

## **Attachment 1: Description of Emission Reduction Measure Form**

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

**Title: Accelerated Zero-Carbon Energy Procurement - Lowest Environmental and Economic Cost Energy Planning**

**Type of Measure (check all that apply):**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Direct Regulation             | <input 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: <b>Planning Function</b> |   |

**Responsible Agency: CPUC, CEC and ISO**

**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 CO<sub>2</sub>E): 100.095 MMT CO<sub>2</sub>e**

**Percent Reduction in 2020: 36.3% (assuming the RPS, municipal utility, CSI and IOU efficiency program projections in the Updated Macroeconomic Analysis)**

**Cost-Effectiveness (\$/metric ton CO<sub>2</sub>E) in 2020: unknown**

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**Description:** The three policies that have the greatest impact on utility electric resource planning and procurement now and in the future are the complementary policies to reduce overall greenhouse (GHG) gas emissions to 1990 levels, acquire all cost-effective energy efficiency, and increase renewable generation to 33% of retail sales, by 2020. The long-term goal of 80% reductions in GHG emissions below 1990 levels by 2050 ensures that carbon-constrained energy procurement will be the focus well into the future. Achievement of GHG reduction targets in the electric sector must be based on robust plans that are based on all of the following:

- 1) Greenhouse gas emissions reductions requirements for 2020 and targets for 2050;
- 2) Maximization of peak load reducing resources to minimize the need for peaking power. These resources include high-efficiency cooling and ventilation systems, ice

and other storage technologies, lighting, solar air conditioning, demand response, and solar photovoltaics;

3) Resource adequacy and local capacity needs; and,

4) Development and procurement of renewable energy resources sufficient to achieve at least a 33% renewable penetration in 2020.

The current electric resource planning and procurement process must be adapted in two ways, in order to maximize zero and near-zero carbon energy resources to achieve the AB 32, all cost-effective energy efficiency, and the 33% renewables policies at the least environmental and economic cost.

First, all electricity providers in the state should be required to submit plans to achieve a resource mix sufficient to comply with AB 32 targets from now through 2020. These plans must rely on existing or nearly market-ready technology that can be sited in California, or procured by California electricity providers from out of state, under existing law.

Second, all electricity providers in the state should be required to maximize the utilization of zero-carbon energy resources on their systems, while meeting reliability and locational capacity requirements. To achieve this, utilities would transition to energy planning and procurement more strongly focused on energy and associated CO<sub>2</sub>e emissions, than on capacity as is currently the case, as emissions are a function of energy generation. To calculate the potential carbon emissions reductions available from building supply around energy resources, the relevant state agency, either the CEC or the CARB, could invest in economic research and modeling and demonstration projects to establish the applicability and scope of such a new approach.

There is some concern over how to incorporate increased penetrations of intermittent renewables - wind and solar. There are many ways to approach this question. Large-scale renewables projects can be organized, geographically distributed and managed to reduce intermittency of wind and solar in several ways. The generation profiles of wind and solar resources are potentially complementary. Wind integration studies of Minnesota, New York, California and other US and European utility systems have found existing utility systems to have sufficient flexibility to accommodate penetrations of intermittent renewables up to about 20%. But as such penetrations become larger, balancing generation supply with customer load will require more dispatchable generation, which is likely to be gas-fired. Resource plans should also consider storage and non-storage alternatives to incorporating intermittent renewables into the system.

The electricity providers should be required to report their plans to all state energy agencies and the CARB. These plans should be used to guide resource development and demand-side management investments.

**Emission Reduction Calculations and Assumptions:** The changes in planning described in this proposal will yield to greater reductions over time. For 2020, we have assumed the emissions reductions for utility programs listed in the Updated Macroeconomic analysis. These are: 8.2 MMT CO<sub>2</sub>e for IOU RPS, 18.0 for the Comprehensive Municipal Utility Program, 0.92 for the California Solar Initiative, and 9.26 for IOU energy efficiency programs. These total 36.38 MMT CO<sub>2</sub>e, or 36.3% reductions below sector baseline in 2020.

**Cost-Effectiveness Calculation and Assumptions:** unknown

**Implementation Barriers and Ways to Overcome Them:** The establishment of the policy itself will likely be the largest barrier. The process for producing plans, harmonizing assumptions and discussions over the status of technology and depiction of costs and other factors, will likely be done through a joint CEC/CPUC proceeding. There will be disagreement between parties. Some adjustments will likely be needed to the plans, which can occur over time.

**Potential Impact on Criteria and Toxic Pollutants:** Displacing natural gas burning generation with energy efficiency, demand side management, and renewable energy resources will result in substantial reductions in all criteria air pollutants, especially nitrogen dioxide (NO<sub>x</sub>).

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