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Ratesetting

TO PARTIES OF RECORD IN RULEMAKING 13-11-005:

This is the proposed decision of Administrative Law Judge Julie A. Fitch. Until and unless the Commission hears the item and votes to approve it, the proposed decision has no legal effect. This item may be heard, at the earliest, at the Commission's August 1, 2019 Business Meeting. To confirm when the item will be heard, please see the Business Meeting agenda, which is posted on the Commission's website 10 days before each Business Meeting.

Parties of record may file comments on the proposed decision as provided in Rule 14.3 of the Commission's Rules of Practice and Procedure.

The Commission may hold a Ratesetting Deliberative Meeting to consider this item in closed session in advance of the Business Meeting at which the item will be heard. In such event, notice of the Ratesetting Deliberative Meeting will appear in the Daily Calendar, which is posted on the Commission's website. If a Ratesetting Deliberative Meeting is scheduled, ex parte communications are prohibited pursuant to Rule 8.2(c)(4)(B).

W. ANTHONY COLBERT for
Anne E. Simon
Chief Administrative Law Judge

AES:avs

Attachment

Decision PROPOSED DECISION OF ALJ FITCH (Mailed 6/28/2019)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking
Concerning Energy Efficiency Rolling
Portfolios, Policies, Programs,
Evaluation, and Related Issues.

Rulemaking 13-11-005

**DECISION MODIFYING THE ENERGY EFFICIENCY
THREE-PRONG TEST
RELATED TO FUEL SUBSTITUTION**

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**DECISION MODIFYING THE ENERGY EFFICIENCY
THREE-PRONG TEST RELATED TO FUEL SUBSTITUTION**

Summary

This decision modifies the energy efficiency three-prong test originally established in Decision 92-02-075, which was designed to avoid encouraging programs that involved substituting one fuel for another (electricity or natural gas), but had a “predominantly load building or load retention character.” At the time the test was originally established, fuel substitution primarily involved replacing electric equipment with those fueled by natural gas.

Now with the State of California increasingly focused on the potential for fuel substitution to address greenhouse gas (GHG) emissions reduction goals, several parties (Natural Resources Defense Council, Sierra Club, and the California Efficiency and Demand Management Council, jointly), filed a motion seeking review and modification of the three-prong test.

This decision modifies and clarifies the formulation of the three-prong test, which has been modified periodically since its creation in 1992. The decision requires that the reformulated test be applied at the individual measure level. It determines that the baseline against which a fuel substitution measure is compared should be determined in the same manner as for other measures in the energy efficiency portfolio (namely, using code baseline, industry standard practice, or existing conditions, depending on the circumstances of the measure installation). The measure must save energy and also not harm the environment (as currently measured by GHG emissions).

In addition, this decision determines that a fuel substitution measure should no longer be required to pass a cost-effectiveness threshold at the measure level. Instead, fuel substitution measures will be reflected in the cost-

effectiveness evaluation of a program administrator's overall energy efficiency portfolio. Since the cost-effectiveness prong will effectively be removed, the test will hereafter be referred to as the Fuel Substitution Test.

When a measure first passes the Fuel Substitution Test to be included in the portfolio, it shall utilize a default net-to-gross (NTG) ratio assumption of 1.0, until such time as impact evaluation results become available. Thereafter, the evaluated NTG ratio for the individual measure shall be used in the portfolio cost-effectiveness calculation.

Finally, the decision requires that the new-fuel ratepayers fund the proposed fuel substitution measures, and that energy savings accrue to those ratepayers, while the original fuel utility's energy savings goals are also credited with the fuel savings that otherwise will become unavailable to them due to the fuel substitution activities.

This proceeding remains open to consider several other policy issues in Phase 3 of the proceeding.

1. Background

1.1. Procedural Background

On June 8, 2017, Natural Resources Defense Council (NRDC), Sierra Club, and the California Efficiency and Demand Management Council (CEDMC), jointly filed a motion seeking the Commission's review and modification of the three-prong test, which governs the use of energy efficiency program funding for fuel substitution purposes.

Responses to the June 8, 2017 joint motion were timely filed on June 23, 2017 by the Public Advocates' Office (Cal Advocates), Pacific Gas and Electric Company (PG&E), and Southern California Gas Company (SoCalGas).

NRDC and Sierra Club jointly filed a reply to the response of SoCalGas on July 6, 2017.

Subsequently, on June 25, 2018, an Administrative Law Judge (ALJ) ruling was issued seeking comments in response to a series of more specific questions about the three-prong test and its application.

Comments in response to the ALJ ruling were filed on July 17, 2018 by PG&E, Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E) and SoCalGas (jointly), Cal Advocates, Small Business Utility Advocates (SBUA), NRDC and Sierra Club (jointly),¹ and the Association of Bay Area Governments (ABAG) on behalf of the Bay Area Regional Energy Network (BayREN).

Reply comments in response to the ALJ ruling were filed on July 27, 2018 by SDG&E and SoCalGas (jointly), Cal Advocates, NRDC and Sierra Club (jointly), and SCE.

1.2. Background on the Three-Prong Test

The original version of the three-prong test adopted by the Commission was contained in Decision (D.) 92-02-075. The test was instituted to ensure that fuel substitution reduced total energy use cost-effectively and without degrading environmental quality. The Commission also wanted to ensure that fuel substitution did not encourage programs “with a predominantly load building or load retention character.”²

¹ The comments of Sierra Club and NRDC were also supported by the following additional organizations: Ardena Energy LLC, Association for Energy Affordability, Association of Bay Area Governments, Carbon Free Palo Alto, Center for Sustainable Energy, City and County of San Francisco, City of Arcata, City of Berkeley, Clean Coalition, County of Contra Costa, County of Marin, Design AVenues LLC, Efficiency First California, Guttman & Blaevoet, Marin Clean Energy, Redwood Energy, Silicon Valley Clean Energy, and Sonoma Clean Power.

² D.92-02-075, Attachment 1, at 6.

In D.92-10-020, the Commission established that fuel substitution programs should be treated differently than other demand-side management programs, to address their potential for environmental degradation and increasing source-fuel consumption. D.92-10-020 also stated that the “goals of this Commission, utilities and customers are also not served by implementing fuel substitution programs that increase source-BTU [British Thermal Unit] consumption of nonrenewable resources.”³ This second 1992 decision also expanded Rule 13 of D.92-02-075 to become the three-prong test, addressing 1) source BTU consumption, 2) total resource costs, and 3) adverse environmental impact. This decision redefined fuel substitution programs as “programs which are intended to substitute energy using equipment of one energy source with a competing energy source [or utility-supplied electricity or natural gas].”⁴

D.92-12-050 followed D.92-10-020, to set a baseline reference for fuel substitution programs as the “most cost-effective same-fuel-substitute technology that is currently cost-effective under the total resource cost test.” The Commission was concerned that using minimum standards equipment or standard purchase practices could encourage practices that undermine resource procurement goals.⁵ The third 1992 decision also concluded that environmental impacts were not limited to air-emissions for fuel substitution programs.⁶ D.92-12-050 modified Rule 13 Part (3) (also known as the “third prong”) to include, “... environmental impacts beyond the residual emission factors

³ D.92-10-020 at 8.

⁴ D.92-10-020, Attachment 3, at 22.

⁵ D.92-12-050, Finding of Fact 9, at 11.

⁶ D.92-12-050, Conclusion of Law 3, at 12.

presented in the Update. The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis.”⁷

D.05-04-051 adopted the Energy Efficiency Policy Manual Version 3, which contains the most-recently adopted version of the three-prong test. That version made the following changes:

- The second prong, cost effectiveness, includes the Program Administrator Cost (PAC) test, to require proposed programs to surpass a benefit-cost ratio of 1.0 for the Total Resource Cost (TRC) test and the PAC test;
- The third prong, environmental, must reference the avoided cost rulemaking, Rulemaking (R.) 04-04-025; and
- The baseline comparison of the most efficient same-fuel substitute must also meet the cost effectiveness requirements of 1.0 or more.

There have been subsequent versions of the Energy Efficiency Policy Manual that change how a fuel substitution program is defined. However, unlike Version 3, these were not formally adopted by any decision or resolution.

Thus, the current version of the three-prong test is reflected in Version 3 of the Energy Efficiency Policy Manual adopted by D.05-04-051. This version reads as follows:

“Fuel substitution programs may offer resource value and environmental benefits. Fuel-substitution programs should reduce the need for supply without degrading environmental quality. Fuel-substitution programs, whether applied to retrofit or new construction applications, must pass the following three-prong test to be considered further for funding:

⁷ D.92-12-050, Ordering Paragraph 2, at 12.

- a. The program must not increase source-British-Thermal-Unit (BTU) consumption. Proponents of fuel substitution programs should calculate the source-BTU impacts using the current CEC [California Energy Commission]-established heat rate.
- b. The program must have TRC and PAC benefit-cost ratio of 1.0 or greater. The TRC and PAC tests used for this purpose should be developed in a manner consistent with these Rules.
- c. The program must not adversely impact the environment. To quantify this impact, respondents should compare the environmental costs with and without the program using the most recently adopted values for residual emissions in the avoided cost rulemaking, R.04-04-025. The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis.

For purposes of applying these tests, fuel substitution proponents must compare the technologies offered by their program with the most efficient same-fuel substitute technologies available to prospective participants that would have TRC and PAC benefit-cost ratio of 1.0 or greater. The burden of proof falls on the party sponsoring the analysis to show that the baseline comparison adheres to this requirement. Fuel substitution programs with a predominantly load building or load retention character are not eligible for funding, and the proponent of a fuel-substitution program carries the burden of proof to demonstrate that the program focuses on energy efficiency and creates net resource value.”

2. Motion by NRDC, Sierra Club, and CEDMC

The motion filed on June 8, 2017 for review and modification of the three-prong test by NRDC, Sierra Club, and CEDMC was supported by 24 stakeholders.

The motion stated the following:

“the CPUC established the three-prong fuel substitution test in the early 1990s when a primary concern was to mitigate the

risk of “fuel wars” between utilities in Southern California as energy efficiency programs were ramping up. At the time, NRDC and others supported the three-prong test due to concern both about the successful roll-out of new energy efficiency programs and about increased air pollution and greenhouse gas emissions that would result from switching from natural gas to electricity due to emissions from electricity generation at that time. However, given both the significantly cleaner electric resource mix today and the maturity of California’s energy efficiency programs, the Commission should reconsider the three-prong fuel substitution test through a formal process to better align it with California’s climate policies.”

In particular, the moving parties emphasize that “the Test is a barrier to California’s progress on climate and energy goals.” They further argue that there is uncertainty on what burden of proof is needed to pass the three-prong test, especially with regard to selecting the baseline to which a new measure or program must be compared. This lack of clarity, they argue, in turn hinders electrification and the replacement of natural gas with “clean fuels” due to the lack of incentive programs funded by energy efficiency budgets.

The motion ultimately requests that the Commission:

1. Review the Test for clarity, utility, and alignment with Commission policies and California’s climate goals; modify the Test as needed and provide clear guidance on the methodology and baseline for conducting the Test.
2. Clarify under what conditions the Test must be passed (*e.g.*, for substitution of regulated fuels vs. substitution between regulated and unregulated fuels such as propane and wood) and consider modifying Commission policy to enable switching between regulated and unregulated fuels when key policy objectives are met.
3. Provide guidance, with example cases, on how projects or programs that include fuel substitution will be assessed

using the Commission's standard cost effectiveness tests that are required of all energy efficiency programs.

3. Issues Before the Commission

The comments of parties on the three-prong test generally fall into the following categories, which form the organization of the discussion for the rest of this decision:

- Policy context;
- Applicability to non-utility-provided fuels;
- Level of applicability;
- Comparison technology;

Prong 1: Source energy consumption;

- Prong 2: Cost-effectiveness;
- Prong 3: Environment;
- Applicability to new construction;
- Applicability to non-resource programs;
- Applicability to storage technologies;
- Applicability to, or accounting for, on-site generation;
- Burden of proof;
- Funding sources;
- Energy savings credits;
- Relationship to market transformation programs; and
- General clarifications and ease of use.

4. Policy Context

This section generally discusses the purpose of the three-prong test and what it is designed to do.

4.1. Comments of Parties

The original petitioners, including NRDC and Sierra Club, generally argue in their comments that the principles that led to the adoption of the test originally are still sound and relevant today. However, they argue that the test needs updating to align with current climate policies, and to make the test actionable so that the original objectives are still realized.

NRDC and Sierra Club represent that environmental concerns were the motivation for the creation of the test in the first place. They provide excerpts from the 1992 decisions to support their argument that the test was designed to avoid increasing the use of non-renewable resources and to avoid environmental harm generally.

In addition, NRDC and Sierra Club argue that the Commission in 1992 was focused on making sure that a fuel substitution measure not be a second-best alternative, when an even-more-efficient same-fuel measure was available. NRDC and Sierra Club argue that this concept is critical to avoid outcomes that are not in the interests of the environment.

4.2. Discussion

We generally agree with the NRDC and Sierra Club characterization of the purpose of the test. There are two aspects.

The first is ensuring that a fuel substitution activity can result in energy savings. This is the primary objective and purpose of our energy efficiency programs; a measure must demonstrate this benefit to be considered energy efficiency and to be eligible for funding authorization through energy efficiency funds collected from distribution system ratepayers of the investor-owned natural gas and electric utilities. It is worth noting that some fuel substitution technologies and measures may provide other benefits besides energy savings,

but those options are being examined in other venues, such as the building decarbonization R.19-01-011.

The second critical element is ensuring that, in the course of saving energy, the fuel substitution activity does not result in harm to the environment. Thus, in addition to energy savings, which is the primary purpose here, the fuel substitution activity also must not create a detrimental impact on the environment. We will discuss the implementation of these concepts further in the sections below.

5. Applicability to Non-Utility-Provided Fuels

5.1. Comments of Parties

NRDC, Sierra Club, and CEDMC advocated in their original petition for modification and in comments in response to the ALJ ruling that non-utility fuels such as propane or fuel oil (termed fuel switching, as distinct from fuel substitution where regulated fuels are substituted for one another) should be included in the three-prong test and eligible for energy efficiency program funding. They argued that switching from non-regulated fuels to electricity or natural gas has the potential to reduce GHG emissions and would be in line with California's goals.

5.2. Discussion

While we agree with NRDC, Sierra Club, and CEDMC that fuel switching may be in line with California's goals, the original ALJ ruling ruled this topic out of scope for purposes of revisions to the three-prong test for energy efficiency. These issues will be addressed more comprehensively in our building decarbonization R.19-01-011. Thus, for purposes of the three-prong test application in this proceeding and with respect to energy efficiency funding, it

will be limited to use when fuel substitution involves regulated fuels (electricity and natural gas).

6. Level of Applicability

This section addresses the question of the level at which the three-prong test should be applied. Numerous parties raised this issue in comments, in slightly different ways. The test could be applied to each specific measure, to individual projects, or at the program level (involving multiple measures and/or projects). As currently written, the test is not clear as to the level at which it should be applied, though the original intent appears to have been to apply the test at the individual measure level.

6.1. Comments of Parties

Cal Advocates strongly advocates that the three-prong test should be applied at the measure level, particularly with respect to the second prong, related to cost-effectiveness. Most other parties, including NRDC and Sierra Club, as well as SCE and SBUA, advocate that the cost-effectiveness test be applied at the portfolio level, which would mean fuel substitution measures are treated the same as any other measure included in the energy efficiency portfolio. In this interpretation, even if a specific fuel-substitution measure was not cost-effective individually, it could still be included in a portfolio of energy efficiency measures, so long as the portfolio as a whole is cost-effective.

6.2. Discussion

The comments of parties on this topic are somewhat confusing, because applicability of the test at the measure, project, program, or portfolio level is relevant to all three prongs of the current test, not just the cost-effectiveness one. The question, on the most basic level, is what is being compared to what, in utilizing the three-prong test.

The only approach that seems to make logical sense is to apply the test at the measure-level, since otherwise, program, project, or portfolio expenditures would serve to complicate the question of what is being compared. Comparing two technologies which use different fuels only seems to make sense if handled at the individual measure level.⁸ This is a separate question from what thresholds are required for the measure to pass each part of the three-prong test. Those issues are discussed further below.

7. Comparison Technology

This section addresses parties' comments with respect to how to identify the technology against which the fuel-substitution measure is compared. Prong 1, which measures the net energy savings from fuel substitution, and Prong 3, which measures the net GHG savings from a fuel substitution measure, necessarily compare the fuel substitution measure to a technology that would have been installed instead. Currently, the three-prong test requires the comparison technology to be "the most efficient same-fuel substitute technology available." "Same-fuel," in this instance, means a technology using the same fuel as what was being utilized prior to the fuel substitution measure. For example, if an electric technology is replacing a natural-gas-fueled technology, the "same fuel" would be "the most efficient" natural-gas-fueled technology.

7.1. Comments of Parties

NRDC, Sierra Club, and CEDMC requested clarity in their comments on what qualifies as the "most efficient" available technology. They state that it

⁸ In this context, "measure" means a "deemed" measure, a "custom" measure, or an individual fuel-switching technology that is contained within a larger "custom project." For further detail on "deemed" measures, see Ex-Ante Fact Sheet #2, available at: <https://www.cpuc.ca.gov/General.aspx?id=4132>. Custom measures and projects are defined in D.11-07-030, Attachment B, at B1.

might be extremely expensive and barely available. Instead, they support a comparison to the most efficient same-fuel substitute technology currently offered by the regular energy efficiency program portfolio, regardless of the cost-effectiveness of the technology.

Cal Advocates would prefer that the comparison technology be any technology that is commercially available in the market, that is the most efficient same-fuel option, regardless of whether it is offered as part of an energy efficiency program of a utility or not.

7.2. Discussion

There may be many reasons why a particular technology is not being incentivized through an energy efficiency program, not the least of which could be because the same-fuel measure is already standard practice. Therefore, we will not require comparison against a technology that is represented in the program administrator's energy efficiency portfolio.

In addition, the most efficient same-fuel technology may not be cost-effective or may be hard to define, as pointed out by NRDC, Sierra Club and CEDMC.

Thus, for generally practical reasons, we will require that the comparison technology be based on the normally determined baseline of the measure that is being replaced. This means the "same fuel" technology baseline, and is generally either based on the building code or appliance standard, industry standard practice, or existing conditions, depending on the circumstances of the measure installation.⁹

⁹ For further explanation of the treatment of baseline policy in energy efficiency portfolios, see Commission Resolution E-4939, Attachment A, and Industry Standard Practice Guidance v. 1.2A, available at: <https://www.cpuc.ca.gov/General.aspx?id=4133>.

For example, if a natural-gas-fueled water heater is being replaced with an electric heat pump water heater, the baseline comparison technology would be the minimum appliance standard for natural gas storage water heaters required by Title 20 appliance regulations promulgated by the California Energy Commission (CEC) or the U.S. Department of Energy. The minimum standard would vary with the size of the water heater.

Overall, the purpose of this comparison technology identification is to ensure that energy savings and environmental benefits are both better under the fuel substitution measure than the original-fuel measure.

8. Prong 1: Source Energy Consumption

The first prong of the three-prong test is designed to ensure that a fuel substitution measure reduces source energy consumption. The current formulation of the prong states that, “The program must not increase source-British-Thermal-Unit (BTU) consumption. Proponents of fuel substitution programs should calculate the source-BTU impacts using the current CEC-established heat rate.”

8.1. Comments of Parties

NRDC and Sierra Club comment that the CEC heat rate represents only the fossil fuel generation portion of the electricity resources used to serve load in California, and should therefore not be used. They argue that this value is not appropriate because it does not capture the zero-BTU content of the portion of the electricity portfolio that is renewable. Instead, NRDC and Sierra Club argue that the Commission should utilize the heat rates embedded in the Avoided Cost Calculator (ACC) already used for evaluating cost-effectiveness of demand-side measures in the portfolios of the program administrators.

PG&E and SCE also recommend utilizing the values already embedded in the avoided cost calculator, which provide the avoided energy inputs to the cost-effectiveness tool (CET) utilized in the energy efficiency programs. They point out that the CET is the best publicly-available tool to address source energy savings through its use of hourly heat rate granularity. In addition, SCE argues that this is important to maintain consistency desired by the integrated distributed energy resource (IDER) proceeding, which applies cost-effectiveness principles to all demand-side resources. Any updating of assumptions in the IDER proceeding would automatically flow to the energy efficiency and fuel substitution context.

SoCalGas and SDG&E instead recommend using the U.S. Environmental Protection Agency “Energy Star Portfolio Manager Thermal Conversions” methodology.¹⁰ They argue that this is consistent with other customer initiatives such as benchmarking requirements, that already use the Energy Star Portfolio Manager.

In reply comments, Cal Advocates points out that while use of the avoided cost calculator’s hourly heat rates has advantages, the tool is designed to produce estimates of GHG emissions and not source-BTU consumption, because it effectively treats renewable electricity as containing no energy, which they claim is inaccurate. Thus, Cal Advocates suggests a five-step approach to calculating the appropriate heat rates. First, use the avoided cost calculator to estimate the fraction of the grid electricity generated from renewable resources. Second, for the non-renewable share of electricity generation, use a standard heat rate from the CEC or the average market heat rate from the avoided cost calculator. Third,

¹⁰ See <https://portfoliomanager.energystar.gov/pdf/reference/Thermal%20Conversions.pdf>.

for the renewable share of electric generation, use 3412 BTU per kilowatt-hour (kWh) – the energy content of electricity. Fourth, using the share of renewables taken from the avoided cost calculator, compute a weighted average of the renewable and non-renewable heat rates for all 8760 hours of the year. Finally, multiply the hourly load profile of the fuel-substitution measure by the weighted-average heat rate from step 4.

8.2. Discussion

We agree with PG&E, SCE, NRDC, and Sierra Club that using the heat rate values embedded in the ACC is the best method currently available for calculating source energy. These values are already used by the Commission in other areas of the portfolio, such as the development of the energy efficiency Potential and Goals Study, and will be maintained to remain consistent with the policy developed for all demand-side resources in the integrated distributed energy resources (IDER) proceeding.¹¹ In addition, there is value in the added granularity of using hourly heat rates, rather than relying on a single annual average heat rate, if possible.

We further agree that ideally proponents of fuel substitution measures should calculate the source energy of fuel substitution measures using measure-specific hourly consumption estimates, if available. Hourly consumption estimates present measure-specific energy usage by hour, and using these will result in increased accuracy in determining if a fuel substitution measure passes Prong 1 of the three-prong test. This is because the energy savings and GHG reductions associated with electricity use from the grid largely depend on when the technology is used.

¹¹ Commission R.14-10-003.

This calculation should also take into account the lifecycle avoided source energy consumption of a fuel substitution measure, rather than only the first-year source energy consumption. Specifically, to be most accurate, the calculation should use a forward forecast of hourly marginal heat rates of the electric grid over the effective useful life of the measure.

While the above methodology, as described, would arguably be more accurate, it may not be immediately feasible utilizing the ACC and CET tools, and their embedded assumptions. Thus, a simplified approach of using the annual system average heat rate may be more practical.

Either the more accurate or the simplified approach would be acceptable to the Commission, and methods may improve over time. Thus, we delegate to Commission staff to develop technical guidelines for the calculation of source energy consumption for purposes of Prong 1 of the three-prong fuel substitution test as revised by this decision. Staff may develop this guidance on a standalone basis, or as part of more comprehensive guidance for proponents of fuel substitution measures intending to include those measures in the energy efficiency portfolio.

Commission staff shall produce the technical guidance on calculating source energy consumption in instances of fuel substitution within 90 days of the issuance of this decision, shall post it on the Commission's website, and shall serve it on the service list for this proceeding.

This guidance may propose a short-term solution with a longer-term development plan, as needed. This guidance may include information on how to access hourly consumption information, heat rates, and recommended modeling tools for creating or identifying information not included in current Commission tools. The guidance may include updates to tools and databases to facilitate this

calculation. Staff may also wish to host a workshop to develop these guidelines, at its discretion.

Staff should also periodically update these guidelines as information improves and we gain more experience with implementing fuel substitution measures.

9. Prong 2: Cost-Effectiveness

This section addresses the threshold for passing the second prong of the test, regarding cost-effectiveness. According to the current three-prong test formulation, a fuel substitution measure must achieve a benefit-cost ratio of 1.0 or higher for both the total resource cost (TRC) and the program administrator cost (PAC) tests. In this section, we discuss whether the cost-effectiveness prong of the test should continue to be required for fuel substitution measures.

9.1. Comments of Parties

As already summarized above, most parties commenting on cost-effectiveness focused on the level at which cost-effectiveness should be calculated, whether at the measure, project, program, or portfolio level. Most parties did not comment on the threshold that should be used, or assumed that it would or should be the 1.0 benefit-cost ratio for both the TRC and PAC tests, as otherwise required for the energy efficiency portfolio as a whole.

SCE, SBUA, and NRDC commented that cost-effectiveness thresholds should only be applied at the portfolio level, which is current Commission policy for energy efficiency expenditures. SCE argues that there are currently few or no fuel substitution measures in the energy efficiency portfolios because they are largely incapable of passing a cost-effectiveness threshold of a 1.0 TRC benefit-cost ratio.

Cal Advocates disagrees, stating that we should maintain a TRC threshold of a 1.0 benefit-cost ratio for fuel substitution measures.

In addition, parties commented on the appropriate baseline to utilize to calculate the energy savings included in the cost-effectiveness calculation.

SCE, in its comments, suggests that baseline determination should be based on the substituted fuel, and should otherwise follow the same principles as the rest of the energy efficiency portfolio. The baseline would be set at the original fuel code baseline, industry standard practice, or an existing conditions baseline, depending on the technology and applicable rules. PG&E's comments agree.

SoCalGas and SDG&E point to the process outlined in D.16-08-019, and associated Resolution E-4818, which initiated the Track 2 Working Group to work on additional issues related to setting energy efficiency baselines. However, SoCalGas and SDG&E explicitly recommend against the use of industry standard practice as a baseline since it is difficult to define.

Cal Advocates also agrees that the same rules for determining baselines for energy efficiency measures should apply to fuel substitution measures, including the provisions of D.16-08-019 and Resolution E-4818.

NRDC and Sierra Club also seem to agree, and their comments include a detailed set of recommendations to distinguish the setting of the savings baseline from the setting of the comparison technology.

9.2. Discussion

Applying a cost-effectiveness threshold at the measure level for fuel substitution measures creates a barrier for their inclusion in the energy efficiency portfolios. No other program or measure is required to pass a cost-effectiveness threshold for inclusion in the portfolio and program administrators routinely

include other types of energy efficiency measures which have TRC or PAC benefit-cost ratios below 1.0. Such measures can still contribute to other portfolio goals, including energy savings, and are balanced with other, more cost-effective measures.

In addition, many fuel substitution measures are relatively new to the California market, and greater market adoption may be necessary before the measure costs in the market are reduced and the measures are able to pass cost-effectiveness thresholds. In this regard, the measures may have similar characteristics to those included in the Emerging Technologies Program¹² or forthcoming market transformation programs, as discussed later in this decision.

We do not wish to continue to erect a cost-effectiveness barrier for fuel substitution measures that represents a higher hurdle than for any other measure included in the energy efficiency portfolio. Therefore, we will not require that a fuel substitution measure pass a cost-effectiveness threshold at the individual measure level. Instead, like all other measures included in the energy efficiency portfolios, a fuel substitution measure may be included in the portfolio, regardless of its individual cost-effectiveness characteristics, but each program administrator must still propose a portfolio that is cost-effective overall and meets all other requirements, as most recently articulated in D.18-05-041 and prior decisions.

Further, when including fuel substitution measures in the portfolio-level cost-effectiveness calculations, a program administrator should initially assume a default net-to-gross (NTG) ratio for the fuel substitution measure of 1.0. This assumption may be utilized, both on an *ex ante* (forecasted) basis and for savings

¹² See D.05-04-051, Attachment 3.

claims, until such time as an impact evaluation is conducted that establishes a different NTG ratio, at which point this assumption should be updated to the evaluated NTG assumption on a prospective basis.

The baseline utilized for cost-effectiveness analysis purposes should be the same as described in Section 8 of this decision associated with the implementation of Prong 1 of the test for energy savings.

In addition, the installed measure cost should include the full incremental cost to install the measure in a customer's home or business (technology, labor, and installation costs), but should exclude any additional upgrades required to increase the building total electric or natural gas load (*e.g.*, electric panel upgrades, running new gas lines, increasing size of natural gas lines, etc.). The necessity of such upgrades is specific to individual buildings and the cumulative total of installed technologies in the building, and therefore should not be attributed entirely to a single measure.

This is a departure from general energy efficiency cost-effectiveness policy, which requires that all relevant participants costs be reflected in the analysis. Because these are costs that should not be entirely attributed to each fuel substitution measure, on its own, we will make this exception for infrastructure upgrades associated with fuel substitution measures only. However, because this is a new issue area, we will require program administrators sponsoring fuel substitution measures in the energy efficiency portfolio to record and track the instances in which panel upgrades or gas line installations/upgrades are required to facilitate fuel substitution measures included in the portfolio.

Workpapers related to fuel substitution measures should include details of how all costs were accounted for and should include all data sources. Data collection on building upgrade requirements shall be conducted in consultation

with Commission staff and included in the Energy Efficiency Annual Reports of the program administrators, normally due May 1st of every year.

10. Prong 3: Environment

This section addresses the third prong of the three-prong test, designed to ensure that fuel substitution activities do not adversely impact the environment.

The current version of the prong states:

“The program must not adversely impact the environment. To quantify this impact, respondents should compare the environmental costs with and without the program using the most recently adopted values for residual emissions in the avoided cost rulemaking, R.04-04-025. The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis.”

A question inherent to the definition of environmental impacts is addressing which pollutants are being considered. This section will address that issue as well.

10.1. Comments of Parties

Many of the comments of the parties summarized under Section 8 above related to the first prong of the three-prong test are relevant to the environmental prong, particularly the methodological suggestions addressing heat rates and how they should be used.

NRDC and Sierra Club additionally recommend that the long-run marginal emissions values developed by Energy and Environmental Economics (E3) in 2017, as part of the avoided cost calculator update to incorporate the GHG adder, be used to estimate the environmental impact of a fuel substitution measure. They recommend that since the CET already utilizes these inputs, this is an appropriate tool to address the environmental prong of the test. However, they also represent that the current values in the avoided cost calculator for heat

rates (and therefore emissions) reflect the average existing energy use in a particular hour, rather than the marginal electricity use demanded as result of gas-to-electric fuel substitution. They argue that instead, new electricity use should be based on the build margin (at least 60 percent renewable energy by 2030, according to the renewables portfolio standard requirements). This would result in lower heat rates (fewer emissions) than just the average hourly heat rate that is currently in the avoided cost calculator. However, Sierra Club and NRDC are comfortable using the current heat rates available until better data can be added.

In addition, there is the question of which pollutants should be addressed in identifying the environmental impact. NRDC and Sierra Club argue, in their comments, that while there are differential impacts of some of the potential measures that could be included in fuel substitution programs (for example, there are more efficient natural gas water heaters that may slightly increase criteria pollutants while reducing GHG emissions), it would be extremely challenging to try to address the impact of each potential measure on multiple types of pollutants. In addition, they worry that attempting to conduct such a granular analysis could slow down the introduction of otherwise generally environmentally-beneficial measures. Thus, they recommend that GHG emissions are an adequate proxy for tracking the environmental impacts of fuel substitution measures until we are able to conduct a more comprehensive analysis, including indoor air quality, for all measures.

SCE also agrees that the long-run marginal cost of emissions reflected in the CET is the appropriate way to assess the third prong. SCE also recommends that these values continue to be updated in the IDER proceeding, in order to provide transparent and consistent assumptions to all parties for all types of

resources. SCE also assumes that the early emphasis will be on GHG emissions or CO₂ equivalents, with other air emissions included in the tools over time.

PG&E's comments are along the same lines, suggesting that the CET be used to evaluate the third prong of the test for now, with additional pollutants being added in the IDER proceeding, as better information becomes available.

BayREN also comments that GHG emissions can be used as a reasonable proxy for all pollutants.

10.2. Discussion

The current version of the avoided cost calculators (for electricity and natural gas) do not include comprehensive information about criteria pollutant emissions. Thus, we will utilize CO₂ equivalent GHG emissions as the proxy for environmental impact, for purposes of determining whether a measure has met the third prong of the three-prong test. Commission staff may update the calculator tools from time to time, and should more rigorous criteria pollutant information become available, staff may update the calculator to incorporate it.

We also agree with the majority of parties who suggest that the long-run marginal emissions estimates from the avoided cost calculator (for electricity) are the appropriate values for estimating the CO₂ equivalent emissions impacts of fuel substitution measures. However, it may take additional adjustments to the avoided cost calculator to have the values reflect this preference. In the meantime, we agree with SCE, PG&E, NRDC, and Sierra Club that the current version of the avoided cost calculator represents the best-available information to estimate the emissions impacts of fuel substitution measures, until such time as updated heat rate estimates are developed.

In order to determine if a fuel substitution measure increases or decreases CO₂ emissions compared to the baseline measure, parties should utilize the CET,

which uses inputs from the avoided cost calculator. The CET compares outputs for Gross Electric CO₂ reductions with outputs for Gross Gas CO₂ reductions. To determine the overall impact of the measure in terms of both gas and electric CO₂ emissions reductions, the values are added together. If the combined value is positive, then the measure reduces CO₂ emissions and passes Prong 3.

Similar to the discussion of Prong 1 in Section 8 of this decision, on how to calculate source energy consumption, as we start to implement fuel substitution programs, we may find that existing tools such as the CET, may or may not be adequate. Commission staff may also update technical guidance, within the policy articulated in this decision, on how to calculate avoided GHG emissions, as needed.

11. Applicability to New Construction

This section addresses whether the three-prong test should continue to be applicable to new construction applications.

11.1. Comments of Parties

All of the parties, in their comments, who address this issue at all, seem to agree that the three-prong tests should no longer be applicable to new construction applications.

Sierra Club and NRDC recommend that in most cases, the three-prong test should only apply to measures installed in existing buildings. They state there may be some cases in large commercial or industrial new construction where the only available baseline is a different-fuel technology. In that scenario, a default fuel does exist, not because of code but because of previous technology availability. Those projects should be considered fuel substitution and would have to pass the three-prong tests. But, according to NRDC and Sierra Club,

there is no need for a customer to go through a fuel substitution test when designing a new building with all-new end-use technologies.

SCE and Cal Advocates agree that the three-prong test should not apply to new construction. SCE recommends that building occupancy or permit to occupy should be used as a line of demarcation between new construction and an existing building, because occupancy provides the clearest distinction between decisions made during the building process and those made after occupancy.

Similarly, PG&E recommends that “greenfield” new construction measures (cases where no building yet exists) would generally not be subject to the three-prong test, but dual-fuel expansions, renovations, and additions, would.

Only SDG&E and SoCalGas argue that the three-prong test should apply to new construction applications, though they do not elaborate on the reasons why.

11.2. Discussion

We agree that the three-prong test is no longer relevant for application to new construction measures, projects, or programs. In the time since the original creation of the three-prong test, the California building energy codes (Title 24) have evolved considerably, to allow builders to choose different fuel-source pathways to reaching the building energy code requirements, including all-electric and mixed-fuel options. Thus, the three-prong test is no longer needed to ensure efficient outcomes in new construction applications. Thus, hereafter, we will only apply the three-prong test in retrofit applications or for renovations to existing buildings.

12. Applicability to Non-Resource Programs

This section addresses whether the three-prong test should apply to non-resource programs.

12.1. Comments of Parties

BayREN, in its comments, raised a concern about the application of the three-prong test to codes and standards programs that are considered non-resource programs in their categorization. Under the assumption that the test does apply, BayREN expressed concern that this would prevent BayREN from developing training, offering assistance, and making recommendations that support local government GHG reduction goals or Climate Action Plans.

12.2. Discussion

BayREN's concern raises the issue of whether the three-prong fuel substitution test can be applied to non-resource programs. The kinds of activities BayREN is describing would usually be considered non-resource programs that would not be subject to the three-prong test.

In addition, as we have described the measure-level application of the three-prong test above, even in the case of resource programs, the test would be applied to determine whether a given fuel substitution measure would be authorized to be included in an energy efficiency program. If the measure passes, then the activities associated with the promotion of the measure, such as education and training, would be considered in the overall portfolio of activities offered by the program administrator, when evaluating the overall cost-effectiveness of the entire portfolio of program offerings.

13. Applicability to Storage Technologies

This section addresses whether the three-prong fuel substitution test should apply to storage technologies and measures.

13.1. Comments of Parties

Cal Advocates, in its comments, raised the concern that Prong 1 of the three-prong test, related to source energy, does not apply to storage resources and should only apply to energy efficiency measures, although some flexibility may be appropriate. Cal Advocates stated that a fuel substitution measure should not increase source energy, consistent with the first prong of the test.

13.2. Discussion

Storage systems consume and hold energy and therefore they are not considered energy efficiency measures. The attributes of electricity supplied to the grid can vary significantly over a single day and throughout the year as the generation mix changes. On a grid where fossil fuels are on the margin, shifting when energy is taken from the grid could reduce the overall source energy consumed. On the other hand, on a grid where renewable fuels are on the margin, there may be a cost difference between time periods but may not be a reduction in source energy consumption or any environmental benefits from shifting when energy is taken from the grid.

In California, renewables are increasingly on the margin. Thus, we agree with Cal Advocates that energy storage should not be considered an energy efficiency measure at this time, and should not be subjected to or evaluated under the three-prong test.

14. Applicability to, or Accounting for, On-Site Generation

This section addresses whether and how the three-prong tests should be applied to situations where there is on-site electricity generation.

14.1. Comments of Parties

This issue was chiefly addressed in the comments of SBUA. They argue that small business customers have increasingly taken the step of adding on-site solar generation, and therefore should be credited for the electricity they

generate. They argue that where an electric appliance is substituted for a gas appliance and the customer generates electricity on site that is greater, on average over a billing cycle, than the electricity needed to power the substituted electric appliance, it should be assumed the measure is eligible for energy efficiency funding.

SoCalGas and SDG&E argue that on-site generation should not be a factor, since the three-prong test assumes utility-supplied energy.

In reply comments, Cal Advocates disagrees with SBUA. Cal Advocates argues that SBUA's suggestion ignores the load shapes of both the distributed generation and the fuel substitution measure, which is inappropriate. They suggest instead that the Commission follow existing policy guidance from other energy efficiency programs regarding customers with on-site generation.

14.2. Discussion

On this issue, we see no specific reason why the fuel substitution context should require different treatment for customers with on-site generation than any other energy efficiency measure. Thus, we agree with Cal Advocates and do not make any adjustments to deal with fuel substitution measures installed at sites with on-site generation.

15. Burden of Proof

This section addresses how "burden of proof" should be interpreted for purposes of fuel substitution measures. The current version of the three-prong test addresses this issue three times. In the first instance, in the third prong, it states, "The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis."

In the second instance, the test generally refers to the requirement of TRC and PAC benefit-cost ratios of 1.0 or greater, and states: “The burden of proof falls on the party sponsoring the analysis to show that the baseline comparison adheres to this requirement.”

Finally, the final sentence of the current version of the test states:

“Fuel substitution programs with a predominantly load building or load retention character are not eligible for funding, and the proponent of a fuel-substitution program carries the burden of proof to demonstrate that the program focuses on energy efficiency and creates net resource value.”

15.1. Comments of Parties

Parties’ comments, for the most part, did not focus on this issue.

15.2. Discussion

We wish to clarify that this “burden of proof” issue is no different in the context of fuel substitution measures or programs than for any other energy efficiency program. That is, the proponent of the measure or program must justify its recommendation for inclusion in the energy efficiency portfolio.

This is fundamentally different from the “burden of proof” issues being debated within the Track 2 Working Group associated with D.16-08-019 and Resolution E-4818 implementation, though it may be related when it comes to the type of evidence that program administrators need to submit to justify program or measure inclusion in the portfolio.

However, the current version of the three-prong test seems to overemphasize this issue, and we will address this in the reformulation of the fuel substitution test as a result of this decision.

16. Funding Sources

This section addresses the questions of which ratepayers should fund fuel-substitution activities.

16.1. Comments of Parties

Cal Advocates and SoCalGas/SDG&E indicate that the utility customers receiving the benefit of the avoided cost of the fuel should also pay the funds to support the fuel substitution measures. SoCalGas and SDG&E state that if the energy efficiency fuel substitution measure results in gas avoided cost savings, then the gas utility customers should pay for that measure. Cal Advocates' argument is the same, that fuel substitution measures must be funded by the original fuel ratepayers, because all avoided costs accrue to those ratepayers.

PG&E and SCE argue that the commission should reject this approach because it creates a disincentive for single-fuel utilities to initiate fuel substitution activities, limiting GHG reduction efforts and other energy efficiency intervention efforts. SCE specifically endorses PG&E's proposal, which is that "measures that replace gas in favor of electricity would be funded by electric ratepayers, and vice versa." PG&E justifies this suggestion in the spirit of one of the original purposes of the three-prong test, which was to mitigate the risk of "fuel wars."

SCE instead states the justification from the point of view of the fuel source of the measure being installed. In other words, if a fuel substitution technology uses electricity, then the funding source would come from electricity ratepayer funds. Similarly, if the technology uses natural gas, then funding would come from natural gas ratepayers.

NRDC and Sierra Club argue that most customers utilize the same electricity and natural gas distribution systems of the investor-owned utilities, with the limited exception of those served by publicly-owned electric utilities. Therefore, presumably, the ratepayers of both electricity and natural gas

investor-owned utilities overlap and thus there is no major inequity regardless of the funding path the Commission chooses.

SBUA argues that fuel type has little to do with equity, and that other customer characteristics such as level of energy use, income level, and business size are better indicators.

16.2. Discussion

We will adopt PG&E's proposal, because it is the most practical. We would like to see fuel substitution measures included in the portfolio, to the extent that they pass the fuel substitution test. Limiting funding of such fuel substitution measures, and their associated program costs, to the utility ratepayers for whom avoided costs accrue (in other words, the utility whose fuel is substituted), appears unlikely to result in enthusiastic support for fuel substitution measures. In addition, we agree with the argument put forth by NRDC and Sierra Club that there is unlikely to be any major inequity created by allowing funding for fuel substitution measures from the new-fuel ratepayers.

While the new fuel ratepayers will be the funding source, potential program administrators are not limited to utilities. All program administrators may propose to offer fuel substitution measures; the Commission will identify the appropriate funding sources and accounting treatment, as necessary.

In addition, there should be an equitable attribution of energy savings benefits to the same ratepayers who have funded the fuel substitution program; this issue is further discussion in the next section.

17. Energy Savings Credits

This section addresses how energy savings from fuel substitution measures should be attributed to program administrators, as well as potential adjustments to the methodology used to develop energy efficiency goals for

program administrators, to account for fuel substitution. This section applies only to measures that have passed the three-prong fuel substitution test and qualify for inclusion in the portfolio.

17.1. Comments of Parties

NRDC and Sierra Club argue that if the Commission chooses to have the “new fuel” utility ratepayers fund fuel substitution measures, then the program administrator whose ratepayers are paying the program costs should receive the credit for the energy savings resulting from the measures. In addition, the fuel savings from the original fuel would also have to be backed out of the original fuel utility program administrators’ goals. They state that this last step is necessary because the fuel substitution savings would have been achieved and they would, therefore, no longer be available for the original fuel utility program administrator to pursue.

SCE also recommends that the Commission consider avenues for savings to be claimed by the utility sponsoring the fuel substitution measure. They argue that traditional energy efficiency accounting practices allow gas and electricity savings to be exchanged based on negotiated rates between participating utilities as their purposes align in co-delivery and cost sharing. They argue that such accounting issues could create a significant and artificial limitation on the deployment of fuel substitution measures. Instead, SCE offers an example that if a gas water heater is replaced with an electric heat pump water heater, this would lower the overall gas water heater therm savings potential that is currently included in the gas energy efficiency goals. Therefore, they suggest that the Commission could reduce the overall gas energy efficiency goal by the corresponding therms saved by the electric fuel substitution measure. This

would then eliminate the concern of a utility not meeting its energy efficiency savings goals as a result of fuel substitution measures.

17.2. Discussion

Here we agree with NRDC, Sierra Club, and SCE that there needs to be a methodology not only for crediting energy savings to the ratepayers of the utility that funds that fuel substitution measure, but also subtracting the resulting original-fuel savings from the goals of the original-fuel utility for its service area. This is not a discussion of how to calculate any aspects of the three-prong fuel substitution test, but rather how to treat a program or portfolio utilizing fuel substitution measures that have already passed the test.

Basically, we can effectuate this purpose with two steps. First, the utility whose ratepayers fund the fuel substitution measure will earn the full energy savings to be credited against its goals in that fuel. The full energy savings is the difference between the fuel substitution measure energy use compared to the energy usage of the comparison technology, using the original fuel, depending on program design. This uses the process from the first prong of the three-prong fuel substitution test as reformulated in this decision.

The full energy savings value is converted into the new fuel units from BTUs. The program administrator implementing the program utilizing fuel substitution measures can use the full energy savings value in their portfolio forecasts and claims. When a fuel substitution measure has passed the three-prong test, as revised herein, it warrants the value of all of the associated savings for the ratepayers who have funded the program.

Second, the original-fuel utility, whose fuel is being substituted, will experience a reduction in its energy efficiency potential, both from a savings and a potential participant perspective. Thus, it should receive a credit against its

overall savings goals for its energy efficiency portfolio, in order not to create a disincentive towards allowing fuel substitution. This credit should capture the difference between the fuel substitution measure energy use as compared to the energy usage of the comparison measure using the original fuel. This also uses the same process as the first prong of the three-prong fuel substitution test, as reformulated in this decision. The savings value is converted into the original fuel metric. In some cases, the same utility program administrator may receive savings credit in both fuels.

To document these savings claims, we will require the program administrators to include energy savings impacts associated with fuel substitution measures in their Annual Reports and Annual Budget Advice Letter filings, and in any other documentation that requires inclusion of the energy efficiency portfolio goals and progress towards those goals.

In the case of dual-fuel utilities, the impact on both the new fuel and the original fuel consumption can be readily reported at the same time. In the case of single fuel utilities, the original fuel utility will need to wait until the new fuel utility reports the savings impacts of its fuel substitution activities, and then should reflect the original fuel impacts in the following year, either in the Annual Reports or the Annual Budget Advice Letters, unless the utilities mutually agree to share information on a more timely basis. Commission staff are encouraged to work with the program administrators to implement practical reporting requirements associated with these provisions of this decision.

At a minimum, in the Energy Efficiency Annual Reports, normally due May 1 of every year:

- The new fuel utility or program administrator must clearly identify in a separate table that year's fuel substitution

measures' energy savings and demand reductions, and calculations should be broken out by fuel, as appropriate.

- The original-fuel utility should report the reduction in its energy savings and demand reductions associated with the fuel substitution measures reported by the new fuel utility, either for the same year or with a one-year lag in order to capture the publicly-reported impacts of the other-fuel utility.

18. Relationship to Market Transformation Programs

This section addresses whether fuel substitution measures can or should be included in market transformation programs, including any forthcoming framework changes to how market transformation may be offered by energy efficiency program administrators.

18.1. Comments of Parties

Cal Advocates, in its comments, argues that not all potential fuel substitution measures can currently achieve measure-level cost-effectiveness thresholds. They state that certain technologies hold promise, but are not yet mature enough to be cost-effective, either because the technology does not yet deliver substantial efficiency gains or because manufacturers and implementers have not yet learned how to reduce the costs.

Thus, Cal Advocates argues that such immature technologies should be considered for inclusion in a dedicated market transformation program. They note that this proceeding is also concurrently consider a market transformation framework, into which some fuel substitution measures may fit.

18.2. Discussion

We agree with Cal Advocates that some new fuel substitution measures that do not currently qualify for energy efficiency funding by passing the three-prong test, as reformulated in this decision, could still be eligible to be funded through our forthcoming market transformation framework. This opportunity

holds promise for some emerging technologies. We will further address the market transformation framework in a forthcoming decision in this proceeding. But we agree that if a fuel substitution measure or program otherwise meets those forthcoming market transformation requirements, it should be considered for funding and promotion in that context.

19. General Clarifications and Ease of Use

19.1. Comments of Parties

NRDC, Sierra Club, and CEDMC, in their petition, state that the three-prong test is ambiguous and needs clarification. Their recommendations include three-prong test guidelines and example calculations, a list of same-fuel options, a calculator, a standardized templates or database for all parties to use, and specific data sources.

19.2. Discussion

We agree with NRDC, Sierra Club, and CEDMC that, in an ideal world, all of the tools they recommend would be available. At this stage, however, the resources that do exist are the DEER database and the workpaper and custom measures/project processes, as well as the ACC and CET, as discussed earlier in this decision. These are the resources that should be used. Where these values do not already exist, either in DEER or in workpapers, the program proposers should show calculations and justifications for its proposals.

20. Summary of Changes to the Three-Prong Test

This section summarizes the previous sections of this decision by adopting a reformulated version of the three-prong test, which we will rename the “Fuel Substitution Test.” This new name is intended to avoid confusion, since the original Prong 2, related to cost-effectiveness, will no longer be applied at the individual measure level, and is already incorporated within the overall energy efficiency portfolio of the program administrator. Today’s revision continues to

emphasize and value each part of the test equally, such that a fuel substitution measure will not result in load building, nor will it adversely impact the environment. The Fuel Substitution Test shall be formulated as follows:

Fuel Substitution Test. Fuel substitution measures must offer resource value and environmental benefits. Fuel substitution measures should reduce the need for energy supply without degrading environmental quality. A measure may be “deemed” (have pre-determined savings parameters) or “custom” (have unique savings parameters) and may also be contained within a custom project. To be considered for energy efficiency ratepayer funding for retrofit measures, a measure must meet the following requirements:

- a. The measure must not increase total source energy consumption when compared with the baseline comparison measure available utilizing the original fuel, as currently defined by the baseline policies in D.16-08-019 and Resolution E-4939, Attachment A, and as may be revised by the Commission.
- b. The measure must not adversely impact the environment. This means that the use or operation of the measure must not increase forecasted carbon-dioxide-equivalent emissions impacts as compared to the comparison measure utilizing the original fuel.

The comparison measure utilizing the original fuel, against which the fuel substitution measures is compared, must be the same for both items a and b above.

This test does not apply to new construction applications, but does apply to renovations of existing buildings. Program administrators proposing fuel substitution measures must provide all assumptions and calculations for review, utilizing the most recent versions of the Avoided Cost Calculator and the Cost-Effectiveness Tool available at the time the measure is proposed. Fuel substitution measures and/or programs with a predominantly load-building or load-retention character are not eligible.

The costs and benefits of fuel substitution measures and programs shall be reflected in the cost-effectiveness analysis of the total portfolio of the program administrator sponsoring the measures. When a fuel substitution measure passes the Fuel Substitution Test, it shall be included in the cost-effectiveness analysis of the portfolio with a net-to-gross (NTG) ratio assumption of 1.0, until such time as evaluated NTG information is available, when the assumption shall be updated on a prospective basis.

21. Process for Submitting a Proposed Fuel Substitution Measure for Approval

Any program administrator proposing a fuel substitution measure shall prepare documentation for review and approval by Commission staff, and any related Commission consultants, relying upon the *ex ante* (energy savings forecasting) review processes, where necessary, in place at the time of submission. The responsibility to deny or accept a fuel substitution measure for use in a program administrator's overall energy efficiency portfolio rests with Commission staff, within the policies articulated in this decision.

A fuel substitution measure, depending on its status as a deemed or custom measure, will have different documentation requirements according to the current rules that pertain to those types of measures. For example, current requirements are that program administrators request approval for a deemed measure with a workpaper submission. For custom measures, the adopted process is provided in Attachment B of D.11-07-030. Regardless of the specific process, the program administrator shall specifically flag workpapers or custom projects as fuel substitution-related when filing their documentation.

Once Commission staff notify the program administrator that the measure has passed the Fuel Substitution Test, the measure will be available for use in the portfolios. The program administrator utilizing the fuel substitution measure in

its portfolio shall otherwise follow other Commission rules for adding new measures or programs to their portfolio. As the Commission gains experience with these measures, Commission staff may also provide additional guidance on how fuel substitution measures should be proposed in the energy efficiency portfolios.

22. Comments on Proposed Decision

The proposed decision of ALJ Roscow in this matter was mailed to parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on _____.

23. Assignment of Proceeding

Liane M. Randolph is the assigned Commissioner and Julie A. Fitch and Valerie U. Kao are the assigned Administrative Law Judges in this proceeding.

Findings of Fact

1. The policy behind the three-prong test, as originally formulated, was to ensure that fuel substitution activities save energy, benefit the environment, and do not result in load building.

2. Fuel substitution is defined as changing from one regulated fuel to another (*e.g.*, from natural gas to electricity), whereas fuel switching involves changing from the use of a non-regulated fuel to a regulated one (*e.g.*, from propane to electricity).

3. Fuel substitution is permissible within the energy efficiency portfolios of program administrators, whereas fuel switching is not covered in this decision and not funded by utility ratepayer energy efficiency funding.

4. Applying the three-prong fuel substitution test at the measure level is the only logical approach; other comparisons would serve to obscure the policy purposes of the test.

5. A fuel substitution measure should be compared against the original fuel measure that would otherwise be identified as the baseline technology, as otherwise articulated in the Commission's energy efficiency baseline policy in D.16-08-019 and Resolution E-4939, Attachment A, or any updates to this policy.

6. The Commission currently utilizes the Avoided Cost Calculators and Cost-Effectiveness Tool to evaluate inclusion of energy efficiency measures in the portfolio. These remain the best-available tools for evaluating individual measure costs and benefits.

7. Source energy consumption of individual fuel substitution measures that utilize electricity should be evaluated by using hourly heat rates, when possible, or averaged heat rates, if necessary.

8. The Commission evaluates the cost-effectiveness of energy efficiency portfolios at the portfolio level, and not at the individual measure level.

9. Applying a cost-effectiveness screen at the measure level for fuel substitution measures could create a barrier to their inclusion in energy efficiency portfolios, since no other measures are subjected to this threshold requirement at the individual measure level.

10. Applying the three-prong test at the measure level and removing the requirement for measure-level cost-effectiveness, effectively leaves only two prongs to the test. Thus, the test should be renamed to the Fuel Substitution Test in order to minimize confusion.

11. The need for building infrastructure upgrades such as electrical panel upgrades or installation or upgrading of natural gas lines are attributable to the

cumulative impact of multiple energy-using measures in a customer's building, rather than only one fuel substitution measure.

12. The Commission does not have good data on the necessity of building infrastructure upgrades, such as electrical panels or gas lines, associated with fuel substitution measures.

13. The best information currently available to the Commission about environmental impacts of fuel substitution measures is to utilize carbon dioxide equivalent greenhouse gas emissions as a proxy for all environmental impacts.

14. California's Title 24 building energy code allows builders to choose different fuel-source pathways to reaching the code.

15. Energy storage technologies or systems that consume and hold energy are not considered energy efficiency measures.

16. The versions of the three-prong test adopted prior to this decision emphasized the "burden of proof" for the proponent of fuel substitution measures, but this does not appear to be a significant issue.

17. When fuel substitution measures are sponsored, the original-fuel utility will experience a reduction in energy efficiency potential, since that original-fuel measure will no longer be available to be replaced with a more efficient same-fuel option.

18. The Commission uses the Energy Efficiency Annual Reports and Annual Budget Advice Letter filings to document energy savings goals and progress towards those goals.

Conclusions of Law

1. The Commission should continue to ensure that fuel substitution activities do not result in an increase in source energy consumption, harm to the environment, or load building.

2. The Commission should continue to permit fuel substitution, but not fuel switching, within the portfolios of the energy efficiency program administrators.

3. The venue for policy on fuel substitution that does not result in energy savings, as well as fuel switching, is within the context of the Commission's Building Decarbonization Rulemaking (R.19-01-011).

4. The three-prong fuel substitution test, as reformulated in this decision, should be applied at the individual measure level ("deemed" measure, "custom" measure, or to the fuel substitution measures within a custom project).

5. The comparison technology for a fuel substitution measure should not be required to be included in an existing energy efficiency portfolio, nor should it be required to be cost-effective.

6. Baseline policy for fuel substitution should be the same as for the energy efficiency portfolio as a whole, as further articulated in D.16-08-019 and Resolution E-4939, Attachment A, or any subsequent update to this policy.

7. The Commission should rely on the Avoided Cost Calculators and Cost-Effectiveness Tool to evaluate individual fuel substitution measure proposals, as those tools are updated from time to time by the Commission or staff.

8. Commission staff should issue technical guidance on calculating source energy consumption of fuel substitution measures, as well as any other necessary aspects of how to apply the three-prong fuel substitution test, as reformulated in this decision, within 90 days of the issuance of this decision. Such guidance may be updated periodically, as needed, at the discretion of Commission staff.

9. The Commission should apply cost-effectiveness analysis of fuel substitution measures and activities as part of the overall energy efficiency portfolio, and not at the individual measure level. Thus, the second prong of the

three-prong test should be eliminated at the individual measure level and the test should be renamed the Fuel Substitution Test.

10. When fuel substitution measures pass the Fuel Substitution Test and are initially included in the energy efficiency portfolios of program administrators, the cost-effectiveness of the measure should be assumed to have a net-to-gross ratio of 1.0, until such time as an impact evaluation establishes a different assumption, on a prospective basis.

11. The baseline for a fuel substitution measure, for cost-effectiveness purposes, should be same as for the first prong of the test related to energy savings.

12. Building infrastructure upgrades such as electrical panel upgrades or installation or upgrading of natural gas lines should not be included in the measure costs associated with fuel substitution measures, either at the individual measure or the portfolio level.

13. The exception to exclude consideration of building infrastructure upgrades in the full measure costs of the fuel substitution measure, to be utilized in considering cost-effectiveness, is a specific exception for fuel substitution measures only.

14. Energy efficiency program administrators sponsoring fuel substitution measures should be required to track the instances of building infrastructure upgrades (such as electrical panels and natural gas lines) associated with installation of fuel substitution measures. Approaches to this data collection should be designed in consultation with Commission staff and the data should be included in energy efficiency annual reports.

15. The Commission should utilize the electric Avoided Cost Calculator heat rates and the natural gas Avoided Cost Calculator, run through the Cost

Effectiveness Tool, to estimate the carbon dioxide equivalent GHG emissions as a proxy for environmental impact of fuel substitution measures.

16. A fuel substitution measure must not increase the carbon dioxide equivalent emissions to pass the Fuel Substitution Test and be included in the energy efficiency portfolio.

17. The Fuel Substitution Test should not be applied to new construction measures, projects, or programs.

18. The Fuel Substitution Test should be not be applied to non-resource energy efficiency programs, since such programs typically do not involve installation of specific energy efficiency measures or technologies.

19. The Fuel Substitution Test should not be applied to energy storage technologies or systems.

20. The Fuel Substitution Test does not need to be modified to handle situations with electricity generated on site. The same policies that apply to the energy efficiency portfolio as a whole with respect to on-site generation should be used for fuel substitution measures.

21. In terms of “burden of proof” in proposing fuel substitution measures, the proponent must bring forward all calculations and assumptions in a workpaper in order to have its proposed measure evaluated for passing the Fuel Substitution Test and included in the energy efficiency portfolio.

22. Fuel substitution measures should be funded by the ratepayers of the new fuel, not the original fuel being substituted. This should not create any inherent inequity.

23. Any costs and benefits, including energy savings, of fuel substitution measures or programs should be reflected in the portfolio of the program administrator sponsoring the fuel substitution measure.

24. The original-fuel utility program administrator should receive an offsetting energy savings attribution toward their portfolio energy efficiency goals, calculated as the difference between the fuel substitution measure energy use compared to the energy use of the comparison measure using the original fuel, to account for the loss of energy efficiency potential when its fuel is substituted.

25. Each program administrator sponsoring a fuel substitution measure, as well as any utility program administrator of the original fuel being substituted, should reflect energy savings (or credit towards goals) associated with fuel substitution measures in its Energy Efficiency Annual Report and Annual Budget Advice Letter filings in a separate accounting from claims of other energy savings.

26. A utility whose fuel is being substituted by a fuel substitution measure should include accounting of credit towards energy savings goals, with a one-year lag (if necessary), after reflecting the energy savings claims of the new-fuel utility in its Energy Efficiency Annual Report and/or Annual Budget Advice Letter filings.

27. The Commission should consider fuel substitution measures that do not pass the Fuel Substitution Test for inclusion in market transformation programs, as long as the fuel substitution measure meets the other forthcoming requirements from the Commission about market transformation programs.

O R D E R

IT IS ORDERED that:

1. The Three-Prong Test related to fuel substitution, originally adopted in Decision (D.) 92-02-075, and amended from time to time and most recently in D.05-04-051, shall be replaced with the Fuel Substitution Test, as follows:

Fuel Substitution Test. Fuel substitution measures must offer resource value and environmental benefits. Fuel substitution measures should reduce the need for energy supply without degrading environmental quality. A measure may be “deemed” (have pre-determined savings parameters) or “custom” (have unique savings parameters) and may also be contained within a custom project. To be considered for energy efficiency ratepayer funding for retrofit measures, a measure must meet the following requirements:

- a. The measure must not increase total source energy consumption when compared with the baseline comparison measure available utilizing the original fuel, as currently defined by the baseline policies in D.16-08-019 and Resolution E-4939, Attachment A, and as may be revised by the Commission.
- b. The measure must not adversely impact the environment. This means that the use or operation of the measure must not increase forecasted carbon-dioxide-equivalent emissions impacts as compared to the comparison measure utilizing the original fuel.

The comparison measure utilizing the original fuel, against which the fuel substitution measures is compared, must be the same for both items a and b above.

This test does not apply to new construction applications, but does apply to renovations of existing buildings. Program administrators proposing fuel substitution measures must provide all assumptions and calculations for review, utilizing the most recent versions of the Avoided Cost Calculator and the Cost-Effectiveness Tool available at the time the measure is proposed. Fuel substitution measures and/or programs with a predominantly load-building or load-retention character are not eligible.

The costs and benefits of fuel substitution measures and programs shall be reflected in the cost-effectiveness analysis of the total portfolio of the program administrator sponsoring the measures. When a fuel substitution measure passes the

Fuel Substitution Test, it shall be included in the cost-effectiveness analysis of the portfolio with a net-to-gross (NTG) ratio assumption of 1.0, until such time as evaluated NTG information is available, when the assumption shall be updated on a prospective basis.

2. Any energy efficiency program administrator may propose a fuel substitution measure for inclusion in its portfolio by preparing documentation for review and approval by Commission staff as part of the *Ex Ante* (energy savings forecasting) review process. The responsibility to accept or reject a fuel substitution measure rests with Commission staff, within the framework included in this decision.

3. Commission staff shall, within 90 days of the issuance of this decision, issue technical guidelines for fuel substitution measures, including, but not limited to, guidance on calculation of source energy savings for fuel substitution measures. Such guidance shall be posted on the Commission's web site and distributed to the service list of this proceeding. Commission staff may update this guidance from time to time, at its discretion, as additional information becomes available, and within the policy parameters outlined in this decision.

4. Any energy efficiency program administrator including fuel substitution measures in its portfolio shall track instances of building infrastructure upgrades necessitated by the installation of the fuel substitution measures, and shall include this information in its energy efficiency annual report, in a form agreed upon with Commission staff.

5. Fuel substitution measures and associated program costs shall be funded by the ratepayers of the new fuel, not ratepayers of the fuel being substituted.

6. Each program administrator sponsoring a fuel substitution measure, as well as any utility program administrator of the original fuel being substituted,

shall reflect energy savings (or credit towards goals) associated with fuel substitution measures in its Energy Efficiency Annual Report and Annual Budget Advice Letter filings in a separate accounting from claims of other energy savings.

7. A utility whose fuel is being substituted by a fuel substitution measure should include accounting of credit towards energy savings goals, with a one-year lag (if necessary), after reflecting the energy savings claims of the new-fuel utility in its Energy Efficiency Annual Report and/or Annual Budget Advice Letter filings.

8. Fuel substitution measures that do not pass the Fuel Substitution Test as reformulated in this decision may be evaluated for inclusion in the forthcoming Market Transformation program framework being evaluated by the Commission.

This order is effective today.

Dated _____, at San Francisco, California.