



**(This is a Request for Information only - Complete Pages 1 and 2 for each initiative)**

**Title of Proposed Initiative:** Air Quality and Water Impacts of GHG Mitigation Technologies

**Investment Areas** (Check one or more) – *For definitions, see First Triennial Investment Plan, page 12:*

- Applied Research and Development  
 Technology Demonstration and Deployment  
 Market Facilitation

**Electricity System Value Chain (Check only one):** See CPUC Decision 12-05-037, Ordering Paragraph 12.a. [http://docs.cpuc.ca.gov/PublishedDocs/WORD\\_PDF/FINAL\\_DECISION/167664.PDF](http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).

- Grid operations/market design  
 Generation  
 Transmission  
 Distribution  
 Demand-side management

California Energy Commission

**DOCKETED**

**12-EPIC-01**

TN 72639

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### Issues and Barriers:

Advanced, low carbon technologies and fuels are imperative in meeting California's climate change goals established by AB 32. However, economic and/or regulatory hurdles exist that can preclude the deployment of certain options and limit displacement of traditional energy sources. Further, implementation can be complicated by a current lack of understanding regarding the full range of opportunities and impacts associated with advanced energy strategies, including unanticipated benefits or disadvantages.

In addition to reducing emissions of greenhouse gasses (GHG), transitions to advanced energy strategies can potentially achieve additional environmental co-benefits, including reduced emissions of criteria pollutants and subsequent improvements in regional air quality (AQ). Additionally, displacement of traditional fossil generation could diminish detrimental impacts on the State's constrained water resources, including enhanced conservation of fresh water supplies. Such co-benefits have significant value to California stake holders; however a current lack of understanding regarding the quantification and valuation of air quality and water impacts generally results in their exclusion from current assessments.

### Initiative Description and Purpose:

Assessment of the AQ and water resource co-benefits from GHG mitigation technologies and fuels will assist in identifying energy pathways that maximize benefits of transitions from traditional fuels while avoiding any unforeseen disadvantages. Additionally, valuation of co-benefits will provide important information that can be utilized to more robustly and accurately assess costs associated with switches to alternative technologies and fuels. Such information can assist CA decision makers in prioritizing and selecting energy pathways that can contribute to meeting mandated State goals (i.e., Renewable Portfolio Standard, AB 32) while minimizing costs.

Recommended minimum funding level = \$300,000/project; Recommended maximum funding level = \$1,500,000.

**Stakeholders:**

California Air Resources Board; University of California – all campuses; U.S. Environmental Protection Agency; Air Pollution Control Districts and Air Quality Management Districts

**Background and the State-of-the-Art:**

- California Energy Commission – Energy, Air Quality, Water and Climate Change Co-Benefits of Renewable Power Generation and Fuels Roadmap
- California Energy Commission – Air Quality Impacts of Renewable Power Generation
- U.S. EPA – Air Quality Impacts of Greenhouse Gas Mitigation Strategies in the Power Generation and Transportation Sectors

**Justification:**

Ratepayer benefits from the proposed research initiative include:

- Identifying opportunities to maximize health benefits associated with improvements to regional AQ, including reducing concentrations of ozone and particulate matter.
- Facilitate cost/benefit analyses with enhanced robustness and accuracy to assist decision makers in selecting pathways to meet AB 32 goals with lowest possible costs.
- Assisting decision makers in implementing strategies that can reduce constraints on the State’s freshwater supplies

**Ratepayer Benefits** (Check one or more):

- Promote greater reliability
- Potential energy and cost savings
- Increased safety
- Societal benefits
- Environmental benefits – Air Quality, water resources,
- GHG emissions mitigation/adaptation in the electricity sector at the lowest possible cost
- Low emission vehicles/transportation
- Waste reduction
- Economic development

Identifying strategies that can assist the State in achieving air quality and water co-benefits from deployment of technologies and fuels to meet AB 32 California climate change goals will assist ratepayers by reducing associated costs while maximizing societal benefits, including health benefits.

**Public Utilities Code Sections 740.1 and 8360:**

The proposed research initiative is in alignment with section (e) (1) of CPUC Code Section 740.1 by supporting environmental improvement associated with the State’s climate change, air quality, and water resource goals. Additionally, the proposed research meets the criteria of these utilities codes by (a) providing benefits to ratepayers and (d) as no similar research is currently being undertaken.