

July 8, 2016

Chair Mary Nichols
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: 2030 Target Scoping Plan Concept Paper

Dear Chair Nichols,

The state of California has long been a leader in decarbonizing its economy in a manner that is consistent with economic growth and quality of life. As a result, the state is on track to meet its 2020 heat-trapping emissions target under AB 32 (Global Warming Solutions Act of 2006). However climate science underscores the need for much deeper emissions reductions over the coming decades in order to avoid catastrophic climate change.

In recognition of this reality, Governor Brown issued Executive Order B-30-15 last year, which establishes a 2030 emissions target of 40 percent below 1990 levels and directs the Air Resources Board (ARB) to update the Scoping Plan to reflect this goal. The 2030 target marks an important milestone on the emission reduction pathway to limit global average temperatures increase to “well below 2 degrees Celsius,” a goal enshrined in the Under 2 MOU between 135 jurisdictions and adopted by more than 190 global leaders in the Paris Agreement last December. The Paris Agreement further committed to pursuing efforts to limit the temperature increase to 1.5 degrees Celsius and achieving net-zero global warming emissions in the second half of this century.

Our more than 78,000 supporters in the Golden State, including 2,700 scientific experts, support continued ambitious action by Governor Brown to significantly reduce the state’s heat-trapping emissions on par with these goals and put California on the path to a low carbon and resilient economy. The Union of Concerned Scientists (UCS) is pleased to provide brief comments on the concepts laid out in ARB’s 2030 Target Scoping Plan Concept Paper to most effectively achieve the 2030 goal.

Pathways

The concept paper highlights the importance of rapid reductions to meet the 2030 goal while also putting California on a trajectory to meet its 2050 goal of 80 percent below the 1990 emissions level. In order to achieve both goals, California will need to undertake a rigorous emissions reduction program that includes both carbon pricing and sector-based policies, like the Renewable Portfolio Standard, Low Carbon Fuel Standard, energy efficiency standards, and Zero Emission Vehicle program, among others. We provide feedback on the core set of policies that are common to all four high-level concepts later in this letter.

Two of the high-level concepts described in the concept paper include carbon pricing: continuing California's cap-and-trade program or instituting a carbon tax—either of which can be effective market-based tools to drive down carbon emissions, if designed well. UCS analysis and California's own experience show the importance of integrating sector-specific policies and a carbon price in bringing down emissions more effectively and at a lower cost. A robust price on carbon can help ensure that the costs of climate impacts and the opportunities for low-carbon energy choices are better reflected in our production and consumption choices. It provides an incentive for consumers and businesses to pursue technologies and products that generate less carbon, and helps drive innovation in clean technologies. The revenues from a carbon pricing program can also be used for the public benefit and to amplify climate action, as has been the case in California. California's experience also shows how sector-specific policies such as the renewable electricity standard, energy efficiency standards and vehicle efficiency standards are critical in overcoming market barriers and driving deployment of clean technologies and energy efficiency. Together this suite of policies—a carbon price together with complementary policies—enable a shift to a low carbon economy while realizing important ancillary benefits, like improved air quality and public health benefits. In California, we've seen sector-specific policies drive down emissions, and a price on carbon serve as a cost-effective backstop to ensure that the state reaches its GHG goals.

UCS therefore recommends that ARB focus on high-level concepts that include a price on carbon in addition to the core set of sector-specific policies. California's existing cap-and-trade program is well-established and a central component of the suite of AB 32 policies that have successfully reduced GHG emissions. Raising the ambition of the full suite of policies can put California on a path toward the deeper emission reductions needed for our next phase of climate action, in line with the global goals articulated in the Paris Agreement.

UCS supports the examination of how the different policies interact between sectors, as well as the trade-offs between them, so that the expected reductions from the Plan will better reflect reality. ARB should lay out the underlying assumptions regarding interactions embedded in the PATHWAYS model so that the public can comment on their robustness.

It is also critical that a well-designed carbon reduction program avoids disproportionate impacts on disadvantaged communities while maximizing its public health benefits. UCS encourages ARB to heavily weigh the Environmental Justice Advisory Committee's input to ensure it develops an equitable Scoping Plan. We are also pleased to see that the state will conduct a public health assessment of key mitigation measures, and recommend examining a variety of co-benefits, ranging from reductions in criteria and toxic air contaminants to active transportation and social determinants of health.

Common set of policies for analysis

The concept paper includes a core set of policies that are common across all four high-level concepts, focusing on energy, transportation, and natural and working lands, as well as implementation of the Short Lived Climate Pollutant Strategy. The transportation, industrial, and electric power sectors combined accounted for more than three-quarters of the state's heat-trapping emissions in 2014, which should be reflected in the selection of policies for the Scoping Plan. An increased focus on the management of natural and working lands to enhance their carbon benefits is a welcome update, though rigorous standards should be in place to ensure the accuracy of efforts to quantify the associated benefits. Below we provide

comments on the specific policies described in the concept paper, and highlight additional policies for ARB to incorporate into its modeling efforts moving forward.

Energy policies

SB 350 – 50% RPS and doubling energy efficiency

Last year, SB 350 was signed into law, requiring California to achieve a 50 percent Renewable Portfolio and double energy efficiency by 2030. Any set of policies that ARB models for the 2030 Target Scoping Plan should include these two policies. In addition, **we recommend that ARB also factor in PG&E's commitment to reaching a 55 percent RPS by 2031¹, and projected rooftop solar photovoltaic of 7,700 MW by 2026 (for CEC's mid-case scenario), which would lower electricity demand.**

Renewable energy resources will also be critical in reducing emissions from the transportation sector. The sequencing is key. If California does not have enough clean energy resources online, the electricity fueling electric vehicles will not be as clean. We recommend scaling up renewables and relying on as many non-fossil technologies and strategies as possible to ensure grid reliability. Otherwise, we risk making unnecessary investments in natural gas that could hinder California's ability to achieve deep emission reductions down the road. We believe that the CPUC storage requirements are a step in the right direction, but we will likely need more fast-acting carbon-free grid resources than what is expected to come from the CPUC's storage mandate.^{2 3}

Accounting and other assumptions

California is both an importer and exporter of electricity, and this activity may substantially increase in the future. Transparent greenhouse gas accounting across the western interconnect is therefore critical. While an effort to improve this exists within the context of the Energy Imbalance Market, if the California ISO expands, **we believe California will need to better understand the carbon content of the electricity it receives from out-of-state.**

The Draft Reference Scenario assumptions for the PATHWAYS Model include increased Combined Heat and Power (CHP) to achieve the Governor's target in the CPUC Long-Term Procurement Plan. CHP has substantial cost, efficiency, and emissions benefits in the near-term. However, we believe that without a shift away from natural gas to low or zero-carbon fuel sources, the heat-trapping emissions from this technology could comprise an unacceptably large fraction of the state's 2050 emissions target. **If California is to increase the amount of in-state CHP, we encourage the state to identify a viable pathway to drastically reduce carbon emissions from this technology to near zero between present-day and 2050.**

¹ MJB&A. 2016. Joint Proposal for the Orderly Replacement of Diablo Canyon Power Plant with Energy Efficiency and Renewables. Concord, MA. Online at:
<http://www.pge.com/includes/docs/pdfs/safety/dcpp/MJBA.pdf>

² California Energy Commission. 2016. California Energy Demand 2016-2026, Revised Electricity Forecast, Volume 1: Statewide Electricity Demand and Energy Efficiency. 15-IEPR-03. Sacramento, CA. Online at:
http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-03/TN207439_20160115T152221_California_Energy_Demand_20162026_Revised_Electricity_Forecast.pdf

³ Nelson, J.H. and L. M. Wisland. 2015. Achieving 50 Percent Renewable Electricity in California: The Role of Non-Fossil Flexibility in a Cleaner Electricity Grid. Union of Concerned Scientists: Oakland, CA. Online at:
<http://www.ucsusa.org/sites/default/files/attach/2015/08/Achieving-50-Percent-Renewable-Electricity-In-California.pdf>

Transportation policies

Low Carbon Fuel Standard

California needs to continue robust investment in and deployment of low carbon fuels beyond 2020. As such, it is critical to set robust Low Carbon Fuel Standard (LCFS) targets for steady expansion of low carbon fuels through 2030. With falling demand for gasoline and diesel, steady growth of low carbon-intensity (CI) fuels on an absolute basis will require accelerating targets on a carbon intensity basis.

All four concepts in the Scoping Plan Concept Paper envision increasing the LCFS to an undetermined target greater than 10 percent. **UCS believes that 25 percent would be an appropriate target for 2030**, which equates to roughly a doubling of the amount of low CI fuels required to meet the 2010 target, given projected reduction in fuel use. A target significantly lower than 25 percent would result in a slack market for clean fuels just as investments are bringing new fuels to market, thereby undermining the markets the policy is only now building. It is important for the LCFS to keep demand growing through 2030, at a minimum, because return on investment for fuel producers is more than a few years. UCS encourages ARB to aim high with an ambitious LCFS target, and create cost containment mechanisms and flexibility to adjust if optimistic projections are not fully realized, rather than to aim too low and discourage investment in low carbon fuels.

Zero emission and plug-in hybrid light duty electric vehicles

Electrification in the light-duty sector is a key strategy for meeting our 2030 GHG emission goals, as well as our goals for cutting oil use and meeting health-based air quality standards. UCS recently commissioned ICF International to conduct a study of pathways to reduce oil use on the West Coast. The results of the analysis indicate that roughly 30 percent of new vehicle sales would need to be zero emission vehicles (ZEV) or plug-in hybrid vehicles (PHEV) in order to meet a goal of reducing petroleum use in half by 2030.⁴ Likewise, the ARB Mobile Source Strategy's Cleaner Technology and Fuels Scenario estimates 40 percent of new car sales are ZEVs or PHEVs in 2030, for a total of 4.2 million ZEVs and PHEVs on the road.⁵ In order for ZEVs and PHEVs to reach 30 to 40 percent of new car sales in 2030, California must meet the 2025 targets of 15 percent of new vehicle sales. We strongly believe the ZEV program must ensure California reaches this key milestone, as well as 1.5 million total ZEVs and PHEVs, with at least 750,000 ZEVs, by 2025. However, UCS's analysis of the program shows that the current rules will not require much more than 1 million ZEVs and PHEVs by 2025. Therefore, **we encourage the 2030 Target Scoping Plan to include commitments to restore the current ZEV program to meet the 15 percent sales target in 2025 to get on a trajectory to 30 to 40 percent of new car sales by 2030.**

Extend greenhouse gas standard for light-duty vehicles

The 2030 Target Scoping Plan Concept Paper does not make explicit reference to the greenhouse gas (GHG) emission standards for light-duty vehicles. **We suggest that the proposed Scoping Plan make commitments to ensuring that the GHG standards are**

⁴ ICF International. 2016. Half the oil: Pathways to reduce petroleum use on the West Coast. San Francisco, CA. Online at www.ucsusa.org/WestCoastOil

⁵ California Air Resources Board. 2016. Mobile Source Strategy. Sacramento, CA. Online at <http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>

delivering the emissions reductions that are expected for 2025, and continue to make progress beyond 2025 on the order of 5 percent improvement per year to 2030.

Freight vehicles and equipment capable of zero emission operation

Freight equipment is a critical component of the Scoping Plan because heat trapping emissions from freight are currently increasing. Likewise, as the draft Sustainable Freight Action Plan notes, freight equipment accounts for nearly half of statewide emissions of diesel particulate matter and nitrogen oxides, and freight hubs are a significant source of air toxics that can cause localized cancer hot spots.⁶ We recommend that the Scoping Plan and the final Sustainable Freight Action Plan should commit to a deployment of greater than 100,000 freight vehicles and equipment capable of zero emission operation. A recent ICF analysis commissioned by the California Electric Transportation Coalition found that California already has 100,000 pieces of freight equipment capable of zero emission operation and, that even under its least aggressive assumptions, the population of electric freight equipment will approach 300,000 by 2030.⁷ ARB's own Mobile Source Strategy suggests that over half of the 100,000 target would be achieved by electric forklifts. Consequently, **we believe that an ambitious yet achievable target would be roughly 500,000 freight vehicles and equipment capable of zero emission operation by 2030.**

Additional policies to consider

In addition to the policies described above, UCS believes that ARB should also consider policies to reduce the carbon intensity of water consumption in California. Given the amount of emissions associated with energy use in the water sector, its exclusion represents a missed opportunity. In light of Executive Order B-30-15, we also recommend that ARB include a discussion of how the policies in the Scoping Plan consider climate impacts to ensure both that they can achieve the projected emission reductions in a changing climate over the coming decades and that they will help the state become more resilient to a changing climate.

Energy intensity of water use

California's water sector consumes nearly 20 percent of the state's electricity, and its needs are growing. The water sector uses electricity to pump, treat, transport, deliver, and heat water, and expected increases in groundwater pumping, water recycling, and desalination mean the energy intensity of water use will grow.⁸ Water and wastewater utilities access electricity by purchasing it from an electric utility or the wholesale market, by signing a contract with an independent generator, or by generating it themselves. The electricity that they directly purchase or generate is not typically addressed by California's climate and

⁶ California Department of Transportation, California Air Resources Board, California Energy Commission, and Governor's Office of Business and Economic Development. 2016. California Sustainable Freight Action Plan Discussion Draft. Sacramento, CA. Online at: http://www.casustainablefreight.org/app_pages/view/154

⁷ ICF International. 2014. California Transportation Electrification Assessment – Phase 1. San Francisco, CA. Online at: http://www.caletc.com/wp-content/uploads/2014/09/CalETC_TEA_Phase_1-FINAL_Updated_092014.pdf

⁸ California Energy Commission. 2006. Refining estimates of water-related energy use in California. CEC-500-2006-118. PIER Industrial/Agricultural/Water End Use Energy Efficiency Program. Prepared by Navigant Consulting, Inc. Online at: <http://www.energy.ca.gov/2006publications/CEC-500-2006-118/CEC-500-2006-118.PDF>

renewable energy policies, like the RPS. Therefore, the water sector and its growing electricity needs could contribute to greater emissions.

At the same time, the water sector is poised to become a greater part of the energy and climate solution given the significant amount of electricity purchasing power of many water and wastewater utilities, as well as assets and infrastructure that could host renewable generation facilities or provide flexibility for the electricity grid. Numerous studies and real-world experiences have found that many water and wastewater utilities can rely primarily on renewable sources of electricity. One example is the Sonoma County Water Agency's (SCWA) policy to reduce the global warming emissions associated with its water services in order to achieve "carbon-free water" by 2015. If 25 percent of the electricity used by water and wastewater utilities came from renewables or was offset by energy efficiency, it would contribute 1,000 MW to California's electricity supply.⁹

We recommend that ARB identify and evaluate policy options to reduce the carbon intensity of energy use in the water sector as a key measure for the 2030 Target Scoping Plan. (To aid in this, we would like to suggest the ideas in this 2015 [UCS report](#), "Clean Energy Opportunities in California's Water Sector", that outlines reasoning and strategies for better understanding of the energy needs of the water sector and how the water sector can be a contributor to cleaner energy.)

Climate resilience considerations for planning

EO B-30-15 also requires that state agencies take specific actions to help build resilience in California to the impacts of climate change. State agencies must now consider climate change in planning and investments (especially related to infrastructure), and prioritize "actions that both build climate preparedness and reduce greenhouse gas emissions."¹⁰ While the concept paper mentions resilient economic growth, it does not discuss the need or the opportunities for the sector-specific policies to contribute to the state's climate preparedness.

Climate change will impact key sectors in the Scoping Plan, such as energy, transportation, and forestry, affecting their ability to deliver services and placing our safety, quality of life, and economy at risk.¹¹ It could also affect a sector's ability to help achieve the 2030 and 2050 goals, especially as we look towards mid-century and beyond. For example, rising temperatures over the coming decades will increase electricity demand for cooling needs while decreasing the efficiency of power plants to meet that demand. It will also cause more precipitation to fall as rain versus snow, shrinking our snowpack and reducing the amount of hydropower available, especially in the warm summer months when electricity demand is higher.¹² The Scoping Plan should describe how it will address these changing conditions in its policies so that the state is prepared to meet energy needs over the coming decades in a manner that reduces emissions while improving the resilience of the energy system to these and other climate impacts. In this instance, several clean energy strategies, like "smart grid"

⁹ Park, L. and K. Croyle. 2012. California's Water-Energy Nexus: Pathways to Implementation. A White Paper by GEI Consultants. Online at: http://www.geiconsultants.com/stuff/contentmgr/files/0/421ce0d61af5a9dd26e4ab0995a12cad/download/californias_water_energy_nexus.pdf

¹⁰ Governor Brown. 2015. Executive Order B-30-15. Online at: <https://www.gov.ca.gov/news.php?id=18938>

¹¹ California Natural Resources Agency. 2014. Safeguarding California: Reducing Climate Risk. Sacramento, CA. Online at: http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf

¹² Moser, S., J. Ekstrom, and G. Franco. 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California. Sacramento, CA. Online at: <http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf>

technologies, energy efficiency and demand response programs, renewable energy, etc., can help accomplish these goals.¹³ Similar examples exist for other sectors as well.

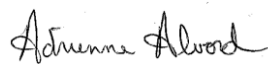
The 2030 Target Scoping Plan provides an opportunity to highlight policies that will help California build a future that is both low carbon and climate resilient, and meet the requirements of EO B-30-15. **We suggest that ARB highlight the ways in which it is already considering climate impacts and preparedness in its concepts and policy development and identify additional areas for evaluation through the development of the Scoping Plan.**

With the 2030 Target Scoping Plan, California can demonstrate its continued leadership and accelerate the state's transformation to a low carbon and resilient economy. UCS encourages ARB to be bold, focusing on a mixture of carbon pricing and sector-specific policies that will secure the deep reductions needed to meet the state's emission reduction targets and place it on the path to net-zero emissions in the latter half of this century. We look forward to continued engagement with ARB as details of the 2030 Target Scoping Plan are further fleshed out and evaluated.

Sincerely,



Jamesine Rogers Gibson
Western States Senior Climate Analyst



Adrienne Alvord
California and Western States Director

¹³ Davis, M. and S. Clemmer. 2014. Power Failure: How climate change puts our electricity at risk – and what we can do. Union of Concerned Scientists: Cambridge, MA. Online at: <http://www.ucsusa.org/sites/default/files/legacy/assets/documents/Power-Failure-How-Climate-Change-Puts-Our-Electricity-at-Risk-and-What-We-Can-Do.pdf>