ENERGY INNOVATION
POLICY & TECHNOLOGY, LLC

August 5, 2013

Michael Tollstrup
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Submitted via CARB comments webpage

RE: Scoping Plan update comments

Dear Mr. Tollstrup:

We wanted to begin by sending thanks to the CARB staff, Chair Nichols, and the Board for the great work you have already done building a low-carbon economy. California's climate programs are inspiring others to join in action. The package of policies that CARB has put together—a well-crafted suite of performance standards backed by a market-based cap to sweep up the last remaining reductions—is a model for the world. The Governor's recent mission to China was a great success, and CARB's follow-on work helping that nation launch their cap-and-trade pilot programs is just one example of the broader cooperation that is occurring. California has set the pace, globally, for a comprehensive strategy to decarbonize the economy, and to use that transformation to build new industries and more jobs. And it's a good sign that California's employment rate has improved faster than the national rate so far for the year.

There is much to be celebrated, but also more work to do, so the Scoping Plan Update is a great occasion to look around the corner. Energy Innovation LLC offers these recommendations for the Scoping Plan update, in sum.

1. ***Press forward with bold interim greenhouse gas reduction goals to provide policy regulatory certainty beyond 2020.*** Set a 2030 target that is more ambitious – requires greater reductions – than would be implied by drawing a straight line between the 2020 emission level allowable by AB 32 and 2050 reductions in Executive Order. Then work out a pathway, sector-by-sector, to reach that goal.
2. ***Improve methane emissions measurement and verification.***
3. ***Work with other relevant state agencies to set renewable electricity goals through 2030. By that time, California should aim to use renewable sources to generate the majority of its electricity (51 percent or more).***
4. ***Stay on course with transportation fuels entering the cap-and-trade program as planned in 2015 and use the revenue from auctioning these allowances to invest in public transit.***

Discussion of each of these recommendations follows:

1. ***Press forward with bold interim greenhouse gas reduction goals to provide regulatory certainty beyond 2020.***

Set a 2030 target that is more ambitious – requires greater reductions – than would be implied by drawing a straight line between the 2020 emission level allowable by AB 32 and 2050 reductions in Executive Order. A longer term goal is needed to provide certainty for longer-term low carbon investments. The technology needed to achieve deep reductions is ready; deployment will push costs down further, and; a supportive policy framework will help to grow the billion-dollar clean tech companies of the future in California. Meanwhile, the costs of delay mount with time, and the climate science has only become more certain and more worrisome since AB 32 was adopted in 2006. Now is the time to lean forward, not sit back.

In the long run, it is best if the legislature validates the Scoping Plan's longer-term emission goal, but we suggest that a useful first step is for CARB to establish a technically-sound pathway through 2030. CARB's trailblazing actions have been adopted in legislation after the fact in other instances. For example, the Scoping Plan's metropolitan carbon reduction goals were subsequently enshrined in Senate Bill 375.

Doing this work, with sector-by-sector analyses and policy strategies, is the key to accelerating the decarbonization of California's economy.

2. ***Improve methane measurement and verification.***

CARB should improve methane measurement and verification. The state's inventory and mandatory reporting data have advanced the global state of the art, but there is more work to do to get them right. We understand efforts are underway at CARB to address remaining challenges in the research division, the inventory and reporting office, and at the CEC. We know that CARB is aware of recent studies indicating that the state's methane emissions inventory is undercounted; for example, Wennenberg et al.[1] and Pielsch et al.[2] These two studies, which took place in the South Coast Air Basin, found levels of methane in the atmosphere approximately 50 percent higher than bottom-up inventory methods have suggested. The new methane detection technologies used in these studies,[3] as well as other emerging

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[1] Paul O. Wennenberg, et al. 2012. "On the Sources of Methane to the Los Angeles Atmosphere," *Environ. Sci. Technol.*, 2012, *46* (17), pp 9282–9289

[2] J. Peischl. "Quantifying sources of methane using light alkanes in the Los Angeles basin, California," Journal of Geophysical Research: Atmospheres, Vol. 118: 1–17. 2013

[3] Picarro, Inc. is a Santa Clara, CA-based company that has developed a state-of-the-art mobile (car-mounted) methane measurement tool. The device allows for quick sampling at some distance, and can not only identify the source of a leak but also estimate its magnitude. The Picarro tool has been used in studies of emission leakage throughout the natural gas system, from extraction to distribution level pipelines. For more information, visit the company's website.

technologies, will enable the next generation of regulatory procedures for inventories and mandatory reporting.

Climate change is a global problem, and CARB has always rightly sought to spur improved greenhouse gas emission management in other jurisdictions. CARB's innovation in the area of methane measurement will boost global efforts to control greenhouse gas emissions. We are witnessing a surge of interest in natural gas as a fuel, with the United States barreling ahead and others looking to follow. Methane is a powerful greenhouse gas, and its leakage from the time of extraction through processing and delivery to the end use is a problem that must be better understood and managed.

Emissions from open-air pits holding water produced during oil and gas extraction are one source deserving attention. These data are not captured in the current mandatory reporting requirements, but should be. California should also invest in studies looking at the amount of leakage that occurs after oil and gas wells have been abandoned. Industry studies have found that five percent of oil and gas wells leak from the outset due to cracked cement and these integrity problems increase over time.[4]

Though CARB faces resource constraints and cannot do everything at once, getting methane right should be a priority. Improved measurement and verification technology and institutions could open up a new set up possibilities for regulating methane pollution. CARB—once again—has the opportunity to set the example for the globe on an issue that will profoundly affect the rate and gravity of climate change. In the future, it seems possible that methane emissions could be capped and traded just as carbon dioxide emissions are today.

3. Join with the CPUC and CEC to set renewable electricity goals for through 2030.

California is the national leader in both energy efficiency and renewable energy. Having surpassed 20 percent renewables (not counting large hydroelectric or nuclear), and already having contracts signed for 33 percent by 2020, it is time to look ahead. California should have policy certainty beyond 2020, now less than seven years away. While more technical work must be done before any new requirement is put into law, the state should set its sights on achieving greater than 50 percent renewables by 2030. The scoping plan update should call for CARB to form a working group with the PUC, CEC, ISO, and DNR to set this 2030 target as well as interim targets for renewable electricity.

New utility business models, institutional arrangements, and policies are needed as we move to a modern electricity system, characterized not just by more renewables, but a new requirement to optimize across increasingly decentralized and networked resources. To accomplish this, regulation, policy, and market design will need to catch up with new technologies. In collaboration with the Energy Foundation and 150 of the nation's electricity policy experts, Energy Innovation LLC is finalizing a set of policy and market design recommendations to take advantage of new opportunities to integrate higher

[4] Watson, T.L. and Bachu, S. 2009. Evaluation of the Potential for Gas and CO_2 Leakage Along Wellbores. *SPE (Society of Petroleum Engineers) Drilling & Completion* **24** (1): 115-126. SPE-106817-PA.

shares of renewables onto the grid. The recommendations will be released as a set in the October issue of *The Electricity Journal*.

Powering the electricity grid with a high share of renewables will require that the utilities and/or the California Independent System Operator become "system optimizers," efficiently dispatching a wide range of supply and demand alternatives to meet total system demands. The utility regulations that have already decoupled profits from electricity volume sold were the crucial first step. The utilities' procurement of renewables under the Renewable Portfolio Standard and the state's net-metering policy were the second step. There are proceedings underway to add storage to the mix, and the PUC is interested in strategies to purchase fast-ramping natural gas back-up and demand-response in order to offset the variability of renewable energy.[5] These are all positive steps, and now is the time to provide greater policy certainty over a longer time horizon.

4. ***Stay on course with transportation fuels entering the cap-and-trade program as planned in 2015 and use the revenue from auctioning these allowances to invest in public transit.***

California's cities are crucial to our state's commitment to environmentally-sustainable economic growth. The Governor made this point in the 1978 state Environmental Goals and Policy Report, *The Urban Strategy.* We've reviewed that document recently, and many of the goals and strategies recommended still ring true—for example, promoting infill development. Despite their crucial role and willingness to be full partners in managing greenhouse gas emissions, cities are arguably even more revenue-starved than the state. Auction revenue should be used to support city and regional investment in public transit.

A more diverse, less car-centric transportation system is emerging in California's urban areas. Increasingly, people prefer to live in neighborhoods that don't require cars. Real estate in more centrally located neighborhoods has performed best since the great recession, and sprawling development located far from city centers has been hardest-hit by foreclosures. People want shops and services within walking distances, and the option of hopping on convenient, comfortable transit. Transit use is growing steadily. Bike ridership, including as a commute option, is taking off even more quickly than would have been predicted in places like San Francisco and Oakland. But for these trends to continue and reach great scale, for urban density to truly work, cities will need to keep improving car alternatives.

We urge that the state rebuff arguments that transportation fuels should not enter the cap-and-trade program as planned in 2015. The cap-and-trade program's broad coverage of about 85 percent of the economy is one of the outstanding features of California's program. Further, without fuels in the cap, revenue for public investment would be sharply reduced. Revenue from pollution fees is an efficient way to raise funds for valuable public transportation projects in this time of constrained public sector budgets.

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[5] One idea for giving new technologies an on-ramp into the market is described in: Gimon, Aggarwal, Harvey. *A New Approach to Capabilities Markets: Seeding Solutions for the Future.* Electricity Journal (July 2013). http://dx.doi.org/10.1016/j.tej.2013.06.002

Peter Calthorpe and colleagues have developed a state-of-the-art modeling tool that provides a robust assessment of the benefits of smarter growth, defined as including transit-oriented density and other steps to reduce dependency on cars for mobility. Calthorpe and Associates estimate that smart growth and AB 32 policies will save households over $10,000 annually (in 2008 dollars) by 2050 due to more energy efficient urban transportation and other energy savings.[6] To accomplish these benefits, the state will have to continue to invest in the transportation network of the future.

Wrapping this together

CARB, and other key agencies like the CPUC and CEC, have put in place an unsurpassed climate and clean energy policy framework. In an endeavor as far-reaching and long term as the effort to manage greenhouse gas emissions, it is important to take stock and recalibrate every few years. The Scoping Plan Update is a great occasion for this. In this memo, we have offered a number of policy steps to help the state continue to blaze the path to a prosperous low carbon future. There will be terrific positive impacts on the local environment, the economy, and global climate change. Our team at Energy Innovation: Policy and Technology LLC stands ready to provide assistance, if and as we can. Thank you for considering our input in the Scoping Plan Update drafting process.

Sincerely,

Chris Busch, Director of Research

Hal Harvey, CEO

[6] Vision California. *Charting our Future: Statewide Scenarios Report.* June 2011