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STAFF PAPER

Framework for Establishing the Senate Bill 350 Energy Efficiency Savings Doubling Targets

California Energy Commission

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ABSTRACT

Senate Bill 350 requires the Energy Commission, by November 2017, to establish annual targets for energy efficiency savings that achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses of retail customers by 2030. This paper provides an initial process and quantitative framework for implementing these targets.

Keywords: Senate Bill 350, Energy Efficiency

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EXECUTIVE SUMMARY

Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015 (De León, Chapter 547, Statutes of 2015) (SB 350), established for the State of California a new set of clean energy targets in support of the state's goal to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030. In addition to requiring an increase to 50 percent the purchase of renewable electricity generation in the state, SB 350 requires the California Energy Commission to establish annual targets that achieve a cumulative doubling of projected statewide energy efficiency savings in electricity and natural gas end uses of retail customers by January 1, 2030. The doubling of projected energy efficiency savings called for in SB 350 is beyond the significant savings that are projected to be achieved by 2030 through California's existing suite of energy efficiency programs and activities. While the energy efficiency savings called for by SB 350 are ambitious, the legislative intent language of SB 350 declares that the targets of the bill are to be "permanent, enforceable, and quantifiable." This report provides a process and policy framework for establishing the energy efficiency targets that SB 350 calls upon the Energy Commission to establish, and to solicit stakeholder feedback on this framework.

CHAPTER 1:

Process and Timing

California Public Resources Code Section 25310 (c) (1) requires the California Energy Commission, “in collaboration with the Public Utilities Commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders,” to establish, on or before November 1, 2017, “annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030.” Staff proposes the following initial timeline and process for establishing these targets. Stakeholders will be given the opportunity to provide formal written and oral comments at all workshops. Staff may propose additional workshops related to this proceeding not described here at a later date.

First Workshop on Data and Analytic Needs

On July 11, 2016, the Energy Commission held an initial workshop to discuss the data and analytical needs related to doubling projected energy efficiency savings within the context of the *Integrated Energy Policy Report (IEPR)* demand forecast. At that workshop, staff presented a preliminary set of implementation issues and asked stakeholders for comment. With the benefit of further assessment by Commission staff, discussion during the workshop, and comments filed by stakeholders, this report aims to describe the foundational issues and to provide staff recommendations to implement the portions of SB 350 related to doubling energy efficiency.

Second Workshop Establishing Policy Framework

This report is being published in anticipation of a January 23, 2017, workshop. This will be the second publicly noticed workshop related to implementing the energy efficiency portions of SB 350. Discussion at the January 23 workshop will focus on the implementation framework contained in this report. The upcoming workshop seeks to clarify the path forward in establishing the doubling targets called for by SB 350 by November 2017, discuss how to achieve the targets thus established, and hear the views of stakeholders on the proposed process and address any questions or concerns they may have.

Third Workshop on Utility Savings

Staff proposes holding a third workshop on what portion of the overall cumulative statewide doubling targets ought to be met by utilities. This third workshop may entail a discussion of establishing subtargets for the achievement of enhanced energy efficiency savings to be met by the investor-owned utilities (IOUs) and publicly owned utilities (POUs). This workshop will discuss not only the potentials for enhanced utility program

savings, but also how best to track and report on the achievement of these savings over time. SB 350 requirements related to this topic include:

- California Public Utilities Commission (CPUC) energy efficiency targets for IOUs to achieve, consistent with the energy efficiency doubling targets set by the Energy Commission (Public Utilities Code Sections 454.55 and 454.56).
- Energy efficiency portions of IOU and POU integrated resource plans (Public Utilities Code Sections 454.52, 9621, and 9622).

This workshop on utility savings subtargets will likely be held in the second quarter of 2017.

Fourth Workshop on Other Savings

Staff proposes holding a fourth workshop focused on other nonutility subtargets that may be established as part of the overall statewide doubling target. This workshop would also entail a discussion of the gap, if any exists, between the energy efficiency savings expected to be achieved by the sum of the subtargets established and the overall 2030 statewide doubling target. Discussions on how best to track and report on these nonutility subtargets will be an essential component of this workshop, which will also occur in the second quarter of 2017.

Fifth Workshop on Staff Draft Final Report

Staff proposes combining all discussion and comments from the previous four workshops into a staff draft final report that will establish the targets that achieve a statewide cumulative doubling of energy efficiency savings in end uses by 2030, and subtargets established toward this overall statewide target. Staff proposes holding a fifth and final workshop to receive oral comments on this draft final report, to be published in the third quarter of 2017. Stakeholders will be offered an opportunity to make formal written comments.

Adoption of Energy Efficiency Targets at Business Meeting

The Energy Commission would consider the staff draft final report, incorporating any proposed changes in response to any comments received following the fifth and final workshop, in the adoption of the energy efficiency targets in a business meeting no later than November 2017.

CHAPTER 2:

Summary of Staff Draft Implementation Framework

Senate Bill 350 (De León, Chapter 547, Statutes of 2015) directs the California Energy Commission to “establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030,” and directs the California Energy Commission to:

“...base the targets on a doubling of the midcase estimate of additional achievable energy efficiency [AAEE] savings, as contained in the California Energy Demand Updated Forecast, 2015–2025, adopted by the commission, extended to 2030 using an average annual growth rate, and the targets adopted by local publicly owned electric utilities pursuant to Section 9505 of the Public Utilities Code, extended to 2030 using an average annual growth rate, to the extent doing so is cost-effective, feasible, and will not adversely impact public health and safety.”

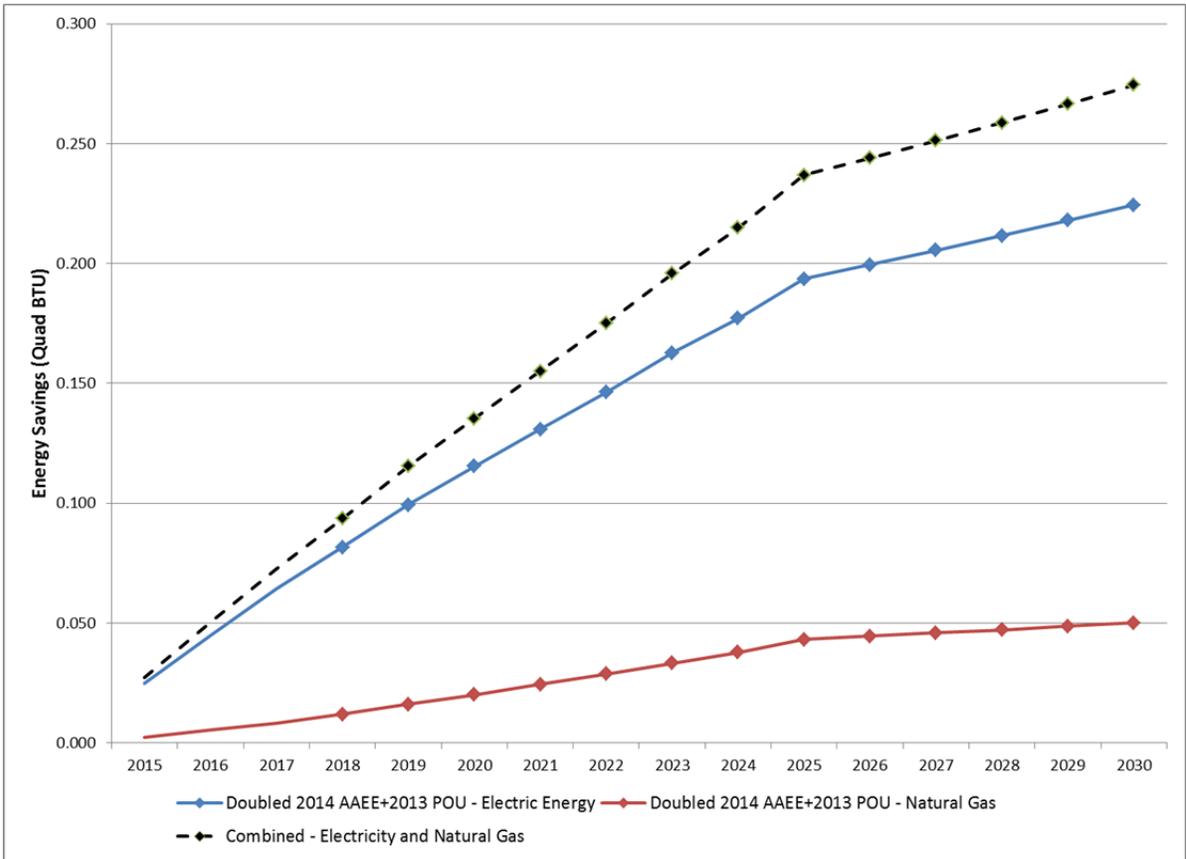
Staff recommends interpreting “cumulative” energy efficiency savings to mean the cumulative savings realized in 2030; staff does not interpret “cumulative” energy efficiency savings to mean the sum of the cumulative energy efficiency savings realized in every year from 2015 through 2030. Staff recommends that 2018–2030 annual targets be based upon an arithmetic doubling of projected AAEE savings, adjusted for errors found in the computational framework used in the *California Energy Demand Updated Forecast, 2015–2025*. For establishing annual targets for the period from 2026–2030, staff proposes basing savings on a 3 percent savings growth rate.

Staff thinks that it is useful to portray electricity and gas savings in a common unit for reporting on progress toward meeting the annual goals. Figure 1 shows the electric and gas savings expressed in quadrillion British thermal units (quad BTU), with the red line being natural gas savings, the blue line being electricity savings, and the dotted line being the combined energy savings targets¹. Annual savings are indicated with line markers starting in 2018, to clarify that staff does not propose to establish, track or report savings targets for historical years. For displaying savings in BTU, staff proposes to use site energy conversion factors. In conjunction with reporting on energy savings in

¹ This paper uses the literal doubling of AAEE & POU energy savings to illustrate the concept of annual savings targets to be established for SB 350. These will likely NOT be the annual energy savings targets proposed by staff later in 2017, since the analyses to determine cost-effectiveness, feasibility and reliability are not yet complete.

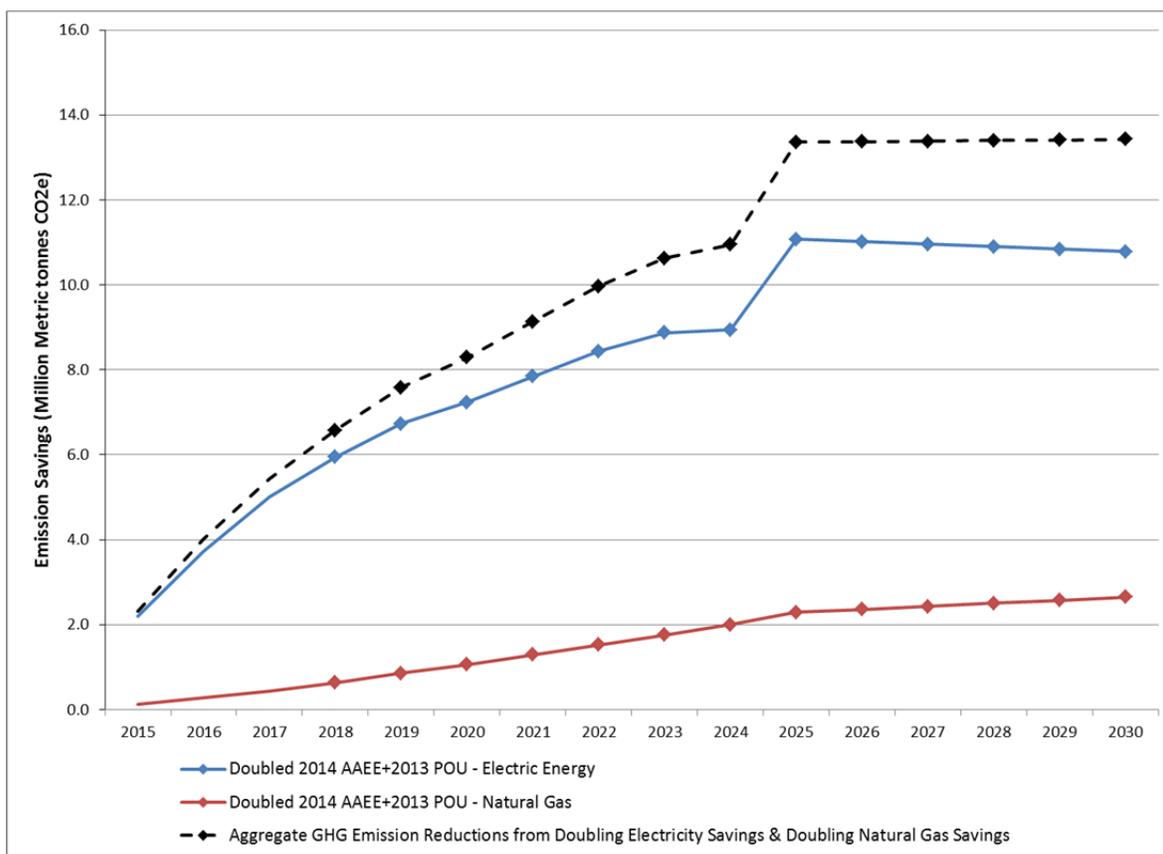
a common unit of energy, staff plans to express savings targets as expected greenhouse gas emissions savings, expressed in Figure 2 as million metric tons of carbon dioxide (CO₂) equivalent. For displaying savings in GHG emissions, staff proposes to use typical electricity and natural gas system loss factors expected over time, and projections of electric system resource plans assuming achievement of the 50 percent Renewables Portfolio Standard. Therefore, Figure 2 incorporates expected changes in electricity GHG emissions over time. Further metrics, such as energy per capita or energy per dollar of gross state product, may also be computed and used for policy tracking and reporting; however, the primary metric for target implementation and tracking would be energy savings.

Figure 1: Literal Doubling of AAEE & POU Energy Savings (Quad BTU)



Source: Energy Commission staff

Figure 2: Illustration of Statewide Greenhouse Gas Emission Reductions That Would Result From Achievement of SB 350 Energy Savings Targets (Million Tonnes CO₂e)



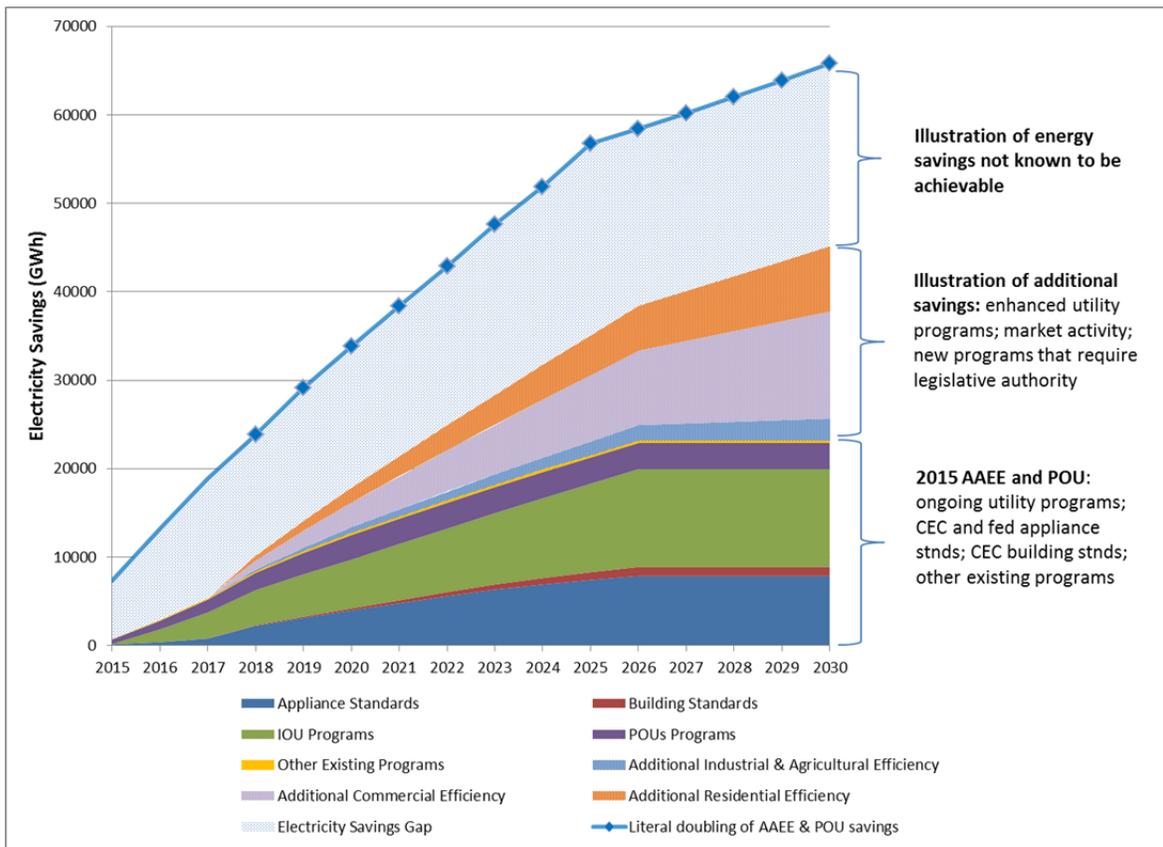
Source: Energy Commission staff

Figure 2 is an illustration of GHG emission reductions that would be expected to occur if the doubling of AAEE & POU savings is determined to be cost-effective, feasible and reliable. Staff intends to revise these estimates once the annual energy savings targets for both electricity and natural gas are established. For example, if less than twice the electricity savings are found to be cost-effective, feasible and reliable, but more than twice the natural gas savings are found to be such, then likely the resultant GHG emission reductions would be different than those shown in Figure 2. This specific example is illustrated in Figure 5, which translates the illustrative examples of efficiency savings subtargets for electricity and natural gas (introduced next), into GHG emission reduction expectations.

For expressing and reporting to the Energy Commission programmatic and other activities that will achieve electric and gas efficiency savings under the annual targets, Energy Commission staff proposes using energy units more common to electricity (gigawatt hours, or GWh) and gas (therms). Figures 3 and 4 show illustrative electricity and natural gas savings projections, respectively. These figures show the separate statewide annual targets for electricity and gas in GWh and therms and depict:

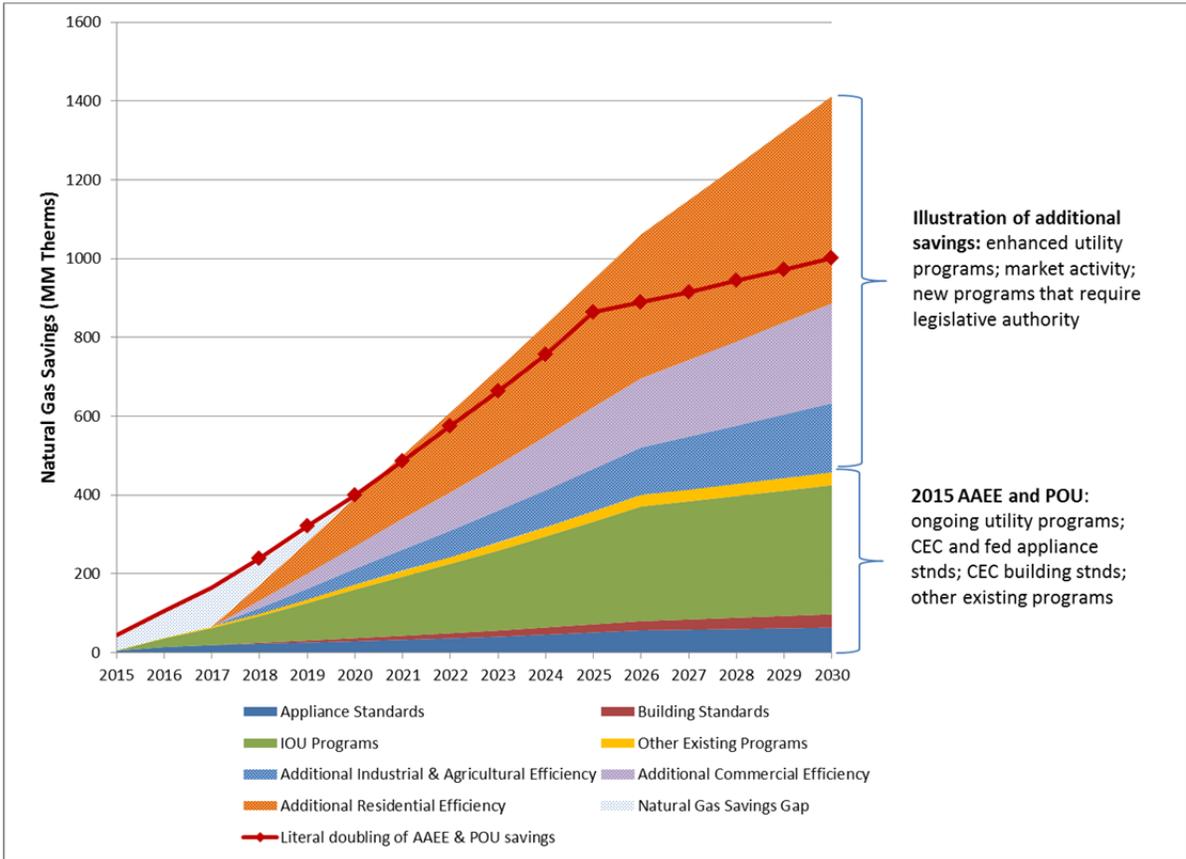
- How the statewide annual targets compare against current AAEE savings from the 2015 IEPR cycle and POU savings from 2013 electricity savings projections submitted by the POUs to the Energy Commission.
- Staff illustrations of potential enhanced (beyond AAEE) savings that could come from enhanced programs and activities.
- An example of energy savings that may not be known to be achievable.

Figure 3: Illustration of Current, Enhanced, and Unknown Sources of Savings to Achieve the 2030 Electricity Target



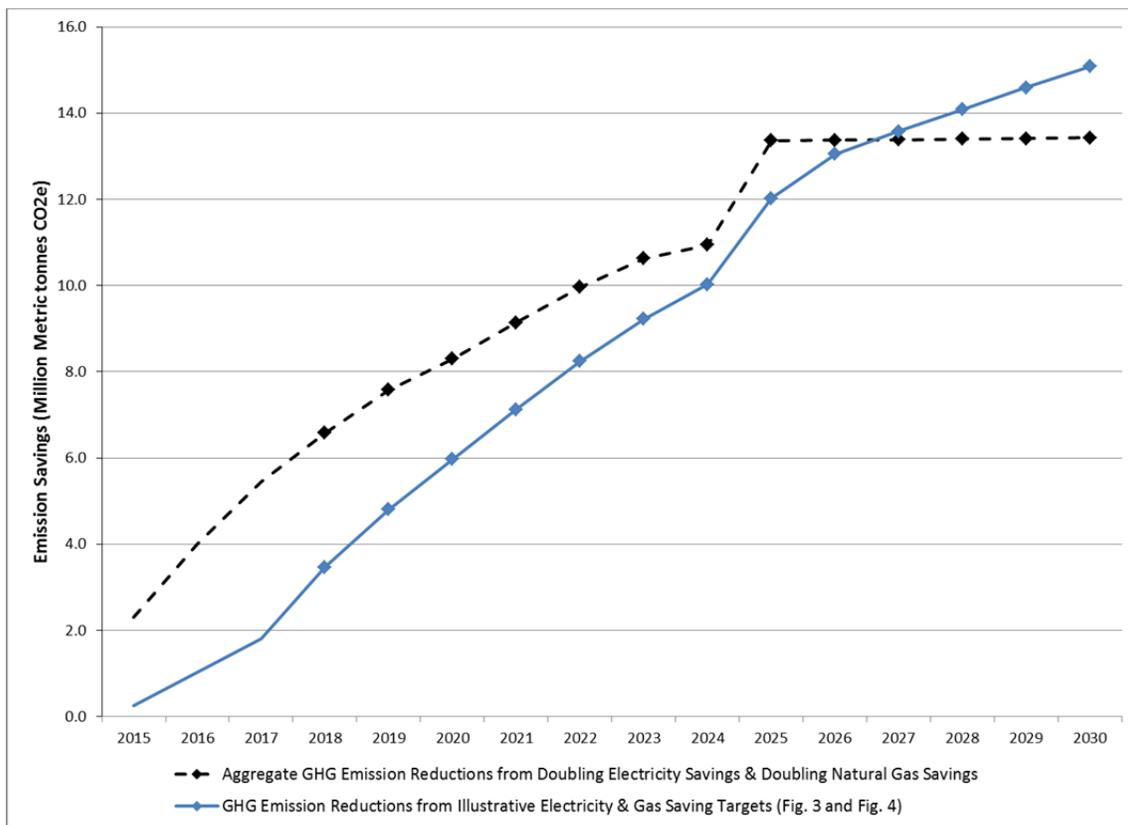
Source: Energy Commission staff

Figure 4: Illustration of Current, Enhanced, and Unknown Sources of Savings to Achieve the 2030 Natural Gas Target



Source: Energy Commission staff

Figure 5: Illustration of the Dependence of Expected GHG Emission Reductions on the Energy Savings Targets



Source: Energy Commission staff

Staff proposes establishing subtargets as internal components of the gas and electric statewide annual targets, using the non-exhaustive list of programs through which the targets may be achieved in Section 25310 (d) of SB 350 as a guide. Cost-effectiveness, feasibility, and reliability tests will be applied to these subtargets. Staff proposes that the Energy Commission establish subtargets specifically for enhanced savings to be met by the POUs and that the CPUC establish subtargets for enhanced savings to be achieved by the IOUs and other CPUC-jurisdictional entities. Staff recommends against counting electrification of transportation toward the goal. A more detailed analysis of the subtargets and enhanced savings that will contribute to the annual targets will be made in a subsequent paper drawing upon the ongoing energy efficiency potential studies underway by the CPUC and POUs, respectively.

SB 350 requires the Energy Commission to report, beginning in 2019 and biennially thereafter, on progress toward achieving the annual savings targets. Energy Commission staff recommends, beginning in the 2019 IEPR and in every odd-year IEPR thereafter, reporting on progress toward achieving the established subtargets. Staff recommends

the Energy Commission, in this biennial reporting, recommend to the Legislature options to remedy the gap (should one exist) between expected savings (whether by actual AAEE or from enhanced subtargets) and the annual doubling target for that time period. The ability of the Energy Commission and the CPUC to stimulate and/or detect market transformation, as well as new legislative direction that may be needed to achieve the doubling target, will be key components of this reporting.

CHAPTER 3:

Staff Draft Implementation Framework

Staff Proposal on Interpretation of “Cumulative”

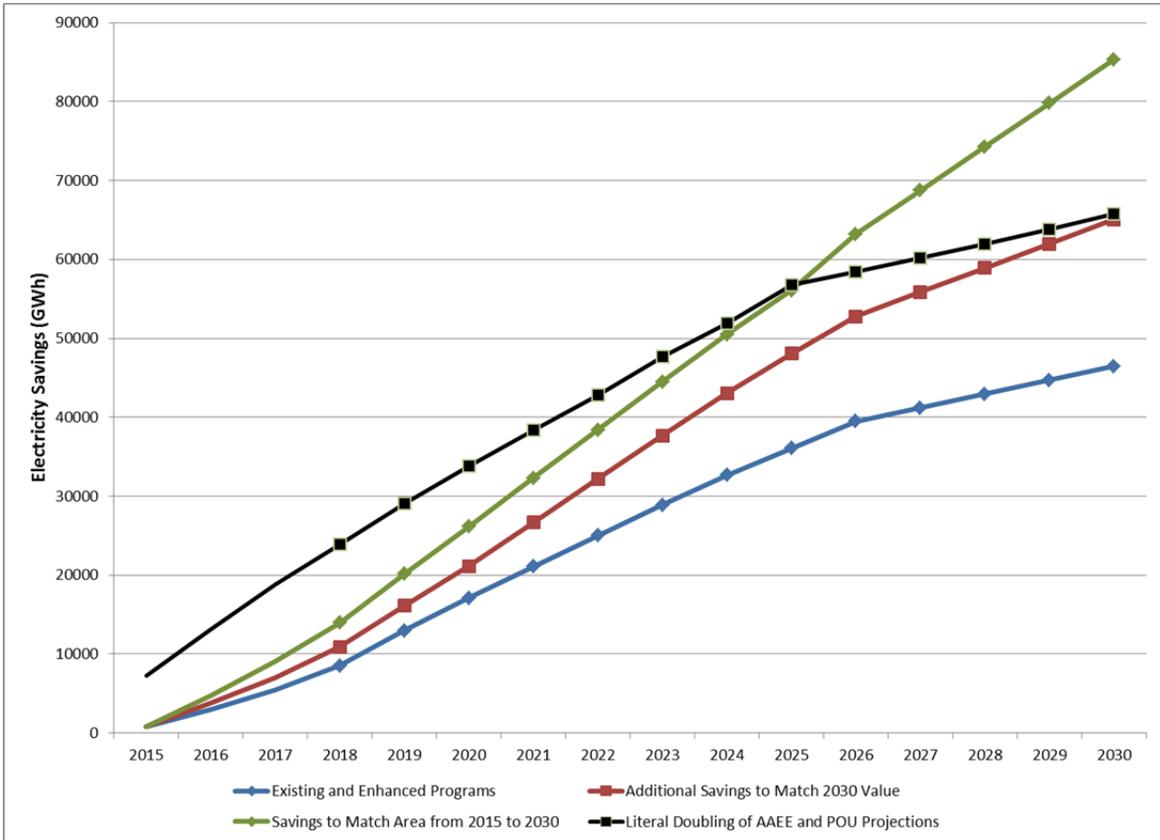
Staff interprets “cumulative” energy efficiency savings to mean the cumulative savings realized in 2030. The Energy Commission does not interpret “cumulative” energy efficiency savings to mean the sum of the cumulative energy efficiency savings realized in every year from 2015 through 2030. “Cumulative” energy efficiency savings realized in 2030 means the total of the first-year energy efficiency savings for measures installed and behavior changes in 2030, plus the savings realized in 2030 from all previous measure installations from 2015 through 2029 (reflecting persistence decay that has occurred since the measures were installed), for all end uses. This use of “cumulative” aligns with the definition the CPUC has used to set energy efficiency savings goals. For instance, in Decision 07-10-032 (October 2007), the CPUC defined cumulative savings for a given year as “the savings in that year from all previous measure installations (and reflecting any persistence decay that has occurred since the measures were installed) plus the first-year savings of the measures installed in that program year.” The value of the savings realized in 2030 is “cumulative” in that it reflects the energy efficiency savings in 2030 for measures installed from 2015 through 2030, as opposed to reflecting only the energy efficiency savings for measures installed in 2030. This use of “cumulative” is the standard way to distinguish between savings in a given year (which includes savings attributable to measures installed in previous years) and the accumulation of these savings over time.

For setting targets, “cumulative doubling” of energy efficiency savings therefore means a doubling of cumulative energy efficiency savings in 2030. The baseline for this doubling is the sum of “midcase estimate of additional achievable energy efficiency [AAEE] savings, as contained in the California Energy Demand Updated Forecast, 2015-2025” and “the targets adopted by local publicly owned electric utilities pursuant to Section 9505 of the Public Utilities Code,” both of which are to be extended to 2030 using an average annual growth rate. Both sources provide a sequence of cumulative savings that are expected over time.

Figure 6 uses electricity savings to illustrate two interpretations of “cumulative doubling,” but a comparable situation exists for natural gas. Figure 5 depicts the difference between the Energy Commission’s interpretation of “cumulative doubling” (doubling of cumulative energy efficiency savings realized in 2030) and the alternative interpretation (doubling the sum of the cumulative energy efficiency savings realized in every year from 2015 through 2030). The black line in the chart represents the doubling of both 2014 AAEE and most recent POU targets, both extended to 2030 using an average annual growth rate (in this case of 3 percent per year). The blue line is the sum

of all known, and perhaps enhanced, existing programs savings identified in the managed demand forecast. The red line is a trajectory of savings created by unknown programmatic or market-based efforts to achieve a doubling of cumulative energy efficiency savings in 2030. The green line is the further savings beyond the red line that would be needed to achieve the sum of the cumulative energy efficiency savings realized in every year from 2015 through 2030.

Figure 6: Alternative Interpretations of “Cumulative”



Source: Energy Commission staff

Staff Proposal on Revising the *CEDU 2015* to Correct Known Errors

As directed by statute, the *California Energy Demand Updated Forecast, 2015-2025* (*CEDU 2015*) will be the basis for calculating the doubling of energy efficiency savings to be achieved by 2030. However, the Energy Commission is aware of errors in the *CEDU 2015* that need to be corrected by revising the *CEDU 2015* before setting the final numerical values of the annual targets. Thus, the numerical values in this paper are for illustration only, though they are consistent with the error corrections staff intends to include in the revised *CEDU 2015*. The error corrections reduce the *CEDU 2015* energy efficiency savings by approximately 10%. Staff will publish proposed final numbers for

adoption by the Energy Commission at a future business meeting, and all interested persons will have the opportunity to comment on them.

Staff Proposal on Aggregating Gas and Electric Savings

Public Resources Code Section 25310 (c) (2) authorizes the Energy Commission to combine energy efficiency savings from both electricity and natural gas end uses if it adopts a method “for aggregating electricity and natural gas final end-use energy efficiency savings in a consistent manner based on source of energy reduction and other relevant factors” in a public process that allows input from other stakeholders. Staff thinks that it is useful to portray electricity and gas savings in a common unit for reporting on progress toward meeting the annual goals. Figure 1 shows the electric and gas savings expressed in quadrillion British thermal units (quad BTU), with the red line being natural gas savings, the blue line being electricity savings, and the dotted line being the combined energy savings targets. For displaying savings in BTU, staff has used site energy conversion factors. In conjunction with reporting on energy savings in a common unit of energy, staff proposes to express savings targets as expected greenhouse gas emissions savings, expressed in Figure 2 as million metric tons of CO₂ equivalent. For displaying savings in GHG emissions, staff has used projections of electric system resource plans assuming achievement of the 50 percent Renewables Portfolio Standard; staff proposes to use the assumptions of CO₂ emission factors for electricity and natural gas used in the *2015 IEPR*. For expressing and reporting to the Energy Commission programmatic and other activities that will achieve electric and gas efficiency savings under the annual targets, Energy Commission staff proposes against aggregation and instead proposes using energy units more common to electricity (gigawatt hours) and gas (therms). (See Figure 3 and Figure 4.)

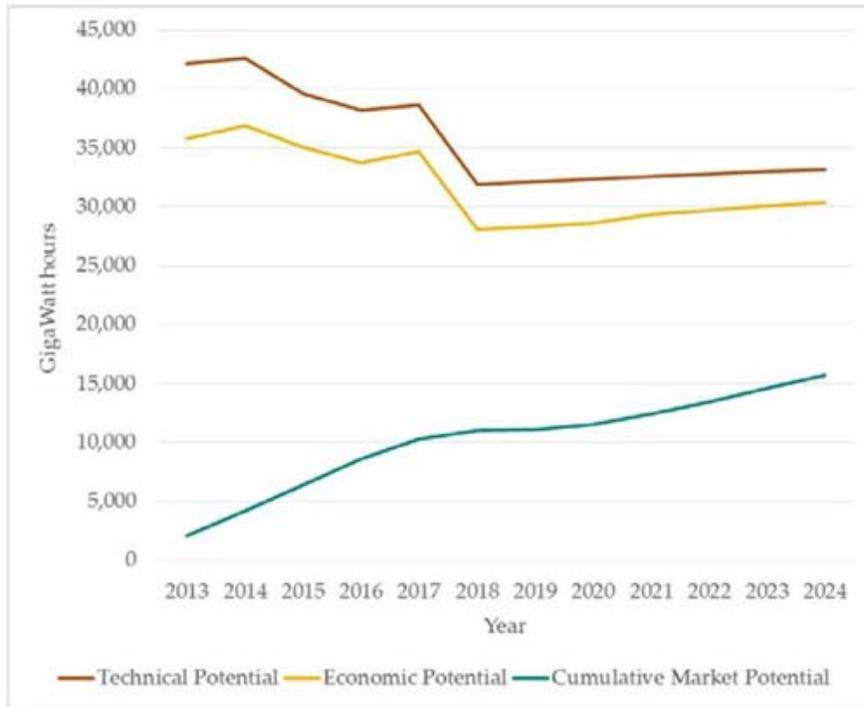
Staff Proposal on Average Annual Growth Rate

The studies referenced in SB 350 on which savings targets are to be based only extend to 2025 and 2023, for AAEE in IOU and POU service territories, respectively. Thus, the legislation directs the Energy Commission to extend them to 2030 using “an annual average growth rate” but leaves for the Energy Commission to determine this growth rate. Staff recommends using a reasonable basis for growth in the period outside this range.

Figure 7 for electricity savings and Figure 8 for natural gas savings are taken from the draft final report of Navigant Consulting in support of the California Public Utilities Commission’s 2015 P&G study.² Each of these figures reports only savings potential from utility incentive programs and exclude other types of savings potential. However, such incentive programs cover a large share of known potential.

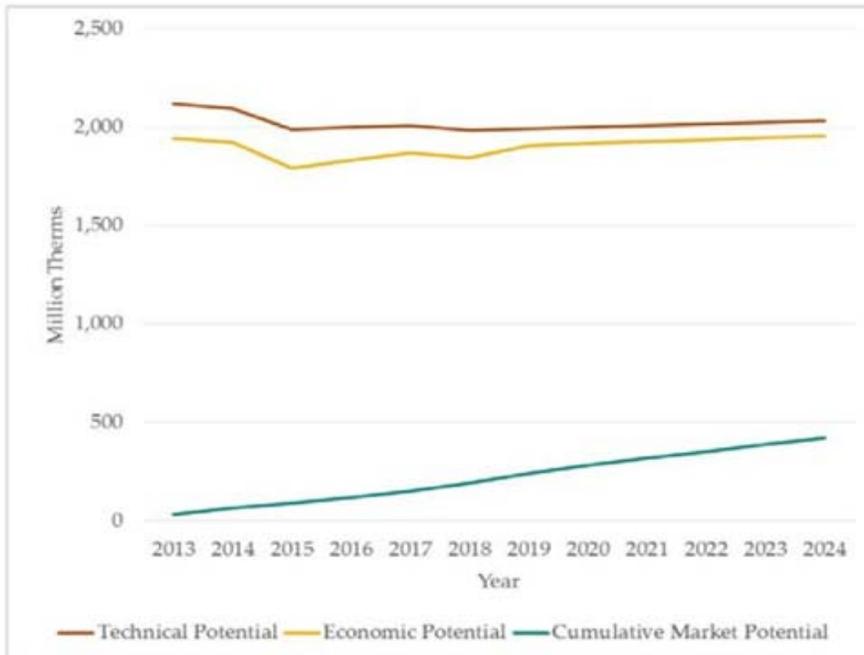
² 2013 California Energy Efficiency Potential and Goals Study, available at <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=4024>.

Figure 7: Electric Energy Savings Potential from the 2015 CPUC Study



Source: June 2015 PG Model

Figure 8: Natural Gas Savings Potential from the 2015 CPUC Study



Source: June 2015 PG Model

For electricity energy savings, Figure 7 suggests that doubling cumulative market potential comes close to matching the economic potential.³ For natural gas, Figure 8 suggests doubling cumulative market potential is well within the economic potential boundary, but there are large barriers to achieving economic potential from known program designs, as shown by cumulative market potential being far below economic potential in all years of the study.

Since there are no energy efficiency potential studies that extend to 2030, an annual average growth rate will need to be developed requiring judgment from staff. The Navigant study suggests that the economic potential is hardly growing for either electricity or natural gas in the years of the study; therefore, the Energy Commission will be cautious in assuming that cost-effective potential will grow substantially in the 2025-2030 period.

Unless substantial new information is developed through the two potential studies underway, the Energy Commission proposes that the 2014 AAEE study savings projections described in the *CEDU 2015* be extended at an annual average growth rate of 3 percent per year for both electricity and natural gas in the 2026-2030 period. The Energy Commission also proposes that the 2013 POU savings projections that stop in 2023 also be extended using an annual average growth rate of 3 percent per year.

Staff Proposal on Subtargets, Cost-Effectiveness, Feasibility and Reliability

Staff proposes using the non-exhaustive list of programs through which the targets may be achieved in Section 25310 (d) of SB 350 as a rough guide on how the annual savings targets should be apportioned into multiple energy saving subtargets, with cost-effectiveness, feasibility and reliability evaluations to be applied as appropriate for each subtarget. This approach follows the directive that the target-setting exercise of SB 350 be done to the extent that it is cost-effective and feasible and does not adversely impact public health and safety. Staff interprets “adverse impacts on public health and safety” to mean primarily ensuring reliability of electricity supply. Staff also recognizes that the different components of AAEE (and enhanced savings going forward) have had and will continue to have different statutory and regulatory definitions of “cost-effective” and “reliability.”

Figures 3 and 4 illustrate how energy savings subtargets would be tracked over time by the Energy Commission to meet the statewide savings targets. The regulatory body overseeing each program will determine the methods for cost-effectiveness, feasibility

³ The economic is calculated as the total energy efficiency potential available when limited to only cost-effective measures. In the 2015 P&G study, economic potential does not account for stock turnover. 2015 P&G Study, p. v.

and reliability assessment. For example, savings from future Title-24 Building Energy Efficiency Standards will be estimated using building and equipment life-cycle costs to the consumer as the cost-effectiveness approach, as required by state law. Another example is that the savings targets for IOU ratepayer programs administered by IOUs, regional energy networks (REN),⁴ and community choice aggregators (CCA)⁵ will be set using the cost-effectiveness calculations established in CPUC policy decisions. Cost-effectiveness, feasibility and reliability assumptions for energy savings from enhanced programs or new savings opportunities yet to be identified will be determined at a future date.

Examples of the subtargets that could be established using discrete assumptions of cost-effectiveness, feasibility and reliability include, but are not limited to:

- A subtarget to be achieved by each POU through customer programs.
- A subtarget to be achieved by each IOU through customer programs and by each CCA to the extent it operates customer programs independent of the IOUs.
- Subtargets to be achieved by future statewide regulations (for example, Title 20 and 24 standards, AB 802 benchmarking and disclosure).
- Subtargets to be achieved by future federal appliance efficiency standards.
- Subtargets to be achieved by future local and/or regional ordinances (for example, time of sale energy audits, reach codes, benchmarking, and disclosures beyond the statewide coverage).
- Subtargets to be achieved by Property Assessed Clean Energy financing programs.
- Subtargets to be achieved by new voluntary mechanisms (for example, air district mitigation of criterial pollutants, large commercial GHG emission reduction contest, statewide public awareness campaign).

Staff recommends the Energy Commission use this list as an illustrative outline in establishing savings subtargets; staff recommends that any establishment of targets for CPUC-jurisdictional entities should be undertaken by the CPUC, not the Energy Commission. Establishing subtargets will provide specific energy savings expectations to the entities responsible for achieving them. Subtargets for utility programs and impacts of future standards are likely to be readily developed by the statutory deadline.

⁴ *Regional energy networks* are ratepayer funded energy efficiency programs in California that are authorized by the CPUC as provisional pilots to design and administer energy efficiency programs that the IOUs cannot or do not intend to conduct. They operate without utility oversight.

⁵ A *community choice aggregator* is defined as local governments that aggregate electricity demand within their jurisdictions to procure alternative energy supplies using the existing utility transmission and distribution system.

Subtargets for new programmatic and market activity may not be completed by the end of 2017 and will have to be established in subsequent review cycles.

Staff acknowledges some limitations of available data to fully characterize cost-effective efficiency potential or sufficiently identify implementation strategies or program designs to fully capture more energy savings from efficiency. Staff expects to continue to refine our analysis, strategy identification, and target setting for the 2019 edition of the IEPR. These efforts will explore more in-depth industrial sector efficiency potential, the relative GHG impacts of gas efficiency versus future electric strategies, what kinds of new programs or strategies might more deeply tap into unrealized economic efficiency potential. In addition, the Energy Commission and the CPUC have already begun looking at opportunities to better integrate EPIC RD&D with utility Emerging Technology efficiency programs, and how to further market uptake via full-scale “programs” or even “market transformation” outcomes.

Utilities would have to report to the CPUC and/or the Energy Commission, as appropriate, on how they intend to achieve the targets assigned to them. All entities assigned responsibility for achieving energy saving targets would have to provide information to the Energy Commission for energy savings tracking and reporting. A more detailed analysis of staff proposals for SB 350 energy efficiency savings sub-targets will be forthcoming.

Finally, some entities are also required to provide prospective energy efficiency program savings as part of either Energy Commission- or CPUC-administered integrated resource planning (IRP) mechanisms. All subtargets that pass the responsible entities' tests for reliability and have impacts within the service areas/customer bases of entities with IRP development requirements would be included in the IRPs. Subtarget savings with outcomes too uncertain to be relied upon for resource planning and procurement will not be included in the IRPs. For example, IRPs would not include the targets set for future building and appliance standards beyond those that are already included in the AAEE for IOUs. A key component of the SB 350 target-setting process will be to determine which targets are included in IRPs, and which are not. All electricity and natural gas end-use sectors will be included in the identification and quantification of energy savings subtargets: residential, commercial, industrial, and agricultural.

A more detailed analysis of potential subtargets will be undertaken by CEC staff in subsequent papers and workshops.

Treatment of Fuel Switching and Fuel Substitution

Staff proposes that the Energy Commission may include fuel substitution measures, but not fuel-switching measures, as explained below. Fuel-switching measures involve shifting from an energy source that is not utility-supplied/interconnected (such as petroleum) to a utility-supplied/interconnected energy source (including rooftop solar). For setting targets to double energy efficiency savings, SB 350 defines “energy efficiency

savings” as “reduced electricity or natural gas usage produced either by the installation of an energy efficiency measure or the adoption of an energy efficiency practice that maintains at least the same level of end-use service or by conservation actions that reduce energy use by reducing the quantity of baseline energy services demanded” (Section 25310 [a]). Fuel-switching measures (including electrification of transportation) should not be included in the targets because such measures do not involve reducing either electricity or natural-gas usage.

Fuel-substitution measures involve substituting one utility-supplied/interconnected energy source (that is, electricity and natural gas) for another. Unlike fuel switching measures, these measures involve reducing either electricity or natural-gas usage and are expected to result in lower BTU consumption. The statute includes a non-exhaustive list of programs (Section 25310 [d]) through which the targets may be achieved. One of the items on the list is programs “that save energy in final end uses by using cleaner fuels to reduce greenhouse-gas emissions as measured on a life-cycle basis from the provision of energy services.” Therefore, any fuel substitution measures “that save energy in final end uses by using cleaner fuels” may be included in the targets.

APPENDIX A:

Relevant Portions of SB 350

SECTION 1. This act shall be known and may be cited as the Clean Energy and Pollution Reduction Act of 2015.

SEC. 2. (a) The Legislature finds and declares that the Governor has called for a new set of objectives in clean energy, clean air, and pollution reduction for 2030 and beyond. Those objectives include the following:

(1) To increase from 33 percent to 50 percent, the procurement of our electricity from renewable sources.

(2) To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

(b) It is the intent of the Legislature in enacting this act to codify the targets described under subdivision (a) to ensure they are permanent, enforceable, and quantifiable.

SEC. 6. Section 25310 of the Public Resources Code is amended to read:

25310. (a) For purposes of this section, the following terms have the following meanings:

(1) "End use" means the purpose for which energy is used, including, but not limited to, heating, cooling, or lighting, or class of energy uses upon which an energy efficiency program is focused, typically categorized by equipment purpose, equipment energy use intensity, or building type.

(2) "Energy efficiency savings" means reduced electricity or natural gas usage produced either by the installation of an energy efficiency measure or the adoption of an energy efficiency practice that maintains at least the same level of end-use service or by conservation actions that reduce energy use by reducing the quantity of baseline energy services demanded.

(b) On or before November 1, 2007, and by November 1 of every third year thereafter, the commission in consultation with the California Public Utilities Commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders, shall develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas efficiency savings and establish targets for statewide annual energy efficiency savings and demand reduction for the next 10-year period. The commission shall base its estimate at least in part on information developed pursuant to Sections 454.55, 454.56, 715, 9505, 9615, and 9615.5 of the Public Utilities Code. The commission shall, for each electrical corporation and each gas corporation, include in the integrated energy policy report, a comparison of the public utility's annual targets

established pursuant to Sections 454.55 and 454.56, and the public utility's actual energy efficiency savings and demand reductions.

(c) (1) On or before November 1, 2017, the commission, in collaboration with the Public Utilities Commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders, shall establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030. The commission shall base the targets on a doubling of the midcase estimate of additional achievable energy efficiency savings, as contained in the California Energy Demand Updated Forecast, 2015-2025, adopted by the commission, extended to 2030 using an average annual growth rate, and the targets adopted by local publicly owned electric utilities pursuant to Section 9505 of the Public Utilities Code, extended to 2030 using an average annual growth rate, to the extent doing so is cost effective, feasible, and will not adversely impact public health and safety.

(2) The commission may establish targets for the purposes of paragraph (1) that aggregate energy efficiency savings from both electricity and natural gas final end uses. Before establishing aggregate targets, the commission shall, in a public process that allows input from other stakeholders, adopt a methodology for aggregating electricity and natural gas final end-use energy efficiency savings in a consistent manner based on source of energy reduction and other relevant factors.

(3) In establishing the targets pursuant to paragraph (1), the commission shall assess the hourly and seasonal impact on statewide and local electricity demand.

(4) In assessing the feasibility and cost-effectiveness of energy efficiency savings for the purposes of paragraph (1), the commission and the Public Utilities Commission shall consider the results of energy efficiency potential studies that are not restricted by previous levels of utility energy efficiency savings.

(5) The energy efficiency savings and demand reduction reported for the purposes of achieving the targets established pursuant to paragraph (1) shall be measured taking into consideration the overall reduction in normalized metered electricity and natural gas consumption where these measurement techniques are feasible and cost effective.

(d) The targets established in subdivision (c) may be achieved through energy efficiency savings and demand reduction resulting from a variety of programs that include, but are not limited to, the following:

(1) Appliance and building energy efficiency standards developed and adopted pursuant to Section 25402.

(2) A comprehensive program to achieve greater energy efficiency savings in California's existing residential and nonresidential building stock pursuant to Section 25943.

- (3) Programs funded and authorized pursuant to the California Clean Energy Job Creation Act (Division 16.3 (commencing with Section 26200)).
 - (4) Programs funded by the Greenhouse Gas Reduction Fund established pursuant to Section 16428.8 of the Government Code.
 - (5) Programs funded and authorized pursuant to this division.
 - (6) Programs of electrical or gas corporations, or community choice aggregators, that provide financial incentives, rebates, technical assistance, and support to their customers to increase energy efficiency, authorized by the Public Utilities Commission.
 - (7) Programs of local publicly owned electric utilities that provide financial incentives, rebates, technical assistance, and support to their customers to increase energy efficiency pursuant to Section 385 of the Public Utilities Code.
 - (8) Programs of electrical or gas corporations, local publicly owned electric utilities, or community choice aggregators that achieve energy efficiency savings through operational, behavioral, and retrocommissioning activities.
 - (9) Programs that save energy in final end uses by reducing distribution feeder service voltage, known as conservation voltage reduction.
 - (10) Programs that save energy in final end uses by using cleaner fuels to reduce greenhouse gas emissions as measured on a lifecycle basis from the provision of energy services.
 - (11) Property Assessed Clean Energy (PACE) programs.
- (e) Beginning with the 2019 edition of the integrated energy policy report and every two years thereafter, the commission shall provide recommendations and an update on progress toward achieving a doubling of energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030, pursuant to paragraph (1) of subdivision (c). The commission shall also include with the recommendations and update both of the following:
- (1) An assessment of the effect of energy efficiency savings on electricity demand statewide, in local service territories, and on an hourly and seasonal basis.
 - (2) Specific strategies for, and an update on, progress toward maximizing the contribution of energy efficiency savings in disadvantaged communities identified pursuant to Section 39711 of the Health and Safety Code.

SEC. 28. Section 454.55 of the Public Utilities Code is amended to read:

454.55. (a) The commission, in consultation with the Energy Commission, shall identify all potentially achievable cost-effective electricity efficiency savings and establish efficiency targets for an electrical corporation to achieve, pursuant to Section 454.5, consistent with the targets established pursuant to subdivision (c) of Section 25310 of the Public Resources Code.

(1) By July 1, 2018, and every four years thereafter, each electrical corporation shall report on its progress toward achieving the targets established pursuant to subdivision (a).

(2) By July 1, 2019, and every four years thereafter, the commission shall, pursuant to Section 9795 of the Government Code, report to the Legislature on the progress toward achieving the targets established pursuant to subdivision (a). The commission shall include specific strategies for, and an update on, progress toward maximizing the contribution of electricity efficiency savings in disadvantaged communities identified pursuant to Section 39711 of the Health and Safety Code.

(b) (1) By December 31, 2023, the commission shall, in a new or existing proceeding, undertake a comprehensive review of the feasibility, costs, barriers, and benefits of achieving a cumulative doubling of energy efficiency savings and demand reduction by 2030 pursuant to subdivision (c) of Section 25310 of the Public Resources Code.

(2) Notwithstanding subdivision (c) of Section 25310 of the Public Resources Code, if the commission concludes the targets established for electrical corporations to achieve pursuant to subdivision (a) are not cost effective, feasible, or pose potential adverse impacts to public health and safety, the commission shall revise the targets to the level that optimizes the amount of energy efficiency savings and demand reduction and shall modify, revise, or update its policies as needed to address barriers preventing achievement of those targets.