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Johanna / Sara:

Thank you for putting together the team for developing a model to make use of the CO2 available in the United States and lowering the Carbon Intensity (CI) of the nation's fuel pool. Here are some broad comments which if not today, perhaps in future meetings might be relevant.

My focus is to source CO2 for Enhanced Oil Recovery (EOR) with carbon sequestration being a concurrent benefit. I believe in the coming years, constituents and the press will become increasingly aware of the significance of growing state and federal budget deficits so prioritizing government programs and projects for sequestration that have a concurrent, new revenue component (added oil revenue and taxes) will be much easier to defend when that day comes. When creating a motivation for a business person, it is important for The California Air Resources Board (ARB) to recognize that hurdles can quickly destroy incentives. For example, the risk of assuming additional regulatory burdens of an EOR project requiring Class VI federal monitoring oversight versus staying as a Class II project with state jurisdiction in the past has been the difference between a producer walking away (saying "no thanks") and moving ahead. I have seen this happen. These are 15-30+ year investments and operational commitments, so oil producers really do sometimes put quality of life before taking on a long term "opportunity" with what they perceive as excess political liability or risk, so keeping the policy risk as low as possible will incentivize many more projects to make use of CO2 to be considered.

An oil producer, more than anyone, has the highest incentive (financial motivation) to do their best to retain as much CO2 in a reservoir as possible once injected. In this case, his or her incentives are truly aligned with ARB's. Should they do a poor job and lose CO2 from the reservoir, this means their expense of purchasing additional CO2 goes up instead of making sure what they already purchased and put down hole is put to the best use. With oil at \$100 anyone can look pretty smart, but during pricing downturns, the most efficient operator will be left standing and continue the project. When developing this new CCS program, for these programs to be sustainable into the next generation, please keep this in mind. The less onerous these programs can be, the better for attracting multiple solutions and help entrepreneurs to become creative.

Also, one thing which I would encourage you to consider could be done in the near term and comes to mind through experience with ILUC (Indirect Land Use Change) theory and models in the biofuels space. Here an ILUC carbon intensity assumption (requirement) had been put forth by the modelers (GREET and others) which was quite conservative, though justifiably realistic at the time. Now, years later as more evidence has been gathered and learning occurred on all fronts, the ILUC carbon scoring has been reduced (which helps projects) as recognition and display of earned confidence in the efficiency of the industry. The sooner a conservative CCS benchmark can be put forth for sequestration through EOR, the sooner prospective developers can move forward with analytic considerations and funding discussions. In recent years one pipeline company/operator did a study indicating that of the CO2 in one entire EOR project value chain (inclusive of

pipeline/compression/injection/recirculation and reinjection) showed over 94% of the CO2 remained sequestered. If ARB in this CCS process would come out sooner than later with a CCS sequestration EOR floor, then developers and California refiners/blenders could explore economics using various long term oil price decks (assumptions) with a pretty good level of confidence. For example stating that an EOR project under Class II jurisdiction would be created with no less than an 80% sequestration credit under CCS would be a good start and economics on a variety of fronts could be pursued. Over time, this benchmark would improve as empirical evidence became more available. This benchmark (unwavering and in stone) could lead to action. This along with assurance in the program that the producers would not fall under the burden of federal monitoring for EOR projects for California ARB qualifying purposes and stay under a Class II state jurisdiction would lead to great strides toward benefits with the LCFS and generating employment, royalty and added tax revenue along with sequestration through your CCS endeavor.

Just some initial thoughts.

We realize none of this is easy and do appreciate your efforts! Thank you.

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