Options for Setting GHG Planning Targets for Integrated Resource Planning and Apportioning Targets among Publicly Owned Utilities and Load Serving Entities

CPUC and California Energy Commission Staff Discussion Document

Overview

Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015 (de León, Chapter 547, Statutes of 2015) (SB 350) requires the California Public Utilities Commission (CPUC) and the California Energy Commission (Energy Commission) to establish Integrated Resource Planning (IRP) processes to ensure that load-serving entities (LSEs) and qualifying publicly owned utilities (POUs)[1] meet the greenhouse gas (GHG) emission reduction targets established by the California Air Resources Board (CARB) for the electricity sector and each LSE and POU for the year 2030.

To fulfill this mandate, in 2017 the CPUC needs to establish guidance for LSEs to follow in IRP filings, develop the first optimal portfolio of resources to meet the electric sector's emissions reduction target, and direct the LSEs to file specific IRPs. Also in 2017 the Energy Commission will develop and adopt guidelines for POUs to follow in their IRPs to be filed by January 2019.

The CPUC, Energy Commission, and CARB have initiated a joint agency process to establish GHG planning targets for IRP. While CARB has yet to establish the electricity sector share of the economy-wide GHG emission reduction target, the CPUC and Energy Commission have begun the task of defining their IRP processes to meet statutory deadlines. For LSEs and POUs to begin implementing IRP, the CPUC and Energy Commission must undertake several steps to establish GHG planning targets for LSEs and POUs:

- Define the electric sector GHG emissions reduction target or target range for use in IRP;
- Adopt a methodology to divide this target for planning purposes in the CPUC's and Energy Commission's respective IRP processes; and
- Adopt a methodology for setting LSE- and POU-specific GHG emission reduction targets.

The purpose of this document is to frame issues that will be discussed at the joint CPUC and Energy Commission workshop on February 23, 2017, which will focus on potential methods and associated challenges of setting GHG targets for use in IRP. The workshop will also address how the CPUC, Energy Commission, and CARB plan to coordinate to set GHG targets for IRP in compliance with SB 350. This document includes focused questions that we invite stakeholders to discuss in informal written feedback in advance of the workshop. Stakeholders should submit their comments to the CPUC and Energy Commission by February 21, 2017, according to the agency-specific instructions described in

[1] The IRP requirement applies only to POUs with annual demand exceeding 700 GWh.

each agency's workshop notice. Stakeholders are encouraged, but not required, to submit written comments to both the Energy Commission and CPUC proceedings.

For CPUC IRP purposes, this document is intended to complement the options and questions presented in the CPUC Staff White Paper on Implementing GHG Planning Targets in IRP, released for informal party comment in November 2016.[2] Energy Division staff plan to use party feedback on both documents to develop a recommendation for setting GHG planning targets in the 2017 CPUC Staff Proposal on IRP.

Considerations for Setting GHG Planning Targets in 2017

When evaluating the range of options for establishing GHG planning targets in the IRP process, it is important to keep in mind several regulatory, timing, and technical factors that could influence the viability of those options:

- CPUC IRP modeling will incorporate certain assumptions or constraints on cost, reliability, and GHG emission reductions. CPUC IRP modeling in 2017 will cover the CAISO balancing authority area (BAA), which includes several entities outside CPUC jurisdiction (POUs) and excludes several CPUC-jurisdictional LSEs.[3]
    - CPUC-jurisdictional LSEs outside the CAISO BAA: PacifiCorp and Liberty Utilities.
    - POUs within the CAISO BAA:
        - City of Anaheim
        - City of Azusa (Azusa Light & Water)
        - City of Banning
        - City of Colton
        - City of Pasadena (Pasadena Water and Power)
        - City of Riverside
        - City of Vernon
        - City of Alameda
        - City of Biggs
        - City of Gridley
        - City of Healdsburg
        - City of Lodi
        - City of Lompoc
        - City of Palo Alto
        - City of Ukiah

[2] Available at www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442451662.

[3] To roughly estimate the relative emissions of POUs and LSEs in the CAISO BAA, of the total GHG allowances that CARB allocates to protect customers of electric distribution utilities, POUs receive about 12% of the allowances allocated to CAISO-area distribution utilities, and IOUs (on behalf of all distribution customers) receive about 88%.

    - Port of Oakland
    - Silicon Valley Power
    - City of Rancho Cucamonga
    - City and County of San Francisco
    - Moreno Valley Utilities
    - Port of Stockton
    - Power and Water Resource Pooling Authority
    - Victorville Municipal
    - City of Industry
    - Corona
    - Pittsburg Power (Island)
    - Eastside

- The CPUC plans to conduct IRP modeling in 2017 to define a Reference System Plan that specifies an optimal set of resources for meeting forecasted load throughout the CAISO BAA. This Reference System Plan will guide investment, resource acquisition, and programmatic decisions to reach the state's policy goals, in addition to informing the development of individual LSE IRPs. In generating the Reference System Plan, the CPUC Energy Division will need to specify a CAISO-wide GHG-reduction target to use as a constraint in modeling, in addition to other constraints. The draft Reference System Plan is expected to be released for public comment by April 2017; however, CPUC IRP modeling cannot proceed without a CAISO-wide GHG-reduction target. Similarly, LSEs will need to know their respective GHG planning targets before they can begin developing planning scenarios for IRP.
- The Energy Commission is developing guidelines that prescribe the process for developing, submitting, and reviewing POU IRPs. The POUs are required to submit IRPs by January 1, 2019. However, the POUs have public notice and review processes that lengthen the time needed to adopt IRPs. For this and other reasons, they have requested that the Energy Commission guidelines for IRP contents be completed by the 3rd quarter of 2017. At that time the POUs will need to know their respective targets, because they cannot develop planning scenarios without knowing the GHG emission reduction targets they are expected to reach; individual POU targets cannot be developed without a "POU-wide" reduction target.

Part 1: Define an Overall Electric Sector Emissions Target in 2030 for IRP Purposes

CARB has defined the electric sector's share of the State's 2030 GHG emission reduction in the 2017 Climate Change Scoping Plan Update (Scoping Plan), but the Scoping Plan does not address how or whether the electric sector's share of the statewide emission reduction target should be used as a planning target in either agency's IRP process. The electric sector target will be expressed as a range of GHG reductions in million metric tons of carbon dioxide equivalent (MMT CO2e).

Option A: Use the Electric Sector Share of Statewide 2030 Emissions Specified in CARB's Scoping Plan

CARB's proposed Scoping Plan forecasts emissions by economic sector to achieve statewide 2030 GHG targets. CARB forecasts that the electric sector's share of total statewide GHG emissions will be in the range of 42 to 62 $MMTCO_2e$ in 2030 (see Table 1; subject to change pending Board approval). Option A would establish a numerical target within this emissions range for use in IRP, to be further subdivided between the CPUC and Energy Commission IRP processes.

Option B: Scale the Statewide 2030 GHG Target by the Electric Sector Share of the Most Recent GHG Emissions Inventory

CARB conducted an inventory of statewide GHG emissions in 1990, which serves as the basis for the state's 2020 and 2030 GHG emissions limits. The 1990 statewide GHG emissions were 431 $MMTCO_2e$;[4] the 2020 target is equal to the 1990 level; and the 2030 target is 40% of 1990 levels, or 260 $MMTCO_2e$ (see Table 1). Option B would establish a 2030 electric sector emissions target for IRP based on the electric sector's share of statewide emissions in CARB's most recently conducted emission inventory (2016 Edition, covering emissions reported through 2014). To establish this target, the CPUC and Energy Commission would pursue the following steps in coordination with CARB:

1. Evaluate the electric sector's share of total statewide emissions in CARB's 2016 (or most recent) Edition GHG emissions inventory. (In-state electric generation and electric imports account for roughly 20% of total California emissions in 2014; see Table 1.)
2. Multiply this fraction by the statewide 2030 GHG emissions target established in the 2017 Climate Change Scoping Plan Update.

[4] ARB staff constructed a 1990-2004 greenhouse gas emission inventory to determine the 1990 emission level, which the Board approved in December 2007 as 427 MMTCO2e. CARB transitioned to the scientifically updated IPCC 2007 fourth assessment report global warming potentials in 2014, causing recalculation of the 2020 limit to 431 MMTCO2e. More information is available at www.arb.ca.gov/cc/inventory/1990level/1990archive.htm.

TABLE 1: Two Options for Defining the Electric Sector Share in IRP.

		1990 actual (same as 2020 goal)	2014 actual (GHG Emissions Inventory)*	2030 goal for IRP (**Option A**)**	2030 goal for IRP (**Option B**)
Economy-wide emissions	MMT CO2e	431	441.5	260	260
Electric sector emissions	MMT CO2e	108	88	**42 to 62**	**52**
	As % of total economy	25%	20%	16% to 24%	20%

* See CARB 2016 Edition of the GHG Emission Inventory, available at www.arb.ca.gov/cc/inventory/data/data.htm.

** See Table II-3, page 43, "The 2017 Climate Change Scoping Plan Update," January 20, 2017, available at www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

Questions for all parties:

1. **Under Part 1, which of the options do you recommend, and why? What issues should be considered when implementing that option, and how should those issues be addressed?**
2. **If recommending Part 1 Option A, should the IRP process use an emission reduction target equal to the lower end of this range (42 MMTCO_2e), the higher end of this range (62 MMTCO_2e), or a target somewhere within this range?**
3. **Are there any other methods that should be considered for assigning an overall electricity sector target in 2030 for IRP purposes? If so, please describe the method in as much detail as possible and explain why it is preferable to the options listed above.**
4. **Do the proposed methods adequately account for interactive effects between the electric and other economic sectors, in particular with the transportation sector? If not, please explain how those interactive effects should be accounted for in the IRP process.**

Part 2: Determine a Methodology to Divide the Electric Sector Emissions Reductions Target (Established in Part 1) between the CPUC's and Energy Commission's Respective IRP Processes.

Once the electric sector range is identified, the CPUC and Energy Commission will need to determine how best to divide the responsibility for reducing GHG emissions in their respective IRP processes. The CPUC and Energy Commission would then develop more refined methods to set LSE-specific and POU-specific targets separately in their individual IRP processes. CPUC staff has already outlined four

potential options for assigning LSE-specific GHG targets; those options and related implementation issues are described in detail in the 2016 White Paper on Implementing GHG Planning Targets in IRP.[5]

Option A: Use a Methodology Similar to CARB's Allowance Allocation for Electric Distribution Utilities

CARB's Cap-and-Trade Program provides an allocation of GHG allowances to electric distribution utilities between 2013 and 2020 to protect electric ratepayers.[6] CARB based the allowance allocation on three factors: each utility's expected emissions between 2013 and 2020, cumulative energy efficiency investments, and early investments in renewable energy. To conduct these allocations, CARB relied on a range of data, but chiefly the utilities' projected resource mix reflected in S-2 forms filed with the Energy Commission, and resource projections and load forecasts reflected in the 2009 Integrated Energy Policy Report (IEPR).[7] For IRP purposes, these allowance allocations provide one potential way to estimate the relative emissions of LSEs and POUs.

To set GHG targets for their IRP processes, under this approach the CPUC and Energy Commission would divide the electric sector target from Part 1 by the proportion of allowances allocated to entities in their respective jurisdictions. In other words, the 2030 electric sector target would be divided proportionally to the 2020 allowance allocations.[8]

Following the determination of a methodology to divide the electric sector emissions reductions target, CPUC and Energy Commission would develop more refined methods to set LSE-specific and POU-specific targets separately in their individual IRP processes. For example, for those LSEs located within IOU services territories (e.g., CCAs and ESPs), the CPUC would determine further breakdown and representation of individual GHG planning targets in the CPUC IRP proceeding, as discussed in the CPUC Staff White Paper on Implementing GHG Planning Targets.

Option B: Divide the Electric Sector Target Based on Electric Load Served in 2016

The Energy Commission's 2015 IEPR includes the California Energy Demand Forecast for 2016-2026, which provides information about each retail electricity seller's load forecast. This option would use

[5] Available at www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442451662.

[6] See Cap-and-Trade Regulation Title 17, California Code of Regulations, Section 95892, and especially Table 9-3.

[7] See *Appendix A: Staff Proposal for Allocating Allowances to the Electric Sector*, published July 2011, available at www.arb.ca.gov/regact/2010/capandtrade10/candtappa2.pdf

[8] The CARB Cap-and-Trade allocation methodology is expected to change for post-2020 allocations.

retail load forecasts as a proxy for emissions by electric LSE and POU, solely for the purposes of defining GHG planning targets for the CPUC and IRP to use in their respective proceedings.

Following the determination of a methodology to divide the electric sector emissions reductions target, the CPUC and Energy Commission would develop more refined methods to set LSE-specific and POU-specific targets separately in their individual IRP processes. For example, any further adjustments to the targets due to unique retail seller circumstances, such as departing load, would be handled in separate proceedings at the Energy Commission and CPUC, respectively.

Option C: Determine a Bottom-Up Methodology for Apportioning the Electric Sector Emissions Reductions Target among All Retail Sellers of Electricity (both POUs and LSEs)

This approach would attempt to achieve a higher level of accuracy than Options A and B might provide. One potential approach would be to forecast utility emissions in 2030, using the California Energy Demand Forecast (noted above), assumptions regarding existing zero-and very low-carbon resources (e.g., nuclear, large hydro) that would still be in operation, and energy associated with a 50 percent renewable portfolio standard. Residual energy needs would be assumed to be met with natural gas-fired generation at an appropriate representative heat rate for natural gas generators. The agencies could aggregate emissions across all retail sellers and compare them to the statewide electric sector target. Emissions estimates for each retail seller would be scaled up or down proportionally until the aggregated GHG number meets the electric sector target, yielding a common multiple to be used across all retail sellers.

Following the determination of a methodology to divide the electric sector emissions reductions target, the CPUC and Energy Commission would develop more refined methods to set LSE-specific and POU-specific targets separately in their individual IRP processes. For example, any consideration of other factors deemed necessary, such as the amount of energy efficiency savings assumed in setting individual targets, differences across retail service providers in potential energy efficiency savings, and transportation electrification would take place in these proceedings.

Questions for all parties:

5. **Under Part 2, which of the options do you recommend, and why? What issues should be considered when implementing that option, and how should those issues be addressed?**
6. **Are there any other methods that should be considered for dividing the GHG emissions reduction target between the CPUC's and Energy Commission's respective IRP processes? If so, please describe the method in as much detail as possible and explain why it is preferable to the options listed.**
7. **What are the data requirements associated with the methodology you recommend? If these data entail forecasting or simulation, please describe the input data needed and potential sources of this data.**

Other questions related to GHG-target setting:

8. **How do we account for hydro variability, and what are the target GHG reductions during average hydro years? How do we incorporate uncertainty?**
9. **What are reasonable expectations to allocate GHG targets for the other POUs (not just the 16 largest that are required to do IRPs)?**
10. **What are stakeholder thoughts on the evolution of filing requirements between compliance periods, particularly between the first and second compliance filings?**
11. **Should utilities consider the GHG emissions for their own facilities and their vehicle fleets?**
12. **How should the Energy Commission and CPUC address publicly-owned utilities becoming community choice aggregators, and whose jurisdiction does that fall under for IRPs?**
13. **Should utilities consider short-lived climate pollutants in their IRPs?**