

Energy Efficiency Savings Eligibility at Sites with non-IOU Supplied Energy Sources — Guidance Document

Version 1.1

Revision History

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Contents

- Introduction3
- CPUC Policy Background4
- General Framework to Estimate Savings 7
- Eligibility and Maximum Claimable Energy Savings Determination.....8
- Attachment A: Typical Customer Facility Diagram 11
- Attachment B – Process Flow to Determine Eligibility and Maximum Claimable EE Energy Savings . 12
- Attachment C – Selected Examples 13

Introduction

The purpose of this document is to clarify the California Public Utilities Commission (CPUC) policy on how to analyze energy efficiency improvement projects, which impact the use of non-IOU supplied energy, proposed for financial support under the CPUC-authorized energy efficiency (EE) portfolios implemented by the Program Administrators, mainly the California investor owned utilities (IOUs). The focus of the discussion in this document is the “accounting” method that shall be utilized to establish the claimable savings for these situations. Below are the two primary CPUC policy considerations which provide the framework for this guidance document.

1. Current policy related to eligible savings from a project or measure seeking financial support via CPUC-authorized energy efficiency portfolios including:
 - a. The use of hourly net electric grid impacts as the basis to estimate or measure electric kW and kWh savings and to calculate incentives; and
 - b. A reduction in energy supplied from the grid/system that is subject to the electric energy efficiency surcharges or the non-bypassable gas surcharge.
2. Guiding principles consistent with California’s energy policy goals, including the state’s Zero Net Energy (ZNE) goals including:
 - a. Furthering progress towards ZNE residential and commercial new building construction and existing building retrofit activity primarily as enabled via the introduction of onsite renewables – specifically photovoltaics (PV) which is currently nearly the exclusive on-site renewable resource used to accomplish ZNE in buildings – supported by net energy metering; and
 - b. Supporting deeper energy efficiency adoption together with site-specific use of PV.

On April 8, 2014, the IOUs (led by PG&E) submitted a proposal to Commission staff for consideration of estimating the savings from energy efficiency (EE) projects implemented at sites that use electric power produced from on-site generation.

The proposal was in response to a Commission staff ex ante custom project dispositions that directed the IOUs to claim energy savings and offer incentives based on project/measure energy savings that result in coincident reductions in consumption of IOU-supplied energy from the grid/system which are subject to billed non-bypassable EE charges. Similarly, Commission staff-managed ex post evaluations of custom projects have disallowed savings which did not meet those requirements. In their disagreement with these dispositions the IOUs cited long-standing utility program rules that allowed energy savings to be claimed regardless of the timing and impact of savings on the grid/system and sometimes independent of the applicability of non-bypassable EE charges. These IOU program rules were allowing energy savings and incentives to be paid as long as the project/measure energy savings did not exceed the annual energy purchases from the grid/system. Additionally, IOU program rules did not always limit eligible savings to the reduced consumption subject to the non-bypassable EE charges.

Commission staff reviewed the IOUs’ proposal and found it lacking in both areas of the policy considerations identified above. First, Commission staff reaffirmed the Commission’s directions and policies behind its disposition on crediting energy savings that result in coincident reduction in IOU-

supplied energy from the grid/system subject to the non-bypassable EE charges. As discussed below, the CPUC policy requiring hourly electric grid supplies and monthly gas system supplies was effective commencing with the 2006 EE portfolios. Commission staff has, in its weekly custom projects ex ante review status update calls with the IOUs, cited the CPUC's policies supporting that direction.

Second, upon further consideration, Commission staff recognized that strict interpretation of the hourly grid impact rules as well as the IOU proposed method of capping savings to annual grid purchases rules are not fully consistent with the second policy framework noted above – deepening energy efficiency combined with the application of PV to accelerate progress towards California's ZNE buildings goals.

This document clarifies the CPUC's policies on the eligibility of EE projects/measures to receive rebates/incentives when installation of the EE projects occurs at sites that meet part or all of its energy requirements from non-IOU energy resources. Guidance is provided on the considerations and methodology to be used to estimate energy savings for projects eligible to receive financial support from the Program Administrators' portfolio of energy efficiency programs overseen by the CPUC. This guidance also addresses special considerations, and in some cases, an exemption for sites utilizing PV and implementing deep EE measures in furtherance of the California ZNE goals.

The eligibility and savings estimation guidance in this document applies to all resource program activities in the CPUC authorized EE portfolios. This guidance is based upon Commission direction effective in 2005 and clarified in 2006 and should have been applied to all EE activities from that time forward. Staff understands that some of this direction has not been implemented in all activity areas and requires that the Program Administrators take immediate steps to ensure that all activities have incorporated this guidance into their measure/project eligibility rules, ex ante savings estimates and claims reporting.

CPUC Policy Background

The primary goal of EE programs is to reduce the load on the grid/system with a resultant reduction in the investments in additional supply-side resources. This policy is based on recognition that the CPUC has considered energy efficiency (using less energy to provide the same or higher level of service)¹ and demand response (modifying energy usage when needed for optimal grid operation) to be top priorities in meeting California's energy needs.² Therefore the impacts of EE

¹ Current policy, as expressed most recently in D.12-05-15 and D.14-10-006, excludes like-for-like replacements and regressive baseline items from the definition of eligible for support and expects program design to minimize free ridership such that savings is incremental to normally occurring savings included in current procurement planning.

² 2013 Integrated Energy Policy Report at 1 (http://www.energy.ca.gov/2013_energypolicy/). The Energy Action Plan II, September 2005, provided a first joint CPUC/CEC commitment to the Loading Order priority of preferred resources, including energy efficiency, being the first consideration. (http://www.energy.ca.gov/energy_action_plan/2005-09-21_EAP2_FINAL.PDF).

measures/projects for which EE funding is sought must be that which coincidentally reduce energy supplied from the grid/system. This policy of coincident reduction draws from CPUC avoided cost adoption Decisions in which the cost effectiveness of EE portfolio and portfolio impacts are based on hourly electric impact shapes and monthly natural gas use shapes³. The above-referenced electric hourly impact shape requirement and the grid/system impact requirements ensure that the rebate/incentives are available only for the impact that reduces the coincident energy supplied from the grid/system. This accounting approach also enables appropriate credit for demand response (DR) activities as expected by the loading order policy⁴.

However, guidance must also take into consideration that the loading order calls for renewable resources and distributed generation next after EE and DR. During the development of the hourly electric grid impact accounting policy for EE, in R.04-04-025, the contribution of distributed generation via renewables was not an issue that was raised or addressed. Additionally, the ZNE goals had not yet been adopted⁵. Currently on-site PV is a very significant reality, continuing to grow rapidly and the key current component in progress towards the ZNE goals.

California law requiring access to net energy metering (NEM) has accelerated adoption of PV in residential and small commercial customer buildings as well as encouraged installation of PV and other renewables in larger customer sites. To ensure the EE savings accounting policy does not hinder this progress Commission staff will exempt from EE savings accounting rules all on-site PV generation utilized to reduce building electric demand and usage for residential and small commercial customers⁶.

Additionally, customers other than residential and small commercial utilizing on-site PV generation to reduce building electric demand and usage under a NEM tariff will only be subject to a monthly energy and demand limitation; under this accounting approach monthly EE energy use and demand reduction credit will be counted to the extent those reductions are less than the monthly energy use and demand for the building net of (including the reduction due to) the on-site PV generation. With

³ Decision 05-04-024 adopted the use of utility specific hourly electric grid impact shapes as the basis for valuing the benefits of energy efficiency activities and Decision 06-06-063 amplified the importance of the use of accurate hourly electric grid impacts for determining electric energy savings as well as adopted an hourly methodology as the definition of peak load reductions. This hourly impact construct replaced the previous annual average statewide load reduction valuation methods.

⁴ 2013 Integrated Energy Policy Report at 1 “The loading order identifies energy efficiency and demand response as the State’s preferred means of meeting growing energy needs. Next, the loading order calls for renewable resources and distributed generation.”

⁵ ZNE building goals were first adopted by the CPUC in 2007 (D.07-10-032). Executive Order B-18-12 has indicated aspirational goals for both new and existing state buildings. The California Energy Commission endorsed the CPUC ZNE building goals in the 2007 IEPR and in later ISPR’s endorsed pursuit of ZNE considerations in future building standards to support those goals.

⁶ Small commercial customer, is defined in PUC Section 331, subdivision h, as “a customer that has a maximum peak demand of less than 20 kilowatts”.

these exemptions, on-site PV will have no impact on EE savings accounting for residential and small commercial customers relative to their building energy use and other customers with service under a NEM tariff with on-site PV will not be subject to hourly grid impact accounting, only a net monthly grid purchase limit for energy use and demand reduction credit.

For site-specific custom calculated incentive programs, the rules described in this guidance document including the exceptions provided for above shall apply to all participants.

For deemed incentive programs, the hourly accounting methodology shall be utilized in development of workpaper values without any assumed on-site generation unless such on-site generation is a typical practice among the expected participant population. However, in the case of customers applying for deemed rebates, the EE savings credit shall not be allowed to exceed the customers annual purchases subject to non-bypassable EE charges; if such a limitation is exceeded the incentive payment shall be prorated based upon the customer average annual purchases, excluding any NEM reductions due to exports. In other words, all purchases count even those later negated by exports, but an increase in exports will not count as increased savings. Other than these exemptions and alternate treatments all other measures and projects at all customer sites shall be required to follow the hourly electric and monthly gas grid demand accounting procedures as outlined in this document.

For buildings installing electric energy efficiency measures, savings accrue only during the hours that the building(s) is a purchaser of grid electricity or system gas used to meet the electric load. CPUC Decision 05-04-024 adopted for use in 2006 and beyond hourly electric avoided costs and Decision 06-06-063 amplified the requirement that electric savings be established via hourly grid impact (load) shapes that are applied to the hourly avoided costs to develop the eligible energy and demand and resultant cost-effectiveness⁷. D.06-06-063 also adopted the DEER average “grid level impact” definition of peak kW savings for use in all EE activities⁸. Thus, the use of hourly net grid impacts to estimate electric kW and kWh savings and to calculate incentives has been a CPUC energy efficiency policy requirement since 2006. Any methodology proposed to be used for estimating project/measure savings for CPUC authorized EE portfolio financial support must be consistent with this policy and the exceptions or alternative treatments for on-site PV stated above. A simplified approach may be proposed for use, however, the burden is on the proposer to show that the proposed simplification provides an accurate grid/system time dependent savings estimate consistent with the above policy requirements including the exceptions and alternate treatment of on-site PV.

The CPUC policy requirements cited here, combined with the exceptions and alternative treatment for on-site PV generation as stated above, shall apply to ex ante as well as ex post savings estimates

⁷ D.05-04-024 OP 1 adopts hourly electricity and monthly natural gas avoided cost methodologies and OP 2 directs the IOUs to utilize that methodology in 2006 and beyond. D.06-06-063 found that “time averaged” electric load shapes were not appropriate and directed that the use of improved hourly electric load shapes must be a priority (see sections 5. Undervaluation from TOU Averaging and 8. Improving Load Shape Data).

⁸ D.06-06-063 OP 1, with summary on page 5 and discussion on page 24-25.

and thus activities of both Program Administrators (EE portfolio implementation) and Commission staff (portfolio evaluation and regulatory support).

Some commenters on the August 2014 draft expressed the concern that grid/system consumption not subject to non-bypassable EE charges should be eligible for EE portfolio support. Such consumption of gas, for example, may be used for on-site generation or co-generation. Other such consumption may be by organizations which are not subject to the non-bypassable EE charges. Staff notes that most Program Administrator participation rules have correctly included a limitation on program savings eligible for incentives and counting equal to the purchases subject to the payment of EE charges; staff expects that the enforcement of these rules will continue and will follow the policy for time-based credit analysis. In cases where participation rules did not previously include this limitation, Program Administrators shall ensure that forward, all resource program activities are fully aware of and follow this guidance, subject to the exemptions or alternate treatment for on-site PV generation as outlined above. Program administrators shall reference this guidance in all program manuals and ensure that implementer also reference this guidance in their documents and agreements.

General Framework to Estimate Savings

This section first presents a general framework to assess the eligibility of EE projects proposed to be implemented at sites where non-IOU energy resources are also used. Then a step-by-step approach is described to assess project eligibility in such cases and estimate the claimable savings from EE projects.

The reduction in energy usage due to the EE improvements which is eligible for CPUC authorized EE portfolio financial support is limited to those savings of grid/system supplied energy at all the times when the EE measure is operational and its energy resource requirement coincidentally reduces the energy supplied from the grid/system. In cases when all savings attributed to the measure would result in coincident grid consumption reduction the entire savings amount would be eligible to receive rebates/incentives and be included in energy savings claims. If the reduction in energy usage due to EE improvements occurs on the grid/system only sometimes but not always when the EE measure is operational, rebate/incentives and savings claims are limited to energy savings during the times and to the extent they result in coincident reductions in consumption supplied from the grid/system. EE measure/project savings that do not coincidentally reduce consumption from the grid/system during the periods when the EE measure is operational, but rather reduce energy requirements which are met from non-IOU energy supplies, are not eligible for CPUC authorized EE portfolio support via rebates/incentives. Measures/projects which produce no coincident grid/system reduction do not qualify to be counted toward utility savings claim calculations upon which customer incentives payments are based.

An electric EE measure that uses self-generated power fueled by natural gas purchased from the system will only result in reduced natural gas, not a reduction in electric usage, or a reduction on the electric grid/system. This means that rebates/incentives for that electric EE measure must be based

on the reduction in gas usage even though the participating customer actually reduces on-site electric usage and on-site natural gas usage.

Finally, an overarching CPUC requirement has always been that the electric or fuel consumption reduction from an EE measure/project that results in reductions from the grid/system supply is eligible to receive rebate/incentives only if the energy reduction that would have been delivered by the IOU is subject to electric energy efficiency surcharges or the non-bypassable gas surcharge⁹. Measure/project savings that do not reduce the grid/system supplies via a rate structure that includes the utility collected non-bypassable EE surcharges for that supplied energy, are not an eligible measure savings for EE program support or savings claims.

Eligibility and Maximum Claimable Energy Savings Determination

Shown below is a step-by-step method to determine eligibility of an EE project savings to receive rebate/incentive from EE programs when a potential participant is using non-IOU energy resources to meet some or all of its energy resource requirements. Generally, the approach addresses the three overarching questions – non-bypassable EE charges, full or partial use of non-IOU energy resources, and grid/system coincident savings. A typical configuration of a site that uses IOU and non-IOU energy resources is shown in Attachment A and the method presented below is summarized in the flow chart form in Attachment B. Selected examples illustrating the use of this method are included in Attachment C.

1. Is the customer billed for the utility collected electric or gas non-bypassable EE charges on the impacted energy use?
 - If no, the EE savings are ineligible for EE incentives, rebates or savings claims.
 - If yes, then the EE savings might be eligible¹⁰ for EE incentives, rebates or savings claims, proceed to question 2.
2. Does the customer use non-IOU supplied energy resource(s) for all or part of the energy used by the facility or equipment subject to the project/measure being considered for EE

⁹ PU Code 381(a)(b) directs that a electricity “rate component shall be a nonbypassable element of the local distribution service and collected on the basis of usage” to “provide in-state benefits” from “cost-effective energy efficiency”. PU Code 890 (b) directs that “there shall be imposed a surcharge on all natural gas consumed in this state” to fund “cost-effective energy efficiency”. PU Code 896 defines "Consumption" to “means the use or employment of natural gas. Consumption does not include the use or employment of natural gas to generate power for sale, the sale or purchase of natural gas for resale to end users, the sale or use of gas for enhanced oil recovery, natural gas utilized in cogeneration technology projects to produce electricity, or natural gas that is produced in California and transported on a proprietary pipeline. Consumption does not include the consumption of natural gas which this state is prohibited from taxing under the United States Constitution or the California Constitution.”

¹⁰ Eligible, in this context, is still subject to all other CPUC policy regarding individual measure or project eligibility, such as like-for-like, regressive baselines, free ridership, above code requirements, etc.

eligibility?

- If no, the EE savings are eligible. All savings resulting in reduction to the grid/system supplied energy are eligible, limited to the coincident purchases from the grid/system during the times the measure is operational to the extent those purchases are impacted.
- If yes, the savings may be eligible for incentives to the extent that the EE savings reduces coincident energy consumption subject to the utility collected non-bypassable EE charges. Proceed to question 3.

3. Does the customer have multiple facilities and meters at the site?

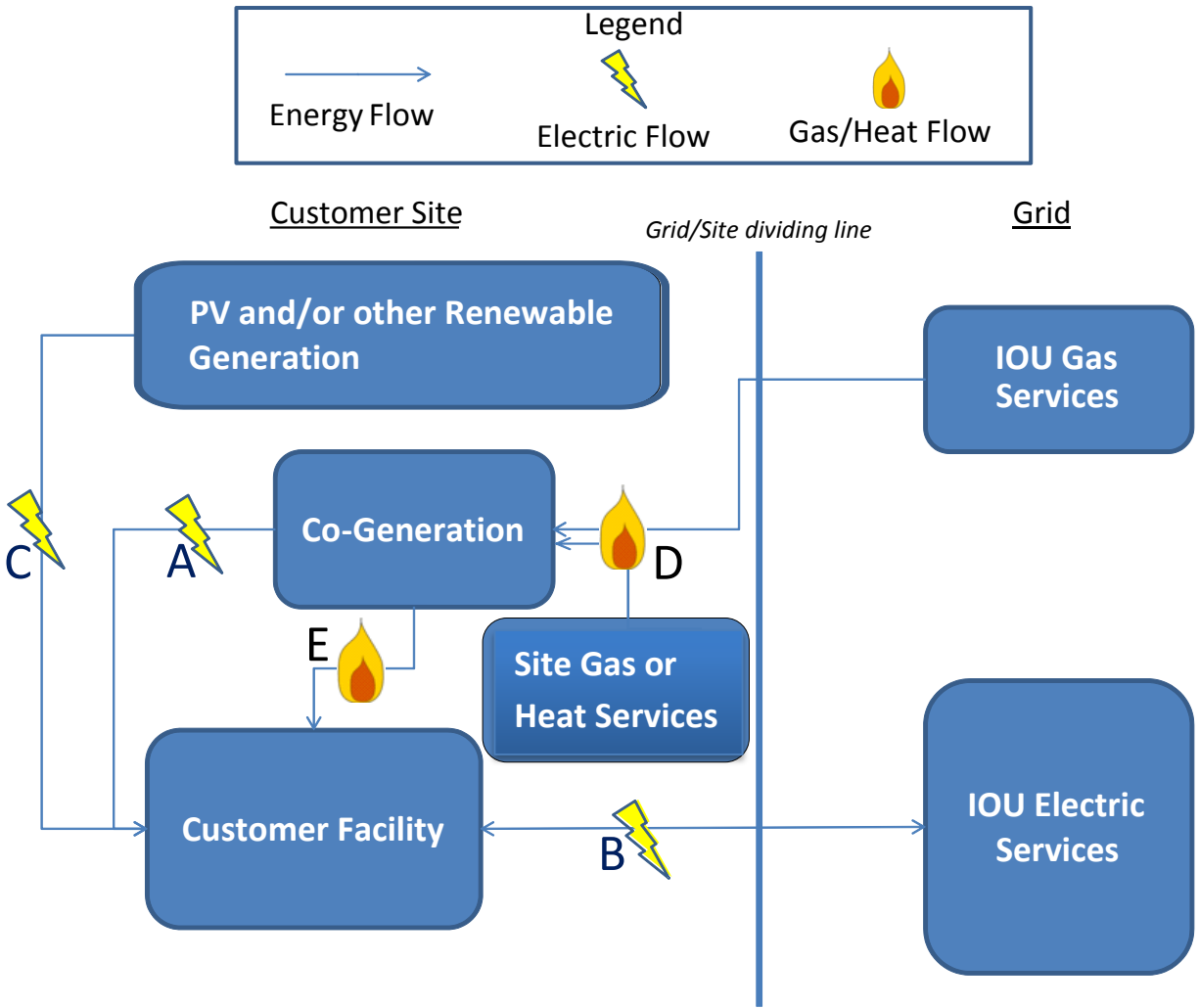
- If no, the savings calculation is straightforward. All savings resulting in a reduction in consumption supplied from the grid/system are eligible, limited to the grid/system energy supplied coincident with the times the measure is operational to the extent savings will reduce those supplies.
- If yes, determine which meter(s) the measure/project savings are impacting the grid/system and verify that non-bypassable EE charges are being assessed for energy purchases recorded on those meter(s) – see question 1. Co-generation fuel purchases must be paying into the corresponding gas non-bypassable EE surcharge. For example if a measure is an electric savings measure and that measure is in a building served by an on-site natural gas fueled co-gen, then the electric savings is only reducing gas purchases for the generator and likely eligible for gas EE incentives only if the natural gas purchases are assessed the non-bypassable gas EE surcharge.

Table 1 below provides guidance on eligibility of EE projects using the typical configuration of IOU and non-IOU energy resources used in a facility (Attachment A). This table applies to situations where the renewable generation is not feeding into the grid and the renewable source is not PV subject to the exceptions and alternative treatments stated above. See examples of eligibility when a renewable source is feeding into the grid. When multiple meters are at site, guidance from this table would apply specifically to the meter to which EE improvement is connected.

Table 1: Guidance on Eligibility of EE Projects for Gas or Electric Savings Incentives and Claimable Energy Savings with non-IOU Energy Resources (Single meter for each IOU service)

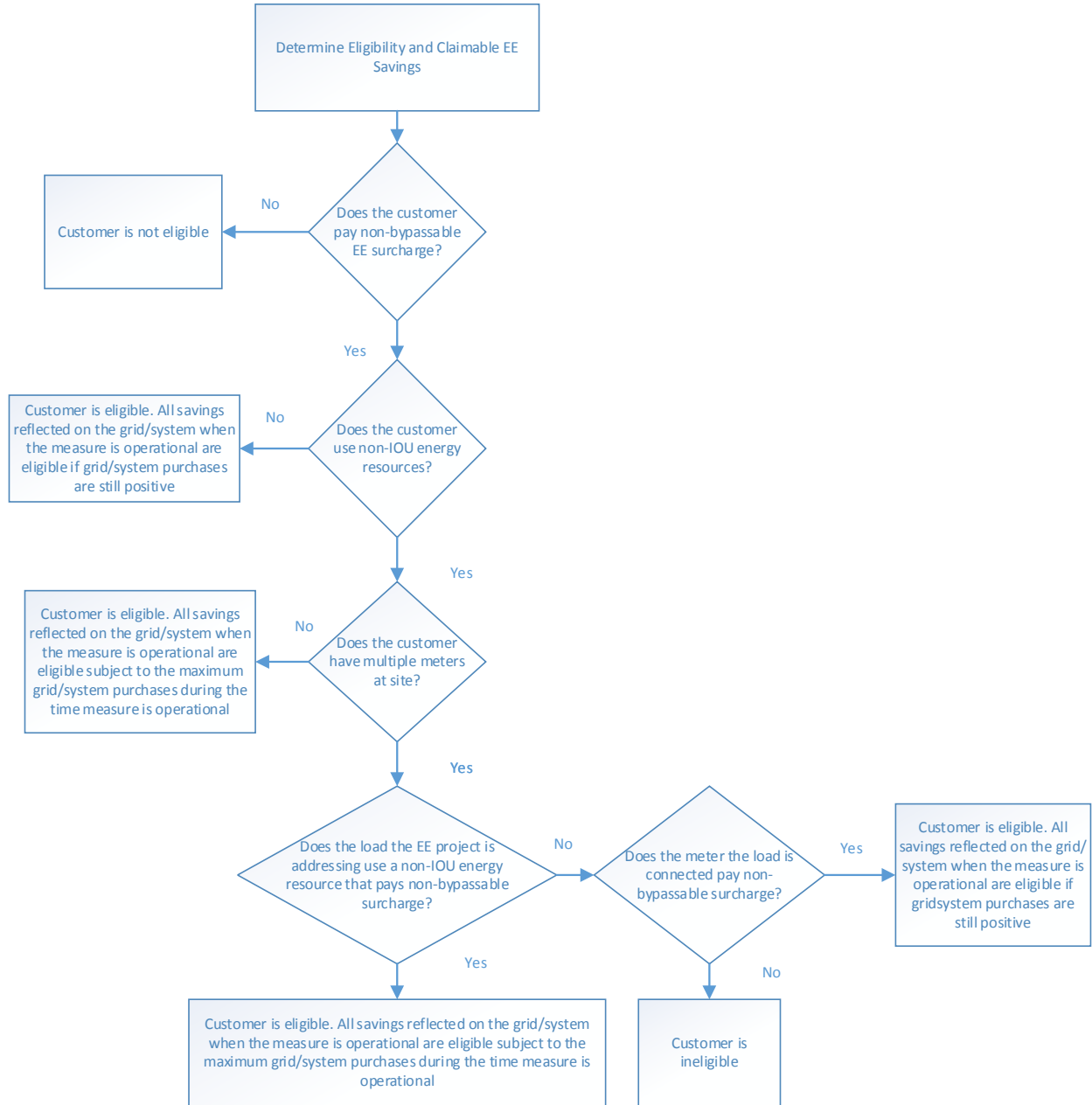
Scenario	Generation Mix	Fuel Purchased from Grid/System	EE Surcharge Payment Status	Hourly kWh and/or Therm Calculation Approach	Incentive Calculation (Not including measure cost incentive limit)
1	100% Cogeneration (A)	Electric	Not applicable	Not applicable	
		Gas	Yes	Hourly measure savings during the period the measure is both operational and to the extent savings will impact cogen output (kWh) * heat rate at site plant - therm interactive effects not handled by waste heat = hourly therm savings	Annual therm savings* therm incentive rate = therm incentives
		Gas	No	Ineligible for gas incentives	
2	X% Cogeneration (A)	Electric	Yes	Hourly measure savings when the measure is operational and to the extent savings will impact electric consumption from the grid (accountinjjg for minimum purchse requirements and excluding generation exported) = Hourly kWh savings	Annual kWh savings * kWh incentive rate = kWh incentives
	Y% Electric Service (B)	Electric	No	Ineligible for electric incentives	
		Gas	Yes	Hourly measure savings during the period the measure is both operational and to the extent savings will impact cogen output (kWh) * heat rate at site plant - therm interactive effects not handled by waste heat = hourly therm savings	Annual therm savings* therm incentive rate = therm incentives
		Gas	No	Ineligible for gas incentives	
3	X% Cogeneration (A)	Electric	Yes	Hourly measure savings when the measure is operational and to the extent savings will impact electric consumption from the grid (accountinjjg for minimum purchse requirements and excluding generation exported) = Hourly kWh savings	Annual kWh savings * kWh incentive rate = kWh incentives
	Y% Electric Service (B)	Electric	No	Ineligible for electric incentives	
		Gas	Yes	Hourly measure savings during the period the measure is both operational and to the extent savings will impact cogen output (kWh) * heat rate at site plant - therm interactive effects not handled by waste heat = hourly therm savings	Annual therm savings* therm incentive rate = therm incentives
		Gas	No	Ineligible for gas incentives	
	Z% Renewable Generation [C]	Renewable	Not applicable	Not applicable	(any excess generation exports increase acts to reduce project cost in same way as incentives)
4	Y% Electric Service	Electric	Yes	Hourly measure savings when the measure is operational and to the extent savings will impact electric consumption from the grid (accountinjjg for minimum purchse requirements and excluding generation exported) = Hourly kWh savings	Annual kWh savings * kWh incentive rate = kWh incentives
		Electric	No	Ineligible for electric incentives	
	Z% Renewable Generation [C]	Renewable	Not applicable	Not applicable	(any excess generation exports increase acts to reduce project cost in same way as incentives)
5	X% Cogeneration (A)	Electric	Not applicable	Not applicable	
		Gas	Yes	Hourly measure savings during the period the measure is both operational and to the extent savings will impact cogen output (kWh) * heat rate at site plant - therm interactive effects not handled by waste heat = hourly therm savings	Annual therm savings* therm incentive rate = therm incentives
	Z% Renewable Generation [C]	Renewable	Not applicable	Not applicable	(any excess generation exports increase acts to reduce project cost in same way as incentives)

Attachment A: Typical Customer Facility Diagram¹¹



¹¹ Adapted from a figure developed and provided by Pacific Gas and Electric Company

Attachment B – Process Flow to Determine Eligibility and Maximum Claimable EE Energy Savings



Attachment C — Selected Examples

1. A customer owns a cogeneration plant and meets its electric power requirements most of the time from self-produced power. The cogeneration plant is typically down for maintenance for two weeks in a year when electricity is purchased from the IOU. The customer uses natural gas supplied by the IOU to operate its cogeneration plant. However, the tariff charged by the IOU for cogeneration purposes is exempt from payment of non-bypassable surcharge. The customer wants to implement lighting energy efficiency improvements for fixtures that operate year-round and seeks incentives based on year-round reduction in electric usage.

Staff Decision: While the lighting energy efficiency improvements will reduce electrical usage, this reduction is reflected in reduced natural gas consumption for the cogeneration plant for all except two weeks in a year. Since the customer does not pay non-bypassable surcharge on the natural gas purchased for its cogeneration plant, the electric savings from the lighting project that reduces consumption of IOU-supplied gas purchases are not eligible for incentives. The customer is eligible to claim electric savings and incentives for the proposed project only for the two weeks in a year when electric purchases are occurring from the grid; the measure is operational; and electric savings during that period result in reductions to electricity purchased from the grid.

2. A customer owns a cogeneration plant and meets its electric power requirements most of the time from self-produced power. The cogeneration plant is typically down for maintenance for two weeks in a year during which time the electricity consumed is supplied by an IOU. The customer uses natural gas supplied by an IOU to operate its cogeneration plant. The tariff charged by the IOU for natural gas supplied to the cogeneration plant includes non-bypassable surcharge. The customer wants to implement lighting energy efficiency improvements for fixtures that operate year-round and seeks incentives based on year-round reduction in electric usage.

Staff Decision: While the lighting energy efficiency improvements will reduce electrical usage, this reduction is reflected in reduced natural gas usage for all except two weeks in a year. Since the customer pays the non-bypassable surcharge on natural gas purchased for its cogeneration plant, electric savings from the lighting project that reduce IOU-supplied gas purchases are eligible for natural gas incentives for 50 weeks in a year.¹² The customer is eligible to claim electric savings and incentives for the proposed project only for the two weeks in a year when electric purchases are occurring from the grid; the measure is both operational and the measure electric savings will reduce electricity purchased from the grid.

3. A customer purchases electricity from a cogeneration plant operator who purchases natural gas for its cogeneration plant from the IOU and pays non-bypassable surcharge on its natural gas purchases. The third party cogeneration plant is able to meet the customer's electricity

¹² The conversion of electric savings into natural gas savings should be done at the prevailing CEC-approved heat rate.

needs throughout the year; therefore, the customer does not purchase electricity from the grid at any time. The customer wants to implement lighting energy efficiency improvements for fixtures that operate year-round and seeks electric incentives based on year-round reduction in electric usage.

Staff Decision: While lighting energy efficiency improvements will reduce electrical usage, that reduction results in reduced IOU supplied natural gas consumption year-round. Since the cogeneration plant operator pays the non-bypassable surcharge on natural gas purchased for its cogeneration plant, electric savings from the lighting project that results in year-round reduced IOU supplied gas purchases are eligible for natural gas incentives.¹³ The customer is not eligible to claim electric savings and incentives for the proposed project as the impacted fuel savings are for natural gas purchased from the system.

4. An educational institution has multiple buildings on its campus. Several buildings, each on a separate meter, are directly supplied electric power by an IOU whereas the remaining buildings are powered by a customer-owned cogeneration plant, which uses IOU-supplied natural gas that is exempt from payment of non-bypassable surcharge. The cogeneration plant supplies power to the connected buildings year-round and grid purchases of electric power do not occur for those buildings. The customer wants to implement two energy efficiency projects in which more efficient uninterrupted power supply systems (UPS) will be installed for its data centers that operate year-round. One data center is housed in a building that has a separate meter and purchases electricity from the IOU. The other data center is housed in a building that is powered all the time by electricity supplied from the customer's cogeneration plant. The customer is seeking electric incentives from both UPS installation projects, claiming reduced electric usage.

Staff Decision: The UPS project proposed to be installed in the data center connected to the grid and powered by the IOU-supplied electricity is eligible for electric incentives to the extent the implemented project/measures will result in reduced consumption from the grid. That is during the hourly periods the IOU-supplied electricity is still consumed and the customer is paying non-bypassable surcharge on those electricity purchases.

The UPS project proposed to be installed in the data center connected to the cogeneration plant is not eligible to receive any incentives as the reduction in electric usage results in natural gas reduction on the system via the cogeneration plant. However, natural gas used to fire the cogeneration plant is not paying non-bypassable surcharge. Therefore, the customer is not eligible to receive natural gas incentives.

5. An educational institution has multiple buildings on its campus. All buildings are powered by a customer-owned cogeneration plant, which uses IOU-supplied natural gas that is not

¹³ The conversion of electric savings into natural gas savings should be done at the prevailing CEC-approved heat rate.

exempt from payment of non-bypassable surcharge. The cogeneration plant supplies power to the connected buildings and exports electricity to the grid year-round for which it is compensated per prevailing tariff or contracts/agreements. The customer wants to install a more efficient uninterruptible power supply system (UPS) for its data center that operates year-round. The customer is seeking electric incentives from the UPS installation project, claiming reduced electric usage.

Staff Decision: The installation of a more efficient UPS system will reduce electric usage on the site but that reduction will not result in reductions to the site grid load. The reduced electric usage, in theory, results in reduced natural gas usage in the cogeneration plant. However, the cogeneration plant is always exporting to the grid. So the reduced natural gas usage from the installation of a more efficient UPS system effectively does not reduce consumption of IOU-supplied natural gas. That is, the measure helps the customer to maintain and increase its level of power export to the grid for which it is being compensated. While the customer is eligible to receive incentives due to payment of the non-bypassable surcharge on IOU-supplied natural gas consumption, the EE project does not result in a reduction of the consumption of fuel supplied by the IOU. The UPS project is not eligible to receive any incentives.

6. A customer owns a cogeneration plant that meets all of its power requirements during the nighttime and most of its power requirements during the daytime. Some grid purchases are made from the IOU year-round only from 1 pm to 5 pm. The customer is not exporting power to the grid at any time. The customer is paying non-bypassable surcharge on natural gas purchased from the IOU to fire its cogeneration plant. This customer wants to implement a lighting efficiency improvement project that will reduce electric usage from 4 pm to 6 am, year-round. The customer seeks electric incentives for the lighting project based on reduced electric usage during these hours.

Staff Decision: The lighting project reduces electric usage from 4 pm to 6 am period of which only one hour (4 to 5 pm) is coincident with the period when the customer is purchasing electricity from the grid. The customer is eligible to receive electric incentive for reduced electric usage from 4 to 5 pm, to the extent such reduction also results in a reduced need for grid purchases during this hour. At other times, reduced electric usage results in reduced natural gas used in the cogeneration plant. Because the customer is paying non-bypassable surcharge on its natural gas purchased, the customer is eligible to receive natural gas incentives for electric usage reduction from 5 pm to 6 am, year-round. The reduced natural gas usage should be calculated using the prevailing CEC-approved prevailing heat rate.

7. A customer is planning to build a new building with estimated peak demand of about 1 MW. This customer also plans to install a fuel cell that will produce 200 KW power at all times using natural gas. Thus the customer will purchase 800 KW from the grid to meet the remainder of its power requirements. The customer plans to implement a package of electric energy efficiency measures that are estimated to result in 50 KW demand savings. Electric usage reduction from the package of EE measures is expected to occur during all hours the

customer is purchasing electricity from the grid. The customer is seeking electric incentives for the package of EE measures.

Staff Decision: Since the customer plans to operate the fuel cell as the base load power, reduced electric usage from the package of EE measures will result in reductions on the grid at the times grid purchases are occurring. The reduction in electricity usage is less than the likely purchases from the grid. Therefore, all electric savings from the proposed EE project are eligible for incentives.

8. A customer operates a PV system that powers an irrigation pump, meeting a varying portion of the pumping power needs during the day time and exporting excess power to the grid during a portion of the day. The pump sometimes runs at night when power is not available from the PV system and the electric power requirements are met from grid purchases. The pump and the PV system are connected to an IOU meter and the pump is the only load on the meter. The customer wants to install variable frequency drive (VFD) on the pump motor and claim incentives based on the entire reduction in electric usage.

Staff Decision: The customer is eligible to receive incentives because grid purchases are occurring and the customer is paying non-bypassable surcharge on electricity purchased from the grid. The VFD savings occurring during the daytime will not result in one-to-one reductions of grid purchases since the daytime power requirement is partially met by the PV system. Reduced electric usage during times when the PV system is supplying the entire pumping load will allow the customer to export more electricity from the PV system after the VFD installed for which the customer will be compensated. VFD savings occurring during the hours when the PV system is not meeting the entire pumping power needs and grid purchases are occurring qualifies for electric EE incentives. This PV system is not eligible for the special treatment afforded to PV systems supplying building loads. Process loads and non-building loads are not eligible for this ZNE driven exception.

9. A customer proposes to install a PV system that supplies power to the varying electric loads from all sources in their building. The PV supplied power will meet a varying portion of the power needs during the time the sun is up and the PV system operates. Some of the PV daytime operation may supply power in an amount that exceeds the building demand and during those times the customer will export excess power to the grid on a net energy metering tariff. During the hours when no or insufficient power is available from the PV system the balance of the electric power requirements are met from grid purchases. The customer wants to also install LED internal and/or external lighting and highly efficiency air conditioning equipment and claim incentives based on the entire reduction in electric usage. All grid purchases are subject to the non-bypassable EE charges.

Staff Decision: The customer is eligible to receive incentives because grid purchases are occurring and the customer is paying non-bypassable surcharge on electricity purchased from the grid even though some of those charges may be credited back at other times. If the customer is a residential or small commercial customer the PV system shall be excluded (ignored) for the purposes of savings credit and rebate/incentive calculations. Building

modeling and measures savings calculations shall be performed as if the PV system is not installed. If the customer is not a residential or small commercial customer and is on a NEM tariff the calculation shall be performed in three scenarios with monthly values: 1) with no EE installed without the PV system installed; 2) the EE installed without the PV installed; 3) the EE not installed and with the PV installed but ignoring exports in monthly total use (so the monthly purchases not reduced by export credits). The savings credit shall be established using the calculations of all EE measures installed without the PV system installed (scenario 1 minus scenario 2) but each monthly value for energy use and demand reductions shall be limited by the monthly energy use and demand values for the building without EE and with PV installed ignoring PV generation exports (scenario 3).

Fuel substitution activity as well as on-site generation or co-generation examples

In comments on the draft of this guidance document Southern California Gas Company asked for clarification on several example scenario projects. These are presented and discussed below. Each of these examples involves a fuel substitution activity as well as on-site generation or co-generation (electricity production).

Per Commission policies, electric production/generation equipment which supplies electricity to equipment other than itself does not fit within the definition of energy efficiency and is not eligible for EE portfolio support. Even when the installation of such equipment reduces the energy supplied by the utility, the installation of such equipment also may not reduce total energy use. Exceptions to this policy have been provided, most recently in D.09-12-022, only for stand-alone solar powered technologies on a limited basis.

For the same reason, the installation of a co-generation system is not an EE supportable activity and the use of heat produced by the co-gen system, to the extent it is required to support the determination that the system is indeed co-generation system and thus exempt from the non-bypassable charge, cannot be supported by EE funds. To the extent installing the co-gen system or any on-site generation for that matter, results in departing load charges, those departing load charges cannot be used as the basis for EE eligible consumption calculations as departing load charges are not for current EE displaceable grid/system consumption.

Fuel substitution activities require special treatment as detailed in D.05-04-051 which is a slight modification to that included into the current EE Policy Manual as noted below:

- A) Fuel substitution program/measures/projects 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/measure/project focuses on energy efficiency and creates net resource value;
- B) Fuel-substitution programs/projects, whether applied to retrofit or new construction applications, to be considered further for funding, must pass the “three-prong test” which requires they:

1. Must not increase source BTU consumption¹⁴;
2. Must have TRC and PAC greater than 1.0 when compared with the most efficient same-fuel substitute technologies available to the customer which also have TRC and PAC values 1.0 or greater;
3. Must not increase total emissions.¹⁵

The examples and discussions below only address gross savings considerations. As with some of the examples above, many of the below examples would likely involve customer actions that would happen absent EE program support. Following direction in D.12-05-015 and subsequent Decisions, the program administrators are expected to take actions designed to increase their net portfolio savings by program rule changes and participation limitations aimed to reduce EE portfolio support of activities that would happen regardless of such support.

10. A customer wants to install a cogeneration system consisting of a turbine and an absorption chiller which will offset the existing base load on the electric chiller. The fuel source for the turbine will be a dedicated IOU supplied natural gas meter, which is exempt from the non-bypassable surcharge. The total site's electric load is serviced by a meter that pays the non-bypassable surcharge. The customer is seeking EE funding for the installation of the absorption chiller claiming the reduction in electric usage by the electric chiller.

Staff Decision: As noted above, the installation of the co-gen system is not an EE supportable activity and the use of heat produced by the co-gen system, to the extent it is required to support the determination that the system is exempt from the non-bypassable charge, cannot be supported by EE funds. Installing an absorption chiller to displace all or part of the consumption of an electric chiller is a fuel substitution activity that is subjected to the added policy considerations as noted above. Additionally, the standard practice baseline for cogeneration systems must be taken into account including standard heat recovery practices (that would indicate that "add on" heat recovery is actually standard practice) as well as the limits and policy for add-on measures and their claimable life. However, if all the policy issues are satisfied, any allowable savings must still take into account the total grid/system impacts with a time-based analysis comparing the scenarios with the policy considerations applied to both cases.

11. A customer owns and operates a fuel cell, which is on a dedicated IOU supplied gas meter that is exempt from the non-bypassable surcharge. The total site's electric load is serviced by a meter that pays the non-bypassable surcharge. There is a second IOU supplied gas meter for the site that supplies gas to all other end uses; such as boilers and direct-fired equipment, and pays the non-bypassable surcharge. The customer is seeking EE funding for the installation of the heat recovery system claiming the reduction in gas usage by the boiler.

¹⁴ Using the current CEC-established heat rate.

¹⁵ To quantify this impact the calculation compares the environmental "costs" between the proposed equipment and the most efficient same fuel substitute baseline equipment using the most recently adopted values for residual emissions

Staff Decision: The example is not clear on what type of heat recovery equipment is proposed to be installed nor from which process the heat is proposed to be recovered. However, the statements in example 9 all apply: if fuel switching is involved those policy considerations must be followed; the standard practice baseline for the generation systems and associated heat recovery must be taken into account; time-based analysis is utilized comparing the scenarios with the policy considerations applied to both cases; the limits and policy regarding add-on measure life also apply. Increases in energy use via fuel switching or load movement, even if that energy use is not subject to the non-bypassable charge, must be included in the analysis, however, reductions in energy consumption that is not subject to the non-bypassable charge is not eligible for counting.

12. A customer owns and operates a gas turbine, which is on an IOU supplied gas meter that pays the non-bypassable surcharge. The customer wants to install heat recovery on the turbine to supply heat to a boiler to offset natural gas use and also produce chilled water through an absorption chiller to offset electric energy use by the facility's electric chillers. Both the boiler and the electric chiller are on non-bypassable surcharge meters. The customer is seeking EE funding for the heat recovery system claiming the reduction in gas and electric usage by the boiler and electric chiller, respectively.

Staff Decision: Again the heat recovery application must consider standard practice and add-on policy including measure life. The addition of the chiller must apply the fuel substitution policy rules to the analysis. Any EE savings allowed after the application of these policies must still take into account the total grid/system impacts with a time-based analysis comparing the scenarios with the policy considerations applied to both cases. Increases in gas use not subject to the non-bypassable charge via fuel switching or load movement, must be included in the analyses, however, reductions in gas consumption that is not subject to the non-bypassable charge is not eligible for counting.

13. An industrial customer has a heat treat furnace, which is on an IOU supplied gas meter that pays the non-bypassable surcharge. The customer would like to recover heat from the exhaust gas to produce steam. The steam would feed a turbine that will operate an existing fan located on the oven. The existing fan motor is served by an electric meter which pays the non-bypassable surcharge. The customer is seeking EE funding for the heat recovery system claiming the reduction in electric usage.

Staff Decision: As noted above electric generation equipment which supplies electricity to equipment other than itself does not fit within the definition of energy efficiency and is not eligible for EE portfolio support. However, in this case it appears that this is a direct drive turbine not a turbine-generator set, so the generation limitation appears not to apply. So this is a project subject to the fuel substitution policy in addition to the add-on measure policy. Any EE savings allowed after the application of these policies must still take into account the total grid/system impacts with a time-based analysis comparing the scenarios with the policy considerations applied to both cases. Increases in the gas use not subject to the non-bypassable charge via the fuel switching, must be included in the analyses, however,

reductions in gas consumption that is not subject to the non-bypassable charge is not eligible for counting.