

Public Meeting to Consider the Proposed Research Projects for Fiscal Year 2022-2023

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Thanks for the excellent research you have conducted for many years. Please consider the following issues for future research. Some topics have an extensive literature while little has been published on the empirical evaluation of others.

DECREASE VMT

Development of high-density, walkable communities linked to mass transit is an effective way of decreasing VMT. However, this is very expensive, increases risk of pandemic contagion, and takes decades to complete. Are there other policies that can decrease VMT that can be implemented in a few months or less and at far lower cost? Consider ride-sharing programs, increasing remote work opportunities for suitable careers from entry-level (e.g., customer service) to executive, and imposing an odometer mileage tax on the number of miles added since the most recent transfer of title, etc.

ENTERIC CH₄ from CATTLE

Conduct a small demonstration project to replicate research on methane-devouring bacteria.
<https://research-repository.griffith.edu.au/bitstream/handle/10072/373404/SyedPUB3455.pdf?sequence=1>

Also test marine algae as a feed additive to see whether its safety and effectiveness is superior to 3NOP. Because the latter has not been approved by FDA, it cannot be used commercially. While awaiting FDA evaluation, if algae is somewhat effective and safe (as it is in human diets), then it may be used while awaiting clearance of pharmaceuticals.
https://www.theguardian.com/environment/2021/sep/30/cow-methane-emissions-reduce-seaweed-kowbucha?CMP=Share_iOSApp_Other

BEHAVIORAL ECONOMICS TO DECREASE DEMAND FOR MEAT AND DAIRY INTAKE

Study a decrease in subsidies for dairy and meat, in effect, by imposing an environmental tax on wholesale prices charged to retailers. Study incorporation of plant-based nutrition and environmental impact of animal v plant foods into K - 12 curricula. Study the imposition of a surcharge on water use for raising livestock (but not on crops). Study educational programs for

farmers that help them transition from livestock to organic regenerative crop agriculture. Study a policy of taxing farmers for failing to decrease the head count of cattle annually.

https://food.berkeley.edu/wp-content/uploads/2020/12/BFI_ValueRisk_in_Ag_120920_Digital.pdf
https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf
<https://newrepublic.com/article/163735/myth-regenerative-ranching>
<https://www.theguardian.com/environment/2021/sep/13/meat-greenhouses-gases-food-production-study>
https://www.theguardian.com/environment/2021/oct/27/meat-and-dairy-giants-feed-climate-crisis-by-dragging-their-heels-on-methane?fbclid=IwAR168KHYVkkpGusx85ynRQ_hhb-a1lXXdp5zX8skjQdGIN86b4kjl5p5g
<https://iopscience.iop.org/article/10.1088/1748-9326/ac02ef>

NATURAL REFRIGERANTS TO REPLACE HFCs

Most HFCs in common commercial use have a GWP of 2,000 to 4,000. Your plan to replace use of these with lower-GWP synthetic refrigerants having a maximum GWP of 1400 to decrease emissions 40% by 2030 is useful. However, it is more economical and effective to use cheap natural refrigerants, e.g., ammonia or CO₂, which have a GWP of less than 15. Promoting 1400 as low will not be very effective and would need to be revised lower in a few years to be effective. Changing refrigerators or refrigerants is costly and should be done right the first time. And the 2030 goal should be increased to at least an 80% reduction. Conduct cost : benefit research on use of a standard of 1400 in contrast to a standard of 150.

Replacing or retrofitting refrigeration units in airplanes and marine ships so they can operate on natural refrigerants is another worthwhile research project.

QUANTIFICATION OF FIREPLACE EMISSIONS - INCENTIVES FOR SEALING

Study the cost : benefit of paying homeowners to seal their fireplaces.

ENERGY STORAGE

Contrast the cost of electrolytic hydrogen made from combustion-free renewable energy, compressed air, pumped hydro, and various battery technologies. Determine which technologies are most suitable for each application.

LIFECYCLE ANALYSIS OF BIOFUELS

Biodiversity reduction, food supply, arable land use limitations, emissions, transportation, and water supply issues present problems for biofuels - especially when sourced from crops. LCI research indicates GHG emissions from biofuels are comparable to that of fossil fuels. And each source emits a wide range of criteria and toxic airborne emissions, some of which have GHG effects (that are rarely accounted for in LCI research). This is not sustainable.

<https://theicct.org/u-s-biofuels-policy-lets-not-be-fit-for-failure/>

Our resources should be allocated to other transportation policies that have lower LCI GHG emissions, no operating phase toxic emissions, and more efficient technologies. Research the cost : benefit, criteria and toxic emissions, and LCI of other transportation policies, e.g., VMT,

conversion of combustion vehicles to all-electric, and purchase incentives for used and new ZEVs. Those with a higher benefit : cost should replace the LCFS program.

HEALTH IMPACT ANALYSIS

Though health impact assessment (HIA) legislation has passed in many other states, this has not occurred in CA. In 2021, AB 713 was introduced, calling for use of HIAs in planning climate and air quality policies. The bill is held in suspense file and may be reintroduced in 2022.

Many kinds of HIAs may be created to facilitate cost : benefit analysis and decision-making . Quantifiable variables are used as inputs to estimate quantifiable outcomes.

CARB's plan to include more medical endpoints in cost : benefit research is sagacious. Please fast-track this so that we may design more effective climate policies.

SORE LANDSCAPING EQUIPMENT

This equipment is used in closer proximity to dwellings than other kinds of SORE. Thus, prioritize research on replacing ICE with ZE equipment. Is it cost : effective for cities or the state to incentivize retirement of ICE and replacement with new ZE. Your rulemaking in late 2021 in response to AB 1346 indicates that the benefit : cost is at least 3 : 1 on a statewide scale. Does this also apply to cities? If the data confirms this, what are the funding implications?