

**DOCKETED**

<b>Docket Number:</b>	19-SB-100
<b>Project Title:</b>	SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future
<b>TN #:</b>	230970
<b>Document Title:</b>	George Peridas - Joint comments on Joint Agency SB100 Report Workshop of November 18, 2019
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	George Peridas
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	12/2/2019 4:26:43 PM
<b>Docketed Date:</b>	12/2/2019

*Comment Received From: George Peridas*  
*Submitted On: 12/2/2019*  
*Docket Number: 19-SB-100*

**Joint comments on Joint Agency SB100 Report Workshop of November 18, 2019**

*Additional submitted attachment is included below.*

December 2, 2019

**Re: SB 100 Joint Agency Report: Charting a Path to a 100% Clean Energy Future, Docket No. 19-SB-100**

Dear Chair Hochschild, Chair Nichols and Commissioner Randolph,

Thank you for the opportunity to comment on the Joint Agency Workshop on the Senate Bill 100 (SB 100) Report of November 18, 2019. The undersigned represent a large and diverse array of energy producers, researchers, analysts, environmental NGOs, labor unions, power producers and utilities. We have a common interest in promoting solutions that can help California attain its mid-century climate goals. In this context, we offer comments on the interpretation of “zero-carbon resource” by the California Energy Commission, Air Resources Board and Public Utilities Commission, as referenced in SB 100.

In our joint comments from September 19, 2019, we recommended that electricity generation projects that produce electricity with zero carbon emissions through the use of carbon capture and sequestration (CCS) technology should be considered eligible “zero-carbon resources” under SB 100. We reiterate this recommendation and commend staff for including natural gas-fired generation with CCS where greenhouse gas emissions are zero in the proposed resource scenarios. However, we urge a broader consideration of the suite of ways in which CCS could lead to zero-carbon generation, using carbon accounting tools that are well established by state agencies.

**CCS as a zero-carbon electricity source**

As we explain in more detail in our joint comments from September 19, 2019, CCS is a deployment-ready suite of climate mitigation technologies that capture the CO<sub>2</sub> from the flue streams of power plants and industrial facilities, preventing them from entering the atmosphere via safe, secure and permanent sequestration deep underground.

There are several ways in which CCS could deliver zero-carbon power, consistent with the objectives of SB 100. One way is through a natural gas-fired power plant with carbon capture & sequestration. We presume that this is the case that the staff presentation from November 18, 2019 refers to as “[n]atural gas generation with CCS where GHG emissions=0.” However, there are several other ways in which the power generation could be zero-carbon, or even carbon-negative. These include:

- Blending fossil natural gas with biomethane at a conventional power plant and capturing (some of) the produced CO<sub>2</sub>;
- Blending fossil natural gas with H<sub>2</sub> that has been produced with zero or even negative carbon emissions at a conventional power plant and capturing (some of) the produced CO<sub>2</sub>;
- Generating electricity using only H<sub>2</sub> fuel that has been produced without carbon emissions using carbon capture technologies;
- Generating electricity using waste biomass as a fuel and capturing (some of) the produced CO<sub>2</sub>; or

- Generating electricity and simultaneously providing the energy (heat and electricity) needs of a co-located direct air capture facility, while permanently sequestering the produced and captured CO<sub>2</sub>.

Establishing whether these, and potentially other, approaches meet, exceed, or fall short of the zero-carbon benchmark will require the inclusion of carbon accounting considerations. However, the Air Resources Board has a long track record of making such considerations under the Low Carbon Fuel Standard program, and has an established framework for doing so. We recommend that the same approach be followed for the purposes of establishing whether a resource is zero-carbon under SB100, while applying a uniform carbon accounting treatment that draws the envelope in the same way for all eligible resources.

### **Consideration of scenarios**

We understand that the proposed resource scenarios presented during the November 18, 2019 workshop are for discussion purposes only. We offer the following recommendations and observations as staff considers further refining these scenarios:

- At least one scenario should cover the broadest spectrum of eligibility possible, consistent with the approaches that could result in zero-carbon electricity using CCS above, and any more that may be possible;
- Scenarios that contain eligibility combinations that are considered likely for adoption should be modeled explicitly;
- Scenarios that are not considered likely for adoption should be pursued as a benchmark for cost and other comparisons, and should be designed as baselines against which to compare more likely scenarios.
- One scenario should pursue the least-cost pathway to zero-carbon electricity by 2045, without imposing technology constraints.

We thank staff for its continued work on this important topic, and stand ready to provide technical information and data for modeling purposes as needed.

Respectfully submitted,

**Jeffrey Bobeck**, Director of Energy Policy Engagement, Center for Climate and Energy Solutions

**Myles Culhane**, Assistant General Counsel, Occidental Petroleum Corporation

**Kim Do**, Director of Financial Planning & Analysis, White Energy Holding Company, LLC

**Tim Ebben**, Principal Carbon Relations Advisor, Shell

**Ken Haney**, Manager EOR & Carbon Capture and Storage, California Resources Corporation

**Eric Hoffman**, President, Utility Workers Union of America Local 132 AFL-CIO

**Deepika Nagabhushan**, Program Director - Decarbonized Fossil Energy, Clean Air Task Force

**Justin Ong**, Program Director, ClearPath

**George Peridas**, Director, Carbon Management Partnerships, Lawrence Livermore National Laboratory

**Gaylan Z. Prescott**, Director, United Steelworkers (USW) District 12

**Tom Willis**, Chief Executive Officer, Conestoga Energy Partners, LLC