



May 26, 2010

Mr. Carl Bauer
California Carbon Capture and Storage Review Panel
California Energy Commission
1516 9th Street, MS 43
Sacramento, CA 95814

Dear. Mr. Bauer:

Calera welcomes the opportunity to provide comments to the California Carbon Capture and Storage Review Panel on the regulatory and legal barriers to CCS in the State of California. Calera captures carbon in a different way from typical gas separation technologies: permanently converting CO₂ emissions to CO₃ and producing carbon-negative building materials such as cement and concrete. We therefore have a unique perspective on CCS that holds great promise for California.

As you may be aware, Los Gatos-based Calera Corporation has been awarded funding for Carbon Capture and Sequestration activities from both the Department of Energy (DOE) and the California Energy Commission (CEC). We are moving forward quickly with significant technological advances at our Moss Landing Pilot Facility. The design and scale-up for this 10 MWe coal equivalent carbon capture demonstration facility has capture rates above 85% of carbon dioxide and 95% of SO₂. The Moss Landing Facility represents Calera's first complete demonstration of the formation of metastable calcium and magnesium carbonate and bicarbonate minerals by capturing carbon dioxide from flue gas and converting the gas to solid minerals that can be sold as carbon-negative building materials. Calera now refers to this process as Mineralization via Aqueous Precipitation, or MAP for short.

Another revolutionary breakthrough is Calera's ability to generate sodium hydroxide at lower energy than other competing technologies. Calera's Alkalinity Based on Low Energy (ABLE) process uses an electrochemistry process to split salt to form an alkaline solution and acid at one-third to one-fifth of the energy use of the current state-of-the-art technology. Anywhere salt and electricity are available we can make alkalinity for the MAP process. What is unique about the process is that it builds on advances in chlor-alkali and fuel cell design to reduce the energy requirements for the process. We have

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demonstrated the continuous operation at laboratory scale and have constructed a one-ton per day pilot scale system at our facility in Moss Landing. We have teamed with the world's largest supplier of advanced electrochemical cell components to accelerate the scale-up of the technology. When the pilot scale optimization is complete, the process will be readily scalable to full commercialization through the addition of more cell stacks. The product of our process is caustic (sodium hydroxide) and acid (hydrochloric acid). The caustic is used directly in the MAP process as a source of alkalinity, and the HCl can be sold, utilized, or neutralized.

The DOE/CEC funding that was awarded to Calera earlier this year is likely to be applied to a California project in the next six months to a year. This site will allow us to demonstrate this technology's ability to scale up to commercial targets.

We urge the California CCS Review Panel to formally recognize that carbon conversion process utilized by Calera and other companies as a viable sequestration option. Currently there is a policy within the state to focus on geologic and terrestrial sequestration. This policy excludes all beneficial reuse technologies. We seek recognition of our technology and similar processes that permanently convert CO₂ to marketable products. We would like to see your panel include a representative of carbon conversion as a formal member. We are happy to help you identify qualified individuals familiar with policy issues and barriers to the commercialization of this cost-effective and scalable technology.

Our second comment relates to the assistance this panel may be able to provide to help create a market that helps establish value for CO₂ mitigation which has been done with RPS but not for carbon. This could be done efficiently by adding the following to an RPS: "The CA government will source by 2020 20% of its fossil-fueled electricity generation with 50% of its CO₂ mitigated." A complimentary market-making RPS-equivalent would be in products: "The CA government will source, when available and at market pricing, carbon neutral or negative building materials in CA state infrastructure." Carbon-negative building materials are not directly addressed in any forum that we are aware of. We urge the panel to recommend that sources creating CO₂ neutral or negative products get reduction or offset credits for both the emissions prevented at their facilities but also for those that would have resulted in the use of carbon intensive conventional materials.

For example, if a power plant captures a ton of carbon dioxide and converts it to two tons of a cement product, that source should get credit for the initial emissions captured and for the emissions that would have resulted from the production of conventional cement. Since Portland cement manufacturing produces roughly one ton of CO₂ for each ton of cement, this would prevent a total of three tons of emissions into the atmosphere.

Each of these suggestions will demonstrate that CCS is broader than simply gas separation and geologic storage. This will improve public acceptance of the CCS in general and will

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help break down some of the regulatory and legal barriers facing CCS. Moreover, most of those barriers are related to transport and storage of CO₂ gas and the liabilities associated with those steps. Carbon conversion avoids the thorny issues of transport and underground storage entirely.

Again, we appreciate the opportunity to provide these comments. Please contact me if you have any questions or thoughts on our suggestions.

Sincerely,



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