10 kV, then Telemetering equipment may be required on Generating Facilities 250 kW or greater. Distribution Provider shall only require Telemetering to the extent that less intrusive and/or more cost effective options for providing the necessary data in real time are not available. Distribution Provider will report to the Commission or designated authority, on a quarterly basis, the rationale for requiring Telemetering equipment in each instance along with the size and location of the facility.

6. LOCATION

Where Distribution Provider-owned Metering is located on Producer's premises, Producer shall provide, at no expense to Distribution Provider, a suitable location for all such Metering Equipment. (N)

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Cancelling Cal. P.U.C. Sheet No.

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GENERATING FACILITY INTERCONNECTIONS

J. METERING, MONITORING AND TELEMETERING (Cont'd.) (N)

7. COSTS OF METERING

Producer will bear all costs of the Metering required by this Rule, including the incremental costs of operating and maintaining the Metering Equipment.

8. MULTIPLE TARIFF METERING

The requirements of Section J.3 may not apply where a Generating Facility includes multiple generators eligible for service under more than one Net Energy Metering (NEM) tariff schedule (e.g. NEM, BG-NEM, FC-NEM), or where a Generating Facility consists of one or more NEM-eligible generators in combination with one or more non-NEM eligible generators without Non-Export relays ("Reverse Power Protection"). To ensure proper tariff administration, metering will be required at the PCC and at each of the NEM eligible generator groups eligible for service under the same NEM tariff schedule. For combinations of multiple NEM eligible generators under different tariffs, billing administration and metering requirements will be as specified in the appropriate NEM tariff schedule.

Where a Generating Facility consists of one or more NEM eligible generator groups in combination with one or more non-NEM generators, metering of the non-NEM generators is not required, except as specified in Section J.3. (N)

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K. DISPUTE RESOLUTION PROCESS (N)

In addition to the informal procedures for timeline-related disputes set out in Section F.1.d, the following procedures will apply for disputes arising from this Rule:

1. SCOPE

The Commission shall have initial jurisdiction to interpret, add, delete or modify any provision of this Rule or of any agreements entered into between Distribution Provider and Applicant or Producer to implement this tariff ("Implementing Agreements") and to resolve disputes regarding Distribution Provider's performance of its obligations under Commission-jurisdictional tariffs, the applicable agreements, and requirements related to the interconnection of Applicant's or Producer's Generating Facility or Interconnection Facilities pursuant to this Rule.

2. PROCEDURES

Any dispute arising between Distribution Provider and Producer (individually referred to in Section K as "Party" and collectively "the Parties") regarding Distribution Provider's or Producer's performance of its obligations under its tariffs, the Implementing Agreements, and requirements related to the interconnection of Producer's Facilities pursuant to this Rule shall be resolved according to the following procedures:

a. The dispute shall be documented in a written notice ("notice") by the aggrieved Party to the other Party containing the relevant known facts pertaining to the dispute, the specific dispute and the relief sought, and express notice by the aggrieved Party that it is invoking the procedures under this Section. The notice shall be sent to the Party's email address and physical address set forth in the Generator Interconnection Agreement or Interconnection Request, if there is no Generator Interconnection Agreement. A copy of the notice shall also be sent to the Energy Division, Office of the Director, at the Commission. The receiving Party shall acknowledge the notice within five (5) Calendar Days of its receipt. (N)

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K. DISPUTE RESOLUTION PROCESS (Cont'd.) (N)

2. PROCEDURES (Cont'd.)

a Upon the aggrieved Party notifying the other Party of the dispute, each Party must designate a representative with the authority to make decisions for its respective Party to review the dispute within seven (7) Calendar Days. In addition, upon receipt of the notice, Distribution Provider shall provide the aggrieved Party with all relevant regulatory and/or technical details and analysis regarding any Distribution Provider interconnection requirements under dispute within twenty-one (21) Calendar Days.

Within forty-five (45) Calendar Days of the date of the notice, the Parties' authorized representatives will be required to meet and confer to try to resolve the dispute. Parties are expected to operate in good faith and use best efforts to resolve the dispute.

b. If a resolution is not reached in forty-five (45) Calendar Days from the date of the notice, either 1) a Party may request to continue negotiations for an additional forty-five (45) Calendar Days or 2) the Parties may by mutual agreement make a written request for mediation to the ADR Coordinator in the Commission's ALJ Division. The request may be submitted by electronic mail to adr_program@cpuc.ca.gov. Alternatively, both Parties by mutual agreement may request mediation from an outside third-party mediator with costs to be shared equally between the Parties.

c. At any time, either Party may file a formal complaint before the Commission pursuant to California PUC section 1702 and Article 4 of the Commission's Rules of Practice and Procedure.

Nothing in this section shall be construed to limit the rights of any Party to exercise rights and remedies under Commission law. (N)

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K. DISPUTE RESOLUTION PROCESS (Cont'd.) (N)

3. PERFORMANCE DURING DISPUTE

Pending resolution of any dispute under this Section, the Parties shall proceed diligently with the performance of their respective obligations under this Rule and the Implementing Agreements, unless the Implementing Agreements have been terminated. Disputes as to the Interconnection Request and implementation of this Section shall be subject to resolution pursuant to the procedures set forth in this Section.

L. CERTIFICATION AND TESTING CRITERIA

1. INTRODUCTION

This Section describes the test procedures and requirements for equipment used for the Interconnection of Generating Facilities to Distribution Provider's Distribution or Transmission System. Included are Type Testing, Production Testing, Commissioning Testing, and Periodic Testing. The procedures listed rely heavily on those described in appropriate Underwriters Laboratory (UL), Institute of Electrical and Electronic Engineers (IEEE), and International Electrotechnical Commission (IEC) documents—most notably UL 1741 and IEEE 929 as well as the testing described in *May 1999 New York State Public Service Commission's Interconnection Requirements.* As noted in Section B, this Rule has been revised to be consistent with ANSI/IEEE 1547-2003 Standard for Interconnecting Distribution Resources with Electric Power Systems. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

1. INTRODUCTION (Cont'd.)

The tests described here, together with the technical requirements in Section H of this Rule, are intended to provide assurance that the Generating Facility's equipment will not adversely affect Distribution Provider's Distribution or Transmission System and that a Generating Facility will cease providing power to Distribution Provider's Distribution or Transmission System under abnormal conditions. The tests were developed assuming a low level of Generating Facility penetration or number of connections to Distribution Provider's Distribution or Transmission System. At high levels of Generating Facility penetration, additional requirements and corresponding test procedures may need to be defined.

Section L also provides criteria for "Certifying" Generators or inverters. Once a Generator or inverter has been Certified per this Rule, it may be considered suitable for Interconnection with Distribution Provider's Distribution or Transmission System. Subject to the exceptions described in Section L, Distribution Provider will not repeat the design review or require retesting of such Certified Equipment. It should be noted that the Certification process is intended to facilitate Generating Facilities Interconnections. Certification is not a prerequisite to interconnect a Generating Facility.

The revisions made to this Rule relative to IEEE 1547-2003 has resulted in changes in set points, test criteria, test procedures, and other requirements that will impact previously certified or listed equipment as well as equipment currently under evaluation. These changes were made to provide consistency with IEEE 1547. Equipment that is certified or that has been submitted to a NRTL for testing prior to the adoption of the revised Underwriters Laboratories (UL) 1741 standard titled "Inverters, Converters, Controllers and Interconnection Systems Equipment for use with Distributed Energy Resources" and that subsequently meets the previous Rule 21 certification requirements will continue to be accepted as Certified Equipment for Interconnection Requests submitted through May 7, 2007, the effective date of the revised "UL 1741." (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT

a. Certified Equipment

Equipment tested and approved (i.e. "Listed") by an accredited NRTL as having met both the Type Testing and Production Testing requirements described in this document is considered to be Certified Equipment for purposes of Interconnection with Distribution Provider's Distribution or Transmission System. Certification may apply to either a pre-packaged system or an assembly of components that address the necessary functions. Type Testing may be done in the manufacturer's factory or test laboratory, or in the field. At the discretion of the testing laboratory, field-certification may apply only to the particular installation tested. In such cases, some or all of the tests may need to be repeated at other installations.

When equipment is Certified by a NRTL, the NRTL shall provide to the manufacturer, at a minimum, a Certificate with the following information for each device:

Administrative:

(1) The effective date of Certification or applicable serial number (range or first in series), and/or other proof that certification is current;

(2) Equipment model number(s) of the Certified equipment;

(3) The software version utilized in the equipment, if applicable;

(4) Test procedures specified (including date or revision number); and

(5) Laboratory accreditation (by whom and to what standard). (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT (Cont'd.)

a. Certified Equipment (Cont'd.)

Technical (As appropriate):

(1) Device ratings (kW, kV, Volts, amps, etc.);

(2) Maximum available fault current in amps;

(3) In-rush Current in amps;

(4) Trip points, if factory set (trip value and timing);

(5) Trip point and timing ranges for adjustable settings;

(6) Nominal power factor or range if adjustable;

(7) If the equipment is Certified as Non-Exporting and the method used (reverse power or underpower); and

(8) If the equipment is Certified as Non-Islanding

It is the responsibility of the equipment manufacturer to ensure that Certification information is made publicly available by the manufacturer, the testing laboratory, or by a third party.

b. Non-Certified Equipment

For non-Certified equipment, some or all of the tests described in this Rule may be required by Distribution Provider for each Generating and/or Interconnection Facility. The manufacturer or a laboratory acceptable to Distribution Provider may perform these tests. Test results for non-Certified equipment must be submitted to Distribution Provider for the Supplemental Review. Approval by Distribution Provider for equipment used in a particular Generating and/or Interconnection Facility does not guarantee Distribution Provider's approval for use in other Generating and/or Interconnection Facilities. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

3. TYPE TESTING

a. Type Tests and Criteria for Interconnection Equipment Certification

Type testing provides a basis for determining that equipment meets the specifications for being designated as Certified equipment under this Rule. The requirements described in this Section cover only issues related to Interconnection and are not intended to address device safety or other issues.

Table L.1 defines the test criteria by Generator or inverter technology. While UL 1741(1) was written specifically for inverters, the requirements are readily adaptable to synchronous Generators, induction Generators, as well as single/multi-function controllers and protection relays. Until a universal test standard is developed, Distribution Provider or NRTL shall adapt the procedures referenced in Table L.1 as appropriate and necessary for a Generating Facility and/or Interconnection Facilities or associated equipment performance and its control and Protection Functions. These tests shall be performed in the sequence shown in Table JL.2 on the next page. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.1
Type Test and Requirements for Interconnection Equipment Certification

Type Test	Reference (1)	Inverter	Synchronous Generator	Induction Generator
Distribution Provider Interaction	UL 1741 – 39	X	X	X
DC Isolation	UL 1741 – 40.1	X	□	□
Simulated PV Array (Input) Requirements	UL 1741 – 41.2	X	□	□
Dielectric Voltage Withstand	UL 1741 – 44	X	X	X
Power Factor	UL 1741 – 45.2.2	X	X	X
Harmonic Distortion	UL 1741 – 45.4	X	X	X
DC Injection	UL 1741 – 45.5	X	□	□
Distribution Provider Voltage and Frequency Variation	UL 1741 – 46.2	X	X	X
Reset Delay	UL 1741 – 46.2.3	X	X	X
Loss of Control Circuit	UL 1741 – 46.4	X	X	X
Short Circuit	UL 1741 – 47.3	X	X	X
Load Transfer	UL 1741 – 47.7	X	X	X
Surge Withstand Capability	[L.3.e	X	X	X
Anti-Islanding	L.3.b	(2)	(2)	(2)
Non-Export	L.3.c	(3)	(3)	(3)
In-rush Current	-L.3.d	□	□	(4)
Synchronization	L.3.f]	(5)	X	(5)

Table Notes:
(1) References are to section numbers in either UL 1741 (Inverters, Converters and Charge Controllers for Use in Independent Power Systems) or this Rule. References in UL 1741 to "photovoltaics" or "inverter" may have to be adapted to the other technologies by the testing laboratory to appropriately apply in the tests to other technologies.
(2) Required only if Non-Islanding designation
(3) Required only if Non-Export designation is desired.
(4) Required for Generators that use Distribution Provider power to motor to speed.
(5) Required for all self-excited induction Generators as well as Inverters that operate as voltage sources when connected to Distribution Provider's Distribution or Transmission System.
X = Required
- = Not Required (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

3. TYPE TESTING (Cont'd.)

a. Type Tests and Criteria for Interconnection Equipment Certification (Cont'd.)

Table L.2 Type Tests Sequence for Interconnection Equipment Certification

Test No.	Type Test
1	Distribution Provider Voltage and Frequency Variation
2	Synchronization
3	Surge Withstand Capability
4	Distribution Provider Voltage and Frequency Variation
5	Synchronization
6	Other Required and Optional Tests

Tests 1, 2, and 3 must be done first and in the order shown. Tests 4 and on follow in order convenient to the test agency.

b. Anti-Islanding Test

Devices that pass the Anti-Islanding test procedure described in UL 1741 Section 46.3 will be considered Non-Islanding for the purposes of these Interconnection requirements. The test is required only for devices for which a Certified Non-Islanding designation is desired.

c. Non-Export Test

Equipment that passes the Non-Export test procedure described in Section L.7.a will be considered Non-Exporting for the purposes of these Interconnection requirements. This test is required only for devices for which a Certified Non-Export designation is desired. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

3. TYPE TESTING (Cont'd.)

d. In-rush Current Test

Generation equipment that utilizes Distribution Provider power to motor up to speed will be tested using the procedure defined in Section L.7.b to determine the maximum current drawn during this startup process. The resulting In-rush Current is used to estimate the Starting Voltage Drop.

e. Surge Withstand Capability Test

The interconnection equipment shall be tested for the surge withstand requirement in Section H.1.c in all normal operating modes in accordance with IEEE Std C62.45-2002 for equipment rates less than 1000 V to confirm that the surge withstand capability is met by using the selected test level(s) from IEEE Std C62.41.2-2002. Interconnection equipment rated greater than 1000 V shall be tested in accordance with manufacturer or system integrator designated applicable standards. For interconnection equipment signal and control circuits, use IEEE Std C37.90.1-2002. These tests shall confirm the equipment did not fail, did not misoperate, and did not provide misinformation (IEEE 1547-5.1.3.2).

The location/exposure category for which the equipment has been tested shall be clearly marked on the equipment label or in the equipment documentation. External surge protection may be used to protect the equipment in harsher location/exposure categories. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

3. TYPE TESTING (Cont'd.)

f. Synchronization Test

This test is applied to synchronous Generators, self-excited induction generators, and inverters capable of operating as voltage-source while connected to Distribution Provider's Distribution or Transmission System. The test is also applied to the resynchronization Function (transition from stand-alone to parallel operation) on equipment that provides such functionality. This test may not need to be performed on both the synchronization and re-synchronization functions if the manufacturers can verify to the satisfaction of the testing organization that monitoring and controls hardware and software are common to both functions. This test is not necessary for induction generators or current-source inverters. Instead, the In-rush Current test Section L.3.d shall be applied to those generators.

This test shall demonstrate that at the moment of the paralleling-device closure, all three synchronization parameters in Table L.3 are within the stated limits. This test shall also demonstrate that if any of the parameters are outside of the limits stated in the table, the paralleling-device shall not close (IEEE 1547-5.1.2A). The test will start with only one of the three parameters: (1) voltage difference between Generating Facility and Distribution Provider's Distribution or Transmission System; (2) frequency difference; or (3) phase angle outside of the synchronization specification. Verify that the Generating Facility is brought within specification prior to synchronization. Repeat the test five times for each of the three parameters. For manual synchronization with synch check or manual control with auto synchronization, the test must verify that paralleling does not occur until the parameters are brought within specifications. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

3. TYPE TESTING (Cont'd.)

f. Synchronization Test (Cont'd.)

Table L.3
***Synchronization Parameter Limits* [1]**

Aggregate Rating of Generator Units (kVA)	Frequency Difference (Δf, Hz)	Voltage Difference (ΔV, %)	Phase Angle Difference (ΔΦ,°)
0-500	0.3	10	20
> 500-1,500	0.2	5	15
> 1,500-10,000	0.1	3	10

[1] – IEEE 1547-5.1.1B

g. Paralleling Device Withstand Test

The di-electric voltage withstand test specified in Section L.1 shall be performed on the paralleling device to ensure compliance with those requirements specified in Section H.1.c (IEEE 1547-5.1.3.3).

4. PRODUCTION TESTING

At a minimum, each interconnection system shall be subjected to Distribution Provider Voltage and Frequency Variation Test procedure described in UL1741 under Manufacturing and Production Tests, Section 68 and the Synchronization test specified in Section L.3.f. Interconnection systems with adjustable set points shall be tested at a single set of set points as specified by the manufacturer. This test may be performed in the factory or as part of a Commissioning Test (Section L.5). (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

5. COMMISSIONING TESTING

a. Commissioning Testing

Commissioning Testing, where required, will be performed on-site to verify protective settings and functionality. Upon initial Parallel Operation of a Generating Facility, or any time interface hardware or software is changed that may affect the functions listed below, a Commissioning Test must be performed. An individual qualified in testing protective equipment (professional engineer, factory–certified technician, or licensed electrician with experience in testing protective equipment) must perform Commissioning Testing in accordance with the manufacturer's recommended test procedure to verify the settings and requirements per this Rule.

Distribution Provider may require written Commissioning test procedure be submitted to Distribution Provider at least 10 working days prior to the performance of the Commissioning Test. Distribution Provider has the right to witness Commissioning Test. Distribution Provider may also require written certification by the installer describing which tests were performed and their results. Protective Functions to be tested during commissioning, particularly with respect to non-Certified equipment, may consist of the following:

(1) Over and under voltage

(2) Over and under frequency

(3) Anti-Islanding function (if applicable)

(4) Non-Exporting function (if applicable)

(5) Inability to energize dead line (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

5. COMMISSIONING TESTING (Cont'd.)

a. Commissioning Testing (Cont'd.)

(6) Time delay on restart after Distribution Provider source is stable

(7) Distribution Provider system fault detection (if used)

(8) Synchronizing controls (if applicable)

(9) Other Interconnection Protective Functions that may be required as part of the Generator Interconnection Agreement

Commissioning Test shall include visual inspections of the interconnection equipment and protective settings to confirm compliance with the interconnection requirements.

b. Review, Study, and Additional Commissioning Test Verification Costs

A Producer shall be responsible for the reasonably incurred costs of the reviews, studies and additional Commissioning Test verifications conducted pursuant to Section E of this Rule. If the initial Commissioning Test verification is not successful through no fault of Distribution Provider, Distribution Provider may impose upon Producer a cost based charge for subsequent Commissioning Test verifications. All Costs for additional Commissioning Test verifications shall be paid by Producer within thirty days of receipt of Distribution Provider's invoice. The invoice provided by Distribution Provider shall consist of the hourly rate multiplied by the hours incurred by Distribution Provider and will separately specify the amount of time spent on-site from that spent in roundtrip travel to the Commissioning Test site. Additional cost, if any, will be specified on the invoice. If the initial Commissioning Test verification is not successful through the fault of Distribution Provider, that visit will not be considered the initial Commissioning Test verification. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

5. COMMISSIONING TESTING (Cont'd.)

c. Other Checks and Tests

Other checks and tests that may need to be performed include:

(1) Verifying final Protective Function settings

(2) Trip test (L.5.g)

(3) In-service tests (L.5.h)

d. Certified Equipment

Generating Facilities qualifying for interconnection through the Fast Track process incorporate Certified Equipment that have, at a minimum, passed the Type Tests and Production Tests described in this Rule and are judged to have little or no potential impact on Distribution Provider's Distribution or Transmission System. For such Generating Facilities, it is necessary to perform only the following tests:

(1) Protective Function settings that have been changed after Production Testing will require field verification. Tests shall be performed using injected secondary frequencies, voltages and currents, applied waveforms, at a test connection using a Generator to simulate abnormal Distribution Provider voltage or frequency, or varying the set points to show that the device trips at the measured (actual) Distribution Provider voltage or frequency.

(2) The Non-Islanding function shall be checked by operating a load break disconnect switch to verify the Interconnection equipment ceases to energize Distribution Provider's Distribution or Transmission System and does not re-energize it for the required time delay after the switch is closed. (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

5. COMMISSIONING TESTING (Cont'd.)

d. Certified Equipment (Cont'd.)

(3) The Non-Exporting function shall be checked using secondary injection techniques. This function may also be tested by adjusting the Generating Facility output and local loads to verify that the applicable Non-Exporting criteria (i.e., reverse power or underpower) are met.

The Supplemental Review or an Interconnection Study may impose additional components or additional testing.

e. Non-Certified Equipment

Non-certified Equipment shall be subjected to the appropriate tests described in Type Testing (Section L.3) as well as those described in Certified Equipment Commissioning Tests (Section L.5.d). With Distribution Provider's approval, these tests may be performed in the factory, in the field as part of commissioning, or a combination of both. Distribution Provider, at its discretion, may also approve a reduced set of tests for a particular Generating Facility or, for example, if it determines it has sufficient experience with the equipment.

f. Verification of Settings

At the completion of Commission testing, Producer shall confirm all devices are set to Distribution Provider-approved settings. Verification shall be documented in the Commissioning Test Certification. (N)

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Cancelling Cal. P.U.C. Sheet No.

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

5. COMMISSIONING TESTING (Cont'd.)

g. Trip Tests

Interconnection Protective Functions and devices (e.g. reverse power relays) that have not previously been tested as part of the Interconnection Facilities with their associated interrupting devices (e.g. contactor or circuit breaker) shall be trip tested during commissioning. The trip test shall be adequate to prove that the associated interrupting devices open when the protective devices operate. Interlocking circuits between Protective Function devices or between interrupting devices shall be similarly tested unless they are part of a system that has been tested and approved during manufacturing.

h. In-service Tests

Interconnection Protective Functions and devices that have not previously been tested as part of the Interconnection Facilities with their associated instrument transformers or that are wired in the field shall be given an in-service test during commissioning. This test will verify proper wiring, polarity, CT/PT ratios, and proper operation of the measuring circuits. The in-service test shall be made with the power system energized and carrying a known level of current. A measurement shall be made of the magnitude and phase angle of each Alternating Current (AC) voltage and current connected to the protective device and the results compared to expected values. For protective devices with built-in Metering Functions that report current and voltage magnitudes and phase angles, or magnitudes of current, voltage, and real and reactive power, the metered values may be used for in-service testing. Otherwise, portable ammeters, voltmeters, and phase-angle meters shall be used.

(N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

6. PERIODIC TESTING

Periodic Testing of Interconnection-related Protective Functions shall be performed as specified by the manufacturer, or at least every four years. All Periodic Tests prescribed by the manufacturer shall be performed. Producer shall maintain Periodic Test reports or a log for inspection by Distribution Provider. Periodic Testing conforming to Distribution Provider test intervals for the particular Line Section may be specified by Distribution Provider under special circumstances, such as high fire hazard areas. Batteries used to activate any Protective Function shall be checked and logged once per month for proper voltage. Once every four years, the battery must be either replaced or a discharge test performed.

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS

This Section describes the additional Type Tests necessary to qualify a device as Certified under this Rule. These Type Tests are not contained in Underwriters Laboratories UL 1741 Standard *Inverters, Converters and Controllers for Use in Independent Power Systems,* or other referenced standards.

a. Non-Exporting Test Procedures

The Non-Exporting test is intended to verify the operation of relays, controllers and inverters designed to limit the export of power and certify the equipment as meeting the requirements of Screen I, Options 1 and 2, of the review process. Tests are provided for discrete relay packages and for controllers and inverters with the intended Functions integrated. (N)

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Cancelling Cal. P.U.C. Sheet No.

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GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test

This version of the Non-Exporting test procedure is intended for discrete reverse power and underpower relay packages provided to meet the requirements of Options 1 and 2 of Screen I. It should be understood that in the reverse power application, the relay will provide a trip output with power flowing in the export (toward Distribution Provider's Distribution or Transmission System) direction.

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired export power flow of 0.5 secondary watts (the minimum pickup setting, assumes 5 amp and 120V CT/PT secondary). Apply nominal voltage with minimum current setting at zero (0) degrees phase angle in the trip direction. Increase the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2% of the expected power. For relays with adjustable settings, repeat this test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay does not operate (measured watts will be zero or negative). (N)

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L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 2: Leading Power Factor Test

Apply rated voltage with a minimum pickup current setting (calculated value for system application) and apply a leading power factor load current in the non-trip direction (current lagging voltage by 135 degrees). Increase the current to relay rated current and verify that the relay does not operate. For relays with adjustable settings, this test should be repeated at the minimum, midpoint, and maximum settings.

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Increase the current level to pickup (about 10 times higher than at 0 degrees) and verify that the relay operates. Repeat for phase angles of 90, 180 and 270 degrees and verify that the relay does not operate.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and current at 180 degrees from tripping direction, to simulate normal load conditions (for three-phase relays, use Ia at 180, Ib at 60 and Ic at 300 degrees). Remove phase-1 voltage and observe that the relay does not operate. Repeat for phases-2 and 3. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32028-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 164
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 5: Load Current Test

Using the pickup settings determined in Step 1, apply rated voltage and current at 180 degrees from the tripping direction, to simulate normal load conditions (use Ia at 180, Ib at 300 and Ic at 60 degrees). Observe that the relay does not operate.

Step 6: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to simulate an unbalanced fault in the non-trip direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 180 degrees, Ib at 0 degrees, and Ic at 180 degrees). Observe that the relay, especially single phase, does operate properly.

Step 7: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32029-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 165
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

i) Discrete Reverse Power Relay Test (Cont'd.)

Step 8: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 9: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand capability test described in L.3.e.

ii) Discrete Underpower Relay Test

This version of the Non-Exporting test procedure is intended for discrete underpower relay packages and meets the requirements of Option 2 of Screen I. A trip output will be provided when import power (toward Producer's load) drops below the specified level.

Note: For an underpower relay, pickup is defined as the highest power level at which the relay indicates that the power is less than the set level. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32030-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 166
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired power flow pickup level of 5% of peak load minimum pickup setting. Apply rated voltage and current at 0 (zero) degrees phase angle in the direction of normal load current.

Decrease the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within 2% of the expected power. For relays with adjustable settings, repeat the test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay operates (measured watts will be zero or negative).

Step 2: Leading Power Factor Test

Using the pickup current setting determined in Step 1, apply rated voltage and rated leading power factor load current in the normal load direction (current leading voltage by 45 degrees). Decrease the current to 145% of the pickup level determined in Step 1 and verify that the relay does not operate. For relays with adjustable settings, repeat the test at the minimum, midpoint, and maximum settings. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32031-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 167
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Decrease the current level to pickup (about 10% of the value at 0 degrees) and verify that the relay operates. Repeat for phase angles 90, 180 and 270 degrees and verify that the relay operates for any current less than rated current.

Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and 25% of rated current in the normal load direction, to simulate light load conditions. Remove phase 1 voltage and observe that the relay does not operate. Repeat for Phases-2 and 3.

Step 5: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and two times rated current, to simulate an unbalanced fault in the normal load direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 0 degrees, Ib at 180 degrees, and Ic at 0 degrees). Observe that the relay (especially single-phase types) operates properly. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32032-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 168
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

ii) Discrete Underpower Relay Test (Cont'd.)

Step 6: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

Step 7: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

Step 8: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand test described in Section L.3.e. (N)

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Original Cal. P.U.C. Sheet No. 32033-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 169
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

a. Non-Exporting Test Procedures (Cont'd.)

iii) Tests for Inverters and Controllers with Integrated Functions

Inverters and controllers designed to provide reverse or underpower functions shall be tested to certify the intended operation of this function. Two methods are acceptable:

Method 1: If the inverter or controller utilizes external current/voltage measurement to determine the reverse or underpower condition, then the inverter or controller shall be functionally tested by application of appropriate secondary currents and potentials as described in the Discrete Reverse Power Relay Test, Section L.7.a.i of this Rule.

Method 2: If external secondary current or voltage signals are not used, then unit-specific tests must be conducted to verify that power cannot be exported across the PCC for a period exceeding two seconds. These may be factory tests, if the measurement and control points are integral to the unit, or they may be performed in the field.

b. In-rush Current Test Procedures

This test will determine the maximum In-rush Current drawn by the Generator.

(1) Locked-Rotor Method

Use the test procedure defined in NEMA MG-1 (manufacturer's data is acceptable if available). (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32034-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 170
GENERATING FACILITY INTERCONNECTIONS

L. CERTIFICATION AND TESTING CRITERIA (Cont'd.) (N)

7. TYPE TESTING PROCEDURES NOT DEFINED IN OTHER STANDARDS (Cont'd.)

b. In-rush Current Test Procedures (Cont'd.)

(2) Start-up Method

Install and setup the Generating Facility equipment as specified by the manufacturer. Using a calibrated oscilloscope or data acquisition equipment with appropriate speed and accuracy, measure the current draw at the Point of Interconnection as the Generating Facility starts up and parallels with Distribution Provider's Distribution or Transmission System. Startup shall follow the normal, manufacturer-specified procedure. Sufficient time and current resolution and accuracy shall be used to capture the maximum current draw within 5%. In-rush Current is defined as the maximum current draw from Distribution Provider during the startup process, using a 10-cycle moving average. During the test, Distribution Provider source, real or simulated, must be capable of maintaining voltage within +/- 5% of rated at the connection to the unit under test. Repeat this test five times. Report the highest 10-cycle current as the In-rush Current. A graphical representation of the time-current characteristic along with the certified In-rush Current must be included in the test report and made available to Distribution Provider. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32035-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 171
GENERATING FACILITY INTERCONNECTIONS

M. APPENDIX ONE (N)

Inadvertent Export

Inadvertent Export: "The unscheduled and uncompensated export of real power from a Generating Facility (GF) for a duration exceeding two seconds but less than 60 seconds."

Under certain operating conditions, an Applicant may choose to completely offset their facility load by installing generation systems which are optimally sized to meet their peak demand with load following functionality on the Generator controls to ensure conditional export of electrical power from the Generating Facility to Distribution Provider's Distribution or Transmission System. In situations where the loading changes rapidly and/or the Generator cannot ramp down quickly enough, the Generating Facility may need to export small amounts of power for limited duration. The event of exporting uncompensated power for a short time is referred to as Inadvertent Export.

It is proposed that the following criteria be the minimum requirements for Inadvertent Export systems. It should be understood that other factors relevant to the interconnection study process (15% screen results, short circuit current ratio, etc.) may necessitate additional technical requirements (e.g. reclose block, transfer trip, ground bank, etc.) that are not explicitly noted here. Also, it should be noted that Inadvertent Export may not be available for interconnections to Networked Secondary Systems.

1) If a Generating Facility is proposed with Inadvertent Export, additional Protective Functions and equipment to detect Distribution or Transmission System faults (per Distribution Provider's standard practices) may be required over and above the basic Protective Functions and equipment associated with the four options in the Export Screen. Protective Functions may include, but are not limited to, directional overcurrent/voltage-restraint overcurrent Protective Functions for line-to-line fault detection and overcurrent/overvoltage Protective Functions for line-to-ground detection. The addition of a ground bank or ground detector may also be necessary. (N)

(Continued)

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Original Cal. P.U.C. Sheet No. 32036-E
Cancelling Cal. P.U.C. Sheet No.

ELECTRIC RULE NO. 21 Sheet 172
GENERATING FACILITY INTERCONNECTIONS

M. APPENDIX ONE (Cont'd.) (N)

2) The effect on equipment ratings can be mitigated by limiting the amount of inadvertent export allowed. To a large degree, Voltage Regulation may be similarly handled. The amount of Inadvertent Export is dependent on specific Distribution Provider requirements and should be limited to the lesser of the following values:

   a. 50% of the Generating Facility Capacity, or

   b. 10% of the continuous conductor rating in watts at 0.9 power factor for the lowest rated feeder conductor upstream of the GF (i.e. 200kW @ 12kV), or

   c. 110% of the largest load block in the facility, or

   d. 500kW or some other maximum level indicated by Distribution Provider

   To govern this quantity, a reverse power Protective Function will be provided to trip the connected Generator(s) within two seconds if the proposed amount of Inadvertent Export is exceeded.

3) Similarly, to ensure limited impact to the Distribution or Transmission System, the expected frequency of Inadvertent Export occurrences should be less than two occurrences per 24-hour period. Additionally, a separate reverse power or underpower Protective Function will be required (in addition to the reverse power Protective Function described in 2) above) to trip the connected Generator(s) if the duration of reverse power or underpower (i.e. ANY export) exceeds 60 seconds. (N)

(Continued)

PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response

PG&E Data Request No.:	SBUA_002-07		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q07		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	May 8, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Nina Bubnova	Requester:	James Birkelund

QUESTION 7

PG&E states in 2014 GENERAL RATE CASE PREPARED TESTIMONY EXHIBIT (PG&E-2) RESULTS OF OPERATIONS 14-5 that "Customer advances for construction are recorded in FERC Account 252. PG&E requires a refundable advance when it extends utility services to new customers. Customer advances may be refunded in whole or in part in accordance with PG&E's tariffs."

a. SBUA requests that PG&E provide an estimate of the average cost of natural gas service interconnection for a small commercial customer.

b. SBUA requests that PG&E provide an estimate of the average cost of natural gas service interconnection for a large commercial customer.

ANSWER 7

New gas service connections for commercial customers are done in accordance with PG&E's filed Gas tariffs Rule 15 and 16 which are included as attachments GRC2014-Ph-I_DR_SBUA_002-Q07Atch01 and GRC2014-Ph-I_DR_SBUA_002-Q07Atch02 respectively. PG&E does not track average cost of service by customer size, but the average historic and forecasted unit cost of connecting all non-residential type customers is included in the Exhibit (PG&E-3), Chapter 9, page 9-16, Table 9-12, Line 4.

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Revised Cal. P.U.C. Sheet No. 21543-G
Cancelling Revised Cal. P.U.C. Sheet No. 18801-G

GAS RULE NO. 15

GAS MAIN EXTENSIONS

APPLICABILITY: This rule is applicable to the extension of gas Distribution Mains* necessary to furnish Permanent Service to Applicants, and will be made in accordance with the following provisions:

A. GENERAL

1. DISTRIBUTION MAIN EXTENSION BASIS

a. DESIGN. PG&E will be responsible for planning, designing, and engineering Distribution Main Extensions using PG&E's standards for material, design, and construction. Applicants may elect to use the Applicant Design Option provisions of this Rule to design that portion of the new Distribution Main Extension normally designed by PG&E. (T)

b. OWNERSHIP. The Distribution Main Extension facilities installed under the provisions of this Rule shall be owned, operated, and maintained by PG&E, except for Substructures and enclosures that are on, under, within, or part of a building or structure.

c. PRIVATE LINES. PG&E shall not be required to serve any Applicant from Distribution Main Extension facilities that are not owned, operated, and maintained by PG&E.

2. DISTRIBUTION MAIN EXTENSION LOCATIONS

a. RIGHTS-OF-WAY. PG&E will own, operate, and maintain Distribution Main Extension facilities only:

1) along public streets, alleys, roads, highways, and other publicly dedicated ways and places which PG&E has the legal right to occupy (franchise areas), and

2) on public lands and private property across which easements and permits satisfactory to PG&E may be obtained without cost to or condemnation by PG&E.

b. NORMAL ROUTE OF LINE. The length and normal route of a Distribution Main Extension will be determined by PG&E and considered as the distance along the shortest, most practical, available, and acceptable route which is clear of obstructions from PG&E's nearest permanent and available distribution facility to the point from which the service facilities will be connected.

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* Certain words beginning with capital letters are defined either within the provisions of this rule or in Section I of this rule.

(Continued)

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Revised Cal. P.U.C. Sheet No. 18802-G
Cancelling Revised Cal. P.U.C. Sheet No. 17716-G

GAS RULE NO. 15
GAS MAIN EXTENSIONS

A. GENERAL (Cont'd.)

3. SPECIAL OR ADDED FACILITIES. Any special or added facilities PG&E agrees to install at the request of Applicant will be installed at Applicant's expense in accordance with Rule 2—Description of Service.

4. TEMPORARY SERVICE. Facilities installed for temporary service or for operations of speculative character or questionable permanency shall be made in accordance with the fundamental installation and ownership provisions of this rule, except that all charges and refunds shall be made under the provisions of Rule 13—Temporary Service.

5. SERVICES. Service facilities connected to the Distribution Mains to serve a customer's premises will be installed, owned, and maintained as provided in Rule 16—Gas Service Extensions.

6. CONTRACTS. Each Applicant requesting a Distribution Main Extension may be required to execute a written contract(s) prior to PG&E performing its work on the Distribution Main Extension. Such contracts shall be in the form on file with the California Public Utilities Commission (Commission). (T) (T)

B. INSTALLATION RESPONSIBILITIES

1. APPLICANT RESPONSIBILITY. In accordance with PG&E's design, specifications, and requirements, Applicant is responsible for:

   a. SUBSTRUCTURES. Furnishing, installing, and upon acceptance by PG&E, conveying to PG&E ownership of all necessary installed Substructures; and,

   b. PROTECTIVE STRUCTURES. Furnishing, installing, and upon acceptance by PG&E, conveying to PG&E ownership of all necessary Protective Structures.

(Continued)

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Revised Cal. P.U.C. Sheet No. 18803-G
Cancelling Revised Cal. P.U.C. Sheet No. 17717-G

GAS RULE NO. 15 Sheet 3
GAS MAIN EXTENSIONS

B. INSTALLATION RESPONSIBILITIES (Cont'd.)

2. PG&E RESPONSIBILITY. PG&E is responsible for the installation of Distribution Main, valves, regulators, and other related distribution equipment required to complete the Distribution Main Extension, including all necessary Trenching, backfilling, and other digging as required. (T)

The Applicant may elect to provide the trench, as discussed in Section B.3.b. If Applicant chooses to perform the Trenching, it must also secure permits from the governmental authority having jurisdiction. If Applicant qualifies for an extension allowance under Section C, PG&E will provide Applicant with a reimbursement or credit for PG&E's project-specific estimated cost-per-foot of trench.

3. INSTALLATION OPTIONS

a. PG&E-PERFORMED WORK. Where requested by Applicant and mutually agreed upon, PG&E may furnish and install the Substructures and/or Protective Structures, provided Applicant pays PG&E its total estimated installed cost.

b. APPLICANT-PERFORMED WORK. Applicant may elect to install that portion of the new Distribution Main Extension normally installed by PG&E, in accordance with PG&E's design and specifications, using qualified contractors. (See Section G, Applicant Installation Option.) (T) (T)

C. EXTENSION ALLOWANCES

1. GENERAL. PG&E will complete a Distribution Main Extension without charge provided PG&E's total estimated installed cost does not exceed the allowances from bona-fide loads to be served by the Distribution Main Extension within a reasonable time, as determined by PG&E. The allowance will first be applied to the Residential Service Facilities, in accordance with Rule 16. Any excess allowance will be applied to the Distribution Main Extension to which the Service Extension is connected. The allowance for non-residential applicants will be applied to the combined refundable cost of the Distribution and Service Extensions. (T) | | | | | | (T)

(Continued)

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Revised Cal. P.U.C. Sheet No. 29570-G
Cancelling Revised Cal. P.U.C. Sheet No. 27503-G

GAS RULE NO. 15 Sheet 4
GAS MAIN EXTENSIONS

C. EXTENSION ALLOWANCES (Cont'd.)

2. BASIS OF ALLOWANCES. Allowances shall be granted to an Applicant for Permanent Service; or to an Applicant for a subdivision or development under the following conditions:

   a. PG&E is provided evidence that construction will proceed promptly and financing is adequate; and

   b. Applicant has submitted evidence of building permit(s) or fully-executed home purchase contract(s) or lease agreement(s); or

   c. Where there is equivalent evidence of occupancy or gas usage satisfactory to PG&E.

   The allowances in Section C.3 and C.4 are based on a revenue-supported methodology using the following formula:

$$\text{Allowance} = \frac{\text{Net Revenue}}{\text{Cost-of-Service Factor}}$$

   where the Cost of Service Factor is the annualized utility-financed Cost of Ownership as stated in Gas Rule 2.

3. RESIDENTIAL ALLOWANCES. The allowance for Distribution Main Extensions, Service Extensions, or a combination thereof, for Permanent Residential Service per meter or residential dwelling unit, on a per-unit basis, is as follows:

Water Heating	$529 (I)
Space Heating	$649 (I)
Oven/Range	$ 57 (I)
Dryer Stub	$ 22 (R)

(Continued)

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Revised *Cal. P.U.C. Sheet No.* 20350-G
Cancelling Original *Cal. P.U.C. Sheet No.* 18805-G

GAS RULE NO. 15 Sheet 5
GAS MAIN EXTENSIONS

C. EXTENSION ALLOWANCES (Cont'd.)

4. NON-RESIDENTIAL ALLOWANCES. The allowance for Distribution Main Extensions, Service Extensions, or a combination thereof, for Permanent Non-Residential service is determined by PG&E using the formula in Section C.2.

   Where the Distribution Main Extension will serve a combination of residential and non-residential meters, residential allowances will be added to the non-residential allowances.

5. SEASONAL, INTERMITTENT, AND INSIGNIFICANT LOADS. When Applicant requests service that requires an extension to serve loads that are seasonal or intermittent, the allowance for such loads shall be determined using the formula in Section C.2. No allowance will be provided where service is used only for emergency purposes, or for Insignificant Loads.

D. CONTRIBUTIONS OR ADVANCES BY APPLICANT

1. GENERAL. Contributions or Advances by an Applicant to PG&E for the installation of a Distribution Main Extension to receive PG&E service consists of such things as cash payments, the value of the facilities deeded to PG&E, and the value of Trenching performed by Applicant. (D)

2. PROJECT-SPECIFIC COST ESTIMATES. PG&E's total estimated installed cost will be based on a project-specific estimated cost. (D) (T)

3. CASH ADVANCE. A cash advance will only be required if Applicant's excess allowance is less than PG&E's total estimated installed cost to complete a Distribution Main Extension. (T)

(Continued)

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Revised Cal. P.U.C. Sheet No. 29271-G
Cancelling Revised Cal. P.U.C. Sheet No. 20351-G

GAS RULE NO. 15 Sheet 6
GAS MAIN EXTENSIONS

D. CONTRIBUTIONS OR ADVANCES BY APPLICANT (Cont'd.)

4. POSTPONEMENT. At PG&E's option, the payment of that portion of such an advance that PG&E estimates would be refunded within six (6) months under provisions of this rule may be postponed for six (6) months if: (1) PG&E is provided evidence the construction will proceed promptly and financing is adequate; (2) Applicant has submitted evidence of building permits(s) or fully executed home purchase contract(s) or lease agreement(s); or (3) where there is equivalent evidence of occupancy or gas usage satisfactory to PG&E; and (4) Applicant agrees in writing to pay at the end of six (6) months all amounts not previously Advanced.

5. TAX. All Contributions and Advances by Applicant are taxable and shall include an Income Tax Component Contribution (ITCC) at the rate provided in PG&E's Preliminary Statement. ITCC Tax will be either refundable or non-refundable in accordance with the corresponding Contribution.

6. REFUNDABLE AND NON-REFUNDABLE AMOUNTS. Applicant shall advance or contribute, before the start of PG&E's construction, the following:

   a. REFUNDABLE AMOUNT. Applicant's refundable amount is the portion of PG&E's total estimated installed cost, including taxes, to complete the Distribution Main Extension (including distribution regulators, PG&E's estimated value of the Distribution Trenching, and any non-residential service facilities, and excluding Betterment), that exceeds the amount of the Distribution Main Extension allowance determined in Section C; or,

   b. NON-REFUNDABLE DISCOUNT OPTION. In lieu of contributing the refundable amount determined in Section D.6.a, Applicant has the option of contributing, on a non-refundable basis, fifty percent (50%) of such refundable amount, plus (T)

   c. OTHER NON-REFUNDABLE AMOUNTS. Applicant's non-refundable amount is PG&E's estimated value of the Substructures, Protective Structures, required by PG&E for the Distribution Main Extension under Section B.1.

7. JOINT APPLICANTS. The total Contribution or Advance from a group of Applicants will be apportioned among the members of the group in such manner as they may mutually agree.

(Continued)

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Revised Cal. P.U.C. Sheet No. 29272-G
Cancelling Revised Cal. P.U.C. Sheet No. 20352-G

GAS RULE NO. 15
GAS MAIN EXTENSIONS

D. CONTRIBUTIONS OR ADVANCES BY APPLICANT (Cont'd.)

8. PAYMENT ADJUSTMENTS.

a. CONTRACT COMPLIANCE. If, after six (6) months following the date PG&E is first ready to serve residential loads for which allowances were granted (one (1) year for non-residential loads), Applicant fails to take service, or fails to use the service contracted for, Applicant shall pay PG&E an additional Contribution or Advance, based on the allowances for the revenues actually generated.

b. EXCESS FACILITIES. If the loads provided by Applicant(s) result in PG&E installing facilities which are in excess of those needed to serve the actual loads, and PG&E elects to reduce such excess facilities, Applicant shall pay PG&E its estimated total cost to remove, abandon, or replace its excess facilities, less the estimated salvage value of any removed facilities.

E. REFUND BASIS

1. GENERAL. Refunds are based on the allowances and conditions in effect at the time the contract is signed. Residential Allowances: the allowance in excess of that needed for the Residential Service Extension in accordance with Rule 16 will be applied to the Distribution Main Extension to which the Service Extension is connected. Non-Residential Allowances: the allowances for non-residential applicants will be applied to the combined refundable cost of the Distribution and Service Extension. (T)

2. TOTAL REFUNDABLE AMOUNT. The total amount subject to refund is the sum of the refundable amounts made under Section D.7.

3. REFUND PERIOD. The total refundable amount is subject to refund for a period of ten (10) years after the Distribution Main Extension is first ready for service.

4. RESIDENTIAL. Refunds will be made on the basis of a new customer's Permanent Load which produces additional revenues to PG&E. The refund will be deducted from the total refundable amount, and the remaining amount subject to refund represents that portion of the Distribution Main Extension cost not supported by revenues. (See Section E.11 for series refund provisions.)

5. NON-RESIDENTIAL. PG&E shall be responsible for reviewing Applicant's actual base annual revenue for the first three (3) years from the date PG&E is first ready to serve. Applicant shall be responsible for notifying PG&E if new, permanent load is added from the fourth (4th) through the tenth (10th) year from the date first ready to serve. Such review shall determine if the additional revenue supports any refunds to the Applicant. (See Section E.11 for series refund provisions.)

(Continued)

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Revised Cal. P.U.C. Sheet No. 26827-G
Cancelling Original Cal. P.U.C. Sheet No. 18808-G

GAS RULE NO. 15
GAS MAIN EXTENSIONS

E. REFUND BASIS (Cont'd.)

6. UNSUPPORTED DISTRIBUTION MAIN EXTENSION COST. When any portion of a refundable amount has not qualified for a refund at the end of thirty-six (36) months from the date PG&E's first ready to serve, Applicant will pay to PG&E a monthly Cost of Ownership charge (Gas Rule 2 applicant-financed Cost of Ownership percentage) on the remaining refundable balance. Monthly Cost of Ownership charges are in addition to the refundable amount, and will normally be accumulated and deducted from refunds due Applicant. This provision does not apply to individual residential Applicants. (T)

7. REFUND TIMING. Refunds will be made without interest within ninety (90) days after the date of first service to new permanent loads, except that refunds may be accumulated to a fifty dollar ($50) minimum, or the total refundable balance, if less than fifty dollars ($50).

8. MAXIMUM REFUND. No refund shall be made in excess of the refundable amount nor after a period of ten (10) years from the date PG&E's first ready to serve. Any unrefunded amount remaining at the end of the ten (10) year period shall become the property of PG&E.

9. PREVIOUS RULES. Refundable amounts paid, Contributed, or Advanced under conditions of a rule previously in effect will be refunded in accordance with the provisions of such earlier rule.

10. JOINT APPLICANTS. When two (2) or more parties make joint Contributions or Advances on the same Distribution Main Extension, refunds will be distributed to these parties in the same proportion as their individual Contributions or Advances bear to the total refundable amount, or as they may mutually agree.

11. SERIES OF DISTRIBUTION MAIN EXTENSIONS. Where there are a series of Distribution Main Extensions, commencing with a Distribution Main Extension having an outstanding amount subject to refund, and each Distribution Main Extension is dependent upon the previous Distribution Main Extension as a direct source of supply, a series refund will be made as follows:

a. Additional service connections supplied from a Distribution Main Extension on which there is a refundable amount will provide refunds first to the Distribution Main Extension to which they are connected; and

b. When the amount subject to refund on a Distribution Main Extension in a series is fully refunded, the excess refundable amount will provide refunds to the Distribution Main Extension having the oldest outstanding amount subject to refund in the series.

(Continued)

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Revised Cal. P.U.C. Sheet No. 21544-G
Cancelling Revised Cal. P.U.C. Sheet No. 19489-G

GAS RULE NO. 15 Sheet 9
GAS MAIN EXTENSIONS

F. APPLICANT DESIGN OPTION (T)

1. COMPETITIVE BIDDING. When Applicant selects competitive bidding, the Distribution Main Extension may be designed by Applicant's qualified contractor or sub-contractor, but the design must be in accordance with PG&E's design and construction standards. All applicant design work of gas and electric facilities must be performed by or under the direction of a licensed professional engineer and all design work submitted to PG&E must be certified by an appropriately licensed professional engineer, consistent with the applicable federal, state, and local codes and ordinances. The applicant design option is available to Applicants for new service and is not available for replacement, reinforcement, or relocation of existing systems, where there is no applicant for new line or service extension work. Under this option, the following applies:

   a. Applicant shall notify PG&E, in a manner acceptable to PG&E.

   b. Applicant designs shall conform to all applicable federal, state and local codes and ordinances for utility installations (such as, but not limited to the California Business and Professions Code).

   c. PG&E may require applicant designers to meet its pre-qualification requirements prior to participating in applicant design.

   d. Applicant designers shall obtain PG&E's design and construction standards and specifications prior to performing applicant design. PG&E may charge for any of these services.

(Continued)

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Revised	Cal. P.U.C. Sheet No.	21545-G*
Cancelling Revised	Cal. P.U.C. Sheet No.	19490-G

GAS RULE NO. 15 Sheet 10
GAS MAIN EXTENSIONS

F. APPLICANT DESIGN OPTION (Cont'd.) (T)

1. COMPETITIVE BIDDING (Cont'd.)

e. PG&E will perform one plan check on each applicant design project at no expense to Applicant. All subsequent plan checks will be at Applicant's expense.

f. For designs performed by a non-utility designer, PG&E will credit Applicant with the amount of PG&E's design bid less appropriate charges such as for plan checking, changes, or revisions.

g. In the case of Applicant designed projects requiring an advance, PG&E will deduct the design credit from Applicant's advance.

h. If no advance is required, PG&E will reimburse/refund the Applicant for the cost of the design after the Distribution Main Extension is first ready to serve.

i. PG&E shall perform all project accounting and cost estimating.

(D)

(Continued)

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Revised Cal. P.U.C. Sheet No. 22376-G
Cancelling Revised Cal. P.U.C. Sheet No. 20353-G

GAS RULE NO. 15 Sheet 11
GAS MAIN EXTENSIONS

G. APPLICANT INSTALLATION OPTION

1. COMPETITIVE BIDDING. When Applicant selects competitive bidding, the Distribution Main Extension may be installed by Applicant's qualified contractor or subcontractor in accordance with PG&E design and specifications. Under this option, the following applies: (D)

   a. Upon completion of Applicant's installation, and acceptance by PG&E, ownership of such facilities will transfer to PG&E. (T)

   b. Applicant shall provide to PG&E, prior to PG&E preparing the line extension contact, the Applicant's Contract Anticipated Costs subject to refund to perform the work normally provided by PG&E. The Applicant shall submit, on a form provided by PG&E, a statement of such costs. If the Applicant elects not to provide such costs to PG&E, the Applicant shall acknowledge its election on the form and PG&E will use its estimated costs. (N)

   c. Applicant shall pay to PG&E, subject to the refund and allowance provisions of Rules 15 and 16, PG&E's estimated cost of work performed by PG&E for the Distribution Main Extension, including the estimated costs of design, administration, and installation of any additional facilities. (T)

   d. The lower of PG&E's estimated refundable costs, or Applicant's Contract Anticipated Costs, as reported in G.1.b., for the work normally performed by PG&E, shall be subject to the refund and allowance provisions of Rules 15 and 16. (N)

   e. Applicant shall pay to PG&E the estimated cost of PG&E's inspection, which shall be a fixed amount not subject to reconciliation. Such inspection costs may be subject to otherwise available allowances up to the difference between the Applicant's Contract Anticipated Costs as reported in G.1.b. and PG&E's estimated costs for performing the same work, but not to exceed PG&E's estimated costs. (N)

   f. Only duly authorized employees of PG&E are allowed, to connect to, disconnect from, or perform any work upon PG&E's facilities.

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Original Cal. P.U.C. Sheet No. 22377-G
Cancelling Cal. P.U.C. Sheet No.

GAS RULE NO. 15 Sheet 12
GAS MAIN EXTENSIONS

G. APPLICANT INSTALLATION OPTION (Cont'd.) (L)

2. MINIMUM CONTRACTOR QUALIFICATIONS. Applicant's contractor or subcontractor (QC/S) shall:

   a. Be licensed in California for the appropriate type of work, such as, but not limited to, gas and general.

   b. Employ workmen properly qualified for the specific skills required (plastic fusion, welding, etc.).

   c. Comply with applicable laws (Equal Opportunity regulations, OSHA, EPA, etc.)

3. OTHER CONTRACTOR QUALIFICATIONS. An Applicant for service who intends to employ a QC/S also should consider whether the QC/S:

   a. Is technically competent.

   b. Has access to proper equipment.

   c. Demonstrates financial responsibility commensurate with the scope of the contract.

   d. Has adequate insurance coverage (worker's compensation, liability, property damage, etc.).

   e. Is able to furnish a surety bond for performance of the contract, if required. (L)

(Continued)

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Revised *Cal. P.U.C. Sheet No.* 22378-G
Cancelling Revised *Cal. P.U.C. Sheet No.* 20354-G

GAS RULE NO. 15 Sheet 13
GAS MAIN EXTENSIONS

(L)

H. SPECIAL CONDITIONS

1. FACILITY RELOCATION OR REARRANGEMENT. Any relocation or rearrangement of PG&E's existing facilities, at the request of or to meet the convenience of an Applicant or customer, and agreed upon by PG&E, normally shall be performed by PG&E at Applicant's expense. Where new facilities can be constructed in a separate location, before abandonment or removal of any existing facilities, and Applicant requests to perform the new construction work, it can be performed under the applicable provisions of Section G, Applicant Installation Options.

   In all instances, PG&E shall abandon or remove its existing facilities at the option of PG&E. Applicant or customer shall be responsible for the costs of all related relocation, rearrangement, and removal work.

2. PERIODIC REVIEW. PG&E will periodically review the factors it uses to determine its residential allowances, nonrefundable discount option percentage rate, and cost of service factor stated in this rule. If such review results in a change of more than five percent (5%), PG&E will submit a tariff revision proposal to the Commission for review and approval. Such proposed changes shall be submitted no sooner than six (6) months after the last revision.

   Additionally, PG&E shall submit by advice letter proposed tariff revisions, which result from other relevant Commission decisions, to the allowance formula for calculating line and service extension allowances.

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Revised Cal. P.U.C. Sheet No. 22379-G
Cancelling Revised Cal. P.U.C. Sheet No. 18812-G

GAS RULE NO. 15 Sheet 14
GAS MAIN EXTENSIONS

H. SPECIAL CONDITIONS (Cont'd.)

3. EXCEPTIONAL CASES. When the application of this rule appears impractical or unjust to either party or the ratepayers, PG&E or Applicant may refer the matter to the Commission for a special ruling, or for the approval of special condition(s) which may be mutually agreed upon.

4. SERVICE FROM TRANSMISSION LINES. PG&E will not tap a gas transmission line except at its option, when conditions in its opinion justify such a tap. Such taps are made in accordance with the provisions of this rule.

I. DEFINITIONS FOR RULE 15

ADVANCES: Cash payments made to PG&E prior to the initiation of any work done by PG&E which is not covered by allowances.

APPLICANT: A person or agency requesting PG&E to supply gas service.

APPLICANT'S CONTRACT ANTICIPATED COST: The cost estimate provided by the Applicant's contractor to the Applicant for performing the applicable refundable work, as stated on the Statement of Applicant's Contract Anticipated Costs (Form 79-1003), or in the case where the work is performed by the Applicant, the Applicant's own cost estimate on the signed form. (N)

BETTERMENT: Facilities installed for PG&E's operating convenience such as, but not limited to the following: to improve gas flow or correct poor pressure conditions, to increase line capacity available to an existing system, to permit pressure conversion of an area, or to install proportionally larger pipe than necessary to provide for future load growth, will be installed at the expense of PG&E. (L)

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Revised Cal. P.U.C. Sheet No. 26828-G
Cancelling Revised Cal. P.U.C. Sheet No. 22380-G

GAS RULE NO. 15 Sheet 15
GAS MAIN EXTENSIONS

I. DEFINITIONS FOR RULE 15 (Cont'd.)

CONTRIBUTION: In-kind services, and/or the value of all property conveyed to PG&E at any time during PG&E's work on an extension which is part of PG&E's total estimated installed cost of its facilities, or cash payments not covered by Applicant's allowances.

COST-OF-SERVICE FACTOR: The annualized utility-financed Cost of Ownership as presented in monthly format and stated in Gas Rule 2 that includes taxes, return, depreciation and is applied to the Net Revenue to determine PG&E's investment in distribution facilities. (T) (T)

DISTRIBUTION MAIN EXTENSION: The length of main and its related facilities required to transport gas from the existing distribution facilities to the point of connection with the service pipe.

A Distribution Main Extension consists of new distribution facilities of PG&E that are required to extend service into an open area not previously supplied to serve an Applicant. It is a continuation of, or branch from, the nearest available existing permanent Distribution Main, to the point of connection of the last service. PG&E's Distribution Main Extension includes any required Substructures and facilities for transmission taps but excludes service connections, services, and meters.

DISTRIBUTION MAINS: Mains which are operated at distribution pressure, and supply three (3) or more services or run parallel to the property line in a public right-of-way.

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Revised Cal. P.U.C. Sheet No. 26829-G
Cancelling Revised Cal. P.U.C. Sheet No. 18813-G

GAS RULE NO. 15 Sheet 16
GAS MAIN EXTENSIONS

I. DEFINITIONS FOR RULE 15 (Cont'd.)

DISTRIBUTION MAINS: Mains which are operated at distribution pressure, and supply three (3) or more services or run parallel to the property line in a public right-of-way.

EXCAVATION: All necessary Trenching, backfilling, and other digging to install Distribution Main Extension facilities, including furnishing of any imported backfill material and disposal of spoil as required, surface repair and replacement and landscape repair and replacement.

FRANCHISE AREA: Public streets, roads, highways, and other public ways and places where PG&E has a legal right to occupy under franchise agreements with governmental bodies having jurisdiction.

INSIGNIFICANT LOADS: Small operating loads such as log lighters, barbecues, outdoor lighting, etc.

INTERMITTENT LOADS: Loads which, in the opinion of PG&E, are subject to discontinuance for a time or at intervals.

JOINT TRENCH: Excavation that intentionally provides for more than one service, such as gas, electricity, cable television, telephone, etc.

MONTHLY OWNERSHIP CHARGE: Cost of Ownership charges (from Gas Rule 2 customer-financed Cost of Ownership percentage) as a percentage rate applied against the outstanding unrefunded refundable balance after thirty six (36) months from the date PG&E is first ready to serve. Serves to recover the cost of operating and maintaining customer-financed facilities that are not fully utilized. (N)

NET REVENUE: That portion of the total rate that supports PG&E's Distribution Main and Service Extension costs and excludes such items as fuel costs, transmission, public purpose programs, and other costs that do not support the Distribution Main and Service Extension costs.

NON-RESIDENTIAL ALLOWANCE NET REVENUE MULTIPLIER: This is a revenue-supported factor determined by PG&E that is applied to the net revenues expected from non-residential loads to determine non-residential allowances.

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Revised Cal. P.U.C. Sheet No. 18814-G
Cancelling Revised Cal. P.U.C. Sheet No. 17726-G

GAS RULE NO. 15 Sheet 17
GAS MAIN EXTENSIONS

I. DEFINITIONS FOR RULE 15 (Cont'd.) (T)

OWNERSHIP CHARGE: Monthly charge as a percentage rate applied against the outstanding unrefunded refundable balance after thirty-six (36) months from the date PG&E is first ready to serve. Serves to recover the cost of operating and maintaining customer-financed facilities that are not fully utilized.

PERMANENT SERVICE: Service which, in the opinion of PG&E is of a permanent and established character. This may be continuous, intermittent, or seasonal in nature.

PROTECTIVE STRUCTURES: Fences, retaining walls (in lieu of grading), barriers, posts, barricades, and other structures as required by PG&E.

RESIDENTIAL DEVELOPMENT: Five (5) or more dwelling units in two (2) or more buildings located on a single parcel of land.

RESIDENTIAL SUBDIVISION: An area of five (5) or more lots for residential dwelling units which may be identified by filed subdivision plans or an area in which a group of dwellings may be constructed about the same time, either by a builder or several builders working on a coordinated basis.

SEASONAL SERVICE: Gas service to establishments which are occupied seasonally or intermittently, such as seasonal resorts, cottages, or other part-time establishments.

SUBSTRUCTURES: The surface and subsurface structures which are necessary to contain or support PG&E's gas facilities. This includes, but is not limited to, equipment vaults and boxes, required sleeves for street crossings, and enclosures, foundations, or pads for surface-mounted equipment.

TRENCHING: See Excavation.

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Revised Cal. P.U.C. Sheet No. 21546-G
Cancelling Revised Cal. P.U.C. Sheet No. 18815-G

GAS RULE NO. 16

GAS SERVICE EXTENSIONS

APPLICABILITY: This rule is applicable to both: (1) PG&E's Service Facilities* that extend from PG&E's Distribution Main facilities to the Service Delivery Point, and (2) the service related equipment required of Applicant on Applicant's Premises to receive gas service.

A. GENERAL

1. DESIGN. PG&E will be responsible for planning, designing, and engineering its Service Extensions using PG&E's standards for design, materials, and construction. Applicants may elect to use the Applicant Design Option provisions in Rule 15 to design that portion of the new Service Extension normally designed by PG&E. (T)

2. SERVICE FACILITIES. For the purposes of this rule, PG&E's Service Facilities shall consist of (a) connection fittings, (b) service pipe, (c) valves, (d) regulators, (e) metering equipment, and (f) other PG&E-owned service related equipment.

3. OWNERSHIP OF FACILITIES. Service Facilities installed under the provisions of this rule shall be owned, operated and maintained by PG&E. Applicant shall own, operate, and maintain facilities beyond the Service Delivery Point.

4. PRIVATE LINES. PG&E shall not be required to connect Service Facilities to or serve any Applicant from gas facilities that are not owned, operated and maintained by PG&E.

5. SPECIAL OR ADDED FACILITIES. Any special or added facilities PG&E agrees to install at the request of Applicant, will be installed at Applicant's expense in accordance with Rule 2—Description of Service.

6. TEMPORARY SERVICE FACILITIES. Facilities installed for temporary service or for operations of speculative character or questionable permanency shall be made in accordance with the fundamental installation and ownership provisions of this rule, except that all charges and refunds shall be made under the provisions of Rule 13—Temporary Service.

7. CONTRACTS. Applicant requesting service may be required to execute a written contract(s) prior to PG&E performing its work to establish service. Such contract(s) shall be in the form on file with the California Public Utilities Commission (Commission).

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* Certain words beginning with capital letters are defined either within the provisions of this rule or in Section I of this rule.

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Revised Cal. P.U.C. Sheet No. 18816-G
Cancelling Original Cal. P.U.C. Sheet No. 17159-G

GAS RULE NO. 16 Sheet 2
GAS SERVICE EXTENSIONS

A. GENERAL (Cont'd.)

8. DISTRIBUTION MAIN EXTENSIONS. Whenever PG&E's distribution system is not complete to the point designated by PG&E where the Service Extension is to be connected to PG&E's distribution system, the extension of Distribution Main facilities will be installed in accordance with Rule 15—Gas Main Extensions. (T) (T)

9. RIGHTS-OF-WAY. Rights-of-way or easements may be required by PG&E to install Service Facilities on Applicant's property to serve only the Applicant.

   a. SERVICE FACILITIES. If the Service Facilities must cross property owned by a third party to serve the Applicant, PG&E may, at its option, install such Service Facilities after appropriate rights-of-way or easements, satisfactory to PG&E, are obtained without cost to PG&E; or

   b. DISTRIBUTION MAIN EXTENSIONS. If PG&E's facilities installed on Applicant's property, or third-party property, will be or are designed to serve adjacent property, then PG&E may, at its option, install its facilities under Rule 15 after appropriate rights-of-way or easements, satisfactory to PG&E, are obtained without cost to PG&E. (T)

   c. CLEARANCES. Any necessary rights of way or easements for PG&E's facilities shall have provisions to maintain legal clearances from adjacent structures.

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Revised Cal. P.U.C. Sheet No. 17728-G
Cancelling Original Cal. P.U.C. Sheet No. 17160-G

GAS RULE NO. 16 Sheet 3
GAS SERVICE EXTENSIONS

A. GENERAL (Cont'd.)

10. ACCESS TO APPLICANT'S PREMISES. PG&E shall at all times have the right to enter and leave Applicant's Premises for any purpose connected with the furnishing of gas service (meter reading, inspection, testing, routine repairs, replacement, maintenance, emergency work, etc.) and the exercise of any and all rights secured to it by law, or under PG&E's tariff schedules. These rights include, but are not limited to: (T)

The use of a PG&E-approved locking device, if Applicant desires to prevent unauthorized access to PG&E's facilities. (T) (T)

b. Safe and ready access for PG&E personnel, free from unrestrained animals. (T)

c. Unobstructed ready access for PG&E's vehicles and equipment to install, remove, repair or maintain its facilities. (T)

d. Removal of any and all of its property installed on Applicant's Premises after the termination of service. (T)

11. SERVICE CONNECTIONS. Only personnel duly authorized by PG&E are allowed to connect or disconnect service pipe to or from PG&E's Distribution Main, remove meters, remove PG&E-owned Service Facilities, or perform any work upon PG&E-owned existing facilities.

B. METERING FACILITIES

1. GENERAL

a. METER ALL USAGE. PG&E will meter delivery of all gas energy, unless otherwise provided for by PG&E's tariff schedules or by other applicable laws.

b. METER LOCATION. All PG&E meters and associated metering equipment shall be located at some protected location on Applicant's Premises as approved by PG&E.

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Original Cal. P.U.C. Sheet No. 17161-G
Cancelling Cal. P.U.C. Sheet No.

GAS RULE NO. 16 Sheet 4
GAS SERVICE EXTENSIONS

B. METERING FACILITIES (Cont'd.)

2. NUMBER OF METERS. PG&E normally will install only one meter for a single-family residence or a single nonresidential enterprise on a single Premises, except:

a. When otherwise required or allowed under PG&E's tariff schedules;

b. At the option of and as determined by PG&E, for its operating convenience, consistent with its engineering design; or,

c. When required by law or local ordinance.

d. When additional services are granted by PG&E.

A single meter is required for each single enterprise operating in one building or a group of buildings, or other development on a single Premises, such as, but not limited to, a commercial business, school campus, industrial manufacturer, or recreational vehicle parks, unless otherwise approved by PG&E. (See Rule 18—Supply to Separate Premise and Submetering of Gas for more information.)

3. MULTIPLE OCCUPANCY. In a building with two or more tenants, or where PG&E furnishes more than one meter on the same Premises, PG&E's meters normally shall be grouped at one central location, or as otherwise specified by PG&E, and each meter position shall be clearly and permanently marked by Applicant, customer, or owner of the Premises to indicate the particular unit, occupancy, or load supplied by it.

a. RESIDENTIAL. PG&E will individually meter gas service to every residential unit in a residential building, or group of buildings, or other development on a single Premise with multiple tenants, such as, but not limited to, apartment buildings, mobile home parks, etc., except as may be otherwise specified in Rule 18 and applicable rate schedules.

b. NON-RESIDENTIAL. PG&E will individually meter gas service to each tenant in a non-residential building or group of buildings or other development on a single Premise with multiple tenants or enterprises, (such as, but not limited to, an office building or shopping center complex). Alternative metering arrangements, as determined by PG&E, may be allowed only as specified in Rule 18 and applicable rate schedules. (N)

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Revised Cal. P.U.C. Sheet No. 18817-G
Cancelling Revised Cal. P.U.C. Sheet No. 17729-G

GAS RULE NO. 16 Sheet 5
GAS SERVICE EXTENSIONS

C. SERVICE EXTENSIONS (T)

1. GENERAL LOCATION. The location of the Service Extension facilities shall extend: (T)

   a. FRANCHISE AREA. From the point of connection at the Distribution Main to Applicant's nearest property line abutting upon any street, highway, road, or rights-of-way, along which it already has, or will install Distribution Main; and,

   b. PRIVATE PROPERTY. On private property, along the shortest, most practical and available route (clear of obstructions) as necessary to reach a Service Delivery Point designated by PG&E. (T)

2. NUMBER OF SERVICE EXTENSIONS. PG&E will not normally provide more than one Service Extension, including associated facilities, for any one building or group of buildings, for a single enterprise on a single Premises, except: (T) (T)

   a. TARIFF SCHEDULES. Where otherwise allowed or required under PG&E's tariff schedules; or,

   b. PG&E CONVENIENCE. At the option of and as determined by PG&E, for its operating convenience, consistent with its engineering design, or when replacing an existing service; or,

   c. ORDINANCE. Where required by ordinance or other applicable law, for such things as gas powered fire pumps, etc.

   d. OTHER. PG&E may charge for additional services provided under this paragraph, as special or added facilities.

3. BRANCH SERVICE. For additional approved Service Delivery Points to serve another Applicant on the same or adjoining Premises, PG&E may install a branch Service Extension at the option of PG&E, and will grant allowances under the conditions as set forth in Section E. (T)

4. OTHER SERVICE CONNECTIONS. Where Applicant or customer requests another type of service connection, such as stub services, curb meters and vaults, or service from transmission lines, PG&E will consider each such request and will grant appropriate allowances as it may determine.

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Revised Cal. P.U.C. Sheet No. 18818-G
Cancelling Revised Cal. P.U.C. Sheet No. 17730-G

GAS RULE NO. 16 Sheet 6
GAS SERVICE EXTENSIONS

C. SERVICE EXTENSIONS (Cont'd.) (T)

5. UNUSUAL SITE CONDITIONS. In cases where Applicant's building is located a considerable distance from the available Distribution Main, or where there is an obstruction or other deterrent obstacle or hazard, such as plowed land, ditches, or inaccessible security areas between PG&E's Distribution Main and the building or facility to be served that would prevent PG&E from prudently installing, owning, and maintaining its Service Facilities, PG&E may at its discretion, modify the normal Service Delivery Point location. In such cases, the Service Delivery Point shall be at such other location on Applicant's property as may be mutually agreed upon; or, alternatively, the Service Delivery Point may be located at or near Applicant's property line, as close as practical to the available Distribution Main.

D. RESPONSIBILITIES FOR NEW SERVICE EXTENSIONS (T)

1. APPLICANT RESPONSIBILITY. In accordance with PG&E's design, specifications, and requirements for the installation of Service Extensions, subject to PG&E's inspection and approval, Applicant is responsible for: (T)

a. SERVICE EXTENSIONS. (T)

1) CLEAR ROUTE. Applicant shall provide (or pay for) a route on any private property that is clear of obstructions which would inhibit the construction of the Service Extensions. (T)

2) EXCAVATION. All necessary trenching, backfilling and other digging as required, including permit fees.

3) SUBSTRUCTURES.

a) Furnishing, installing, owning, and maintaining all support pads, meter or regulator vaults or other Substructures on Applicant's Premises;

b) Furnishing and installing any Substructures in PG&E's Franchise Area (or rights-of-way, if applicable) as necessary to install the Service Extension; and, (T)

c) Conveying ownership to PG&E upon its acceptance of those Substructures not on Applicant's Premises.

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Revised Cal. P.U.C. Sheet No. 18819-G
Cancelling Revised Cal. P.U.C. Sheet No. 17731-G

GAS RULE NO. 16 Sheet 7
GAS SERVICE EXTENSIONS

D. RESPONSIBILITIES FOR NEW SERVICE EXTENSIONS (Cont'd.) (T)

1. APPLICANT RESPONSIBILITY. (Cont'd.)

a. SERVICE LATERAL EXTENSIONS. (Cont'd.) (T)

4) PROTECTIVE STRUCTURES. Furnishing, installing, owning, and maintaining all necessary Protective Structures, as specified by PG&E, for PG&E's facilities on Applicant's Premises.

b. APPLICANT'S FACILITY DESIGN AND OPERATION. Applicant shall be solely responsible to plan, design, install, own, maintain and operate facilities and equipment beyond the Service Delivery Point in order to properly receive and utilize the type of gas service available from PG&E. Refer to Rule 2, for a description, among other things, of:

1) The available service delivery pressures and the technical requirements and conditions to qualify for them,

2) Heating values of natural gas, and

3) Delivery volume adjustments due to altitude.

c. REQUIRED SERVICE EQUIPMENT. Applicant shall, at its sole liability, risk and expense, be responsible to furnish, install, own, maintain, inspect and keep in good and safe condition, all facilities of any kind or character on Applicant's Premises, that are not the responsibility of PG&E, but are required by PG&E for Applicant to receive service. Such facilities shall include, but are not limited to gas pipe, valves, regulators, appliances, fixtures, and apparatus of any kind or character. Detailed information on PG&E's service equipment requirements will be furnished by PG&E.

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Revised Cal. P.U.C. Sheet No. 18820-G
Cancelling Revised Cal. P.U.C. Sheet No. 17732-G

GAS RULE NO. 16 Sheet 8
GAS SERVICE EXTENSIONS

D. RESPONSIBILITIES FOR NEW SERVICE EXTENSIONS (Cont'd.) (T)

1. APPLICANT RESPONSIBILITY. (Cont'd.)

d. LIABILITY. PG&E shall incur no liability whatsoever, for any damage, loss or injury occasioned by:

1) Applicant-owned equipment or Applicant's transmission and delivery of energy; or,

2) The negligence, omission of proper shut-off valves or other protective and safety devices, want of proper care, or wrongful act of Applicant, or any agents, employees, or licensees of Applicant, on the part of Applicant installing, maintaining, using, operating, or interfering with any such pipes, valves, regulators, or apparatus.

e. FACILITY TAMPERING. Applicant shall provide a suitable means acceptable to PG&E for placing its seals on meters and related equipment. All PG&E-owned meters shall be sealed only by PG&E's authorized employees and such seals shall be broken only by PG&E's authorized employees. However, in an emergency, PG&E may allow a public authority, or other appropriate party to break the seal. Any unauthorized tampering with PG&E-owned seals or equipment, or connection of customer-owned facilities to PG&E's service pipe at any time, is prohibited, and is subject to the provisions of Rule 11—Discontinuance and Restoration of Service for unauthorized use.

f. LARGE METERING INSTALLATIONS ON APPLICANT'S PREMISES. If it is necessary to have a large, specifically designed, PG&E-owned metering and related equipment installed on Applicant's Premises to serve Applicant, Applicant shall be responsible for complying with the following general provisions:

1) REQUIRED SPACE. Applicant shall provide space, including working space, on Applicant's Premises, at a location approved by PG&E, for a metering installation, including any necessary regulators, pipes and valves.

(Continued)

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Revised Cal. P.U.C. Sheet No. 18821-G
Cancelling Revised Cal. P.U.C. Sheet No. 17166-G

GAS RULE NO. 16 Sheet 9
GAS SERVICE EXTENSIONS

D. RESPONSIBILITIES FOR NEW SERVICE EXTENSIONS (Cont'd.) (T)

1. APPLICANT RESPONSIBILITY. (Cont'd.)

f. LARGE METERING INSTALLATIONS ON CUSTOMER'S PREMISES. (Cont'd.)

2) ROOM OR VAULT. Where Applicant requests and PG&E approves the installation of the meter(s) or regulator(s) in a vault or room on Applicant's Premises, rather than PG&E's standard outdoor installation:

a) The room or vault on Applicant's Premises shall be furnished, installed, owned, and maintained by customer, and shall meet PG&E's specifications for such things as access, ventilation, drainage, etc.

b) If space cannot be provided on Applicant's Premises for the installation of a meter and regulator, a vault may be installed, at Applicant's expense, in the street area near property line. It shall be Applicant's responsibility to install such vault, if not restricted by the governmental authority having jurisdiction, and Applicant shall convey ownership of the vault to PG&E upon its acceptance. These additional facilities shall be treated as special facilities under the provisions of Rule 2.

c) If PG&E's installed cost for the meter or regulator in the room or vault is more costly than the standard outdoor installation, the additional costs shall be paid by Applicant as special facilities.

g. BUILDING CODE REQUIREMENTS. Any service equipment and other service related equipment owned by Applicant, as well as any vault, room, enclosure, shall conform with applicable laws, codes, and ordinances of all governmental authorities having jurisdiction.

(Continued)

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Revised Cal. P.U.C. Sheet No. 18822-G
Cancelling Revised Cal. P.U.C. Sheet No. 17733-G

GAS RULE NO. 16 Sheet 10
GAS SERVICE EXTENSIONS

D. RESPONSIBILITIES FOR NEW SERVICE FACILITIES (Cont'd.)

1. APPLICANT RESPONSIBILITY. (Cont'd.)

h. REASONABLE CARE. Applicant shall exercise reasonable care to prevent PG&E's Service Extension, meters and other facilities owned by PG&E on Applicant's Premises from being damaged or destroyed, and shall refrain from interfering with PG&E's operation of the facilities and shall notify PG&E of any obvious defect. Applicant may be required to provide and install suitable protection (barrier posts, etc.) as required by PG&E. (T)

2. PG&E RESPONSIBILITY

a. INSTALL SERVICE FACILITIES. PG&E will furnish, install, own and maintain the Service Facilities, as applicable after Applicant meets all requirements to receive service.

b. GOVERNMENT INSPECTION. PG&E will establish gas service to Applicant following notice from the governmental authority having jurisdiction that the customer-owned facilities have been installed and inspected in accordance with any applicable laws, codes, ordinances, rules, or regulations, and are safe to pressurize.

3. INSTALLATION OPTIONS.

a. PG&E PERFORMED WORK. Where requested by Applicant and mutually agreed upon, PG&E may perform that portion of the new Service Extension work normally the responsibility of Applicant according to Section D.1, provided Applicant pays PG&E its total estimated installed cost.

b. APPLICANT PERFORMED WORK. Applicant may elect to use competitive bidding to install that portion of the new Service Extension normally installed and owned by PG&E, in accordance with the same provisions outlined in Rule 15. (T)

(Continued)

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Revised Cal. P.U.C. Sheet No. 29273-G
Cancelling Revised Cal. P.U.C. Sheet No. 18823-G

GAS RULE NO. 16 Sheet 11
GAS SERVICE EXTENSIONS

E. ALLOWANCES AND PAYMENTS BY APPLICANT

1. RESIDENTIAL ALLOWANCES. The allowance for Distribution Main Extensions, Service Extensions, or combination thereof, for Permanent Residential Service is determined by PG&E in accordance with the provisions of Rule 15 Section C. The allowance will first be applied to the Service Facilities. Any excess allowance will be applied to the Distribution Main Extension, to which the service is connected, in accordance with Rule 15.

2. NON-RESIDENTIAL ALLOWANCES. For non-residential Service Extension Applicants the value of such items as connection fittings, service pipe, valves, regulators, and metering equipment, (but not including such items defined as Applicant responsibility as listed in Section D) will be treated in accordance with the allowance and refund provisions of Rule 15. (N) (N)

3. SEASONAL, INTERMITTENT, EMERGENCY AND INSIGNIFICANT LOADS. When Applicant requests service that requires an extension to serve loads that are seasonal or intermittent, the allowances for such loads shall be determined by using the formula in Section C of Rule 15. No allowance will be provided where service is used only for emergency purposes, or for insignificant loads. (T)

4. PAYMENTS. Applicant is responsible to pay PG&E the following non-refundable costs, as applicable under this rule and in advance of PG&E commencing its work:

   a. EXCESS SERVICE FACILITIES. PG&E estimated installed cost, including appurtenant facilities such as fittings, valves, service pipe, service regulators, and metering equipment, etc., in excess of the allowance.

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Revised *Cal. P.U.C. Sheet No.* 18824-G
Cancelling Revised *Cal. P.U.C. Sheet No.* 17735-G

GAS RULE NO. 16 Sheet 12
GAS SERVICE EXTENSIONS

E. ALLOWANCES AND PAYMENTS BY APPLICANT (Cont'd.)

4. PAYMENTS (Cont'd.) (T)

b. TAX. Any payments or contribution of facilities by Applicant are taxable Contributions in Aid of Construction (CIAC) and shall include an Income Tax Component of Contribution (ITCC) for state and federal tax at the rate provided in PG&E's Preliminary Statement.

c. OTHER. PG&E's total estimated cost for any work it performs that is Applicant's responsibility, or performs for the convenience of Applicant.

5. REFUNDS. No refunds apply to the installation of Residential Service Facilities under this Rule. (N) (N)

F. EXISTING SERVICE FACILITIES

1. SERVICE REINFORCEMENT.

a. PG&E-OWNED. When PG&E determines that its existing Service Facilities require replacement the existing Service Facilities shall be replaced as a new Service Extension under the provisions of this rule. (T) (T)

(Continued)

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Revised Cal. P.U.C. Sheet No. 18825-G
Cancelling Revised Cal. P.U.C. Sheet No. 17736-G

GAS RULE NO. 16 Sheet 13
GAS SERVICE EXTENSIONS

F. EXISTING SERVICE FACILITIES (Cont'd.)

1. SERVICE REINFORCEMENT. (Cont'd.)

b. APPLICANT OWNED. The Applicant shall replace or reinforce that portion of the Service Extension which the Applicant will continue to own under the provisions of this rule. (T)

2. SERVICE RELOCATION OR REARRANGEMENT.

a. PG&E CONVENIENCE. When, in the judgment of PG&E, the relocation or rearrangement of a service is necessary for the maintenance of adequate service, or for the operating convenience of PG&E, PG&E normally will perform such work at its own expense, except as provided in Sections F.2.b, F.3 or F.4.

b. APPLICANT CONVENIENCE. Any relocation or rearrangement of PG&E's existing Service Facilities, at the request of Applicant (aesthetics, building additions, remodeling, etc.) and agreed upon by PG&E, the work shall be performed in accordance with Section D, except that Applicant shall pay PG&E its total estimated costs.

In all instances, PG&E shall abandon or remove the existing facilities at the option of PG&E, rendered idle by the relocation, or rearrangement.

3. IMPAIRED ACCESS AND CLEARANCES. Whenever PG&E determines that:

a. ACCESS. Its existing Service Facilities have become inaccessible for inspections, operating, maintenance, meter reading, or testing; or, (T)

b. CLEARANCE. A hazardous condition exists, or any of the required clearances between the existing Service Facilities and any object become impaired, under any applicable laws, ordinances, rules, regulations of PG&E or of public authorities, then the following applies:

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Revised Cal. P.U.C. Sheet No. 17737-G
Cancelling Original Cal. P.U.C. Sheet No. 17171-G

GAS RULE NO. 16 Sheet 14
GAS SERVICE EXTENSIONS

F. EXISTING SERVICE FACILITIES (Cont'd.)

3. IMPAIRED ACCESS AND CLEARANCES. (Cont'd.)

c. CORRECTIVE ACTION. Applicant or owner shall, at Applicant's or owner's expense, either correct the access or clearance infractions, or pay PG&E its total estimated cost to relocate its facilities to a new location which is acceptable to PG&E. Applicant or owner shall also be responsible for the expense to relocate any equipment which Applicant owns and maintains. Failure to comply with corrective measures within a reasonable time may result in discontinuance of service.

4. DAMAGED FACILITIES. When PG&E's facilities are damaged by others, the repair will be made by PG&E at the expense of the party responsible for the damage. Applicants are responsible for repairing their own facilities. (T)

5. SUBDIVISION OF PREMISES. When PG&E's Service Facilities are located on private property, and such private property is subsequently subdivided into separate Premises, with ownership transferred to other than Applicant or customer, the subdivider is required to provide PG&E with adequate rights of way, satisfactory to PG&E, for its existing facilities, and to notify property owners of the subdivided Premises of the existence of the right-of-way.

When adequate rights-of-way are not granted as a result of the property subdivision, PG&E shall have the right, upon written notice to the current customer, to discontinue service without obligation or liability. The existing owner, Applicant or customer shall pay to PG&E the total estimated cost of any required relocation of PG&E's facilities. A new gas service will be re-established in accordance with the provisions of Section D for new services and the provisions of any other applicable PG&E rules.

G. PERIODIC REVIEW. PG&E will periodically review the factors it uses to determine its allowances and costs stated in this rule. If such review results in a change of more than five percent (5%), PG&E will submit a tariff revision proposal to the Commission for review and approval. Such proposed changes shall be submitted no sooner than six (6) months after the last revision. (L) (T) (L)

(Continued)

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Revised *Cal. P.U.C. Sheet No.* 18826-G
Cancelling Revised *Cal. P.U.C. Sheet No.* 17738-G

GAS RULE NO. 16 Sheet 15
GAS SERVICE EXTENSIONS

H. EXCEPTIONAL CASES. When the application of this rule appears impractical or unjust to either party or the ratepayers, PG&E or Applicant may refer the matter to Public Utilities Commission for a special ruling or for the approval of special conditions which may be mutually agreed upon.

I. DEFINITIONS FOR RULE 16

APPLICANT: A person or agency requesting PG&E to supply Gas Service.

DISTRIBUTION MAIN: PG&E's gas facilities, which are operated at distribution pressure and which are designed to supply three (3) or more services. (T)

EXCAVATION: All necessary trenching, backfill, and other digging as required to install Service Extensions, including furnishing of any imported backfill material and disposal of spoil as required, surface repair and replacement, landscape repair and replacement. (T)

FRANCHISE AREA: Public streets, roads, highways, and other public ways and places where PG&E has a legal right to occupy under franchise agreements with governmental bodies having jurisdiction.

INSIGNIFICANT LOADS: These are small operating loads, such as log lighters, barbecues, outdoor lighting, etc.

INTERMITTENT LOADS: Loads which, in the opinion of PG&E, are subject to discontinuance for a time or at intervals.

PREMISES: All of the real property and apparatus employed in a single enterprise on a integral parcel of land undivided, excepting in the case of industrial, agricultural, oil field, resort enterprises, and public or quasi-public institutions, by a dedicated street, highway or other public thoroughfare or a railway. Automobile parking lots constituting a part of and adjacent to a single enterprise may be separated by an alley from the remainder of the premises served.

PROTECTIVE STRUCTURES: Fences, retaining walls (in lieu of grading), barriers, posts, barricades and other structures as required by PG&E.

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Revised Cal. P.U.C. Sheet No. 18827-G
Cancelling Revised Cal. P.U.C. Sheet No. 17739-G

GAS RULE NO. 16 Sheet 16
GAS SERVICE EXTENSIONS

I. DEFINITIONS FOR RULE 16 (Cont'd.)

SEASONAL SERVICE: Gas service to establishments which are occupied seasonally or intermittently, such as seasonal resorts, cottages, or other part time establishments.

SERVICE DELIVERY POINT: Where PG&E's Service Facilities are connected to Applicant's pipe (house line), normally adjacent to the location of the meter(s). (T)

SERVICE EXTENSION: The pipe, valves, meters, regulators, and associated equipment extending from the point of connection at the Distribution Main to the Service Delivery Point, which is normally on Applicant's Premises. (T)

SUBSTRUCTURES: The surface and subsurface structures which are necessary to contain or support PG&E's gas facilities. This includes, but is not limited to, equipment vaults and boxes, required sleeves for street crossings, and enclosures, foundations or pads for surface-mounted equipment.

TRENCHING: See Excavation.

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Data Response

PG&E Data Request No.:	SBUA_002-08		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_002-Q08		
Request Date:	April 23, 2013	Requester DR No.:	PGE-SBUA-002
Date Sent:	May 2, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Steve Coleman	Requester:	James Birkelund

QUESTION 8

In the Pacific Gas & Electric Company prepared testimony Exhibit (PG&E-7) Shared Services and Information Technology 1-21, PG&E states that "Sourcing is responsible for the procurement of over $4.4 billion of goods and services annually for the Company. In 2011, approximately $2.7 billion of PG&E's goods and services came from California suppliers."

It further states in 5-16 that, "One full-time employee dedicated to supporting and evaluating the inclusion of small businesses in PG&E's (PG&E-7) 5-17, "A new position will be created to help build strong strategic relationships within the community, identify potential contracting opportunities for small businesses within PG&E LOBs, and research and collaborate on the technical assistance support needed for that constituency group. Responsibilities will include: ensuring small businesses are included in contract bids across PG&E's LOBs (30 percent), researching small business capabilities in an effort to match them with potential projects or prime suppliers (30 percent), supporting the small business community through business matchmaking, panel discussions, presentations, and other outreach activity (20 percent), and measuring the economic development and job creation of working with small businesses (20 percent)."

a. SBUA requests that PG&E elaborate on what monitoring and outreach it currently provides for small businesses; independent of diverse supplier activities.

b. SBUA requests that PG&E elaborate on which activities will be included for, "ensuing small businesses are included in contract bids across PG&E's LOB".

c. SBUA requests that PG&E elaborate on which activities will be included for "measuring the economic development and job creation of working with small businesses".

ANSWER 8

a. SBUA requests that PG&E elaborate on what monitoring and outreach it currently provides for small businesses; independent of diverse supplier activities.

1. PG&E activities directed to small businesses.

PG&E's small business outreach is interlinked with its efforts to support the local economic vitality of its diverse communities and businesses. Most small business events supported by PG&E are inclusive of all business sizes. However, many are focused specifically on small business, including:

- California Small Business Day
    - Since 2000, this annual event has recognized small business contributions to California. The event is an opportunity for California's legislative representatives to recognize key local small businesses. As a corporate sponsor for the past two years, PG&E hosted small businesses and legislators at the awards luncheon and supported a booth in the exhibit hall to network with the small business attendees.
- Small Business Adminstration (SBA) Business Trainings
    - Since 2012, PG&E has partnered with the SBA to conduct three seminars for small and diverse businesses interested in how to do business with utilities and developing their businesses. More than 300 small and local diverse businesses across PG&E territory benefited from these seminars, gaining valuable business training on access to capital and contracts, financial management, marketing, and operations management. PG&E looks forward to continuing this partnership.
- California Public Utilities Commission (CPUC) Small Business Expos
    - PG&E sponsors and supports two CPUC Small Business Expos a year. During these events, PG&E conducts formal one-on-one business matchmaking sessions, sharing contract opportunities and minimum business requirements with small businesses. PG&E also sits on a panel to discuss how to connect small businesses with state and utility contracts, and provides detail regarding its energy efficiency programs and supplier diversity program at its exhibit hall booth.
- Small Business Matchmaking
    - PG&E supports Business Matchmaking's year-round small business matchmaking events held throughout California. These day-long events attract hundreds of small business that get the chance to discuss contract opportunities in a one-on-one setting with the many PG&E procurement personnel that host matchmaking tables.

2. PG&E's Technical Assistance Program

Adhering to the Joint Utility's Multi-Tiered Technical Assistance and Capacity Building Program adopted by the CPUC in 2011, PG&E's formal Technical Assistance Program (TAP) is an all-inclusive program that offers training to all sizes of diverse and small businesses in the communities it serves and in California as a whole. The program divides the provision of technical assistance into three tiers:

Tier	Description	Solution
Tier 1 Small and diverse businesses	1-3 years experience, less than $1M revenue	Supplements small business development offerings provided by existing organizations such as SBA, SBDCs, and Community Colleges
Tier 2 Mid-Size diverse businesses	3+ years experience, revenue more than $1M	Provides business management skills training through programs such as UCLA Management Development for Entrepreneurs Program
Tier 3 Advanced Technology / Emerging Market diverse businesses	5+ years experience, demonstrated readiness to grow	Prepares diverse businesses to expand into emerging technologies with the utilities through the University of California Advanced Technology Management Institute

Tier One is designed to have the utilities support and leverage the numerous existing programs for start-up, micro and small business training and incubation. Tier Two is designed to support the mid-stage, mid-size diverse business enterprises (DBEs) that are ready to work on their growth strategy and strengthen their infrastructure. Tier Three targets already strong and successful DBEs to succeed in the utilities' emerging technology supply chains.

In addition to the specific small business events mentioned above, PG&E also partners with community organizations and local chambers of commerce on other PG&E Tier One initiatives that support the development of small and diverse businesses, including:

- *Signature Initiatives* to gain a competitive advantage
  - Diverse Suppliers Are Safe
  - Diverse Suppliers Go Green
  - Diverse Suppliers Go Global
- *Diverse Business Workshops* and *Technical Assistance Partnerships* on topics relevant to the small DBE community
  - Small Business Administration Business Training
  - Leadership Development Training
  - Access to Capital Education
  - Business Growth Strategies Training
  - Microenterprise Business Development Training
- *Development Program and Certification Training Scholarships*

- DBE Scholarships for ISO 9001 and ISO 14001 Certification Training
- DBE Scholarships for UCLA Management Development for Entrepreneurs Program
- DBE Sponsorships to attend Advanced Technology Management Institute

b. SBUA requests that PG&E elaborate on which activities will be included for, "ensuing small businesses are included in contract bids across PG&E's LOB".

PG&E would like to increase the identification and its communication of bid opportunities to the local small business community. The activities would include researching of small dollar bid opportunities throughout PG&E's various lines of business and communicating them to viable small businesses. It would also include engaging PG&E's large prime supplier network by introducing primes to the small business community and improving the communication of subcontracting opportunities between prime suppliers and prospective small business suppliers. These efforts will increase the visibility of opportunities for the small business community to compete for business, some as first tier direct suppliers and many more as subcontractors. In our 2014 GRC testimony, Exhibit (PG&E-7), Chapter 5, Supply Chain – Sourcing Operations, in Section C.1.a.1, we have requested one additional full-time employee to provide this dedicated support for small businesses.

c. SBUA requests that PG&E elaborate on which activities will be included for "measuring the economic development and job creation of working with small businesses".

PG&E would like to track the success of its small business efforts with meaningful indicators that demonstrate our support of the small businesses in our local communities. Potential activities could include: tracking the year-over-year increase in spend with small businesses; the year-over-year growth in jobs with select small suppliers awarded contracts; the contracts awarded to the many small businesses within our local communities, developing and sharing illustrative success stories highlighting local small business suppliers. In our 2014 GRC testimony, Exhibit (PG&E-7), Chapter 5, Supply Chain – Sourcing Operations, in Section C.1.a.1, we have requested one additional full-time employee to provide this dedicated support for small businesses.

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Data Response

PG&E Data Request No.:	SBUA_003-02		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_003-Q02		
Request Date:	May 1, 2013	Requester DR No.:	PGE-SBUA-003
Date Sent:	May 9, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Kevin Dasso, Jeffery Hulon, Peter Dominguez, Barry Anderson, Manho Yeung, Steve Calvert	Requester:	Michael Brown

QUESTION 2

In PG&E-4 Figure 1-2 PG&E forecasts a substantial increase in costs associated with Operations and Automation support and Safety maintenance and compliance. What are you planning on doing that justifies this increase? Is this related to installation of Smart Meters?

ANSWER 2

These categories are reflective of groupings in Exhibit (PG&E-4), Chapter 1, page 1-27, Table 1-1, lines 18-45. For specifics please see testimony workpapers listed in the workpaper reference column of that table.

Although there are activities in the Exhibit (PG&E-4) forecast that build on SmartMeter™ technology as described further below, the activities do not involve the installation of SmartMeters™. The costs of PG&E's original deployment of SmartMeters™ were approved by the CPUC in Decision 06-07-027 (in the Advanced Meter Infrastructure Application 05-06-028) and Decision 09-03-026 (in the SmartMeter™ Upgrade Application 07-12-009). Only the capital costs for installation of SmartMeters™ to serve new business in 2014 through 2016 are included in this 2014 General Rate Case (GRC). The costs of new Smart Grid Pilot Projects recently approved by the Commission in Decision 13-03-032 (in Application 11-11-017) are also not included in this 2014 GRC request.

Items included in this GRC forecast which build on SmartMeter™ technology and data as described in Exhibit (PG&E-4):

- Outage Reporting and Analysis System Replacement, Chapter 2, page 2-14
- "Closed Loop" SmartMeter™ Outage Management Integration, Chapter 2, page 2-16

- SmartMeter™ Technology Improvements, Chapter 10, page 10-12
- SmartMeter™ Technology, Chapter 11, page 11-7
- Overloaded Overhead and Underground Line Transformer investigations, Chapter 12, page 12-15
- SmartMeter™ voltage investigations, Chapter 14, page 14-5
- Replacement of the Enhanced Outage Notification subprogram, Chapter 17, page 17-1

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PG&E Data Request No.:	SBUA_003-03		
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Request Date:	May 1, 2013	Requester DR No.:	PGE-SBUA-003
Date Sent:	May 9, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Nina Bubnova, Manho Yeung, Sindy Mikkelsen	Requester:	Michael Brown

QUESTION 3

In PG&E-4 Figure 1-5 PG&E forecasts a substantial increase in the need for capital expenditures for customer connection and demand growth & franchise obligation. What did PG&E base this increase on?

ANSWER 3

These categories are reflective of groupings in Exhibit (PG&E-4), Chapter 1, page 1-27, Table 1-1, lines 2-8. For specifics please see testimony workpapers listed in the workpaper reference column of that table.

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PG&E Data Request No.:	SBUA_003-04		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_003-Q04		
Request Date:	May 1, 2013	Requester DR No.:	PGE-SBUA-003
Date Sent:	May 8, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Kevin Dasso	Requester:	Michael Brown

QUESTION 4

In PG&E-4 2-30 PG&E proposes to an asset management tool for public safety. Would this asset management tool prioritize upgrades to the system based on the size of a business or the number of customers who are served? Could small agricultural businesses or other small remote businesses still receive adequate attention and system upgrades?

ANSWER 4

The proposed asset management tool for public safety assesses the impact of PG&E's assets on the safety of the public to help guide upgrades, replacements and operating and maintenance practices PG&E implements for its facilities. The tool will not use customer size as an input to this analysis because this does not impact PG&E's asset performance relative to public safety risk. The tool is designed to aid PG&E's decision making for all of its electric distribution assets in all areas of its service area. PG&E facilities serving small agricultural businesses and small remote businesses will receive adequate attention because facilities serving these areas will be evaluated for public safety risk mitigations as will all other facilities in PG&E's service area.

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Data Response

PG&E Data Request No.:	SBUA_004-01		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_004-Q01		
Request Date:	May 1, 2013	Requester DR No.:	PGE-SBUA-004
Date Sent:	May 13, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Jess Brown	Requester:	Michael Brown

QUESTION 1

Does PG&E distribute specific small business electric or natural gas usage information? If so can PG&E supply this information to SBUA or provide a link?

ANSWER 1

Per the CPUC's privacy rules and PG&E's privacy policy, PG&E may not distribute customer-specific electric or natural gas usage information to SBUA without the consent of the customer or a specific CPUC order.

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PG&E Data Request No.:	SBUA_004-02		
PG&E File Name:	GRC2014-Ph-I_DR_SBUA_004-Q02		
Request Date:	May 1, 2013	Requester DR No.:	PGE-SBUA-004
Date Sent:	May 10, 2013	Requesting Party:	Small Business Utility Advocates
PG&E Witness:	Jess Brown	Requester:	Michael Brown

QUESTION 2

Does PG&E grant a small business preference for entities or persons applying for solar installation programs, energy efficiency upgrades such as building retrofits, or other similar programs?

ANSWER 2

PG&E interprets this question as does PG&E grant a small business preference over other customers applying for solar installation programs, energy efficiency upgrades, or other similar programs.

PG&E applies its eligibility requirements equally for solar installation programs, energy efficiency upgrades and other similar programs and does not grant a given customer preference over another. Availability of PG&E's rebates/incentives for solar installation, energy efficiency upgrades or other programs are based on a first come first serve basis for participants who meet program eligibility requirement.