

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

29 January 2016

Dear Chair Nichols,

Thank you for the time and effort that went into the public workshop CARB hosted on January 15th. We appreciate the Board members' and staff consideration of the following comments.

We also thank you and other California officials and staff for all your hard work and steady accomplishments, which are not celebrated frequently or vigorously enough. CARB's work continues to serve as a global model of efficacy and the California economy is proving that economic growth and environmental protection reinforce each other. Governor Brown and the CalEPA have helped to invigorate international processes, and because of this, we are seeing increased global progress in managing greenhouse gas emissions and more policy momentum than ever before.

This letter offers recommendations on the two topics covered at the January 15th workshop. In brief, our recommendations are:

(A) Economic analysis should

1. Account for benefits of smart growth using our recent research on this topic;
2. Integrate health benefits into the analysis, and;
3. Recognize the innovation and cost improvements in clean technologies that follow deployment.

(B) The state inventory should integrate cutting edge technologies more quickly to improve the monitoring of methane emissions, which CARB has recognized to be underestimated currently.

A. ECONOMIC ANALYSIS

1. **Account for the benefits of smart growth, as documented in [Moving California Forward](#).**
We urge you to use our report *Moving California Forward* to inform the Scoping Plan Analysis. This recent work takes on the topic of smart growth (roughly meaning more focused development within existing urban areas). We develop vehicle miles traveled (VMT) results with more spatially explicit structural analysis than any other relevant research. This work is the result of collaboration with the renowned urban development experts at Calthorpe Analytics.

California is expected to add six million residents between now and 2030. This is a major opportunity to counter decades of sprawl and develop the walkable, transit-oriented neighborhoods that Californians want. (See the Urban Land Institute's [New California Dream](#) (Nelson 2011) for more details about changing housing demand.) The E3 presentation at the January 15th workshop highlighted the slow turnover of the housing stock. Indeed, buildings are long lasting. However, the population growth that the state is experiencing is a powerful countervailing force that must be accounted for.

Infill development would enable the six million additional Californians to live in the more centrally located, urban neighborhoods that are increasingly in demand. Steering growth towards location-efficient areas will reduce the travel demand of new residents as well as existing residents. The dynamic of how urban form affects VMT is captured in the *Moving California Forward* report, but not represented in the E3 analysis.

Given the challenges to decarbonizing California's transportation sector, it makes sense to use all available tools. Beyond the role in carbon reduction, smart growth will deliver important co-benefits. *Moving California Forward* quantifies a range of impacts in the areas of air quality, health, water conservation, and preservation of natural and working lands, which provide carbon sequestration and other ecosystem services. The public health benefits alone due to fewer motor vehicle emissions are worth billions of dollars, and these figures do not even take into account the health improvements that would result from less sedentary lifestyles (one result of car-dependency).

There are also equity benefits. After housing, transportation is the second largest expense for typical households. Our analysis indicates that SB 375 will save the average household \$600 per year in 2030. Even bolder measures beyond the current aspirations of SB 375 would save the average household \$1400 annually by 2030 (current dollars for all monetary figures).

Our findings on infrastructure savings may be of particular interest. The state is struggling to find ways to pay for aging infrastructure. The Brown administration estimates deferred maintenance in state infrastructure at \$77 billion, most of which is for highways, bridges and roads. We estimate that infrastructure savings from smart growth could amount to \$18.5 billion (undiscounted, cumulative savings between now and

2030). There is a large research base that documents the cost-effectiveness of providing infrastructure for more focused, as compared to more sprawling, growth patterns.¹

2. Incorporate health benefits

CARB's proposed modeling approach includes a step to incorporate "Other Monetized Costs/Savings." We strongly support this step as a way to incorporate public health benefits, which must be factored in to the analysis to properly assess the impacts of proposed policies. The first Scoping Plan analysis included a separate analysis of health benefits. This effort should go further and integrate health impacts along with other impacts. If the results are not integrated, there is a danger that they will be inappropriately ignored by policymakers, the media, and the public.

Energy Innovation has analyzed the US climate commitments to 2030 using our *Energy Policy Simulator*.² Consistent with other research, our findings indicate that health benefits are very large compared to the direct costs and savings regarding energy production and use. Considering the cumulative, discounted impacts through 2030, the social benefits are 6.5 times larger than monetary impacts directly related to energy. Social benefits include avoided climate damage (valued at the social cost of carbon) and public health benefits. Public health benefits are the bulk of these, about four times as large as the climate benefits. This only captures avoided premature mortality effects and does not account for morbidity effects.

3. Recognize the innovation and cost improvements in clean technologies that follow deployment.

Climate policy analysis tends to ignore the process of technological innovation and the associated improvements in performance and cost. CARB's Scoping Plan analysis should go beyond this unfortunate convention. Scenario analysis can be used to explore a range of possible future outcomes. Recent experience has provided clear evidence of the value of deployment for reducing costs. Solar energy costs have fallen 80 percent over the last five years and wind energy costs have declined by about 60 percent over the same time period according to the respected advisory firm [Lazard \(2015, page 10\)](#). In the energy efficiency realm, LED light bulbs are a success story. Since 2008, annual installations of

¹ See for example, Smart Growth America. 2013. *Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development*. Smart Growth America: Washington D.C

² This user-friendly and transparent model can be run through a web interface available on our [website](#), which also includes modeling documentation. We are happy to provide further specifics to staff or stakeholders.

LED light bulbs have grown from less than 400,000 to more than 78 million and LEDs have dropped in price by almost 90%.³

B. IMPROVING MONITORING OF METHANE EMISSIONS

We urge steps to improve the state's inventory by improving methane emissions monitoring. The First Update to the Scoping Plan states on page 21:

“Several recent analyses of atmospheric measurements suggest that actual methane emissions may be 1.3 to 1.7 times higher than estimated in ARB's emission inventory. Recent research suggests that methane emissions from a broad variety of sources could be higher than previously expected, including leaks in natural gas distribution systems, oil and gas extraction facilities, and natural seeps such as the La Brea Tar Pits. Underestimations may explain the discrepancies between the inventory and atmospheric measurements.”

We understand that the Research Division has been working on this topic. With emerging technologies increasing the scope for data collection, now is the time for better monitoring. In addition to systematic sampling to improve the inventory, CARB's oil and gas emission standard proceeding should embrace cutting-edge monitoring technologies to ensure compliance and build up a more accurate emissions inventory. The recent Volkswagen episode emphasizes the importance of real-world data sampling.

Many thanks in advance for your consideration of these ideas. We offered many of these thoughts during the public comment parts of the workshop two weeks ago, and appreciate the opportunity to expand in this letter.

We stand ready to further discuss these comments at your request.

Sincerely,



Chris Busch

Contact information:

Phone: 415.799.2164

Email: [chrisb "at" energyinnovation.org](mailto:chrisb@energyinnovation.org)

³ Department of Energy. 2015. [6 Charts That Will Make You Optimistic About America's Clean Energy Future](#).

