

Humboldt County RESCO Project - Summary and Status, October 2010

Project Title: Planning for Renewable-based Energy Security and Prosperity in Humboldt County

California Energy Commission Agreement Number: PIR-08-034

Project Duration: Two years

Target Completion Date: October 2011

PIER Funding: \$199,988

Total Project Budget: \$286,744

Primary Contractor: Redwood Coast Energy Authority

Subcontractor: Schatz Energy Research Center, Humboldt State University

Project Partner: Pacific Gas and Electric Company (PG&E)

What makes Humboldt County well suited to developing renewables at scale?

Humboldt County has an electrical system that is geographically isolated from the larger CA grid. It has a small electrical demand (170 MW peak), and a wealth of local renewable energy resources, including wind, wave and biomass. Local biomass fired generators already provide a third of the local demand. In addition, there are currently two renewable energy projects being considered for development: the ShellWind Bear River Wind Power Project, with a proposed installed capacity of 50 MW, and the PG&E WaveConnect Project, a first of its kind pilot wave energy project with a proposed installed capacity of 5 MW. Also, PG&E is currently re-powering a local natural gas fired power plant, and the new plant will consist of ten 16-MW high efficiency engine generators that will be ideally suited to following changes in the intermittent supply of renewable electricity. Finally, the local community possesses strong energy research and planning expertise, is tremendously supportive of renewable energy development, and is very active in greenhouse gas reduction planning.

These attributes make Humboldt County very well suited to becoming a renewable energy secure community (RESCO) and to demonstrating renewables at scale. What's lacking is a detailed analysis and a corresponding strategic plan. The products of this RESCO project will provide the needed analysis and planning guidance and will empower the community to move toward a renewable energy secure future.

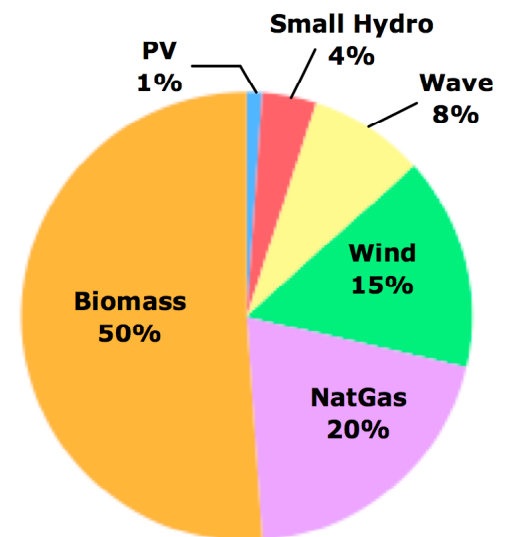
Project Goals:

The goal of this project is to develop a strategic action plan for Humboldt County to develop its local renewable energy resources in an effort to meet 75% to 100% of the local electricity demand as well as a significant fraction of heating and transportation energy needs. The plan will assess a full range of renewable resources and will identify an integrated mix that can be coupled with energy efficiency and demand management to best meet the county's needs and best capture associated environmental, economic, and social benefits. The plan will lay out a long-term development strategy and will identify near-term steps the County should take.

Project Scope:

The project scope includes in depth engineering and technical analyses, economic and market analyses, policy and regulatory analyses, stakeholder assessment, public education and outreach efforts,

Potential Power Supply Mix for Humboldt County



development of an action-oriented strategic plan, and preparation of a RESCO planning workbook that will help transfer the lessons learned in this project to other California communities. We will assess local renewable energy resources and associated conversion and grid integration technologies. This assessment will include stochastic time series modeling that examines both energy supply and demand. A detailed economic analysis will identify least cost options that meet prescribed renewable energy development goals and will assess both direct and indirect economic affects on the local community. We will also research and evaluate development, financing and ownership models, and will characterize the regulatory environment. We will identify potential regulatory barriers to RESCO development and possible solutions to overcome those barriers. Through our local stakeholder analysis and public education and outreach efforts, we will engage the local community and will inspire key decision makers to take the required next steps to move the Humboldt County RESCO vision forward.

Project Status:

We have gathered information on Humboldt County's electrical loads and energy resources, and on pertinent renewable energy technologies. Using these data we have developed a simulation model that allows us to examine the match between available energy resources and local electrical demand on an hourly basis. This analysis includes an assessment of grid-integration technology options, such as: energy storage, electric vehicles, hydrogen generation for transportation, and heat pumps. We are also examining the option of increasing the capacity of the transmission system that connects Humboldt to the rest of the California electric grid. The simulation model has been equipped with an optimization algorithm that will allow us to identify the renewable energy resource and technology portfolios that can best achieve our local RESCO goals.

For a select set of renewable energy resource and technology portfolios we will examine the impact to the local economy. This economic impact assessment will include a detailed input-output analysis. We will be using customized versions of the National Renewable Energy Laboratory's (NREL's) Jobs and Economic Development Impact (JEDI) models to conduct the economic impact assessment. We have already obtained and customize some of the JEDI models, and have developed some of our own models. We have also obtained a substantial amount of renewable energy cost data. We will use these data in the impact models and to develop life-cycle cost and levelized cost of energy estimates.

We have developed a list of possible ownership and financing alternatives for developing renewable energy projects and have begun to assess their viability in Humboldt County. Viable options will be assessed as part of the economic impact assessment. We are just now beginning to engage local stakeholders who will help us craft a strategic plan that will gain broad community support.

Future tasks include an assessment of regulatory and political issues, development of a regulatory guide for local government officials, strategic plan development, community outreach, and the development of a RESCO planning workbook that documents the planning process and makes it accessible to other communities.

What metrics will be used to measure project success?

Successful outcomes for this project will include: 1) a strategic plan that garners strong community and stakeholder support and is likely to be implemented; 2) memorandums of understanding, collaborative agreements, or partnerships between various stakeholders with the stated purpose of moving the RESCO vision forward; 3) local government support and integration of the RESCO vision into the local government planning and policy framework; 4) near-term pilot projects identified, funding identified, and partnerships fostered to move the RESCO vision forward. Long-term success will be measured by the percentage of renewable energy serving Humboldt County's electricity, heating and transportation energy needs.

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