SCOPING PLAN 2022

Initial Air Quality & Health Impacts and Economic Analyses Results Workshop presented by CARB Ap. 20,2022

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by
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Thank you for refining the Scoping Plan, presenting the workshop, and considering public comment. The strengths of the workshop include a title that captures the important topics addressed, slides that are easy to understand and have informative graphics, and input from various authors. Complements could continue at length, but this would not benefit anyone. To abbreviate these comments, only recommendations for improvements are made. Please study and incorporate these recommendations into your next public iteration of the SP. Some of these measures may require collaboration with other agencies or the Legislature. If you wish references about any of the recommendations, I am happy to provide these.

ESTABLISH INTERIM TARGETS

The Alternatives target 2045 or 2035 as the date for reaching neutrality. Three-year targets for each policy are necessary for ensuring that we are on a path that will reach neutrality by 2035 or 2045. Using existing technologies, much can be achieved in 3 years. Utility-scale renewable energy plants and requisite transmission lines can be constructed. Emissions-reducing regulations can be enacted. Conservation and efficiency incentives can be instituted. Issue a status report every 3 years.

NEUTRALITY BY 2035
Select an Alternative with a 2035 neutrality date. Delete Alternatives with later dates. Alternative 1 is more likely to achieve neutrality than 2.

ECONOMIC ISSUES
Modeling economic, public health, air quality, and EJ ramifications of decarbonization policies is not easy. Instead of striving to reinvent the wheel, use the best models already designed by scientists. There is substantial research in these fields. Use models that calculate cost to benefit ratios. At the outset of your calculations, state the limitations and assumptions of the model. Economic ramifications are more challenging and controversial to estimate than public health, air quality, and EJ. This is one of the reasons to deprioritize it. Any Alternatives considered by CARB should weight EJ, air quality, and public health issues more than economic issues.

Another reason to minimize your efforts to quantify economic impacts is that the expertise of CARB is in fields of emissions, air quality, and public health. It is not regarded as an economic expert. Other agencies and academic organizations have more expertise in this area. The mission of CARB is to decrease emissions to improve

air quality and public health. Spurring economic growth is not part of the mission of CARB. It follows that CARB's opinion about the most effective SP should be solely based on policies that expedite rapid decarbonization. Other branches of government should decide whether policies are worth the economic cost (e.g., Appropriations committees). CARB should withdraw its recommendation to select a policy or Alternative because it has a low gross cost.

Net cost is far more important to consider than gross cost. Instead of framing these as costs, it is more accurate to view them as investments in creating a sustainable future. Inadequate investment will produce a paltry return on investment that will harm all CA residents, increase annual percent of GDP necessary for adaptation and catch-up mitigation, and create an unsustainable environment. Research indicates that generous investments in earlier years of a decarbonization plan generate more generous economic, EJ, air quality, public health, and environmental benefits. Effective mitigation policies will create more green jobs annually than are lost in the fossil sector. See Senator Laird's bill SB 1020 for provisions to create green jobs. CARB's estimate of the net change in employment and GDP clashes with University of Mass. research.

Include effects of both short-term and long-term exposure to toxics. Change the discount rate for the Social Cost of Carbon from a 2.5 - 5% range to zero%. This values intergenerational effects.

https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB1020

https://peri.umass.edu/publication/item/download/969_3900ffcb89b3b2d9ac94c79fe37ee96f

Wang, T., Jiang, Z., Zhao, B. *et al.* Health co-benefits of achieving sustainable net-zero greenhouse gas emissions in California. *Nat Sustain* 3, 597–605 (2020). https://doi.org/10.1038/s41893-020-0520-y.

MORBIDITY AND MORTALITY

Estimates of M & M (public health) benefits in the Alternatives are a tiny fraction of that revealed by other research. Consider the following mortality statistics, which do not include morbidity incidence or costs.

In 2018, 8.7 million people suffered premature mortality from fossil fuel (FF) industry particulate matter (PM) emissions. A 2021 study estimated 10.2 million. Estimates of the number of annual premature deaths from FF PM in the US range from 335,000 and 355,000. Using 340,000 and dividing this by the population of the US in 2018 (327 million) equals 0.1%. The CA population in 2018 was 39 million. 0.1% of 39 million is 39,000. The value of a statistical life in the US is $10,000,000. Thus the annual total value of lives lost in CA is $390 billion (39,000 times ten million).

Combustion of FF emits about one dozen toxics. Mortality from the other toxic co-pollutants was not estimated. Many of these toxics are also GHGs, which are the foremost cause of climate change.

What is the death toll from climate change (that is not due to toxic airborne pollution)? One estimate is 150,000 annually. This is a very conservative estimate because cause-of-death records rarely mention air pollution.There is a high probability that premature mortality from climate change, as well as toxic co-pollutants, will continue to increase as long as FF combustion continues. Between 2030 and 2050, over 250,000 deaths per year are projected to be caused by weather extremes. Notice how small these numbers are when contrasted with premature mortality from FF PM.

.https://www.seas.harvard.edu/news/2021/02/deaths-fossil-fuel-emissions-higher-previously-thought

Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem - ScienceDirect

Value of life - Wikipedia

How Much Is a Human Life Actually Worth? | WIRED

https://www.who.int/heli/risks/climate/climatechange/en/

https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

USE IPCC SIXTH ASSESSMENT

This mitigation plan was released in April 2022. It is based on the most current science. Revise the SP if it is based on older assessments. All policies advanced by CARB should be based on well-proven technologies in the most current IPCC report, Paris 1.5 degree consistent, and make a significant contribution to neutrality by 2035.

RELY ONLY UPON MITIGATION MEASURES THAT HAVE BEEN PROVEN EFFECTIVE

It is very risky to project that a technology that is currently ineffective will be improved sufficiently to be effective before 2035. Expunge these technologies from the SP. Examples include BECCS, smokestack CCS for industry, Low Carbon Fuel Standard (Renewable Fuel Standard at the federal level) fuels, and biomethane digesters. Lifecycle analysis research has not shown these to achieve net GHG reductions. In fact, there is research on these showing that they produce a net increase in GHG emissions.
CARBON CAPTURE DECISION TREE - Google Docs
Instead, rely upon proven measures including regulation, efficiency, plugging leaks of HFCs and CH4, replacing fossil energy with non-carbonaceous, combustion-free energy. Industry claims should be suspect until there is independent lifecycle research proving the efficacy of a technology. Industry should be invited to give presentations at

CARB workshops only if such research is available and summarized regarding their products.

Market-based mechanisms should not be part of the SP because there is little evidence to prove that they are effective for decreasing GHGs. Examples include carbon pricing, carbon offsets, and cap and trade. There are numerous ways that these policies can be improved. Incorporation of externalities into the cost of meat and energy products is vital. This should be pursued outside of the SP framework. The gold standard of an effective mitigation policy, including market mechanisms, is whether it drives innovation and decarbonization by industry. There is no independent scientific research that verifies that market mechanisms have spurred significant decarbonization innovations.

REFRIGERANTS

The SP Alternatives should include more stringent regulation of these chemicals. HFCs, which typically have a GWP of 2000 to 4000, should be replaced with natural refrigerants having a GWP of <15. Examples are propane and ammonia. By 2025, only HFCs with a GWP <100 should be eligible for sale in CA. Tighter regulations to prevent leaks and recycle HFCs are needed.

NATURAL AND WORKING LANDS

Select Alternative #1 as a starting point to devise another Alternative that increases net carbon stocks annually. The most effective way to decrease wildfire risk is to effectively mitigate climate change with NWL and other policies that decrease anthropogenic emissions. Decrease herd size of livestock, replace CAFOs with organic regenerative agriculture, and establish 30 x 30 targets.

FOSSIL FUEL INFRASTRUCTURE

Halt issuance of permits for new fossil fuel infrastructure by the end of 2022. This includes offshore and onshore wells, pipelines, refineries, and power plants. Require the industry, at its expense, to plug sources of fugitive emissions starting with idle wells and operating pipelines. Satellite systems, such as those used by EPA, are effective for identifying these sources.

VMT

Peruse research and policy outcomes in other jurisdictions to identify the most effective measures for decreasing VMT. It is well known that it provides numerous benefits for employers and staff as well as the economy and air quality. Ways of incentivizing it and making it more practical and verifiable are needed.

POWER SECTOR

The SP lacks a plan for decarbonizing the power sector. This is a major omission. Set a target of 80% clean energy by 2030 and 100% by 2035 for the grid.

HYDROGEN

Allow production and sale only of H2 that has a lifecycle carbon intensity that is less than or equal to that of electrolysis using 100% geothermal, solar, or wind energy. Develop H2 as an energy and storage source only for difficult to decarbonize applications including heavy industry, aviation, large marine vessels, and heavy trucks.

TRANSPORTATION

Set a goal of all new light passenger and small truck sales to be electric by 2030. For medium and small trucks, set the date of 2035 for 100% zero emission sales (H2 or electric). Your excellent rulemaking is headed in this direction.

BUILDINGS

New building codes that allow only electric energy and appliances are needed by 2023. H2 and NG are to be non-compliant energy sources. Failure to mention this in the SP is a major oversight. Additional policies are recommended to expedite all-electric retrofits.

SYNOPSIS

Toxic and GHG emissions correlate positively with the growth rate of GDP. At global, US, and CA levels, GHG emissions are at or near historic highs. Until we decarbonize our economy, it is unwise for CARB to accelerate GDP growth or use it as a criteria for selecting emissions policies. A target GDP growth rate of 1%, at maximum, should be pursued by CA until net zero is attained.

Sustainability of GDP and *per capita* consumption requires stabilization of population to be effective. Policies incentivizing voluntary limitation of the number of children produced per family are critical. The number of carbon bombs being added to the planet each year is not sustainable and will overwhelm other proven measures for reaching net zero.

Conservation and moderating consumption is vital for reaching net zero. Many policies are needed to implement this. Please add such to the SP.

.https://www.commondreams.org/views/2021/09/15/reducing-energy-consumption-only-long-range-solution-climate-change