STATE OF CALIFORNIA
EPIC TRIENNIAL INVESTMENT PLAN 2015-17
Proposed Energy Research Initiative
Questionnaire

CALIFORNIA ENERGY COMMISSION

QUESTIONNAIRE SUBMITTED BY WASTE MANAGEMENT

Title of Proposed Initiative (Short and concise): ***Funding for community programs that support the use of in-forest residues, agricultural waste and urban wood waste to generate electricity from existing and incentivize construction and operation of new biomass facilities.***

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

☐ Applied Research and Development

XX 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.*

☐ Grid operations/market design

XX Generation

☐ Transmission

☐ Distribution

☐ Demand-side management

Issues and Barriers:

Describe the issues and barriers that are impeding full market adoption of the proposed clean energy technology or strategy (such as cost, integration, or lack of information). ***Generation of power from biomass has multiple benefits including lowering greenhouse gases, safe and beneficial renewable power, lowering the risk of forest fires, safely disposing of urban wood waste and agricultural waste. Although these biomass sources make excellent fuels, the cost of transportation and handling is prohibitive. California's existing biomass facilities are suffering due to the cost, and new facilities are not being developed for similar reasons. Funding for community programs that incentivize the use of in-forest residues, agricultural waste and urban wood waste to generate electricity from existing and new facilities can reverse this downward trend in biomass-to-electricity.***

Initiative Description and Purpose:

How will this technology or strategy help address the issue/issues? Describe knowledge to be advanced to overcome critical barriers. Include the recommended funding level (minimum and maximum) for each project under this initiative.

Funding should be available for advanced biomass fuel handling and delivery systems. Focus should not only be on biomass fuel handling and delivery systems that benefit new biomass generation, but should fund community programs that incentivize the use of in-forest residues to generate electricity from existing and new facilities. Communities near California's magnificent forests would greatly benefit from fuel incentive programs that lower the risk of devastating fires and support for biomass generation from among the most expensive of biomass fuel sources to produce: in-forest residues. Leaving overgrowth material in the state's ecologically stressed forests leaves the forests at high risk of massively destructive wildfires, impedes the functioning of watersheds, and has other negative effects on the forests and nearby communities. The fuel-production alternative also provides many more jobs in rural communities than conventional disposal or leaving in-place of the material. Urban wood wastes that most often find their way to landfill disposal can be

better used as a fuel source in biomass facilities, as can agricultural waste. Programs that reward proper waste management by the generation of useful renewable energy will benefit the electricity customer as well as communities and their citizens.
Recommended Funding Level: $12 million - $15 million

Stakeholders:

Identify the stakeholders who support the initiative.
California electricity consumers, municipal governments and agencies, renewable energy industry, forest industry, agricultural industry, biomass industry, general public, solid waste industry.

Background and the State-of-the-Art:

- What research development and demonstration has been done or is currently being done to advance this technology or strategy (cite past research as applicable)?

  The use of funds for biomass fuel incentives has been established before on a limited basis in California with much success, for the category of agricultural fuels. A modest subsidy per-ton of agricultural waste collected and used as boiler fuel resulted in the collection of almost a million additional tons of agricultural wastes in the year the program ran, preventing open-burning of these residues.

- Describe any public and/or private successes and failures the technology or strategy has encountered in its path through the energy innovation pipeline: lab-scale testing, pilot-scale testing, pre-commercial demonstration, commercial scale deployment, market research, workforce development.

  Utility procurement activities and R&D investments simply have not worked to stimulate the growth of biomass power generation in California. Instead, EPIC funds could be used to reduce the cost of biomass fuel that both provide very desirable packages of ancillary benefits, and are among the most expensive of biomass fuel sources to produce: agricultural residues, and in-forest residues.

- Identify other related programs and initiatives that deal with the proposed technology or strategy, such as state and federal programs or funding initiatives (DOE, ARPA-E, etc.).
  Important incentive programs for biomass, including the Public Goods Charge, that supported biomass fuel sources have lapsed, leaving biomass with few mechanisms of support. While there is professed support for biomass in California policy, few programs now exist providing financial support.

Justification:

Describe how this technology or strategy will provide California IOU electric ratepayer benefits and provide any estimates of quantified annual savings/benefits in California, including:

- Name of sector and estimated size and energy use.

  The energy sector/forest sector/agricultural sector

- Quantifiable performance improvements for the proposed technology/strategy.

  Agricultural residues, in-forest residues and urban waste are the most difficult types of biomass to collect, process, and transport, and therefore the most expensive. Diverting these resources to energy generation as opposed to open burning, however, is by far the most environmentally-preferable alternative for the disposal of this material. In 2009, the California biomass industry converted 2.4 million tons of agricultural residues, and 1.1 million tons of in-forest residues into energy. In doing so, conventional air pollution from the combustion-for-disposal of these materials, including particulates, NOx, CO, and hydrocarbons, are reduced by factors of 10 – 100 times, and in the case of

in-forest residues whose use as fuel facilitates the performance of needed thinnings, the overall health and fire-resiliency of the treated forest is markedly improved. The fuel-production alternative also provides many more jobs than conventional disposal of the material.

- Maximum market potential, if successful.

  The Governor issued an Executive Order S-06-06 (PDF file), signed on April 25, 2006, dealing with biomass and biofuels. Two important points stated that:

  By 2010, 20 percent of its biofuels need to be produced within California; increasing to 40 percent by 2020 and 75 percent by 2050.

  By 2010, 20 percent of the renewable electricity should be generated from biomass resources within the state; maintaining this level through 2020.

- Number of direct jobs created in California.

  California's biomass industry employs approximately 750 workers at the facilities themselves, and supports another 1,250 – 1,500 jobs in the fuel-production sector and other support services.

- Why this research is appropriate for public funding.

  Public funding benefits the electricity consumer by providing cleaner energy, a more diverse energy market, a more reliable electricity source and an environmentally superior fuel, and benefits the general public by lowering risk of forest fires, promoting beneficial use of waste and lowering greenhouse gases into the atmosphere.

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

X☐ Promote greater reliability

X☐ Potential energy and cost savings

X☐ Increased safety

X☐ Societal benefits

X☐ Environmental benefits – specify – lower emissions of greenhouse gases/beneficial use of waste

X☐ GHG emissions mitigation/adaptation in the electricity sector at the lowest possible cost

☐ Low emission vehicles/transportation

X☐ Waste reduction

X☐ Economic development

Describe specific benefits (qualitative and quantitative) of the proposed initiative

Public Utilities Code Sections 740.1 and 8360:

Please describe how this technology or strategy addresses the principles articulated in California Public Utilities Code Sections 740.1 and 8360. The California Public Utilities Code is available online at www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc.

Support for biomass fuel offers a high probability of providing benefits to ratepayers and supports, but does not duplicate current research. Projects support:

(1) Environmental improvement.
(2) Public and employee safety.
(3) Conservation by efficient resource use.
(4) Development of new resources, particularly renewable resources.
(5) Improve operating efficiency and reliability and otherwise reduce operating costs.