

Renewable Electricity Standard Economic Analysis Update

The purpose of this document is to update stakeholders on the economic analysis of the Renewable Electricity Standard (RES) that the Air Resources Board (ARB or Board) will be proposing in 2010. The rulemaking and the associated analysis will be completed in coordination with the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), the California Independent System Operator (CAISO), and other stakeholders.

Currently, ARB is working with Energy and Environmental Economics (E3) and the energy agencies to completely define each RES plausible scenario and the load modifiers that they entail. Once this step is complete and the resource mix for each scenario is established, the full economic impacts of RES can be calculated.

The economic impact methodology will evaluate the changes in business and residential monthly bills and the effects on business creation, competitiveness and employment that may result from a change in electricity costs due to RES. This change will be evaluated as the incremental impact of RES compared to a 20% Renewable Portfolio Standard (RPS) baseline scenario. Economic analysis for the proposed RES regulation is required by law, and will at a minimum include:

- Assessment of impacts on California business creation, expansion, or elimination as a result of the proposed regulation;
- Assessment of whether the proposed regulation will create or eliminate jobs;
- Estimates of impacts on affected individuals in California;
- Determination of impacts on small businesses;
- Determination of California business competitiveness with other states;
- Assessment of the cost impacts to determine that activities undertaken to comply with the regulations do not disproportionately impact low-income communities.

To assess these impacts, ARB staff, in consultation with CPUC and E3, will use a variety of models. To estimate the cost of implementing RES, the 33% RPS Calculator¹ developed by E3 and CPUC will be used. Outputs from the Calculator, as described below, will be input into the Environmental Dynamic Revenue Analysis Model (EDRAM) to assess business, employment, and other

¹ The Calculator and further information are available at the CPUC web site at <http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/33implementation.htm>.

macroeconomic impacts of RES on the state. Cost outputs from the 33% RPS Calculator will also be used as inputs into a Rate Impact calculator developed by the CPUC. This will estimate the rate impacts on individuals and businesses in California resulting from the incremental impact of going from 20% RPS to 33% RES.

ARB is working with E3 to update their 33% RPS Calculator with load estimates consistent with those in the CEC's 2009 Integrated Energy Policy Report². The Calculator will be used to estimate the resource mix and costs associated with reaching a 33% RES by 2020 relative to the current 20% RPS. This analysis will involve considering several scenarios for reaching the 33% RES and develop estimates of the costs associated with attaining this goal under various compliance scenarios. Some of the costs that will be considered are:

- Capital cost of constructing energy resources;
- Energy market value of resource output;
- Intermittent energy integration cost;
- Cost of transmission line infrastructure;
- Potential costs associated with tradable renewable energy credits, if allowed within the scope of the regulation;
- Potential cost or revenue impacts from the auction of CO2 allowances by State or Federal governments.

The money invested in new renewable generation as a result of RES are then broken down and attributed to industry sectors based on resource mix. For example, generating wind energy may stimulate activity in Sector A and Sector B whereas generating energy from biomass may stimulate activity in Sector C and Sector D. A decline in any industry sector activity, as a result of RES, will also be considered as part of this analysis. The industry sector activity that occurs in California is input into the Environmental Dynamic Revenue Analysis Model (EDRAM) to estimate the economic impacts of RES on the entire state. These impacts include:

- Business creation, expansion, or elimination;
- Job creation or elimination;
- Small business impacts;
- Competitiveness of California business.

² More details on the 2009 Integrated Energy Policy Report can be found on the CEC web site at http://www.energy.ca.gov/2009_energypolicy/index.html

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Impacts on various groups of rate payers will also be analyzed for the different compliance scenarios.

A description of the economic analysis methodology as well as the results will be discussed in the draft staff report for RES. The economic analysis modeling efforts and expected completion dates are shown below in Table 1.

Table 1. RES Economic Analysis Projected Completion Dates

Task	Deliverable	Date
Complete 33% RPS Calculator updates	33% RPS Calculator ready for RES scenario modeling	March
Cost Analysis	Incremental cost results from 33% RPS Calculator	March
Economic Impact Analysis	Results from E-DRAM modeling	April
Staff Report	All results and methodology for economic analysis of RES	June