

Attachment 1: Description of Emission Reduction Measure Form

Please fill out one form for each emission reduction measure. See instructions in Attachment 2.

Title: Establishing in law a 33% Renewables Portfolio Standard by 2020

Type of Measure (check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Direct Regulation | <input checked="" type="checkbox"/> Market-Based Compliance |
| <input type="checkbox"/> Monetary Incentive | <input type="checkbox"/> Non-Monetary Incentive |
| <input type="checkbox"/> Voluntary | <input type="checkbox"/> Alternative Compliance Mechanism |
| <input type="checkbox"/> Other Describe: | |

Responsible Agency: CPUC, CEC

Sector:

- | | |
|---|--|
| <input type="checkbox"/> Transportation | <input checked="" type="checkbox"/> Electricity Generation |
| <input type="checkbox"/> Other Industrial | <input type="checkbox"/> Refineries |
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Cement |
| <input type="checkbox"/> Sequestration | <input type="checkbox"/> Other Describe: |

2020 Baseline Emissions Assumed (MMT CO₂E): 100.095 MMTCO₂E (ARB 2004 estimate for electricity generation)

Percent Reduction in 2020: 14.2%

Cost-Effectiveness (\$/metric ton CO₂E) in 2020: \$7.04/MTCO₂E

Description: Expanding the existing California Renewables Portfolio Standard ("RPS") to 33% by 2020 for all of the state's retail electricity providers would result in significant greenhouse gas ("GHG") reductions and other benefits to the state at low cost. A 33% RPS that is applied on a statewide basis would provide more than ten percent of the total emissions reductions identified in the Public Review Draft of the Updated Macroeconomic Analysis of the Climate Strategies Presented in the March 2006 Climate Action Team Report ("Updated Macroeconomic Analysis"). In addition, a 33% RPS would provide substantial economic development and employment benefits to California while promoting air quality, improving fuel diversity, and substantially reducing energy consumers' exposure to volatile natural gas prices. Governor Schwarzenegger has already acknowledged these benefits in establishing the 33% RPS as a state policy goal that is included in the Energy Action Plan. Since AB 32 was passed in 2006, two of the state's largest publicly owned utilities ("POUs") have committed to meeting at least a 33% by 2020 RPS. Earlier this year, the Los Angeles Department of Water and Power committed to a 35% by 2020 RPS, making it the cornerstone of a comprehensive

plan to reduce its GHG emissions, and Burbank Water and Power recently adopted a 33% by 2020 RPS.

A 33% RPS is compatible with a GHG cap-and-trade program, and it is a necessary complement if we believe that renewables are, as the work of the Climate Action Team indicates, necessary to achieve our GHG goals. Establishing the 33% RPS in law is necessary because it provides the market certainty that investors require to continue to invest in the development of renewable energy resources. As importantly, it will provide clear direction to the California Independent System Operator (ISO) that it must plan the state's transmission system to accommodate renewable resources. The current inadequacies of California's transmission system, and the 5- to 8-year lead-time required to develop transmission, will be the chief reason that the 20% RPS is met a few years late and is the reason that a 33% renewables requirement must be established if our AB 32 goals are to be met.

The existing RPS policy has resulted in little or no impact on consumer rates. The vast majority of the contracts signed to date have been priced below the benchmark price for conventional generation (known as the "market price referent" or MPR). The RPS is itself a market-based regulation because it enables utilities and other retail sellers to determine which renewables to purchase based on the value they provide, and developers compete for contracts; in addition, the CPUC has the authority to allow utilities to meet their RPS compliance obligations through the purchase of tradable renewable energy credits instead of, or in addition to, purchasing physical renewable power.

Increasing the RPS to 33% will provide a stable, long-term business environment for the thriving clean energy technology industries, which already have invested several billion dollars in renewable energy technology research and development in California. This investment is demonstrated in part by the 40,000 MW of renewable energy projects whose developers already have filed applications to interconnect to the transmission system – an amount that is large enough to supply some 40% of the state's electricity needs using a variety of resources and technologies. The market-based 33% RPS policy will result in continued technology innovation in the electric sector that will be critical for achieving both the state's AB 32 emissions cap in 2020 and the much deeper emissions reductions that are required beyond 2020.

Emission Reduction Calculations and Assumptions: The Updated Macroeconomic Analysis provides emission reduction estimates for the 33% RPS for both POU and IOUs. The report estimates 6.0 MMTCO₂E of reductions for POU and 8.2 MMTCO₂E of reductions for CPUC-jurisdictional utilities in 2020. Adding these together yields 14.2 MMTCO₂E of total reductions from all of the state's retail electricity providers in 2020.

Cost-Effectiveness Calculation and Assumptions: The cost of the measure is assumed to be \$100 million in 2020, which is the figure provided for the CPUC 33% RPS in the Updated Macroeconomic Analysis. The Updated Macroeconomic Analysis assumes that implementing the POU RPS will not result in incremental costs. Dividing

\$100 million by 14.2 MMTCO₂E results in a cost-effectiveness metric of \$7.04/MTCO₂E in 2020. Though only a preliminary estimate, this suggests that the 33% RPS can provide significant GHG reductions at minimal cost.

Implementation Barriers and Ways to Overcome Them: The RPS policy is already established and generally is functioning well, with the notable exception of the lack of transmission capacity as discussed above. There should be no significant implementation barriers to the 33% RPS itself other than its adoption: current statute prevents the CPUC from implementing the Energy Action Plan's 33% RPS goal because it bars the CPUC from requiring investor-owned utilities to exceed the 20% RPS requirement. Additionally, the statute allows POUs significant flexibility in designing and implementing their own RPS programs, and their compliance is self-enforcing. Therefore, the legislature must place an enforceable 33% RPS into law to enable and ensure the further development of renewables. Some standardization of the state's RPS program across all retail electricity providers will also improve overall cost effectiveness by facilitating renewable electricity credit trading.

In addition, as mentioned above, a 33% RPS for all retail providers will provide a solid foundation on which the state's transmission planner and grid operator, the California ISO, can plan the grid to meet this goal. While the ISO has no obligation to plan the grid for renewables, nor is it directly accountable to the state, it is responsible for planning the grid to meet the needs of the state's utilities. Thus, if the state's utilities have an obligation under state law to purchase renewables, the ISO is obligated to plan accordingly. This planning will require close coordination with the CPUC and POUs to ensure that the entire electricity system is planned and operated in a way that complements, rather than conflicts with, the characteristics of renewable resources, which are generally non-dispatchable. Research studies commissioned by the Energy Commission suggest that the state's existing electricity system, if bolstered by transmission upgrades and prudent resource planning, can readily accommodate 33% renewables with minor changes to its operation and infrastructure. The planning to support the 33% RPS need not be legislated; the state agencies possess the necessary tools. However, it is essential that the 33% goal itself be adopted in statute.

With two primary cornerstones – the expanded RPS and transmission planning – the market can be expected to meet the 33% renewables goal at the least possible cost.

Potential Impact on Criteria and Toxic Pollutants: Because the 33% RPS will displace conventional fossil fuel-burning generation with renewable energy resources that are largely emissions-free, it will result in substantial reductions in criteria pollutants, particularly NO_x and PM. The Updated Macroeconomic Analysis provides electricity emission factors of 0.018 kg/MWh for NO_x and 0.018 kg/MWh for PM 10. Assuming that the 33% RPS results in 36,000 GWh of incremental renewable energy in 2020 (21,000 GWh from CPUC-jurisdictional utilities and 15,000 GWh from POUs, derived from data in the Updated Macroeconomic Analysis), the measure would provide approximately 648 metric tons of NO_x reductions and 648 metric tons of PM 10 reductions.

Name: Cliff Chen (Union of Concerned Scientists)
Nancy Rader (California Wind Energy Association)
Tam Hunt (Community Environmental Council)

Organization: Union of Concerned Scientists
California Wind Energy Association
Tam Hunt (Community Environmental Council)

Phone/e-mail:	Cliff Chen (510) 843-1872 cchen@ucsusa.org	Nancy Rader (510) 845-5077 nrader@calwea.org	Tam Hunt (805) 963-0583 thunt@cecmail.org
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