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LONG-TERM GAS TRANSITION SCENARIOS: JOINT AGENCY PRESENTATIONS NOVEMBER 14, 2024 WORKSHOP REPORT

ISSUED: DECEMBER 13, 2024

GAS LONG TERM PLANNING SCENARIO
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I. Introduction

On November 14, 2024, the California Public Utilities Commission (Commission or CPUC) hosted a workshop in the Order Instituting Rulemaking (OIR) to Establish Policies, Processes and Rules to Ensure a Safe and Reliable Gas Systems in California and Perform Long Term Gas System Planning (Gas Transition OIR or Rulemaking), Rulemaking (R.) 24-09-012. The purpose of the workshop was to (1) provide insights for gas utilities, stakeholders, and the Commission on developing a range of gas transition scenarios, (2) develop a better understanding of gas demand scenarios that may be considered in the Gas Transition OIR, and (3) understand inputs and assumptions used by the California Air Resources Board (CARB) to develop the 2022 Scoping Plan (Scoping Plan) and the California Energy Commission (CEC) to develop Gas Demand Forecast assessments, some or all of which the gas utilities may incorporate into future scenario analysis work.

II. Background

On September 26, 2024, the Commission opened a new Rulemaking to continue the work of R.20-01-007 along with potential new issues that may need to be examined in resolving some of the outstanding issues.[1]

The Rulemaking noted the following:

> *"The policy complexity and technical considerations for transitioning away from fossil gas will require close coordination among State agencies over a long-term planning horizon. No process currently exists to coordinate gas planning across utilities, over time or with related activities and State goals"* [2]

and

> *"To achieve California's decarbonization goals and effectuate an equitable gas transition, a coordinated, iterative, and long-term planning process will help the State agencies and utilities align initiatives related to gas system planning efforts and analytics".*[3]

On October 21, 2024, Administrative Law Judge (ALJ) Van Dyken and ALJ Purchia issued a *Ruling Providing Workshop Notice* (ALJ Ruling). The Ruling indicated that the virtual workshop would feature staff presentations, followed by opportunities for questions

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1 R.24-09-012 at p. 1.

2 *Id*. at p. 6.

3 *Id.*

and answers and public comment. Additionally, the ALJ Ruling indicated that Notice of the workshop would be posted on the Commission's Daily Calendar to inform the public that a decisionmaker would be in attendance. PG&E was directed to prepare an after-workshop Report and distribute the Report to the service list by December 13, 2024.[4]

The Workshop Agenda was served on the service list on November 12, 2024. A copy of the Workshop Agenda is included in Appendix A to this Report.

The CPUC's Energy Division Staff (Kristina Boyaci and Eileen Hvalka – co-leads for the CPUC's Gas Transition OIR) facilitated the workshop. The workshop was held from 10:00 am to 11:55 am and included opening remarks from CPUC Commissioner Karen Douglas, CARB Chair Lianne Randolph, and CEC Vice Chair Siva Gunda, and presentations on CARB's 2022 Scoping Plan and the CEC's Gas Demand Forecast Assessments with an opportunity for workshop participants to ask clarifying questions and/or provide public comments.

Panel presentations are also included in Appendix B.

III. Welcome and Opening Remarks

Commissioner Karen Douglas, California Public Utilities Commission welcomed workshop participants, Chair Randolph, and Vice Commissioner Gunda and expressed appreciation for their participation in the workshop. In the long-term gas transition planning work, scenario analysis is an important tool for assessing the trajectory of change and developments in the gas sector. There are multiple transition paths with potentially different impacts or effects relative to customer rates, infrastructure needs, reliability and other factors. A scenario-based analysis with a long-term view will allow the Commission and other state agencies to track and monitor progress against real world changes, provide critical insights into system needs, while we continue to learn. Commissioner Douglas expressed hope that by integrating insights from today's workshop presentations and subsequent comments from stakeholders and parties, the gas utilities will be better positioned to develop thoughtful scenarios that incorporate key input and assumptions that will be informative to long-term planning.

Chair Liane Randolph, California Air Resources Board thanked Commissioner Douglas for her leadership and Energy Division Staff for working together with staff from CARB and the CEC to plan for the transition of the gas system in support of the state's work to achieve carbon neutrality. The 2022 Scoping Plan lays out a technologically

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[4] ALJ Ruling at 2.

feasible and cost-effective path that transitions away from fossil fuels to clean alternatives. The focus must now be on rapid deployment and implementation of zero emission vehicles, electric appliances and increased renewable generation (electric, wind, solar), and ramp up hydrogen at scale. Between now and 2045, the electricity sector will need to support decarbonization efforts across transportation, buildings and industry, and this requires sustainability build rates of all these things, of the renewable resources, of the zero carbon technologies, of grid integration solutions, energy storage, demand response, and other innovative approaches that ensure a reliable, affordable, and resilient grid. In parallel with the expansion of the electricity sector, we need to ensure that the gas system continues to operate reliably and that residents who are the least able to decarbonize don't unduly bear the burden of that transition. Planning efforts really need to consider scenarios that reflect the system wide changes necessary to achieve our climate goals. The work completed thus far by the CPUC, CARB and the CEC to integrate the inputs from planning efforts will allow us to think about the right planning scenarios that should be analyzed and studied in addition to the policy strategies necessary to achieve our very ambitious, but achievable, goals.

Vice Chair Siva Gunda, California Energy Commission expressed appreciation to Commissioner Douglas and commended her for her leadership. Vice Chair Gunda recognized the complexity of the gas transition and collaboration of Energy Division staff and sister agencies over the last several years to move this important work forward. Vice Commissioner Gunda noted that the gas transition is occurring holistically between electricity and natural gas, and petroleum and many other fuels, and it's important as we move forward boldly and in an accelerated fashion towards realizing our clean energy goals that the work is rooted both in reliability and affordability. Scenario planning will play an important role in helping us to understand what the variety of futures could look like and how to operationalize these scenarios along with what additional policies may be necessary to be consistent with our reliability and affordability goals.

IV. Overview of 2022 Scoping Plan for Achieving Carbon Neutrality

Presenter*:* Jéa Boodry, Air Pollution Specialist, CARB

Overview of CARB’s Climate Policy Framework

CARB began the workshop with an overview of the goals outlined in California's 2022 Scoping Plan (Figure 1) for achieving carbon neutrality and how they relate to the transition away from fossil gas.

GHG targets and goals are informed by California legislation and executive orders that provide targets for total statewide emissions. There are also sector specific targets such as those set by Senate Bill (SB) 100 for the electric sector. The GHG emissions inventory provides an annual evaluation of progress towards these goals. Targets are shown in the pie chart of emissions by inventory sector in 2022 (Figure 1). The 2022 Scoping Plan lays out a cost effective and technologically feasible path to achieve the GHG targets in a way that's consistent with all directives. The Scoping Plan is updated at least once every five years. After each Scoping Plan is approved, CARB and other state agencies review, update or develop new regulations and programs to align with the actions in the plan based on established roles and authority.

FIGURE 1: CALIFORNIA'S CLIMATE POLICY FRAMEWORK

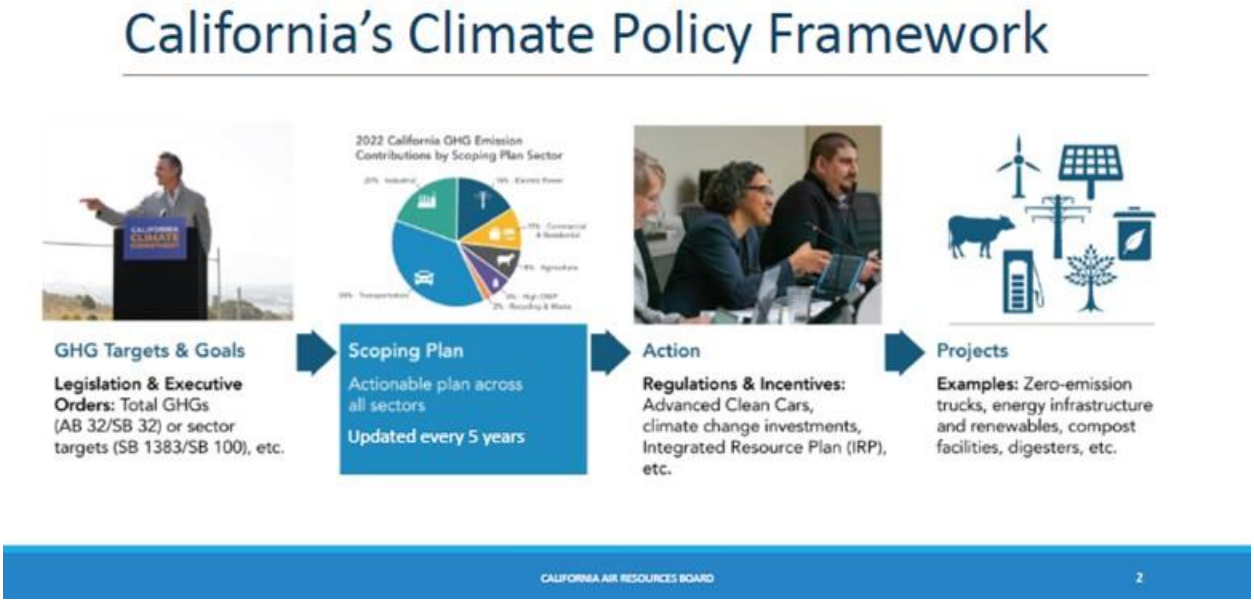
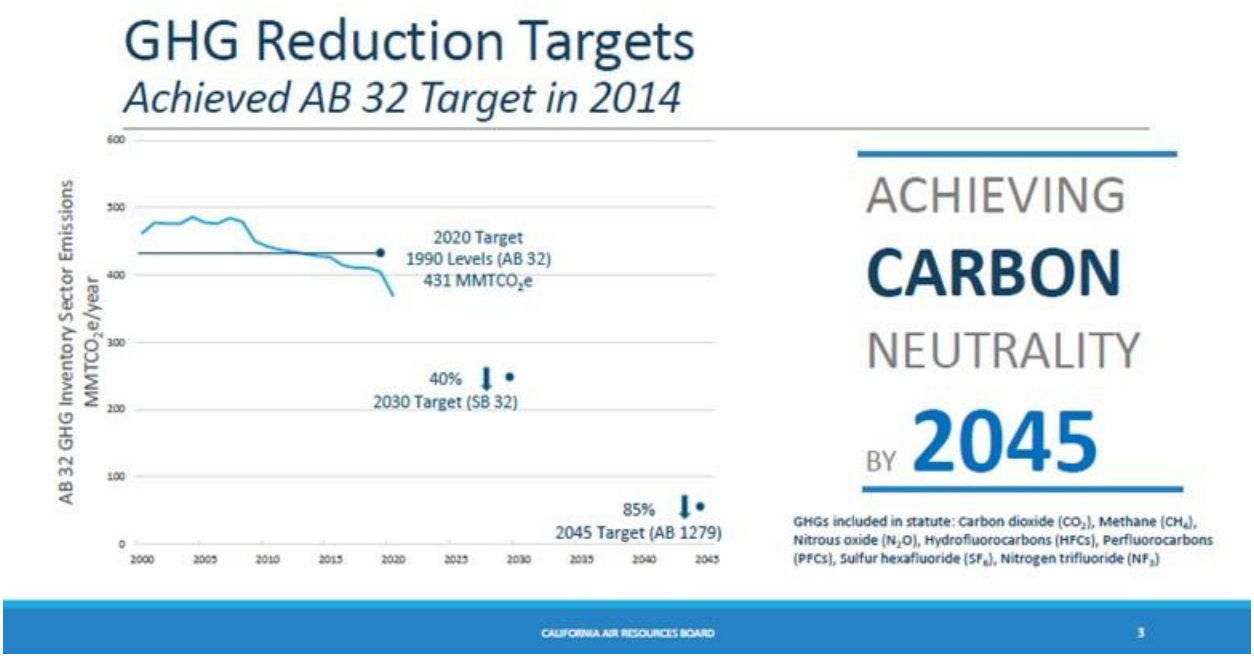


Figure 2 shows California's climate goals relative to current progress. The blue line shows actual annual emissions compared to statutory targets for 2020, 2030, and 2045. In 2016, the legislature called for a 40% reduction in emissions below 1990 levels by 2030 via SB 32. In 2022, Assembly Bill (AB) 1279 established two goals:(1) to reduce anthropogenic

GHG emissions by 85% by 2045 compared to 1990 levels and (2) achieve carbon neutrality no later than 2045.

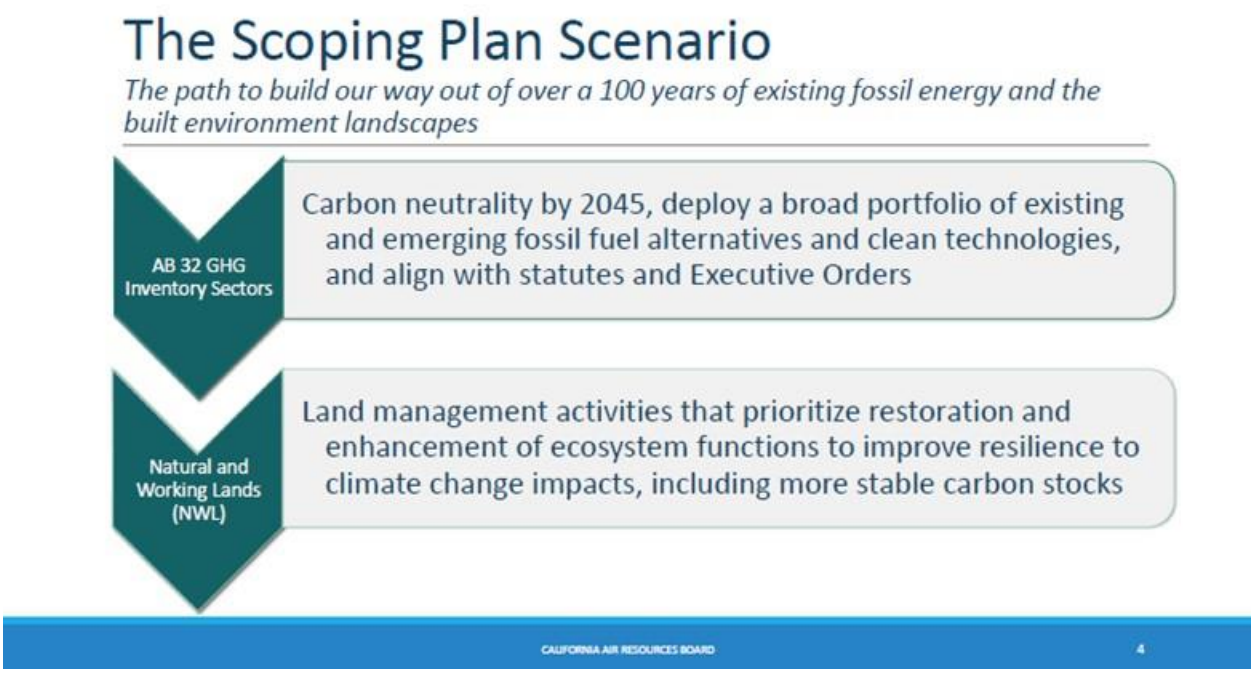
FIGURE 2: GHG REDUCTION TARGETS



2022 Scoping Plan for Achieving Carbon Neutrality

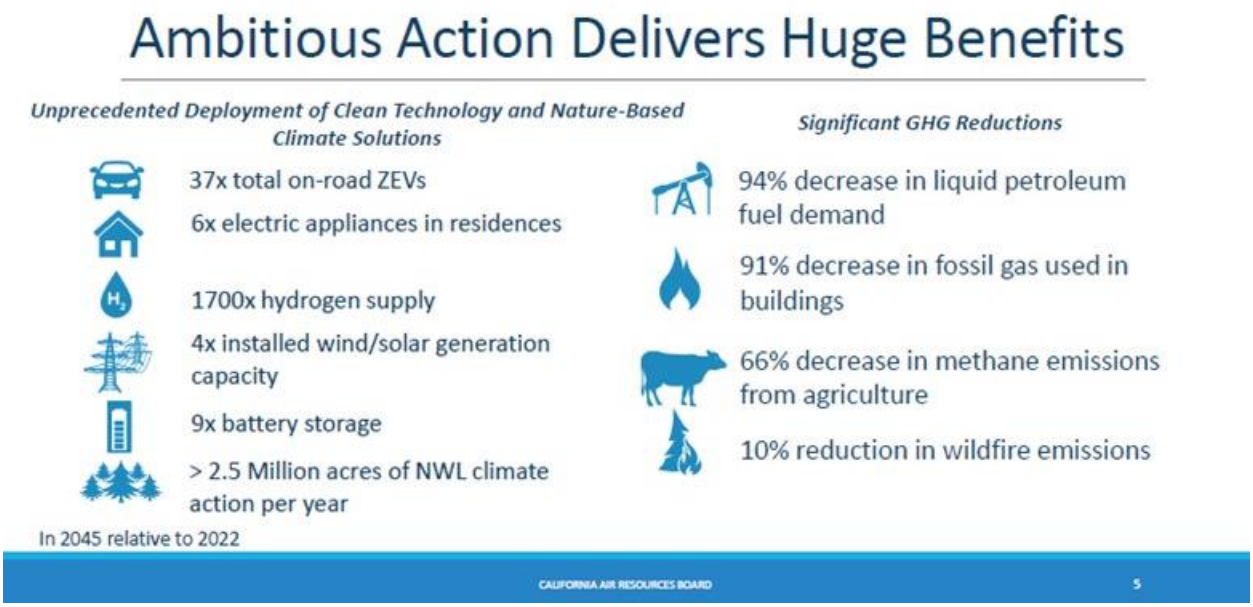
The scenario in the adopted plan includes an analysis of the actions needed across sources covered by both the AB 32 GHG inventory sectors and natural and working lands (see Figure 3). For the AB 32 GHG inventory sectors, the 2022 Scoping Plan scenario uses a broad portfolio of existing and emerging fossil fuel alternatives and includes achievement of the zero emission vehicles Executive Order eliminating internal combustion engines in new vehicle sales in the majority of legacy vehicle fleets. For national and working lands, the scenario includes ambitious levels of land management action across land types with activities that prioritize restoration and enhancement of ecosystem functions to improve resiliency to reduce negative climate change impacts.

FIGURE 3: THE SCOPING PLAN SCENARIO



Achieving carbon neutrality is the most ambitious climate goal today to deliver benefits (Figure 4). It requires unprecedented deployment of low carbon technology and energy, and harnessing nature-based climate solutions.

FIGURE 4: AMBITIOUS ACTION DELIVERS HUGE BENEFITS



The 2022 Scoping Plan prioritizes aggressive emission reduction in AB 32 emissions by 2045, primarily by transitioning energy demand away from fossil fuel sources, but also by targeting short-lived climate pollutants and capturing carbon dioxide directly from combustion at industrial facilities like refineries and cement plants. It is estimated that natural working lands will remain a modest source of emissions over this planning period. To achieve carbon neutrality would require the remainder of emissions to be removed at the point where they were created, directly from the atmosphere through mechanical means. The amount of carbon dioxide capture (Figure 5) and removal required to achieve carbon neutrality by 2045 will be impacted by California's success in reducing emissions and actions to allow natural and working lands to become a carbon sink.

FIGURE 5: ROLE AND SCALING OF CARBON DIOXIDE REMOVAL (CDR)

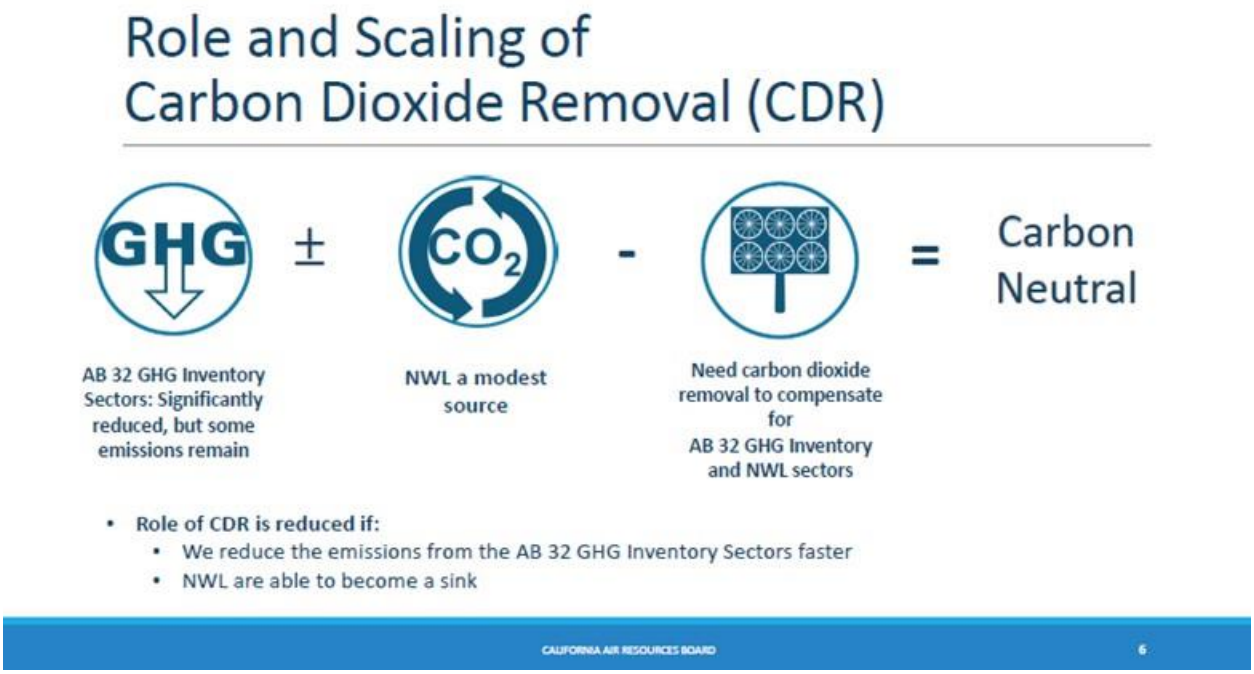
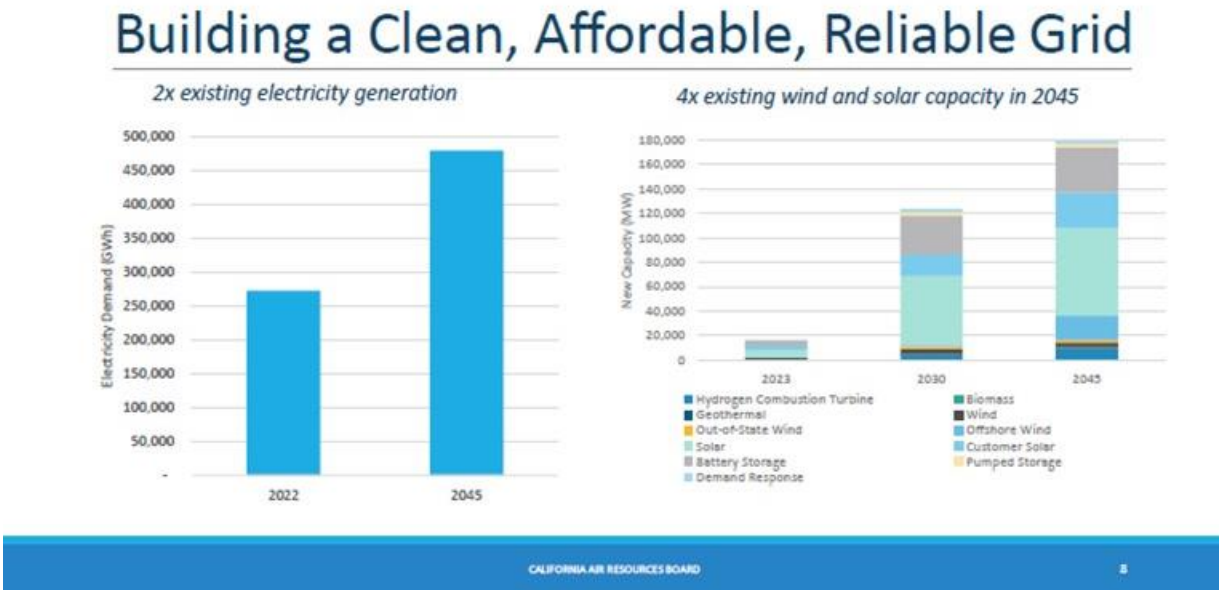


FIGURE 6: BUILDING A CLEAN, AFFORDABLE, RELIABLE GRID

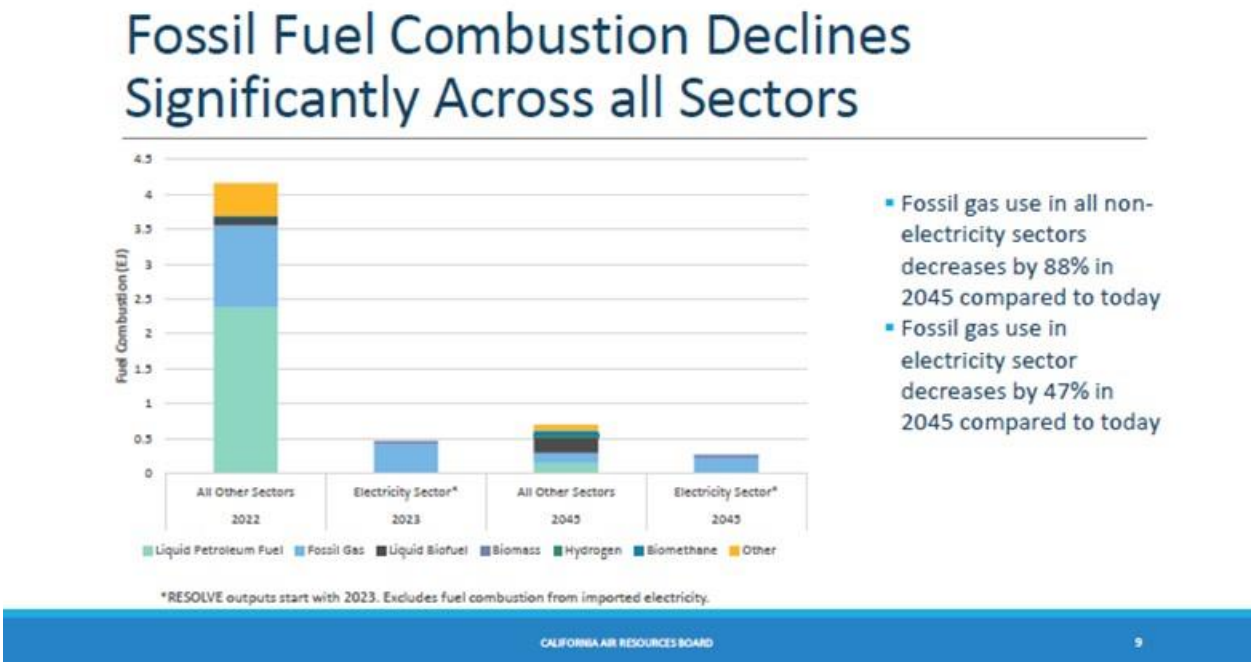


A clean grid (Figure 6) serves as the backbone for the transition with high levels of electrification across sectors. In the 2022 Scoping Plan, electricity demand nearly doubles, requiring significant wind and solar capacity, along with increases in other renewables and zero carbon resources are needed. In line with directives, the Scoping Plan restricts new

gas fired electric generation capacity additions. To meet additional demand and resource adequacy requirements, the scenario relies on a mix of strategies, including offshore wind, battery storage, hydrogen gas turbines, and demand response.

The Scoping Plan matches fossil fuel supply with reductions in demand, producing dramatic decreases in liquid petroleum fuels usage (Figure 7). Demand for fossil gas and sectors such as buildings and industry is reduced by 88% compared to today. This is accomplished primarily by transitioning to clean energy, in parts of clean electricity and renewable hydrogen. Efficiency improvements also contribute to reduced demand for fossil fuels. Implementing these changes and building out renewable and zero carbon fridge resources would also decrease reliance on existing gas generation over time, and the modeling results show a 47% reduction in fossil gas used by the electric sector by 2045.

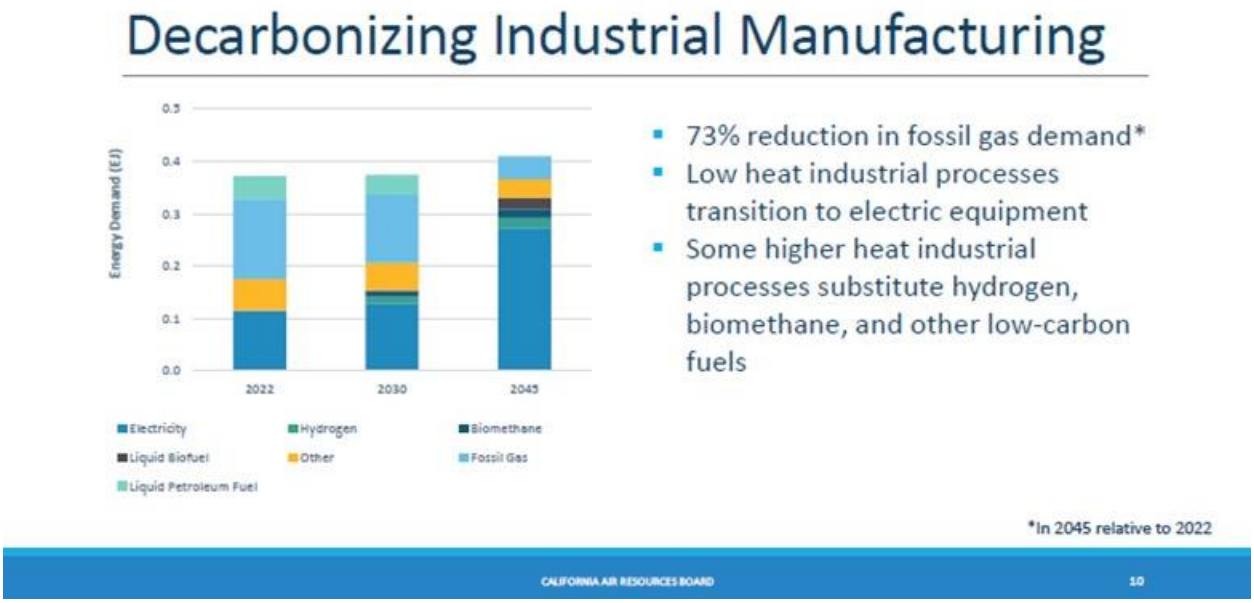
FIGURE 7: FOSSIL FUEL COMBUSTION DECLINES SIGNIFICANTLY ACROSS ALL SECTORS



California's industrial sector faces specific issues in its efforts to decarbonize as many processes are difficult to electrify. The Scoping Plan scenario shows a 73% drop in fossil gas demand by 2045 (Figure 8). Compared to 2022 levels in the industrial sector, electrification or conversion to other clean energy sources is an effective decarbonization method for industrial processes that have lower heat requirements representing the majority of the decrease in fossil gas demand from 2022 to 2045. Industrial processes with high heat

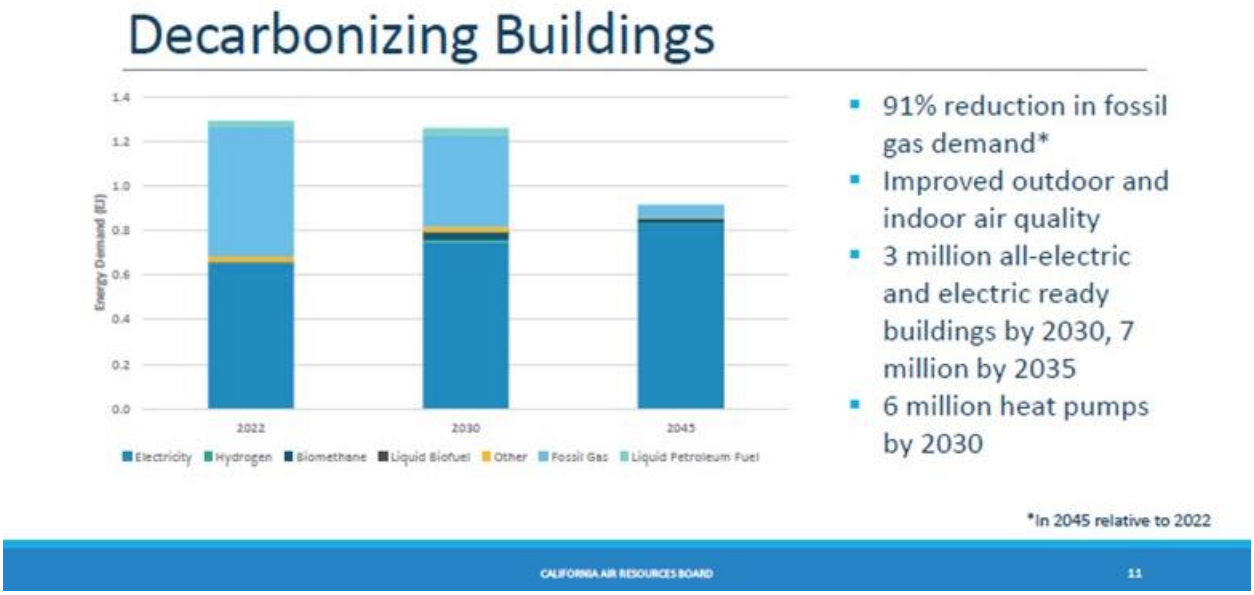
requirements, such as steel forging and glass manufacturing, may be able to substitute to hydrogen, biomethane or other low carbon fuels, or explore other measures to decarbonize.

FIGURE 8: DECARBONIZING INDUSTRIAL MANUFACTURING



The Scoping Plan also identifies action to reduce fossil gas use in buildings and in the residential and commercial sectors. The Scoping Plan scenario demonstrates a reduction in fossil gas demand by 91% by 2045 (Figure 9), supported by meeting the Governor's goal for 3 million climate-ready and climate-friendly homes and the deployment of 6 million heat pumps by 2030. Importantly, building decarbonization will contribute to improved air quality as well.

FIGURE 9: DECARBONIZING BUILDINGS

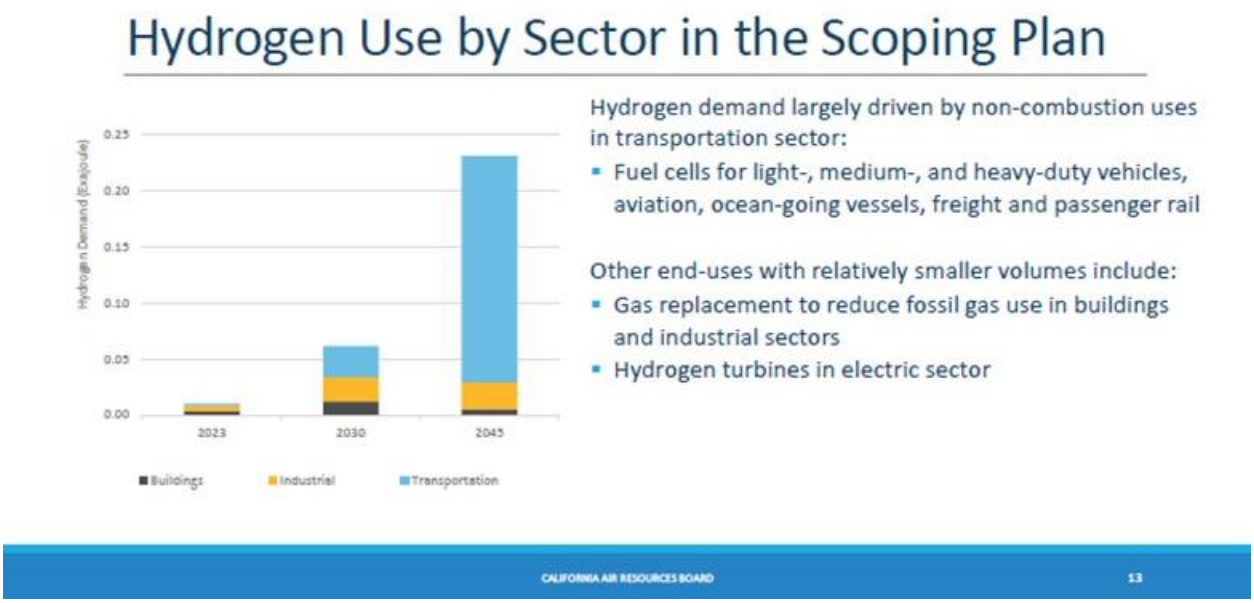


The 2022 Scoping Plan models all electric appliances for new home and commercial building construction beginning in 2026 and 2029 respectively and for existing homes starting in 2030 (Figure 10). Additionally, the model assumes gas appliances are replaced end of life, leading to 80% of overall sales to be electric by 2030 and a hundred percent of new equipment sales by 2035. The model assumes existing commercial buildings have a similar plan for electric appliance adoption - with 80% of sales being electric by 2030 and a hundred percent of sales by 2045. By 2030, these changes result in 3 million “all electric” homes, and by 2035, 7 million homes, along with 6 million heat pumps. Zero emission standards for new space and water heaters are in alignment with the 2022 Scoping Plan. CARB committed to developing and proposing zero emission GHG standards for new space and water heaters sold in California as part of the 2022 strategy for the state implementation plan.

FIGURE 10: BUILDING ELECTRIFICATION

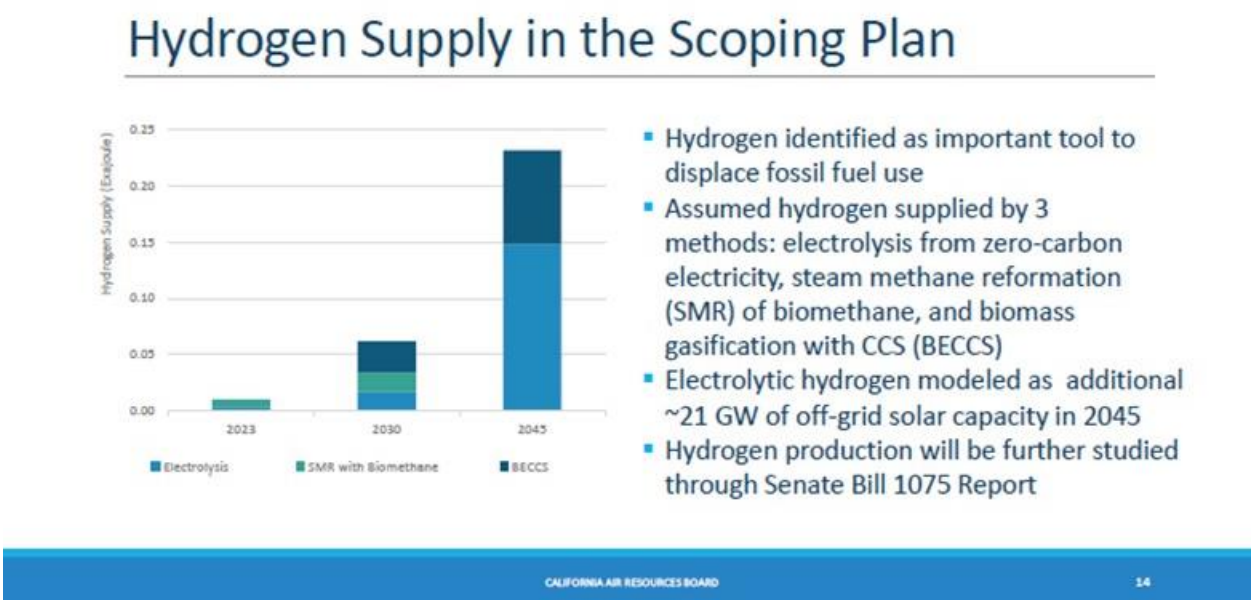
The 2022 Scoping Plan modeled integration of low carbon hydrogen in multiple sectors and anticipates that hydrogen fuel cell vehicle use in the transportation sector will serve as an important part of the state's transition to zero emission vehicles particularly for medium and heavy duty vehicles (Figure 11). Other end uses with relatively smaller volumes make up the rest of anticipated use. These uses include renewable hydrogen that is blended into the natural gas system to reduce fossil gas use in buildings, routed to replace fossil fuel in certain industries and for use in the electric sector. SB 1075 will further evaluate the viability of using hydrogen methane blends in various sectors.

FIGURE 11: 2022 SCOPING PLAN – HYDROGEN USE BY SECTOR



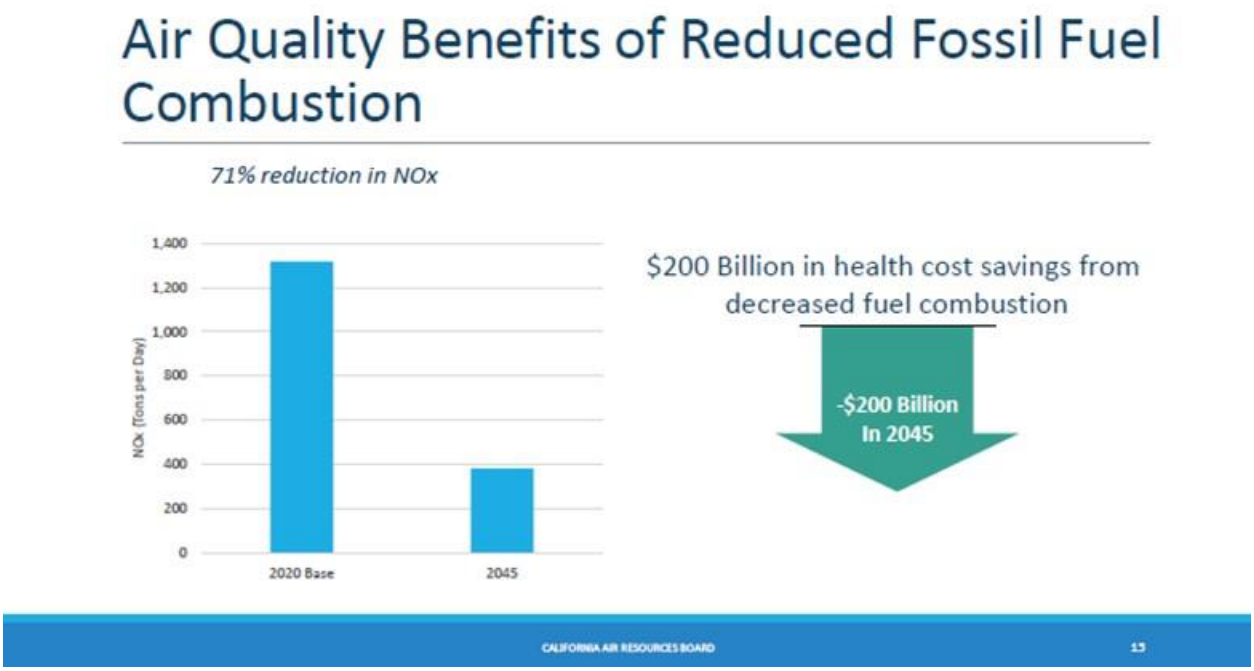
In the 2022 Scoping Plan update, hydrogen is an alternative fuel for liquid transportation fuels and natural gas (Figure 12). The modeling estimated the annual amount of hydrogen needed to achieve GHG emission reduction goals from now out to 2045. CARB's modeling assumes that hydrogen is supplied by three methods: (1) electrolysis produced from zero carbon electricity, (2) steam methane reformation of biomethane, and (3) bio max gasification with carbon capture and storage. The volume that each method could contribute as modeled is shown on Figure 12. The electricity needed to produce the hydrogen was not captured. The Scoping Plan includes an approximate amount (21 GW of solar) that directly feeds hydrogen production. These model assumptions were strictly for the purpose of the Scoping Plan, utilizing the information available at the time. This is an area of rapid development and CARB's understanding of the issues involved in hydrogen production and use are currently being studied through CARB's other agencies work as directed by SB 1075.

FIGURE 12: 2022 SCOPING PLAN – HYDROGEN SUPPLY



The 2022 Scoping Plan update includes more comprehensive air quality modeling and health analysis than in previous Scoping Plans (Figure 13). The analysis shows that the Scoping Plan would reduce air pollution associated with fossil fuel combustion by 71% compared to the baseline. The decrease in air pollution will also result in improved public health and is estimated to result in over $200 billion of annual health cost savings in 2045.

FIGURE 13: AIR QUALITY BENEFITS OF REDUCED FOSSIL FUEL COMBUSTION



CARB concluded their presentation by providing References including where to locate additional information on the modeling inputs and assumptions, detail outputs and strategies in the 2022 Scoping Plan.

Jason Hartzel – Are there any considerations to reliability or affordability in the CARB proposed scenarios? The plan seems to incorporate new unproved energy sources in unrealistic timelines based on current technology *capability and transmission limitations.*

CARB responded that in the Scoping Plan adopted and approved in 2022, there was analysis of some of the economic impacts associated with the scenario and modeling results showing fuel transitions. The Scoping Plan provides directional insights about the magnitude of changes that are needed along with the actions of other state agencies.

Center for Accessible Technology (Melissa Kasnitz) – Would the scenario planning described earlier be impacted by a lack of ongoing federal support for clean fuel transitions?

CARB's scenario modeling represents a number of actions and policies and regulations that were in effect at the time CARB was modeling the Scoping Plan along with a number of additional changes to address planned actions, technology impacts and fuel transitions. CARB does not necessarily see a direct relationship with federal support to achieve the fuel transitions envisioned in the scoping plan.

Pacific Gas and Electric (PG&E), Rachel Kuykendall – Can you confirm if there was any sort of utility rate analysis included *as part of the scoping plan analysis and if not, could that lens be added to the building electrification and would that change the results?*

CARB confirmed that the plan included a high-level economic analysis and did not look at it from a rates level noting that there are other actions or venues such as these planning processes where that level of detail can be applied. CEC inquired as to the level of disaggregation and what geographical constraints may be considered within the Scoping Plan. CARB reaffirmed that the Scoping Plan is intended to provide a high-level pathway to achieving these aggressive climate goals and does not consider temporal analysis of energy use or specific geographic resolution. By starting with high level goals as set out in the Scoping Plan, it can be used to establish what type of adoption levels are necessary and how to assess how that adoption would unfold such that we can plan for the transition.

V. Overview of CEC Gas Assessments

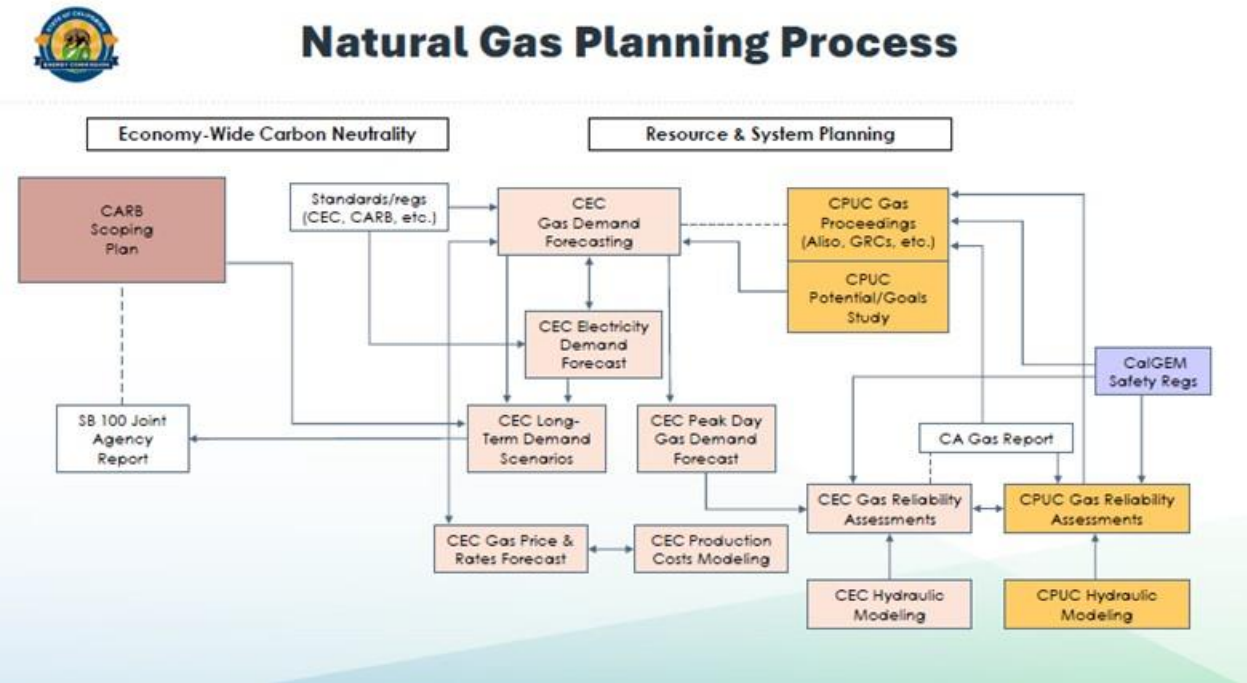
Presenters*:*

Heidi Javanbakht, Demand Analysis Branch Manager, CEC

Nicholas Janusch, Efficiency Analysis Unit Supervisor, CEC

The CEC provides an overview of the CEC's natural gas planning processes (Figure 14). The CEC's planning efforts are guided by California's economy wide carbon neutrality goals and as presented by CARB, the 2022 Scoping Plan proposes air quality and greenhouse gas emission reduction strategies. Energy programs, standards, and regulations that are developed in support of carbon neutrality and feed into the CEC's Integrated Energy Policy Report (IEPR) demand forecasts, or both gas and electricity, are also considered. The electricity and gas forecasts are interdependent. The CEC's IEPR demand forecasts are the foundation for the CEC's long-term demand scenarios and where the CEC also assesses the impacts of relevant Scoping Plan components on fuel demand.

FIGURE 14: NATURAL GAS PLANNING PROCESS



Separately from the IEPR forecast, CEC produces a peak day demand forecast, which is an input to CEC's gas system reliability assessments. These assessments are performed for the SoCal and PG&E regions. The CPUC independently conducts gas system reliability assessments for SoCal Gas based on inputs from the California Gas Report, which is developed by the gas utilities. The California Gas Report, the CPUC assessments, and CalGEM safety regulations all inform the CPUC gas proceedings around rates and system planning.

Figure 15 shows the different gas assessments and the planning time frames. The summer and winter reliability assessments look at the risk of curtailments for the upcoming season. The California Gas Report, which is the basis for gas infrastructure decisions, looks out to 2040 and the state's climate goals.

FIGURE 15: GAS SYSTEM PLANNING – LAYERED PLANNING HORIZONS

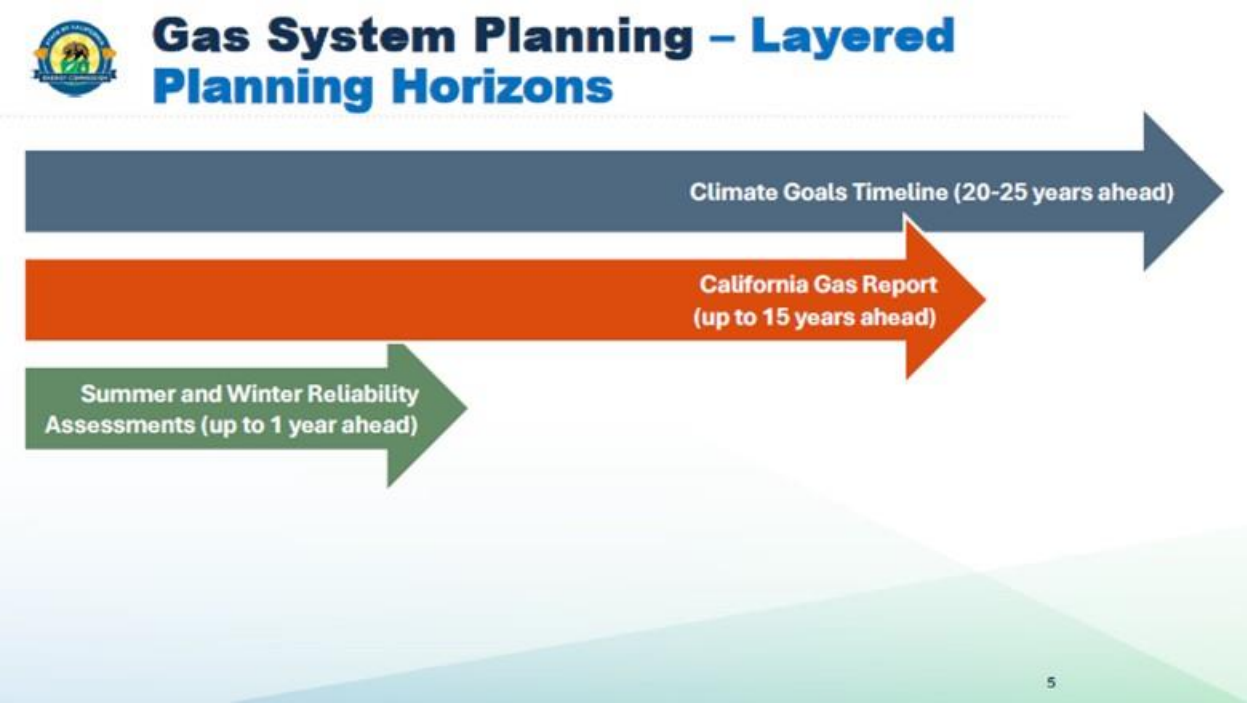
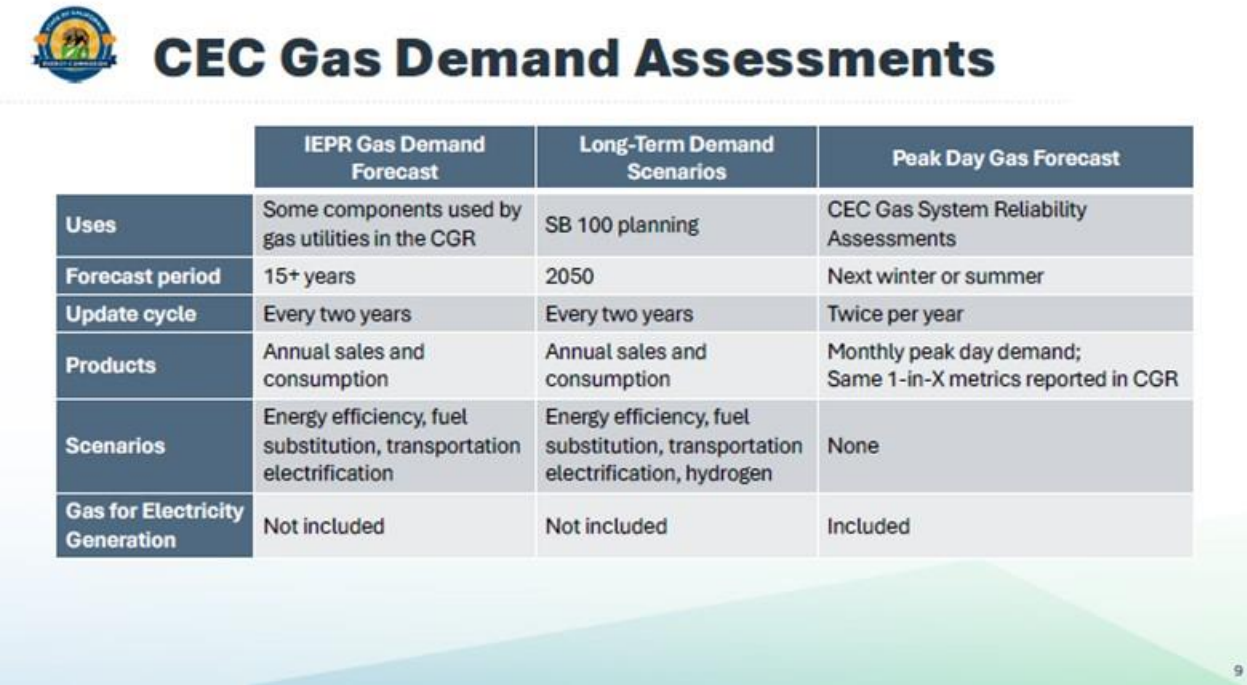


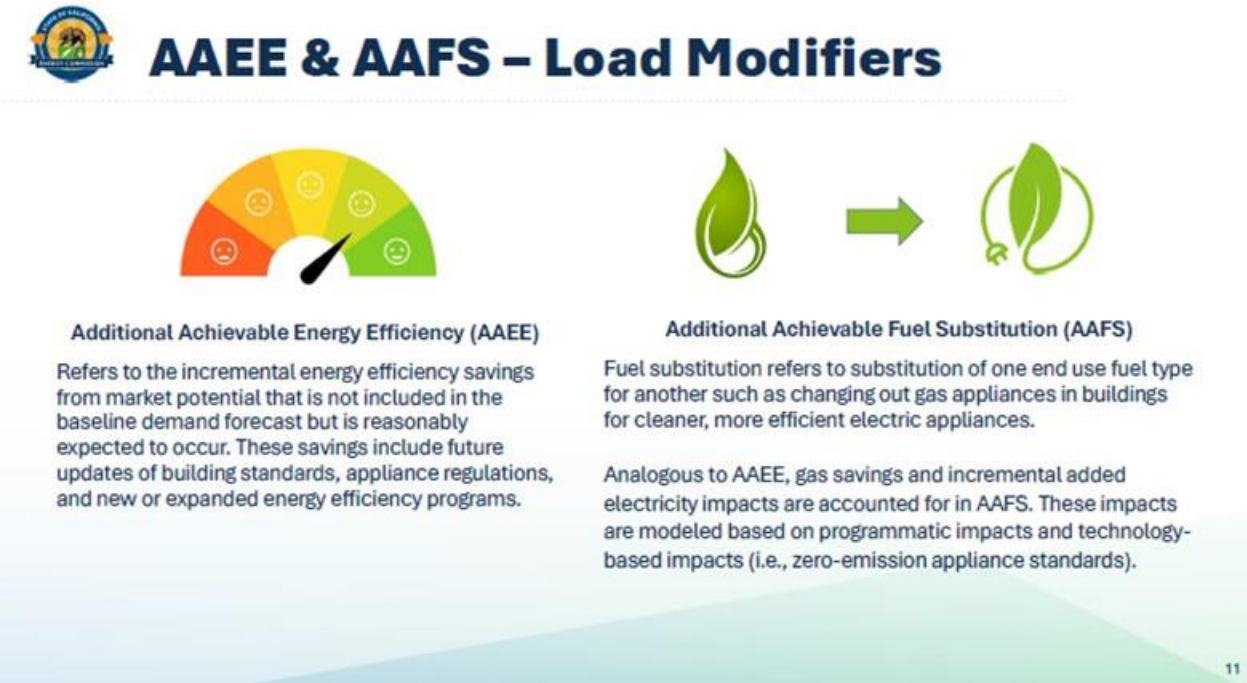
Figure 16 depicts the CEC's three gas demand forecast products. The IEPR Gas Demand Forecast looks at the impacts of current and under-development programs and regulations on both gas and electricity demand. This includes scenarios for energy efficiency, fuel substitution, and transport. The IEPR forecast looks at annual gas sales and consumption going out 15 years published every two years. The long-term gas demand scenarios extend the IEPR Gas Demand Forecast out to 2050, and models additional strategies for meeting the State's carbon neutrality goals. The Peak Day Gas Forecast independently assesses the same metrics reported in the California Gas Report.

FIGURE 16: CEC GAS DEMAND ASSESSMENTS



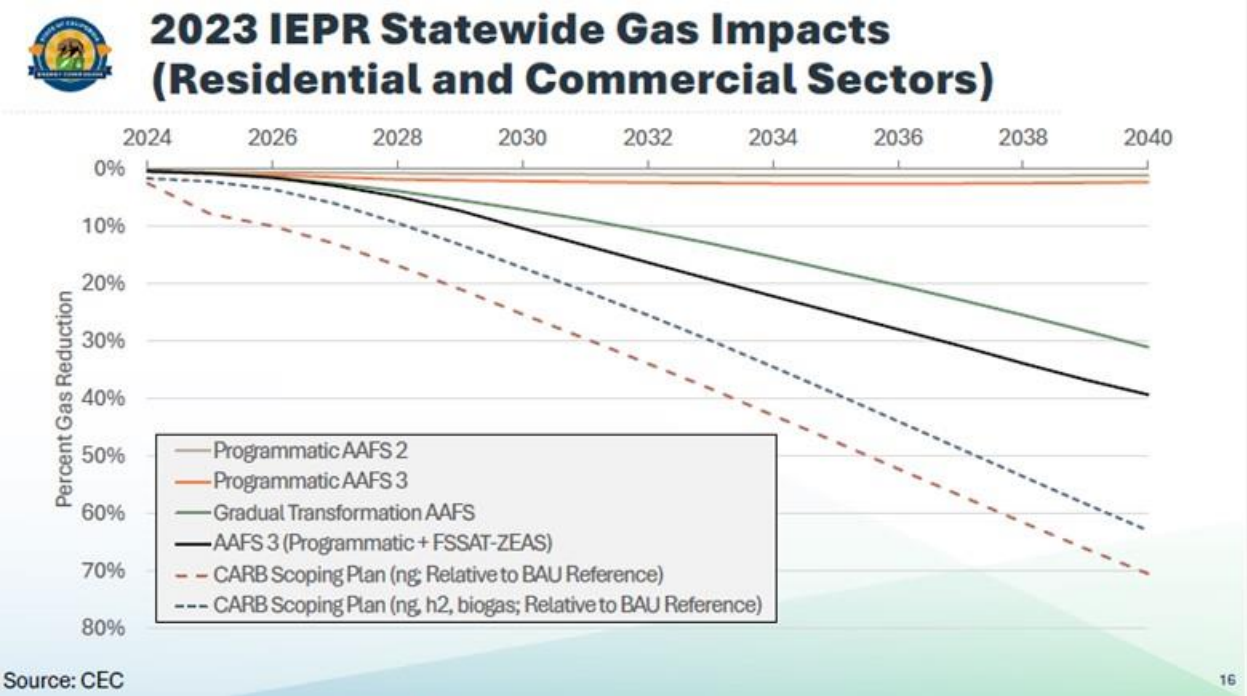
The CEC also forecasts Additional Achievable Energy Efficiency (AAEE) and Additional Achievable Fuel Substitution (AAFS); see Figure 17. AAEE is incremental energy efficiency savings from market potential that is not included in the baseline demand forecast but is expected to occur. AAFS is where a fuel substitution refers to the substitution of one utility supply for another type.

FIGURE 17: AAEE & AAFS – LOAD MODIFIERS



The scenarios depicted in Figure 18 show the overall gas impact from AAFS in the residential commercial sectors. The top four solid curves show the four scenarios. The two lower lines represent the impacts of the Scoping Plan, where the red line shows displacement of natural gas. The blue-line represents the impacts of including hydrogen and biogas.

FIGURE 18: 2023 IEPR STATEWIDE GAS IMPACTS (RESIDENTIAL AND COMMERCIAL SECTORS)



VI. Discussion and Public Comment

Following presentations by CARB and CEC staff, Energy Division opened the workshop forum for questions and public comment by workshop attendees.

Jason Hartzel - Do you conduct any scenario analysis such as high load growth, solar and wind droughts, non-gas generation outage impacts, pipeline outage impacts, etc.?

The CEC responded that its analysis focuses on demand rather than the supply side and noted that it is important to take a holistic and analytical approach to harmonize among the CPUC, CARB and CEC as overarching demand could vary under a variety of electrification strategies, both at an appliance level, but also at the distributed energy resources level which is inherently built into the forecast. A portion of the forecast is then modified using these additional fuel substitution and additional achievable load modifiers. On the supply side, there is an opportunity to look at how to optimize the demand and supply. This work is not completely siloed but work is performed within the context of resource planning and reliability framing. From the integration of the demand side it's really important for the CEC to consider how these factors are interconnected and the extent of the resulting impact on the demand side. The CEC believes there is more work to do to ensure reliability and integrity of the pipeline system.

EarthJustice (Matthew Vespa) – Will the CEC be assessing the impact of the gas demand forecast in particular the gradual transformation?

The Natural Gas Unit at the CEC is working on an analysis of twelve different scenarios based around the gas demand scenarios with different revenue requirement growth rates, as starting points that declined over time. Currently the CEC is building the data sets, performing a review and updating the models. The expected completion date is November 2024 to be followed by an internal CEC review process. The CEC tracks seasonal changes, as well as possible changes to supplies based on pipeline maintenance, storage withdrawal and constraints.

On a daily basis, in addition to tracking PG&E and SoCalGas systems, the CEC also monitors what is occurring upstream and on interstate pipelines that deliver gas to California. Geographically California is at the "end of the line" and even though California has a robust storage infrastructure, outages upstream and outside of California's borders can impact the State. The CEC also performs hydraulic modeling analysis work to assess impacts such as when a compressor station is down.

Jason Hartzel posed the following question: In the CEC's scenario analysis, it showed a nearly 10% reduction in gas usage in just one year. How was this achieved?

The CEC noted two factors likely contributing to the 10% reduction in natural gas: (1) CARB's Scoping Plan curves use different assumptions which assume electrification of existing buildings whereas (2) the CEC's forecast assumes 80% by 2030 (80% of buildings will be all electric, and for new construction starting in 2026 all electric construction at that time as well).

CARB clarified that they strive to model a range of scenarios that are based on existing policies and policies that are under development, and so that gap on the chart between CARB's forecast work and CARB's Scoping Plan work highlights the need for some additional strategies to help with the gas transition.

External Counsel for Environmental Defense Fund (EDF), (Beth Kelly)) asked: If it is correct that the IPER forecast uses solely a "system average gas rate", am curious about the overall price assumptions used?

The CEC confirmed it modeled rates using an average rate for a customer class on transmission or distribution. For electric generation customers, the CEC uses an average rate on the backbone. The CEC uses an average rate for all residential commercial and industrial customers across the three different utilities and does not use one average rate across sectors/utilities.

EDF (Beth Kelly) followed up with a request for the CEC to clarify if the CEC's IEPR forecast is reflective that the expected demand declines associated with policies but not any associated customer price elasticity?"

The CEC's IEPR forecast reflects expected demand declines associated with policies but not any associated customer price elasticity. The CEC responded that when it comes to modeling of the zero emission appliance standards, the CEC's model does not internalize elasticity of gas or price sensitivities in terms of adoption. The adoption rates are imposed "top down" in the model due to regulations and an option selected by the CEC.

The Utility Reform Network (TURN) (Jalal Alwan) commented that "since you're including gas curtailment based on the peak day supply standard/California Gas Report (CGR), it might be worth looking at solar and wind curtailment, 13% and 3% of product production respectively, 2020 through 2023."

Southern California Generation Coalition (SCGC) (Norman Pedersen) asked "Given that the CPUC is anticipating a transition to using a CEC forecast instead of the California Gas Report prepared by the gas utilities*, when will CEC forecasting be refined to the point of being usable for rate making purposes?"*

The CEC responded that it is certainly working towards this goal, but there are a couple improvements planned for the upcoming year. As an example, currently the CEC's electricity generation portion of the forecast is based on a regression model. However, the CEC would prefer to move that component to Plexos modeling which will be key towards making this a usable product for work outside of the CEC. The CEC initiated an expert review of its gas forecasting models which concluded that the CEC's gas forecasting models are equivalent to existing products used in gas planning. For a planning standard, the CEC believes its current forecasting model was adequate but noted its intention take additional time to ensure the forecasting modeling framework is robust enough to accommodate future changes.

The CEC noted that its model does not account for customer choice as the model employs a top-down adoption approach and does not account for the fact that there will be a set of technologies (with a range of efficiencies) that will be eligible to replace gas appliances.

For the upcoming forecasts of the 2024 IPER update, the CEC assumes an even distribution of efficiencies regardless of the technology. This assumption is premised on the fact that some customers (especially in multifamily houses/landlord situations) may choose the lower cost option as a way to minimize costs even if an appliance is less efficient.

Coalition for California Utility *Employees (CUE) (Darian Johnston) commented that it was his understanding that there is not a one-to-one reduction in gas demand to gas pipe maintenance cost. Does the IPER help navigate this gap retention at all?*

The CEC noted that the IPER gas forecast is not currently used for gas system planning and would not likely address this issue. Energy Division further commented that a reduction in gas demand does not mean there's a reduction in gas infrastructure costs. The Energy Division is interested in scenarios planning which looks at how different scenarios impact rates and what that may mean for repairs.

California Independent System Operator (CAISO) (Kevin Head) asked: "With the current obligation to serve will certain customer types EG electric generation customers be in scope for this proceeding"?

Energy Division responded that the Scoping Memo for the Gas Transition OIR has not been issued by the Commission yet but noted that the issue of obligation to serve is not in the preliminary scope of the proceeding.

Energy Division also noted that SB 1221 requires the Commission to establish a program for residential pilots based on certain criteria. For those pilots the obligation to serve would end for that particular area.

EDF (Beth Kelly) observed that the CEC's projections do not neatly fit with California Gas Reports due to differing units (millions of cubic feet per day versus therms per year) and also breaks down customer *segmentation differently.*

As noted by the CEC, its IEPR forecast and demand scenarios forecast uses therms per year. The peak day demand forecast results are summarized outside of the IEPR Report. The CEC's winter system reliability, summer reliability, and seasonal assessments utilize the same metrics included in the California Gas Report.

(Unidentified)The following question was posed during the workshop: "In Washington state, the prohibition on future gas appliances was just overturned by voter initiative. Apparently, people want natural gas in their homes. Will this be reconsidered in California's planning?"

In addition to the CEC's earlier response regarding its demand forecast, the CEC noted that it would look to CARB and the CPUC to provide clarity on assumptions that should be included for building electrification scenarios.

Hydrogen Coalition Council (Janice Lynn) inquired if there was coordination with Alliance for Renewable Clean Hydrogen Energy Systems *(ARCHES).*

The CEC confirmed that it continues to coordinate with ARCHES and would be pursuing additional collaboration and coordination with ARCHES regarding SB 1075.

CUE (Darian Johnston) asked: "It seems like the costs of electric appliances and panel upgrades create significant cost barriers to building electrification. From what I understand, green financing programs to pay for these upgrades over time have had lukewarm success. Shifting these costs on the gas rate base comes with serious equitable concerns. Have any of the regulators or staff in this workshop explored whether new "fin tech" financing models, might offer new pathways to increase access to and adoption of electric appliances to facilitate building electrification?"

The CEC acknowledged that there are definitely large cost barriers for adoption. With respect to alternative financing and mechanisms or any programmatic activity, the CEC tries to capture the potential impact to the extent possible with its programmatic AAFS modeling and by working with the CPUC's potential and goal study team to capture all possibilities of financing options. Secondly, the CEC looks at zero emission appliance standards. The CEC acknowledged that in the spirit of the question, it was important to find resources such as the federal government to help pay for the cost. As an example, the CEC adopted its Equitable Building Decarbonization Program that is largely supported by state and federal funding which are essential funding streams to continue to help with the overall transformation of appliances. CARB also noted that it is currently engaging in the stakeholder process for zero emission appliance standard proposals and encouraged participants to engage in that process and daylight concerns through stakeholder discussion.

EDF (Beth Kelly) asked if the CEC planned to create demand scenarios to oversee the effects between electricity, gas, and hydrogen?

The CEC acknowledged the complexity, challenges and uncertainly around costs and timelines associated with Hydrogen. The CEC plans to consult with ARCHES and fulfill requirements under SB 1075.

PG&E (Todd Peterson) thanked the CPUC, CARB and the CEC for the opportunity to offer comments. To facilitate decarbonization activities over time, PG&E offers three themes that should be considered:

1) *Decarbonization activities should target an emission-based end state without a specific technology adoption requirement, and that culminates with affordable energy rates while delivering safe and reliable energy for our customers.*

2) *The gas planning framework should integrate the gas and electric systems by including the CAISO transmission planning process and the CPUC's Integrated Resource Planning Process (IRP). This will help capture the impacts on emissions, affordability and reliable electric generation and transmission.*

3) *The IOUs' California Gas Report gas demands discussed at today's workshop also include important non-utility and municipal gas transport throughput sectors and will help provide holistic forecasts and uncover key uncertainties*.

VII. Conclusion

Energy Division thanked workshop presenters for their presentations and expressed appreciation to workshop participants for the insightful questions and responses and concluded the workshop.

APPENDIX A

WORKSHOP AGENDA

R.24-09-012 Workshop:

Long-Term Gas Transition Scenarios: Joint Agency Presentations

November 14, 2024 | 10:00 a.m. – 12:00 p.m. | Remote participation only
Remote Participation Link:
https://cpuc.webex.com/cpuc/j.php?MTID=m2d49b1e7b59f9eefe30e2a8b6e961ece
Meeting Password: Gas workshop (42796757 when dialing from a phone or video system)
Join by phone: 1-855-282-6330; Access code: 248 972 19568

Workshop Purpose: This workshop will provide insights for gas utilities, stakeholders, and the CPUC on developing a range of gas transition scenarios. California Air Resources Board's (CARB's) presentation will address the potential impacts of its 2022 Scoping Plan on gas demand, exploring measures like building decarbonization and appliance standards. The California Energy Commission (CEC) will provide information on its gas assessments focusing on the gas demand forecast framework, and projected impacts of zero emission appliance standards from the 2023 IEPR gas demand forecast.

Intended Outcome: Workshop attendees will have a better understanding of the CEC and CARB's gas demand scenarios that may be considered in the Long-Term Gas Planning Rulemaking. Attendees will also have a better understanding of the inputs and assumptions used to develop the scenarios, some or all of which utilities may incorporate into their own scenario analysis work. PG&E staff will publish a report summarizing the discussions held at the workshop.

WORKSHOP AGENDA

10:00 – 10:20 **Welcome and Housekeeping**

Commissioner Karen Douglas, California Public Utilities Commission
Vice Chair Siva Gunda, California Energy Commission
Chair Liane Randolph, California Air Resources Board
Energy Division Staff

10:20 – 10:35 **Overview of 2022 Scoping Plan for Achieving Carbon Neutrality**
CARB staff will provide an overview of the 2022 Scoping Plan Update for achieving carbon neutrality, which describes a broad portfolio of existing and emerging technologies and strategies that can help meet the State's aggressive climate targets. The presentation will also describe changes to gas demand over time in buildings and industrial manufacturing that are consistent with the Scoping Plan Scenario.

Jéa Boodry, Air Pollution Specialist, CARB

10:35 – 10:50 **Q&A**

10:50 – 11:10 **Overview of CEC Gas Assessments**

CEC staff will first provide an overview of their gas demand and system reliability assessments. Staff will then discuss their additional achievable energy efficiency and fuel substitution framework and results within the IEPR forecast with a focus on the potential impacts of zero emission appliance standards on future gas demand.

Heidi Javanbakht, Demand Analysis Branch Manager, CEC
Nicholas Janusch, Efficiency Analysis Unit Supervisor, CEC

11:10 – 11:25 **Q&A**

11:25 –11:50 **Comments (Open to All)**

11:50 – 12:00 **Closing Remarks**
Energy Division staff

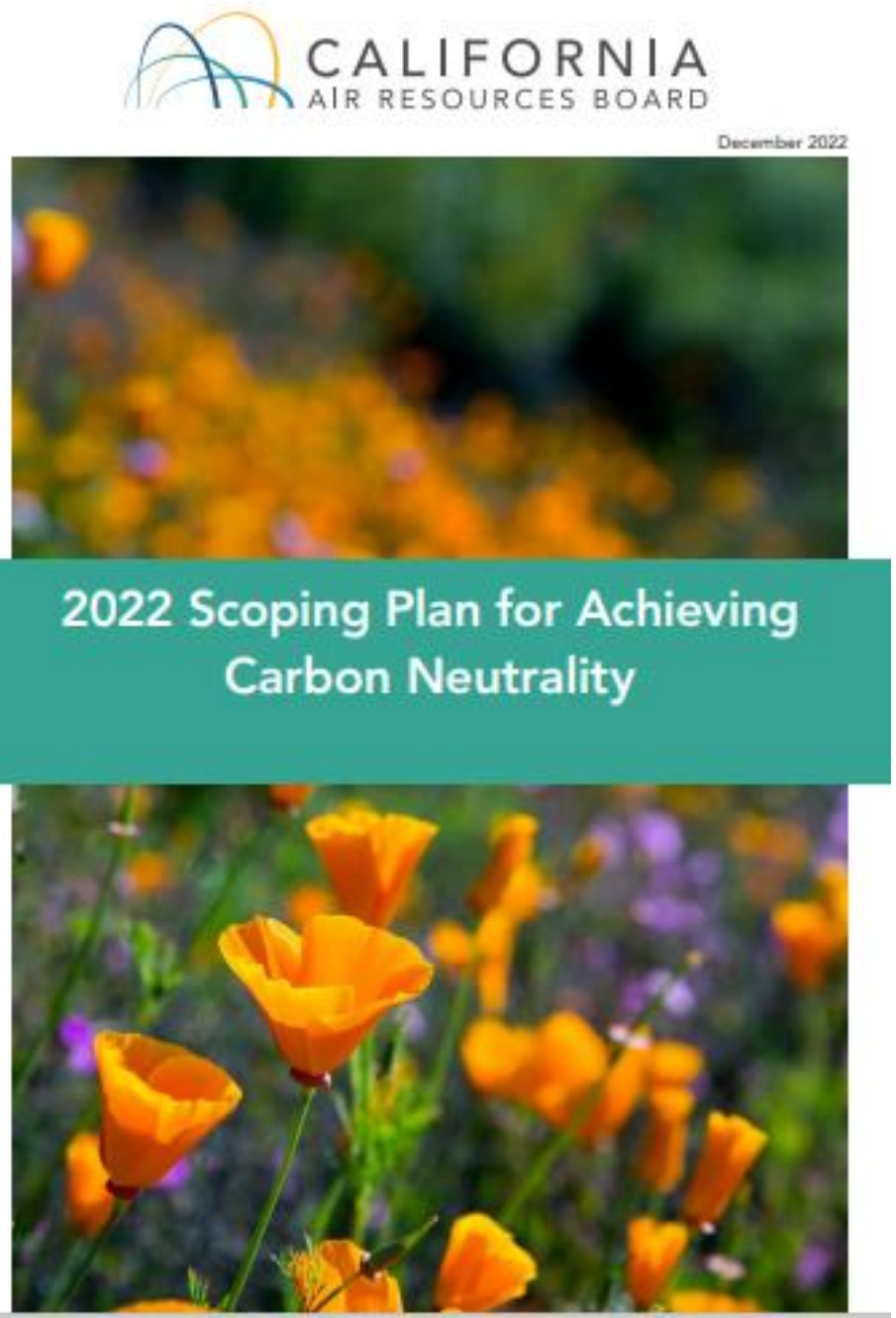
Note: It is expected that one or more CPUC Commissioners may attend and participate in the workshop but no formal Commission action will be taken. One or more advisors to the CPUC Commissioners, as well as other decision-makers, may also be in attendance. The agenda will be publicly noticed on the CPUC's Daily Calendar 10 days in advance, so statements made at the workshop will not constitute a reportable *ex parte* contact. This agenda is subject to change. The workshop will be recorded.

APPENDIX B

GAS LONG TERM PLANNING SCENARIO – WORKSHOP PRESENTATIONS BY CALIFORNIA AIR RESOURCE BOARD AND THE CALIFORNIA ENERGY COMMISSION

CALIFORNIA AIR RESOURCES

2022 SCOPING PLAN



Scoping Plan Overview

California's Strategy for Achieving Carbon Neutrality

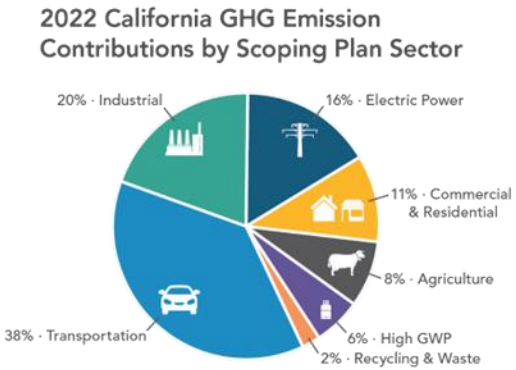
CPUC LONG-TERM GAS SYSTEM PLANNING WORKSHOP

NOVEMBER 14, 2024

California's Climate Policy Framework

GHG Targets & Goals

Legislation & Executive Orders: Total GHGs (AB 32/SB 32) or sector targets (SB 1383/SB 100), etc.



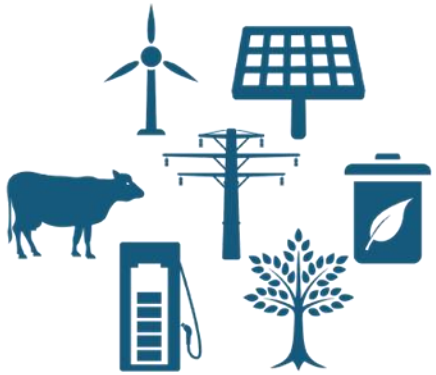
Scoping Plan

Actionable plan across all sectors

Updated every 5 years

Action

Regulations & Incentives: Advanced Clean Cars, climate change investments, Integrated Resource Plan (IRP), etc.

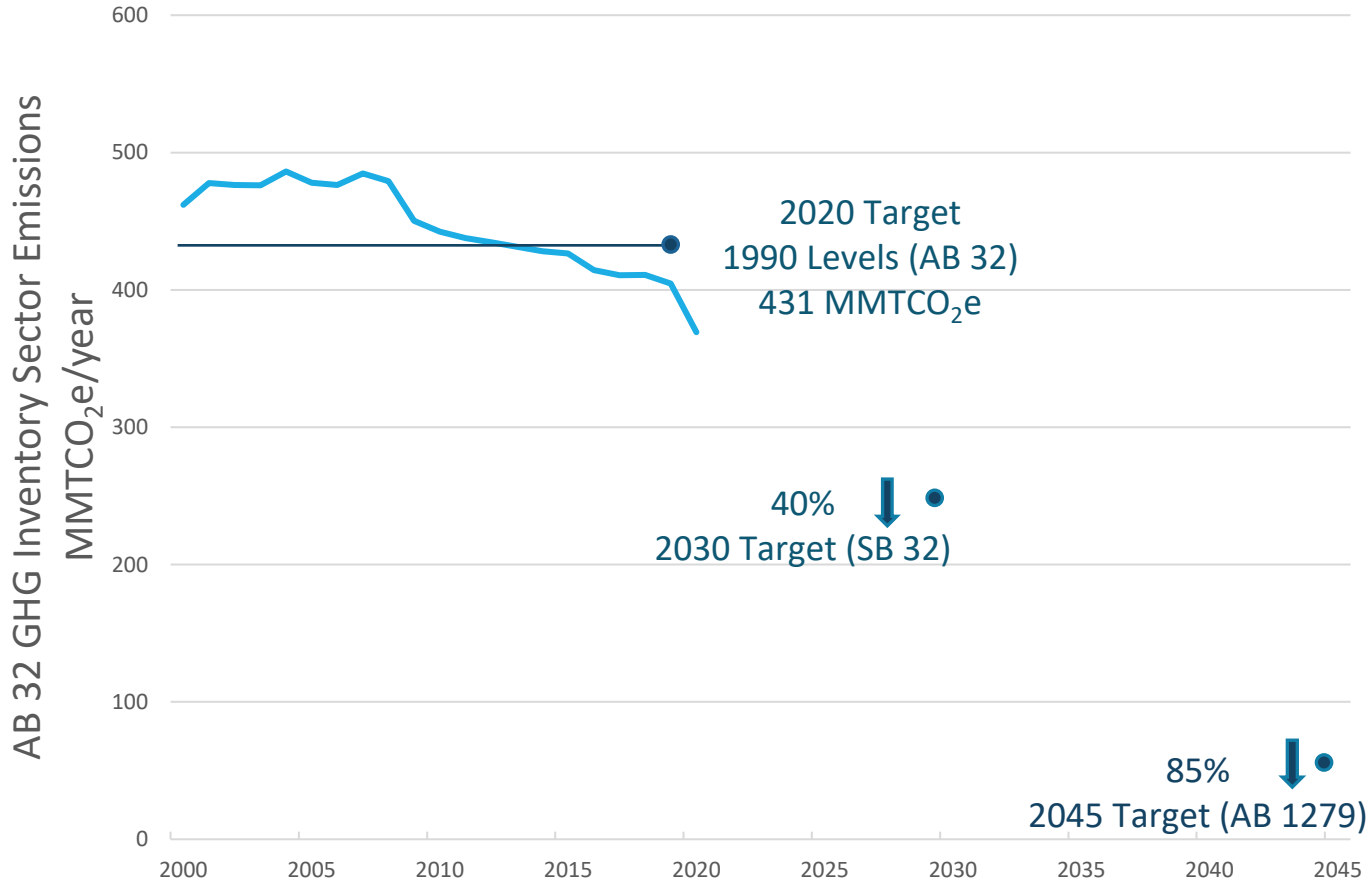


Projects

Examples: Zero-emission trucks, energy infrastructure and renewables, compost facilities, digesters, etc.

GHG Reduction Targets

Achieved AB 32 Target in 2014



ACHIEVING

CARBON

NEUTRALITY

BY **2045**

GHGs included in statute: Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur hexafluoride (SF_6), Nitrogen trifluoride (NF_3)

The Scoping Plan Scenario

The path to build our way out of over a 100 years of existing fossil energy and the built environment landscapes

AB 32 GHG Inventory Sectors

Carbon neutrality by 2045, deploy a broad portfolio of existing and emerging fossil fuel alternatives and clean technologies, and align with statutes and Executive Orders

Natural and Working Lands (NWL)

Land management activities that prioritize restoration and enhancement of ecosystem functions to improve resilience to climate change impacts, including more stable carbon stocks

Ambitious Action Delivers Huge Benefits

Unprecedented Deployment of Clean Technology and Nature-Based Climate Solutions

37x total on-road ZEVs

6x electric appliances in residences

1700x hydrogen supply

4x installed wind/solar generation capacity

9x battery storage

> 2.5 Million acres of NWL climate action per year

In 2045 relative to 2022

Significant GHG Reductions

94% decrease in liquid petroleum fuel demand

91% decrease in fossil gas used in buildings

66% decrease in methane emissions from agriculture

10% reduction in wildfire emissions

Role and Scaling of Carbon Dioxide Removal (CDR)

AB 32 GHG Inventory Sectors: Significantly reduced, but some emissions remain

NWL a modest source

Need carbon dioxide removal to compensate for AB 32 GHG Inventory and NWL sectors

- **Role of CDR is reduced if:**
  - We reduce the emissions from the AB 32 GHG Inventory Sectors faster
  - NWL are able to become a sink

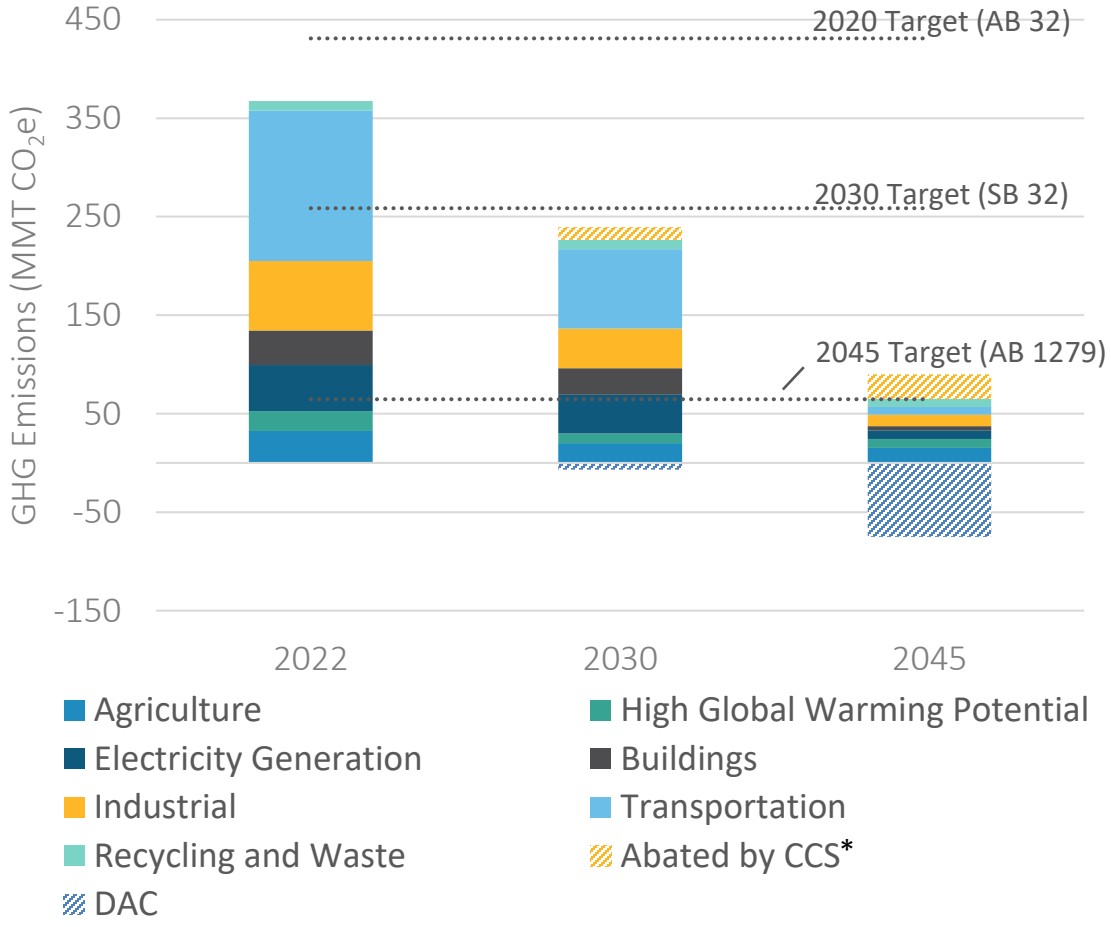
2022 Scoping Plan Update
A Plan for Science-Driven Climate Action

2030: 48% reduction below 1990

- Increased ambition from SB 32 40% target
- SP scenario incorporates 20 $MMTCO_2e$ of mechanical carbon dioxide removal (CCUS/DAC*) in 2030
- 462x increase in renewable hydrogen

2045: 85% reduction below 1990

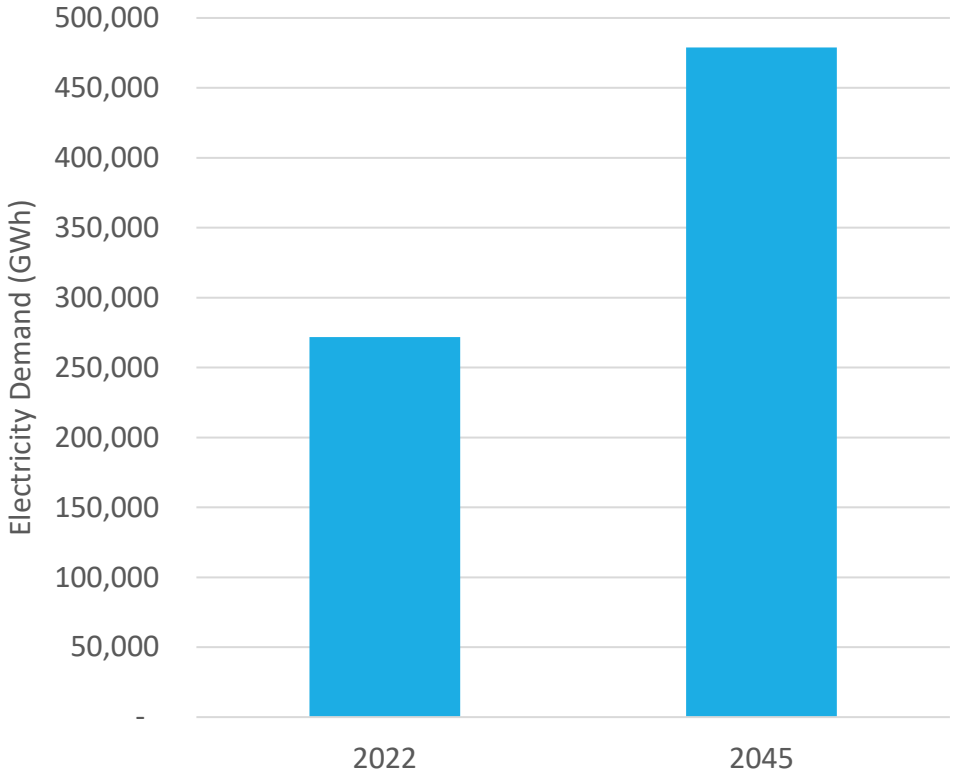
- Need CCUS and carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality



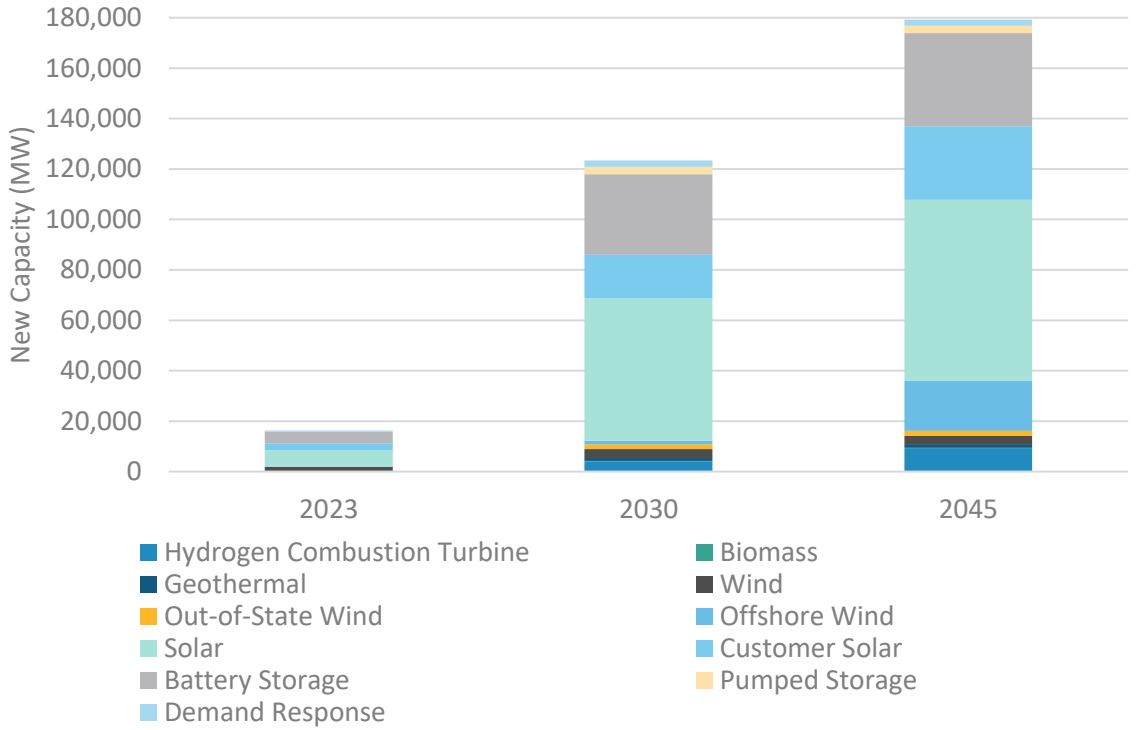
*CCUS: carbon capture, utilization, and storage; DAC: direct air capture; CCS: carbon capture and sequestration

Building a Clean, Affordable, Reliable Grid

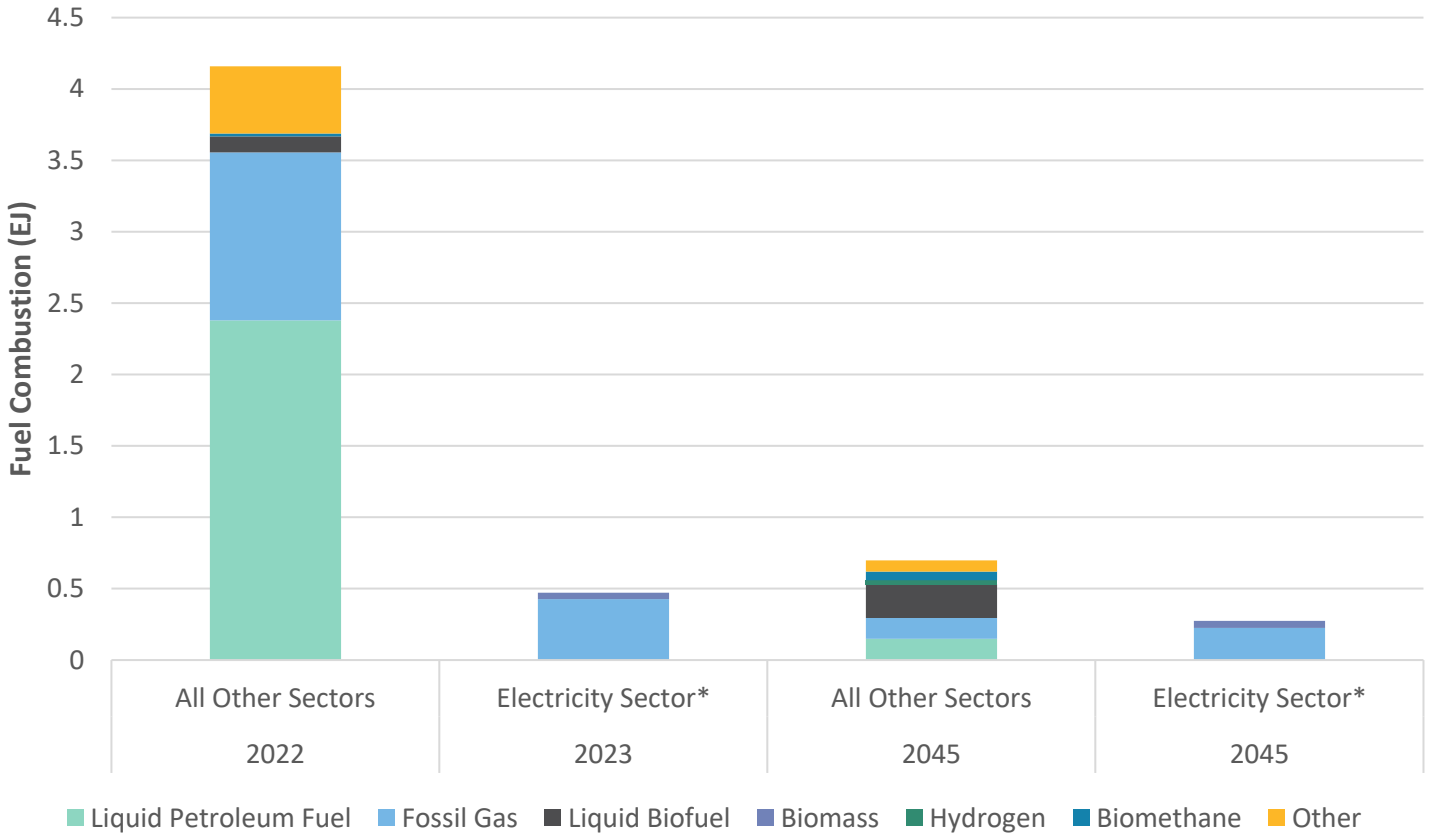
2x existing electricity generation



4x existing wind and solar capacity in 2045



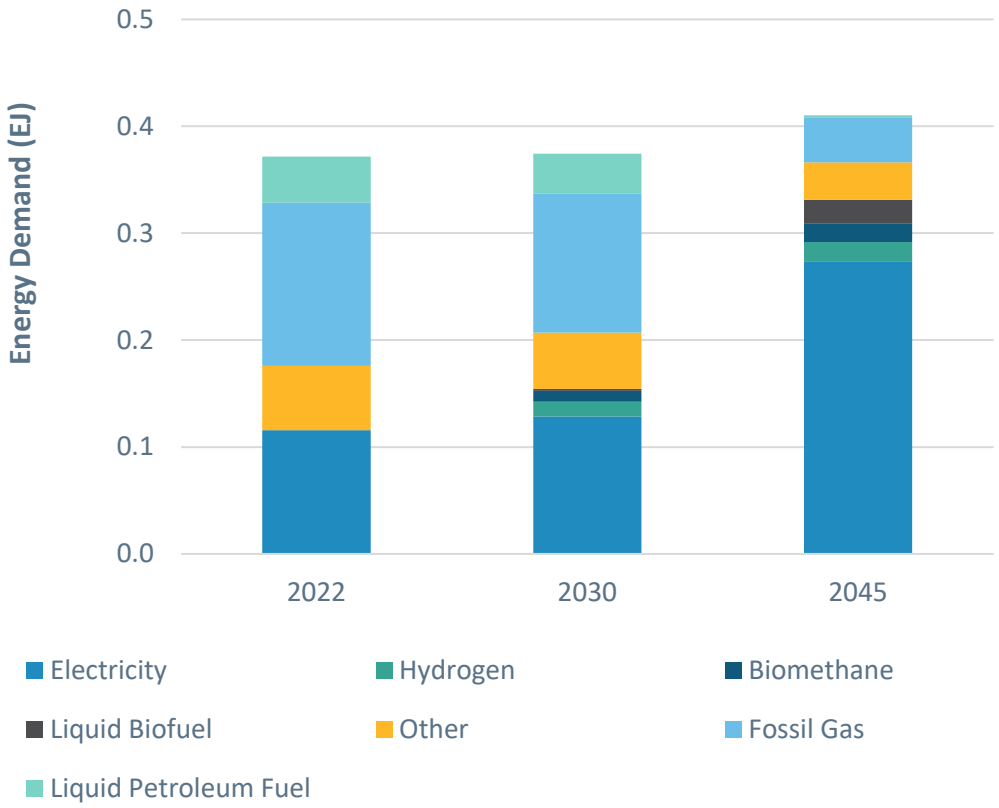
Fossil Fuel Combustion Declines Significantly Across all Sectors



- Fossil gas use in all non-electricity sectors decreases by 88% in 2045 compared to today
- Fossil gas use in electricity sector decreases by 47% in 2045 compared to today

*RESOLVE outputs start with 2023. Excludes fuel combustion from imported electricity.

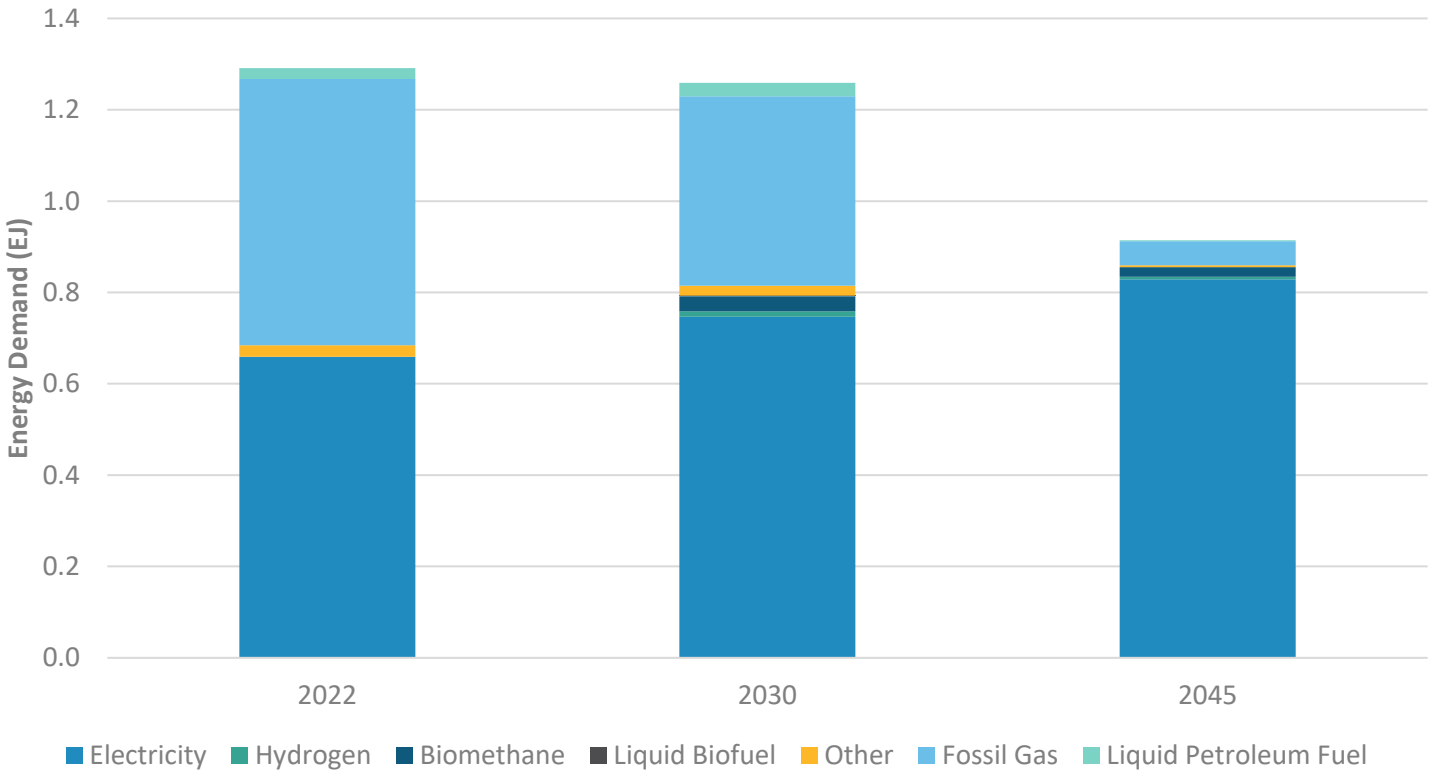
Decarbonizing Industrial Manufacturing



- 73% reduction in fossil gas demand*
- Low heat industrial processes transition to electric equipment
- Some higher heat industrial processes substitute hydrogen, biomethane, and other low-carbon fuels

*In 2045 relative to 2022

Decarbonizing Buildings



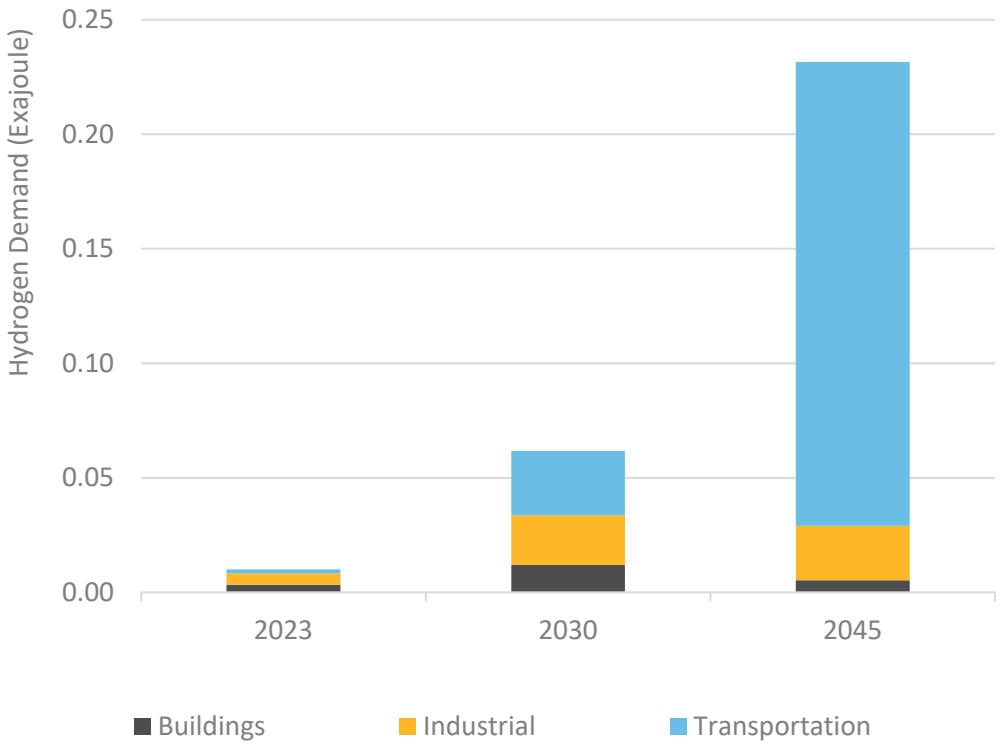
- 91% reduction in fossil gas demand*
- Improved outdoor and indoor air quality
- 3 million all-electric and electric ready buildings by 2030, 7 million by 2035
- 6 million heat pumps by 2030

*In 2045 relative to 2022

Building Electrification

- Strengthen California's building standards to support zero-emission new construction
  - Modeled as all electric appliances beginning 2026 (residential) and 2029 (commercial)
- Existing Residential Buildings
  - 80% of appliance sales are electric by 2030
  - 100% of appliance sales are electric by 2035
- Existing Commercial Buildings
  - 80% of appliance sales are electric by 2030
  - 100% of appliance sales are electric by 2045

Hydrogen Use by Sector in the Scoping Plan



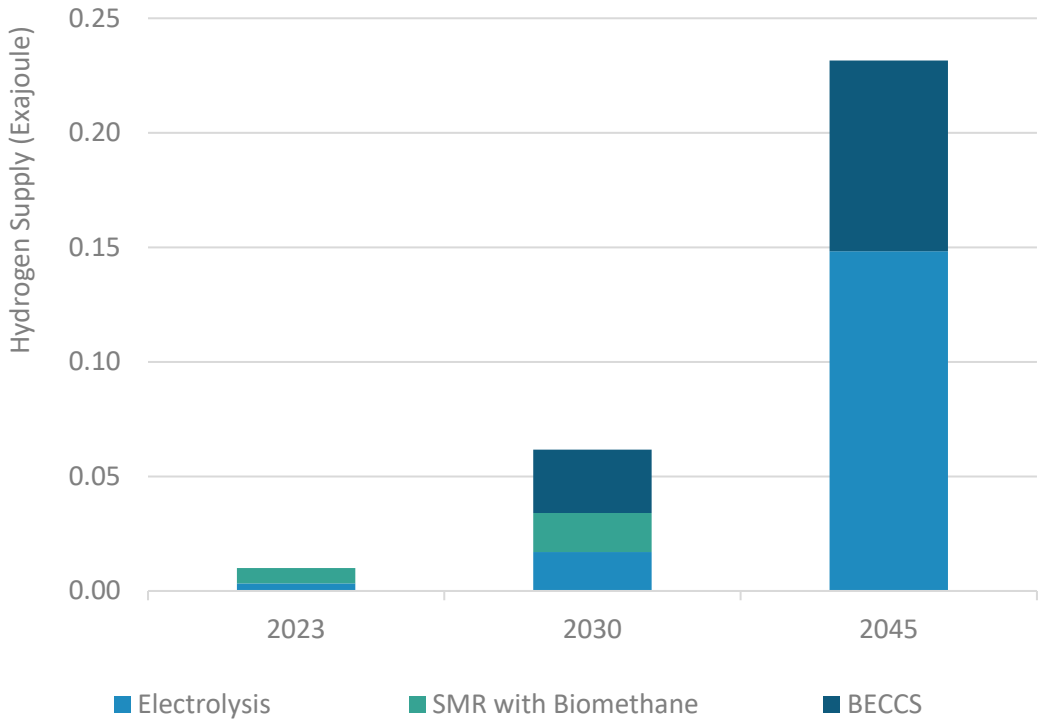
Hydrogen demand largely driven by non-combustion uses in transportation sector:

- Fuel cells for light-, medium-, and heavy-duty vehicles, aviation, ocean-going vessels, freight and passenger rail

Other end-uses with relatively smaller volumes include:

- Gas replacement to reduce fossil gas use in buildings and industrial sectors
- Hydrogen turbines in electric sector

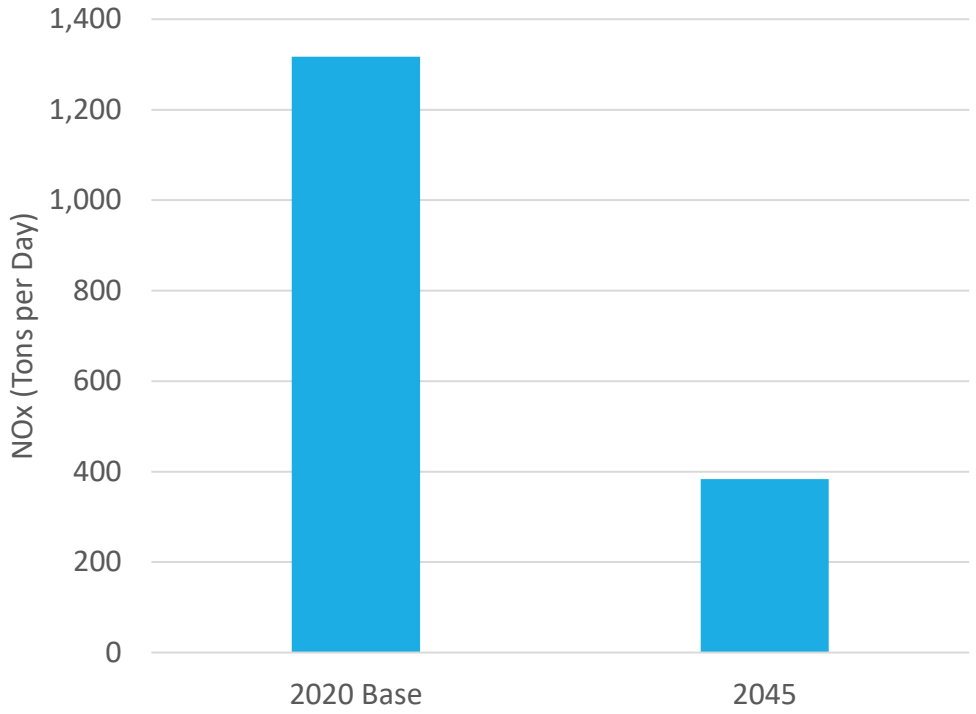
Hydrogen Supply in the Scoping Plan



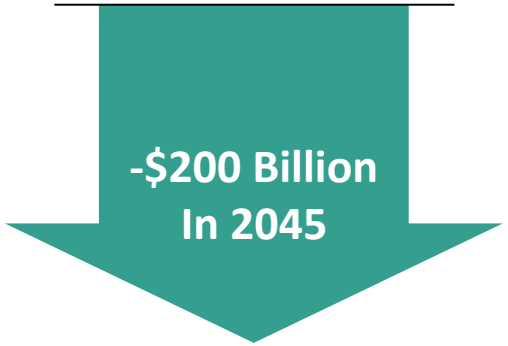
- Hydrogen identified as important tool to displace fossil fuel use
- Assumed hydrogen supplied by 3 methods: electrolysis from zero-carbon electricity, steam methane reformation (SMR) of biomethane, and biomass gasification with CCS (BECCS)
- Electrolytic hydrogen modeled as additional ~21 GW of off-grid solar capacity in 2045
- Hydrogen production will be further studied through Senate Bill 1075 Report

Air Quality Benefits of Reduced Fossil Fuel Combustion

71% reduction in NOx



$200 Billion in health cost savings from decreased fuel combustion



References

- California Greenhouse Gas Emissions from 2000 to 2022: Trends of Emissions and Other Indicators
- 2022 Scoping Plan for Achieving Carbon Neutrality
- Appendix F: Building Decarbonization
- Appendix H: AB 32 GHG Inventory Sector Modeling
- AB 32 GHG Inventory Sectors Modeling Data Spreadsheet

- All 2022 Scoping Plan Update documents may be found here: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

Thank You

CALIFORNIA ENERGY COMMISSION

GAS ASSESSMENTS

Overview of CEC Gas Assessments

November 14, 2024

Heidi Javanbakht
Nicholas Janusch, Ph.D.
Energy Assessments Division

Acronyms and Initialisms

AAEE – Additional Achievable Energy Efficiency

AAFS – Additional Achievable Fuel Substitution

Aliso – Aliso Canyon

AQMD – Air Quality Management Districts

BAU – Business as Usual

CARB – California Air Resources Board

CalGEM - Geologic Energy Management Division

CEC – California Energy Commission

CED/CEDF – California Energy Demand Forecast

Comm. – Commercial Sector

DAWG – Demand Analysis Working Group

DPP – Distribution Planning Process

FSSAT – Fuel Substitution Scenario Analysis Tool

FSSAT-ZEAS AAFS – Zero-emission appliance standard modeling

GRCs – General Rate Cases

GT – Gradual Transformation (scenario)

IEPR – Integrated Energy Policy Report

IRP – Integrated Resource Plan

NC – New Construction

NOx – Nitrogen Oxides

Prog. AAEE - Programmatic AAEE

Prog. AAFS – Programmatic AAFS

Regs – Regulation

Res. – Residential Sector

RASS – Residential Appliance Saturation Study

ROB – Replace on Burnout

TPP – Transmission Planning Process

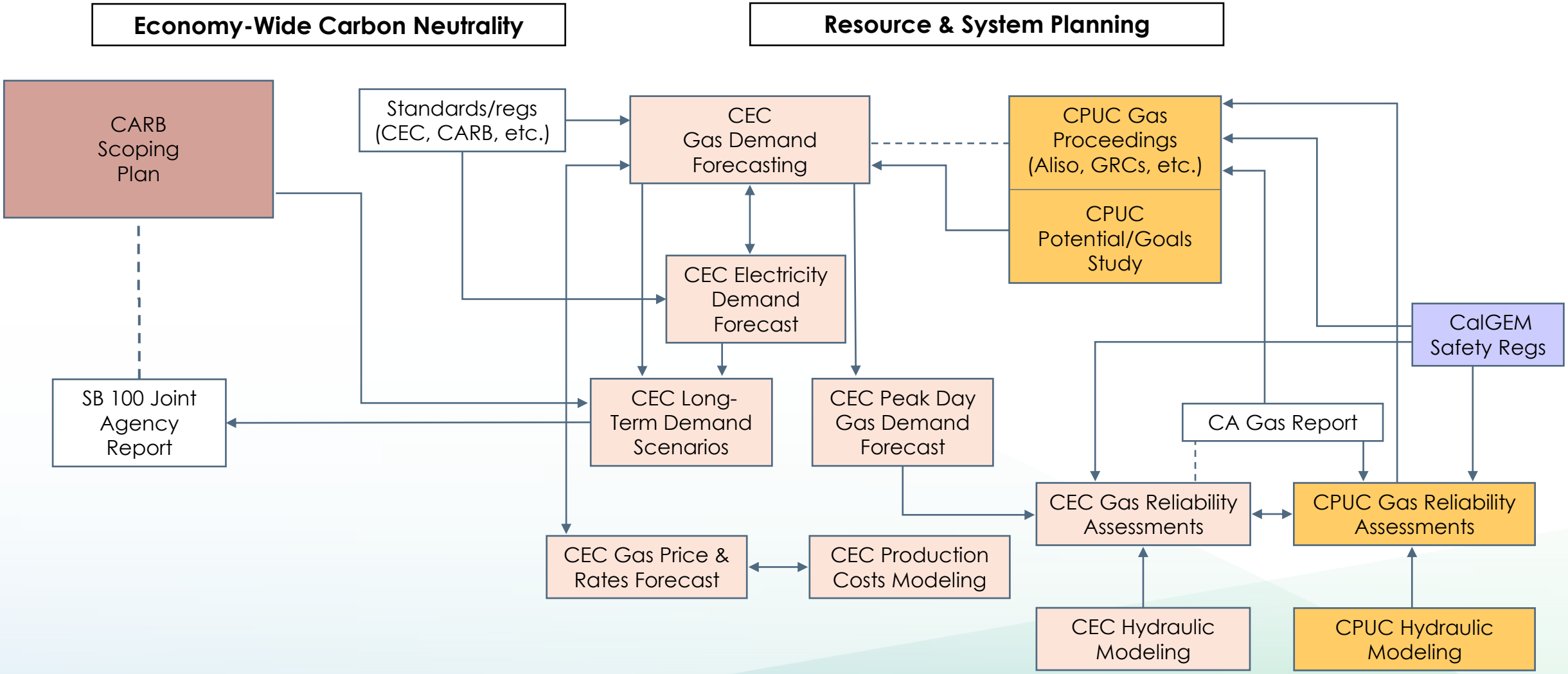
TCU - Transportation, Communication, and Utilities

ZEAS – Zero-Emission Appliance Standards

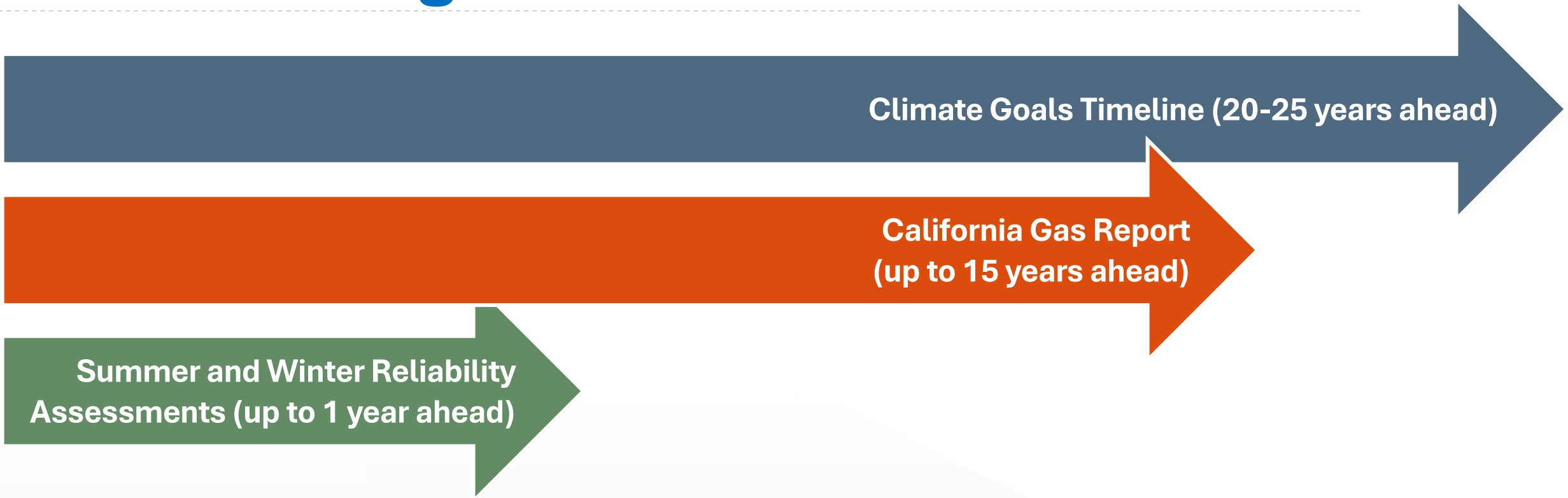
Presentation Outline

1. Statewide Gas Planning Process
2. Overview of CEC's Gas Assessments
   A. Gas System Reliability and Rates
   B. IEPR Forecast
   C. Demand Scenarios
   D. Peak Day Forecast
3. AAEE/AAFS Load Modifiers Framework
4. Summary of 2023 IEPR Forecast AAFS Results

Natural Gas Planning Process



Gas System Planning – Layered Planning Horizons



CEC Gas Assessments

Gas System Reliability and Rates

Gas Demand Forecasts

CEC Gas Analysis

Demand Forecasts

IEPR forecast, long-term demand scenarios, peak day forecast

Reliability

Seasonal gas reliability assessments - PG&E & SoCalGas

- Gas curtailment risk
- **Current:** Winter 2024-25 Gas Reliability Assessment
- **Up next:** Summer 2025 Gas Assessment - *California Energy Resource and Reliability Outlook 2025*

Rates

- Updating delivered price models (current)
  - Used in the IEPR Gas Demand Forecast
- Updated results – Jan. 2025
  - Including CA Demand Forecast Scenarios

Forecasting: A Core CEC Activity

Vetting and Engagement by Public, Partner Agencies, and Stakeholders

- IEPR Process
- Regular Joint Agency Meetings
- Demand Analysis Working Group

Used in Multiple Planning Efforts

IRP **TPP** — Planning Forecast

DPP — Local/Reliability Scenario

Broad Economic Sectors Evaluated

Agriculture

Residential

Commercial

TCU

Transportation

Industrial (+Petroleum)

All Fuels Evaluated

CEC Gas Demand Assessments

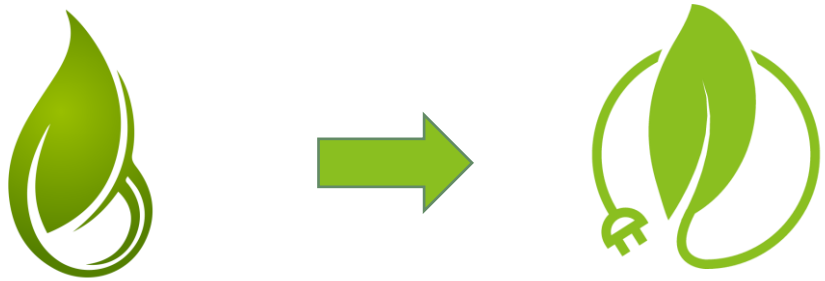
	IEPR Gas Demand Forecast	Long-Term Demand Scenarios	Peak Day Gas Forecast
Uses	Some components used by gas utilities in the CGR	SB 100 planning	CEC Gas System Reliability Assessments
Forecast period	15+ years	2050	Next winter or summer
Update cycle	Every two years	Every two years	Twice per year
Products	Annual sales and consumption	Annual sales and consumption	Monthly peak day demand; Same 1-in-X metrics reported in CGR
Scenarios	Energy efficiency, fuel substitution, transportation electrification	Energy efficiency, fuel substitution, transportation electrification, hydrogen	None
Gas for Electricity Generation	Not included	Not included	Included

AAEE/AAFS Load Modifiers Framework

AAEE & AAFS – Load Modifiers

Additional Achievable Energy Efficiency (AAEE)

Refers to the incremental energy efficiency savings from market potential that is not included in the baseline demand forecast but is reasonably expected to occur. These savings include future updates of building standards, appliance regulations, and new or expanded energy efficiency programs.



Additional Achievable Fuel Substitution (AAFS)

Fuel substitution refers to substitution of one end use fuel type for another such as changing out gas appliances in buildings for cleaner, more efficient electric appliances.

Analogous to AAEE, gas savings and incremental added electricity impacts are accounted for in AAFS. These impacts are modeled based on programmatic impacts and technology-based impacts (i.e., zero-emission appliance standards).

AA Framework & Scenarios

- **Additional Achievable framework:** is applied to energy efficiency, fuel substitution, and transportation electrification for the 2023 IEPR forecast.
- The **additional achievable** scenarios capture a range of incremental market potential impacts, beyond what are included in the baseline demand forecast, but are within the range of what is reasonably expected to occur.

Additional Achievable Scenarios

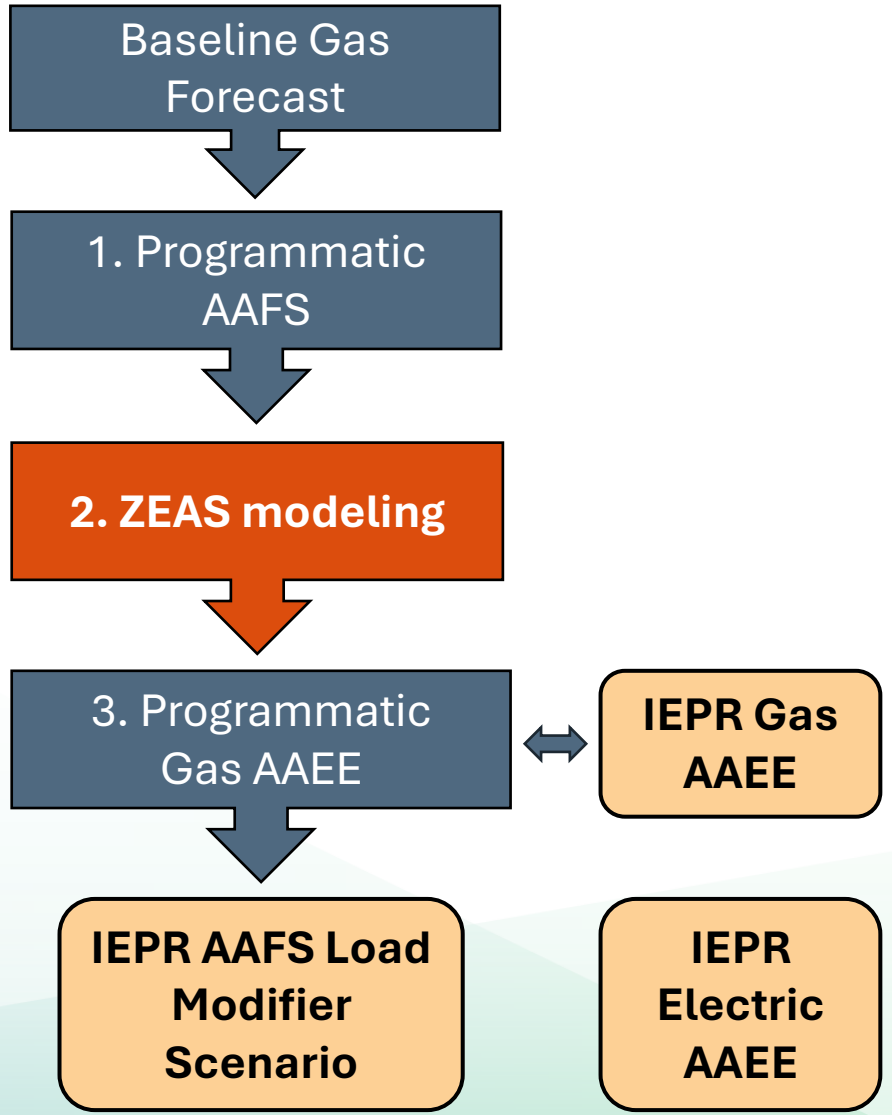
AAEE 1, AAEE 2, AAEE 3, AAEE 4, AAEE 5, AAEE 6

AAFS 1, AAFS 2, AAFS 3, AAFS 4, AAFS 5, AAFS 6

← Conservative Optimistic →

CEC's AAEE AAFS Nomenclature

- The Fuel Substitution Scenario Analysis Tool (FSSAT) creates IEPR AAFS Load Modifier Scenarios using different input scenarios beginning with the Baseline Gas Demand Forecast:
  1. Programmatic AAFS
  2. **Zero-emission appliance standards (ZEAS) modeled using FSSAT**
  3. Programmatic gas AAEE
- Because of interdependencies, the 1-2-3 order is required
- The inclusion of programmatic AAEE in AAFS **does not** imply "efficient electrification"
  - AAFS combines electricity and gas from both programmatic and FSSAT modeling and has interplay with gas AAEE
  - **IEPR Electric AAEE** is independent of AAFS process and only programmatic



Summary of 2023 IEPR AAFS Results

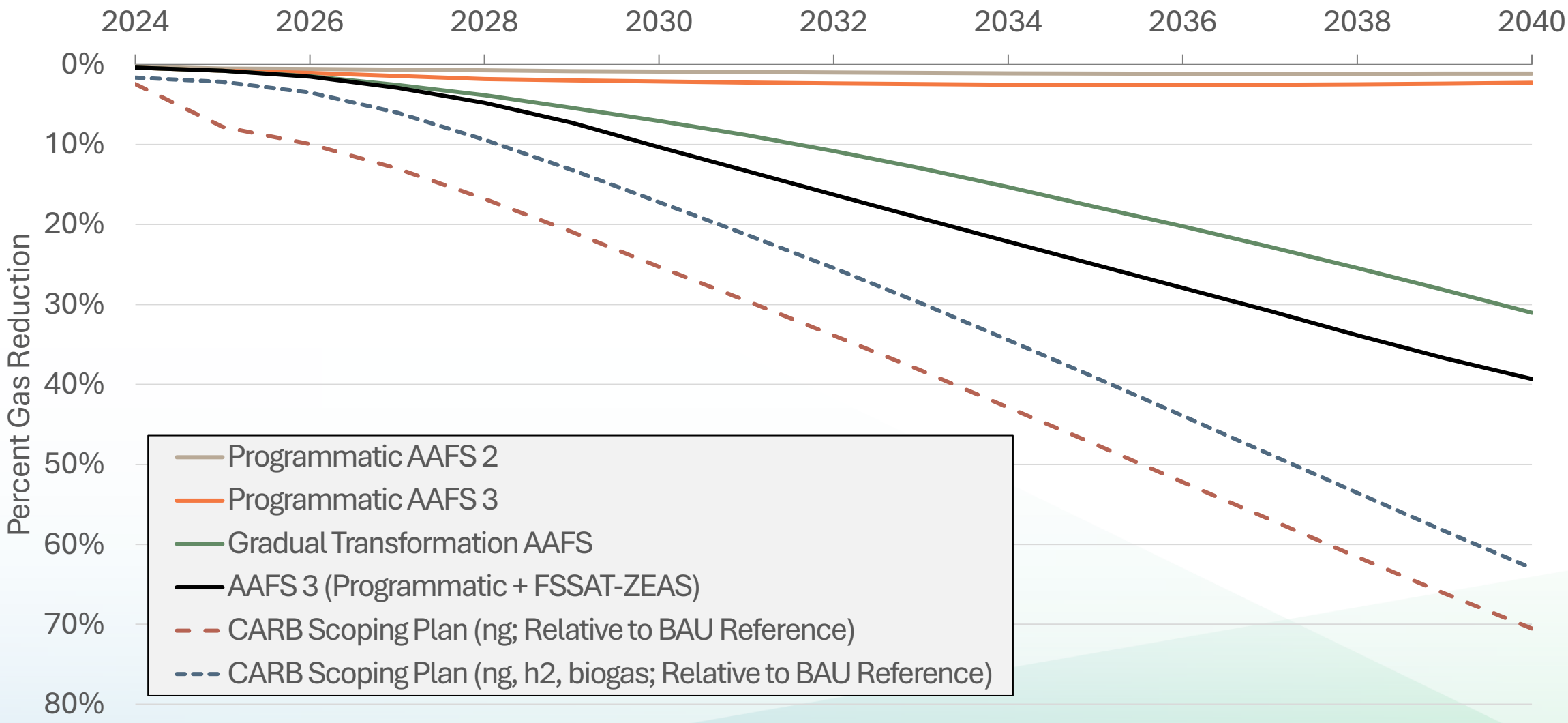
Highlighted 2023 IEPR AAFS Gas Scenarios

2023 AAFS Scenario Name	Programmatic Scenarios	FSSAT-ZEAS Scenario
Programmatic AAFS 2	AAFS 2	• Not included
Programmatic AAFS 3	AAFS 3	• Not included
Gradual Transformation AAFS ("GT AAFS")*	AAFS 3 AAEE 3 (gas and electric)	• Increasing linear statewide adoption rate, reaching 100% by 2040 • Bay Area AQMD 9-4 & 9-6 • South Coast AQMD 1146.2
AAFS 3** (Programmatic + FSSAT-ZEAS)	AAFS 3 AAEE 3 (gas and electric)	• CARB space and water heating ZEAS (Initial 2030 compliance date) • Bay Area AQMD 9-4 & 9-6

Source: CEC

*The CEC adopted the GT AAFS forecast at the May 8, 2024, Business Meeting.
**Assumed in the Reference scenario in the CEC's Demand Scenarios.

2023 IEPR Statewide Gas Impacts (Residential and Commercial Sectors)



AppB-35

Source: CEC

Thank you

Please send any written comments or questions to:

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BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning.	Rulemaking 24-09-012 (Filed September 26, 2024)

INFORMAL COMMENTS OF THE UTILITY REFORM NETWORK ON PACIFIC GAS AND ELECTRIC COMPANY'S AFTER WORKSHOP REPORT ON THE NOVEMBER 14, 2024 LONG-TERM GAS TRANSITION SCENARIOS WORKSHOP

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January 10, 2025

INFORMAL COMMENTS OF THE UTILITY REFORM NETWORK ON PACIFIC GAS AND ELECTRIC COMPANY'S AFTER WORKSHOP REPORT ON THE NOVEMBER 14, 2024 LONG-TERM GAS TRANSITION SCENARIOS WORKSHOP

I. INTRODUCTION

On November 14, 2024, the Commission conducted a workshop with staff presentations from the Commission, the California Air Resources Board (CARB), and the California Energy Commission (CEC) on long-term gas transition scenarios. The Commission directed Pacific Gas and Electric Company (PG&E) to create an "after-workshop report" and distribute the report to the service list on or before December 13, 2024.[1] Pursuant to this directive, PG&E distributed its "After Workshop Report" to the service list on December 13, 2024. On December 16, 2024, Administrative Law Judge (ALJ) Purchia issued an e-mail ruling directing, in pertinent part, entities that participated in the workshop to review PG&E's Workshop Report and distribute any corrections and/or clarifications to the service list by January 10, 2025.

Pursuant to ALJ Purchia's ruling, The Utility Reform Network (TURN) recommends that PG&E's After Workshop Report be modified to incorporate the following clarifications / corrections.

II. CLARIFICATIONS AND/OR CORRECTIONS TO PG&E'S AFTER WORKSHOP REPORT

A. CARB's 2022 Scoping Plan

Report Reference	Clarification / Correction
Regarding Figure 6 (pp. 8-9): "To meet additional demand and resource adequacy requirements, the scenario relies on a mix of strategies, including offshore wind, battery storage, hydrogen gas turbines, and demand response."	Clarification: Figure 6 shows 4x increase in existing wind (out-of-state, offshore) and solar (utility scale, customer-sited) capacity by 2045 under CARB's 2022 Scoping Plan. Key supply changes in 2030 and 2045 appear to be solar, storage, and wind. Hydrogen demand is largely driven by non-combustion uses in

[1] Assigned Administrative Law Judge's Ruling Providing Workshop Notice, 10/21/24, p. 2.

	transportation e.g. fuel cells (see Figure 11, p.13). Moreover, feasibility and uptake of hydrogen as an alternative to natural gas is the purview of SB 1075, as mentioned in the Q&A (p.25).
Regarding Figure 9 (pp. 10, 11): "supported by meeting the Governor's goal for 3 million climate-ready and climate-friendly homes and the deployment of 6 million heat pumps by 2030." Regarding p.11: "The 2022 Scoping Plan models all electric appliances for new home and commercial building construction beginning in 2026 and 2029 respectively and for existing homes starting in 2030 (Figure 10)."	Clarification: "At least fifty percent of the funding to achieve these goals shall be directed toward disadvantaged communities." (Governor's Letter to CARB - July 22, 2022) https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf Clarification: "The 2022 Scoping Plan models *varying percentages of appliance electrification* for new home and commercial building construction beginning in 2026 and 2029 respectively and for existing homes starting in 2030 (Figure 10)."
On p.13: "bio max gasification with carbon capture and storage"	Correction of typo: "biomass gasification with carbon capture and storage"
Regarding p.14: "The decrease in air pollution will also result in improved public health and is estimated to result in over $200 billion of annual health cost savings in 2045."	The CARB 2022 Scoping Plan (p. 131) states that "In total, the benefits reach $78 billion in 2035 and $199 billion in 2045." https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf Correction: "The decrease in air pollution will also result in improved public health and is estimated to result in *approximately* $200 billion *total* health cost savings *by* 2045."

B. CEC Gas Assessment

Report Reference	**Clarification / Correction**
The description of Figure 18 (pp. 20-21)	Clarification: Figure 18 represents a comparison of *a few of* IEPR's statewide gas "impacts (i.e. AAFS)" scenarios against the 2022 CARB Scoping Plan. IEPR's "Managed Gas Forecast Set" is broader than the scenarios mentioned. Page

	149 of IEPR (2023) states: "…baseline gas demand can be combined with six AAEE savings scenarios and six AAFS scenarios to create a managed gas forecast…" Scenario Numbers i.e. 1-6 in IEPR (2023) represent a progression from extremely conservative to extremely optimistic scenarios, in terms of aggressive building electrification and other energy-saving measures. Moreover, although not directly relevant to gas demand, IEPR's scenarios (IEPR, 2023 – p.115) also include load modifiers reflecting Additional Achievable Transportation Electrification (AATE).

III. CONCLUSION

TURN appreciates the opportunity to comment on PG&E's After Workshop Report and looks forward to continued participation in this proceeding.

Date: January 10, 2025

Respectfully submitted,

By: _____/s/_____
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Subject: [EXTERNAL] R.24-09-012: CUE Corrections to Gas Planning Workshop Report
Date: Friday, January 10, 2025 2:24:39 PM

Good Afternoon ALJ Purchia, ALJ Van Dyken, and Parties to R.24-09-012:

Pursuant to the December 16, 2024 email ruling directing parties to review PG&E's After Workshop Report on the November 14, 2024 Long-Term Gas Transition Scenarios Workshop, the Coalition of California Utility Employees (CUE) offers the following typographical corrections:

- **Page 24**: Coalition ~~for~~ of California Utility Employees (CUE) (~~Darian~~ Darion Johnston) commented that it was ~~his~~ her understanding that there is not a one-to-one reduction in gas demand to gas pipe maintenance cost. Does the ~~IPER~~ JEPR help navigate this gap ~~retention~~ at all?

- **Page 25**: CUE (~~Darian~~ Darion Johnston)

Thank you,

Darion

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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning.	Rulemaking 24-09-012 (Filed September 26, 2024)

THE UTILITY CONSUMERS' ACTION NETWORK REQUESTED CORRECTIONS AND CLARIFICATIONS ON PG&E's WORKSHOP REPORT

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Dated: January 10, 2025

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning.	Rulemaking 24-09-012 (Filed September 26, 2024)

THE UTILITY CONSUMERS' ACTION NETWORK REQUESTED CORRECTIONS AND CLARIFICATIONS ON PG&E's WORKSHOP REPORT

Pursuant to ALJ Purchia's email ruling directing Pacific Gas & Electric to confirm service and entities to review its Workshop Report ("Ruling"),[1] the Utility Consumers' Action Network ("UCAN") requests the following clarifications be added to the Report.[2]

I. BACKGROUND AND RECOMMENDED REVISIONS

November 14, 2024, the California Public Utilities Commission ("Commission") hosted a workshop in the Long-Term Gas Planning ("LTGP") proceeding, R.24-09-012. The workshop was intended to inform stakeholders about the California Energy Commission's ("CEC") and California Air Resources Board's ("CARB") actions and activities that may be leveraged for planning the gas transition. ALJ Van Dyken and ALJ Purchia instructed PG&E to write and serve a workshop report ("Report").[3] PG&E served its Report on December 13, 2024. The

[1] R.24-09-012, Email Ruling Directing Pacific Gas & Electric to Confirm Service and Entities to Review Workshop Report (December 16, 2024), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M549/K797/549797761.PDF.
[2] R.24-09-012, Assigned Administrative Law Judge's Ruling Providing Workshop Notice (October 21, 2024), p. 2, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M543/K418/543418963.PDF.
[3] PG&E, Long-Term Gas Transition Scenarios: Joint Agency Presentations November 14, 2024 Workshop Report (December 13, 2024).

Ruling instructs entities that participated in the workshop to distribute any corrections and/or clarifications to the to the service list.[4]

Accordingly, UCAN offers the following Report revision requests.

- Page 1: Requested clarification – include a link to a recording of the workshop.
- Page 1: Requested clarification – include one additional quote from the OIR before the two OIR quotes on page 1, "Broadly, the primary purpose of gas transition planning is to facilitate decarbonization activities..."[5]
- Page 9: typo correction – replace "fridge" with "grid"
- Page 13: typo correction – replace "bio max" with "biomass"

The foregoing constitutes UCAN's revision requests.

Dated: January 10, 2025

/s/ Edward Lopez

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[4] Ruling, p. 6.

[5] R.24-09-012, Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Long-Term Gas System Planning (September 26, 2024), p. 2, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M542/K029/542029029.PDF.