

**CALIFORNIA ALTERNATIVE ENERGY AND
ADVANCED TRANSPORTATION FINANCING AUTHORITY**
Meeting Date: August 25, 2010

***Policy Review of Sales and Use Tax Exclusion Program for Renewable Energy Generation
Projects***

Prepared By: *Alejandro Ruiz and Heather Williams*

Summary. At the July 28, 2010 California Alternative Energy and Advanced Transportation (CAEATFA) Board meeting, the Board directed CAEATFA Staff (Staff) to draft a policy to grant sales and use tax exclusions (STE) for renewable energy generators. The Board provided further direction to Staff to work with the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC) in identifying technologies that quickly advance renewable energy goals of the State, provide quality baseload generation¹, and target economically distressed areas within the State.

Background. There has been significant interest from stakeholders for CAEATFA to grant STE's for renewable energy generation projects. This issue was initially brought to CAEATFA's attention in 2004 when CE Obsidian Energy LLC inquired to CAEATFA about a STE under existing California Revenue and Taxation and Public Resources Codes (CRTC and PRC, respectively). No action was taken on this inquiry.

In 2008 after the Board directed Staff to process and evaluate applications associated with zero emission vehicles for purposes of an STE, there was renewed interest in a similar policy for generators because the Board did not preclude evaluations of renewable energy projects described in PRC 26003(g)(1). At the July 28th, 2010 Board meeting, the Board instructed Staff to examine potential renewable energy technologies and develop eligibility and evaluation criteria that would advance existing State policy goals and also produce a net benefit for the State.

Staff believes that it is the Board's intent that this generator policy and any subsequent action taken on this policy will not delay the implementation of Senate Bill (SB) 71. Moreover, any generator policy implemented will likely trail closely behind the current implementation of SB 71.

CAEATFA's purpose is to provide financial assistance for projects of alternative energy and advanced transportation.² Under CRTC 6010.8, CAEATFA can provide financial assistance in the form of sales and use tax exclusions to participating parties with qualified projects. A generator policy would consider projects found under PRC §26003(g)(1), which defines a project as including:

“...any land, building improvement thereto, rehabilitation, work, property, or structure, real or personal, stationary or mobile, including, but not limited to, machinery and equipment, whether

¹ A baseload power plant operates most hours of the year in order to meet the expected minimum energy demand.

² Public Resources Code §26001.

or not in existence or under construction, that utilizes, or is designed to utilize an alternative source.”

Though CAEATFA is able to grant STEs to a wide range of projects to further develop renewable energy sources and assist with many of the State’s policy goals, the Board directed CAEATFA Staff to exercise prudence in deciding which types of projects are eligible given the State’s fiscal condition and the broader economic environment.

Analysis. In developing a recommendation, Staff analyzed renewable energy sources through the lens of economic development and the State’s central policies for reducing GHGs and increasing renewable energy generators: Assembly Bill (AB) 32 and the Renewable Portfolio Standard (RPS). The Board had directed Staff to also consider the issue of grid integration, however, upon discussion with CEC and CPUC Staff, it was determined that grid integration poses more of a long term potential obstacle once renewable energy generation meets a significant portion of energy demands.

AB 32 and RPS as a framework for Renewable Energy Generation policy: Renewable energy generation sources will help reduce the State’s greenhouse gas (GHG) emissions, in accordance with AB 32, the Global Warming Solutions Act, signed into law by Governor Schwarzenegger in 2006. AB 32 requires the reduction of GHGs to 1990 levels by 2020, which is approximately a 30% reduction in emissions from the business as usual estimates.³ Electrical generation accounted for 30% of GHGs in 2008, second only to the transportation sector.⁴ According to the Air Resources Board Scoping Plan, energy imported from other states contributes more than half of total emissions attributed to the electricity sector “because much of the imported electricity is generated at coal-fired power plants.”⁵ Appropriate renewable energy sources are essential for replacing fossil fuel based generators, such as coal, that produce a considerable portion of total GHG emissions.

An increase in the number of alternative energy generation sources will also help the State meet its RPS, which requires the State to meet 20% of its energy needs with renewable sources by 2010 and 33% by 2020. A 33% RPS could satisfy nearly 12% of the total GHG reductions required by AB 32.⁶ Furthermore, a diverse mix of renewable energy sources foreseen in many RPS scenarios would increase energy independence, in addition to reducing emissions.⁷ The State’s RPS is one of the most ambitious in the country, and a STE for alternative energy generators could be a useful policy tool in further incentivizing investment in renewable sources that qualify for the RPS to help reduce emissions from fossil fuel generators.⁸

Renewable Energy Generators: AB 32 and the RPS aim to mitigate climate change through reducing GHG emissions, which is accomplished, in part, by using less fossil fuel based

³ “Scoping Plan,” *Air Resources Board*. <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>

⁴ “Greenhouse Gas Inventory,” *Air Resources Board*. http://arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-08_2010-05-12.pdf .

⁵ “Scoping Plan,” 12.

⁶ <http://www.cpuc.ca.gov/NR/rdonlyres/1865C207-FEB5-43CF-99EB-A212B78467F6/0/33PercentRPSImplementationAnalysisInterimReport.pdf>

⁷ Ibid.

⁸ <http://www.cpuc.ca.gov/PUC/energy/Renewables/overview.htm>

electricity generation, such as coal or natural gas. The State relies on fossil fuel based sources because of its baseload generation ability, high capacity factor⁹ and low costs. To fully transition away from fossil fuel sources as much as possible, it is necessary to identify renewable energy generation technologies that closely resemble traditional fossil fuel generation technologies in their ability to provide baseload generation at a high capacity factor.¹⁰ Essentially, suitable technologies should be commercialized for lower costs; have the ability to be implemented quickly; and be able to fulfill baseload generation demands. Therefore, staff considered only renewable energy generation sources with high capacity factors similar to those of fossil fuel based sources, such as coal, which has a capacity factor of approximately 80%. Based on the analysis, those renewable energy generation sources with at least a capacity factor of 80% will be the most helpful in displacing fossil fuel based sources.

To provide a general sense of which technologies would be eligible for the STE based on capacity factor, Staff examined the following technologies:

	Energy Generation Source ¹¹	Capacity Factor ¹²
Renewable Sources	<u>Wind</u> : blades of the wind turbine capture the kinetic energy of wind to turn a gearbox connected to a generator for electricity production.	37-42% ¹³
	<u>Solar PV</u> : photovoltaic material, such as that found in solar panels, converts energy contained in photons of light into an electrical voltage, which can then be used to generate electricity.	27%
	<u>Solar Thermal</u> : also known as concentrating solar power (CSP), which uses mirrors to reflect and concentrate sunlight onto receivers that collect the solar energy and convert it to heat. This heat can then be used to produce electricity by passing it through a turbine driving a generator.	27-65% ¹⁴
	<u>Geothermal</u> : the most commercially viable geothermal resources are vapor and liquid dominated. Heat from the earth, in the form of vapor or liquid, is captured and passed through a turbine to generate power.	90-94%
	<u>Hydroelectric</u> : power is generated by capturing the kinetic energy of water as it moves from a higher elevation to a lower elevation by passing it through a turbine.	52%
	<u>Biomass</u> : the two primary methods for using Biomass are combustion and gasification. Combustion burns biomass feedstock materials, for example crop residue, using a variety of burner/boiler technologies also used to burn materials such as coal, oil, and natural gas. Gasification transforms biomass feedstock into synthetic gas in a reactor vessel prior to its introduction and combustion in a gas turbine generator set.	75-90%
	<u>Biogas Gas</u> : degradation of organic material creates gas that is collected and burned in a turbine. Includes landfill gas as well as anaerobic digesters.	85%
	<u>Coal</u> : extracted from the earth and combusted in a turbine to generate electricity. ¹⁵	80%

⁹ A capacity factor is the ratio of actual energy produced in a given period, to the hypothetical maximum possible for a given power plant.

¹⁰ Scoping Plan

¹¹ O'Donnell, Charles, Pete Baumstark, et. al., *Renewable Energy Cost of Generation Update* (Oakland: KEMA, Inc., 2009) . Prepared by KEMA for California Energy Commission. <http://www.energy.ca.gov/2009publications/CEC-500-2009-084/CEC-500-2009-084.PDF>

¹² Ibid., 16.

¹³ A high capacity factor is dependent on a site with optimal wind resources – most do not fall in this range.

¹⁴ The high end of this range is represented by solar thermal systems that utilize storage technologies.

¹⁵ Coal is not a renewable source. It is presented on this table as a reference point for fossil fuel generation sources.

Unemployment Relief: With the State, and country, recovering from one of the most severe recessions in decades and many counties throughout the State experiencing double-digit unemployment levels, providing relief to areas hit hardest by the downturn is vital to ensure an effective and steady economic recovery. *Staff recommends that projects be located in counties at 125% of the statewide unemployment rate average or higher, according to the average unemployment rate for the preceding year established from California Employment Development Department (EDD) data.*¹⁶ This unemployment rate requirement is consistent with other State Treasurer’s Office programs that award financial assistance. As of June 2010, the average unemployment rate for the State for the preceding year was 12.3%. Twenty counties had an unemployment rate of at least 125% of the statewide average for the preceding year, which is currently equal to a 15.3% unemployment rate or higher (Attachment A). *Staff also recommends that the Board retain the ability to waive the unemployment rate threshold in certain circumstances if it is in the best interest of advancing renewable energy goals as well as economic development in distressed areas of the State.*

Board Discussion. Staff suggests that the following criteria be considered by the Board to determine eligibility for a focused STE program for renewable energy generators. In developing criteria, an effort was made to target renewable energy generators that will continue to advance AB 32 and RPS goals by displacing fossil fuel energy generation sources, provide base load generation, and contribute to economic development in severely distressed areas within the State. **This eligibility criteria is intended to result in a focused STE program, consistent with AB 32 and RPS goals, while exercising prudence in extending STEs given the State’s financial condition.**

1. Capacity Factor: select technologies that will replace a portion of fossil fuel based generation. Staff suggests that projects considered for STEs provide base load generation ability with a capacity factor of greater than or equal to 80%.
2. Unemployment Relief: make certain that areas which have felt the deepest impacts of the recession are uplifted with the help of a renewable energy generator STE. Projects to be considered should be located in counties at 125% of the statewide unemployment rate average or higher, according to the average unemployment rate for the preceding year established from EDD data. However, staff recommends that the Board retain the ability to waive the unemployment threshold in certain circumstances if it is in the best interest of advancing renewable energy goals as well as economic development in the State.
3. Scheduled Policy Review: Staff suggests the Board revisit the renewable energy generator policy in approximately 2 years (or as necessary) to formally review the impact of the program and provide further direction to staff to revise the policy and/or determine additional policy goals to expand the program.

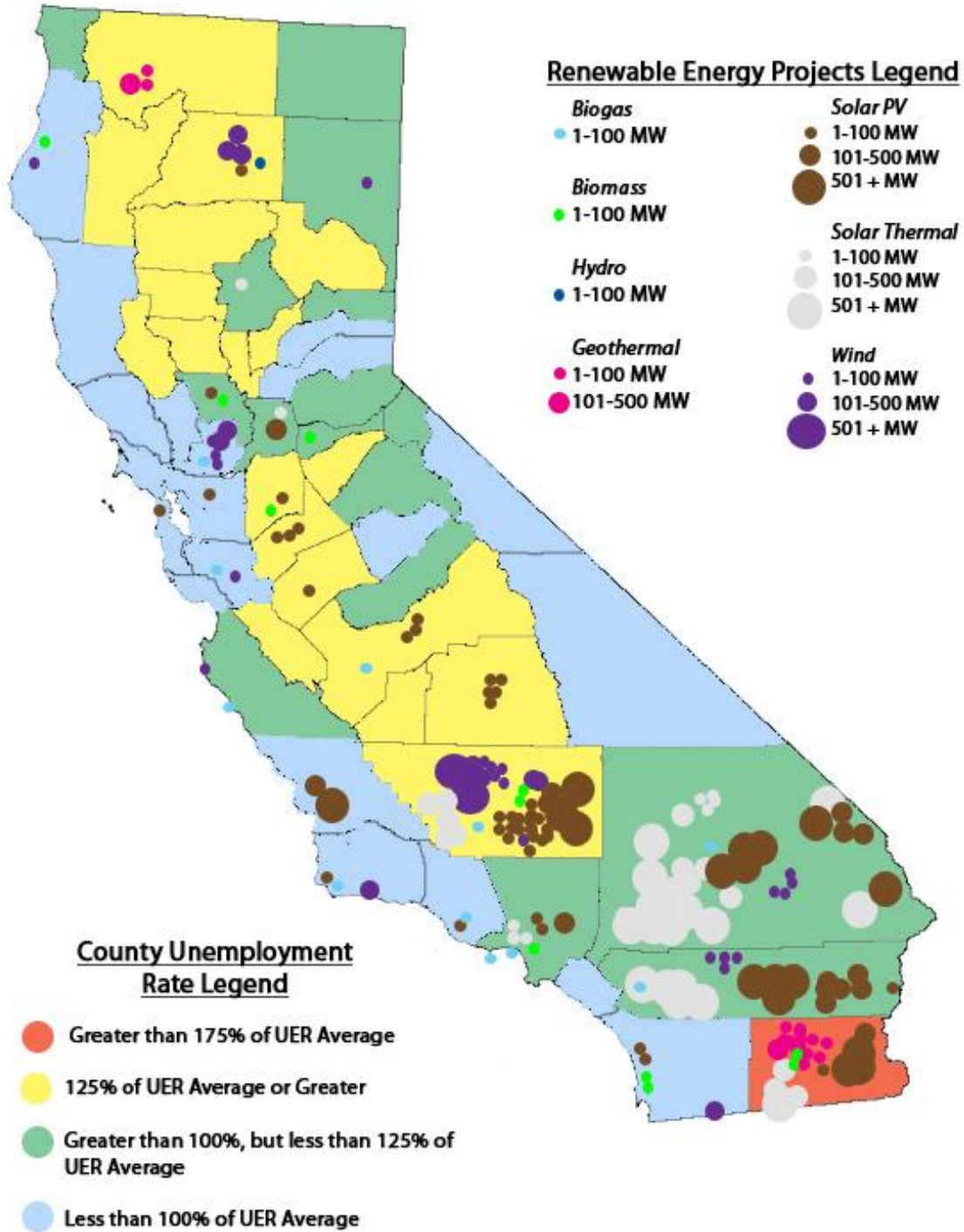
Evaluation Criteria: Staff recommends using a net benefits test similar to that which is being developed for the SB 71 STE program with slight modifications for the purposes of evaluating renewable energy generation. Development of this renewable energy generation policy will not impede the progress of SB 71.

¹⁶ Employment Development Department Data, <http://www.labormarketinfo.edd.ca.gov/?pageid=131>

Agenda Item – 4.A.

Future Policy Discussion: In developing the policy for renewable generators, a suggestion was made to perhaps consider extending STEs to generators who purchase equipment from California companies. Staff agrees that this would further encourage economic activity with the State. In an effort to be responsive to this suggestion, because we believe it merits further discussion, staff recommends the Board consider this in the context of future policy development in granting STEs to renewable energy generators.

County Unemployment Rate (UER) Average from the Past Year versus the Statewide UER Average from the Past Year and Projected Renewable Energy Projects



Note: From July 2009 to June 2010, the UER Average was 12.3%. 125% of this rate is 15.3% unemployment.

Source: For Renewable Energy Projects, see Renewable Energy Action Team, CEC, 7/29/2010 – <http://www.energy.ca.gov/33by2020/documents/index.html>