October 6, 2020
To: CARB Research Planning
From: Muriel Strand, P.E.
Re: Ideas for the CARB 2021-2024 Triennial Strategic Research Plan

I urge CARB to include in the 2021-2024 Triennial Strategic Research Plan several goals that may go beyond your explicit mandate but that do pertain to your mission, specifically the mission to radically reduce greenhouse gas (GHG) emissions and the approaching climate chaos.

First, the current plans for reducing GHG emissions seems to be mostly about substituting wired electricity from PVs and windmills for fossil fuels. While energy conservation, particularly in building design and operation, is also envisioned, California has already been making advances in this area for several decades, and the low-hanging and inexpensive fruit is basically gone. And while some techno-optimists believe that direct carbon capture from the air (other than by natural photosynthesis) can be developed and built on the scale needed to be relevant, I expect the laws of physics and chemistry will veto this idea.

Despite the long-standing political resistance to 'social engineering,' I believe attention to radical changes in lifestyles, supply chains, and production of basic needs, are in order. The concept of 'relocalization' is becoming more popular, and I believe it offers truly substantial opportunities for more energy conservation. Regenerative agriculture and agro-ecology are two more (and very similar) concepts that are also attracting widespread interest. Radically rearranging residential and agricultural land use patterns and practices could greatly reduce the amount of energy now used for driving to stores and workplaces, as well as what is used for key needs like drinking water and agriculture.

While it may be possible for California to meet its medium-term GHG emissions reduction goals with harvesters of renewable energy such as PVs and windmills, I don't believe it's possible for all 50 states, let alone the whole world, to do so. Tangentially related to this challenge is what I call the 'quantification problem.' While measurement of GHG emissions, particularly area sources, is fairly challenging, regulatorily adequate quantification of potential and actual carbon sequestration by natural photosynthesis seems almost impossible. Yet natural photosynthesis is I believe our best hope.

The amount of renewable energy required to sustain anything resembling our nation's current fossil fuel lifestyles will require construction of thousands, perhaps millions, of such harvesters, as well as a substantial amount of new electrical transmission capacity. I believe such construction will require fossil fuels, and thus GHG emissions, for mining, refining, manufacturing, and installation, as well as for recycling these various technological devices at the end of their lifetimes, and then constructing new ones. Of course, global behavior is likely to reflect whatever example we offer, as suggested in the first sections of this article:
http://dedevelopingthroughnonviolence.blogspot.com/

I have outlined some of these various constraints and possibilities in my papers:
Sustainable Investment Means Energy Independence From Fossil Fuels
https://www.researchgate.net/publication/256048802_Sustainable_Investment_Means_Energy_Independence_From_Fossil_Fuels
and
Is It True That 'Small Is Beautiful'?
https://www.researchgate.net/publication/333581837_Is_it_true_that_'Small_Is_Beautiful'

https://tinyurl.com/yy43rxhl

So CARB, the CEC, and related agencies have an opportunity to offer very helpful leadership in identifying and sharing widely the information and designs for living that can radically change our infrastructure so as to be in balance with the planetary ecology. And the more people who have a realistic vision of a sustainable future, the sooner we can get there.

Second, I have several more modest suggestions for projects that can play a role in the larger perspective outlined above. One is for a pilot project to evaluate the effectiveness of pricing all products and services in terms of the kwhr and GHGs required to make them available to consumers, in addition to conventional and ongoing currency prices. Kwhr and GHGs are real prices based on constant relationships, rather than squishy subjective monetary prices. With adroit consumer education, such triple pricing can better harness market forces to create the kind of meaningful change that markets are touted as having the power to induce.

While many are optimistic that carbon fees and cap & trade will harness these market forces, I am extremely skeptical that the political will exists to set these fees anywhere near the amounts needed for the degree of market response that could avert chaos. It may be that robust research on this kind of real price information and its effect on consumer behavior can help create that political will.

Another modest suggestion would be a pilot project to ban all landscaping equipment that uses fossil fuels or electricity for tasks that are within human muscular capability. Such a pilot project could be limited to a single jurisdiction, or it could target interested landscapers and property owners within several jurisdictions. Here is one possible structure for such a project: http://motherearthhome.blogspot.com/

While such a ban will seem impossible to many, and politically very challenging, it will nonetheless be an opportunity to practice making a widespread and tangible change with a minimal downside, since such abstention need not be at all traumatic or dangerous. In comparison, eventual survival of the level of approaching climate chaos, which grows with each day of delay, seems rather more daunting.

Those currently making a living doing ‘mow-and-blow’ landscaping can be trained in permaculture and similar work that helps meet our true physical needs: clean air and water, healthy food, cooking, comfy shelter, and plenty of sleep and exercise. Fortuitously, such a shift offers opportunities for lots of healthy food, exercise, obesity reduction, and better sleep.

Similarly, many who formerly worked in the factories that have been exported, or who have been replaced by robots, can be similarly retrained. There are enough kinds of basic survival jobs that almost everyone can find something painless to do. Working class and homeless people of all races deserve environmental justice. We all need to figure out how to afford ourselves without any fossil fuels.

A future free of fossil fuel use seems impossible to us now. Still, there are rational idealists who continue to envision such a reality, a future that can be stable and not painful. I’ve outlined such a future, to the best of my ability: http://bio-paradigm.blogspot.com/, as have others such as Richard Heinberg and Erik Ohlsen. However, the best analogy I have thought of so far for the path from here to there is—metamorphosis, based on a widespread vision.