Chapter 12. Energy Element

12.1 Purpose

The purpose of this chapter is to present policies and programs to address energy needs, use, and conservation. This chapter provides goals, policies, standards, and implementation measures that strive for sustainable renewable energy and self-sufficiency.

12.2 Relationship to Other Elements

Energy conservation is reflected in the Land Use and Circulation elements' policies, promoting in-fill development supported by transit, bike, and pedestrian transportation options; and in Housing Element policies promoting construction of energy efficient homes. Policies that facilitate energy production are located in the Land Use Element and Water Resources Element.

12.3 Background

Energy and Land Use

There is a close link between energy consumption and production and the physical development of land. Land use development policies strongly impact how much energy is consumed, and zoning and development strategies can affect the ability to develop and transport future energy resources.

Humboldt County has a number of unique features with respect to energy. It is isolated at the end of electricity and natural gas transmission lines, and the capacity of these lines is not great enough to import all of the county's required energy. Related to these capacity constraints is the fact that the county currently produces a large portion of its electricity locally and also supplies some of its own natural gas needs. The county also has a tremendous amount of potential local energy resources, in the form of wind, wave, biomass, hydroelectric, and solar power. Conservation is also viewed as an energy resource and is considered in the Housing and Circulation elements of this Plan. And finally, there is much local interest and expertise and a strong desire to develop long-term energy self-sufficiency for the region.

Local Energy Resources

The majority of primary energy used in Humboldt County is imported, with the exception of biomass energy. Local biomass resources are used to provide about 25 to 30% of the county's electricity needs. The biomass resource is primarily derived from lumber mill wood residue. There is significant growth potential in biomass energy through the use of logging slash, forest thinning and fuel-load reduction materials. ~~There are sufficient supplies of biomass from lumber mill wood residues to supply more than 10% of the county's electricity needs. Forest biomass such as slash from logging operations,~~

~~thinning, and fuel load reduction programs could potentially be a major source of fuel under favorable economic conditions.~~

Roughly half of the electricity serving Humboldt County is generated at the Pacific Gas and Electric Company ~~hais~~Humboldt Bay Generating Station. This ~~replaceding the existing Humboldt Bay Power Plant (HBPP) with a~~ new 163-megawatt natural gas-fired power plant ~~that will is~~be 35% more efficient than its predecessor and is well suited to meeting rapidly changing power demands on the grid. Although the majority of electricity consumed is generated in the county~~ and County government has the ability to generate all of its own electricity~~, a large portion ~~of electric demand~~ is generated using imported natural gas. The county imports about 90% of its natural gas; the rest is obtained locally from fields in the Eel River valley. Total ~~net~~ gas production in the county in ~~2007~~ 2010 was ~~1.1 BCF~~785 MMCF (m~~b~~illion cubic feet). Active gas wells are concentrated in the Tompkins Hill gas field, ~~where there are 31 producing wells. There is also an on-going project to develop gas reserves~~and additional fields are being developed in the Grizzly Bluff area near Alton.

Energy Use and Cost

It is estimated that in 20~~03~~10 Humboldt County spent $~~319~~460 million to meet local energy demands, the majority of which left the county. Approximately half of the energy was used as a transportation fuel (gasoline and diesel), with large amounts also used to meet end use electrical demands and end use natural gas heating demands. It is estimated the county's end use energy consumption totaled about ~~17.4~~18.5 trillion BTUs. Humboldt County electricity use totaled ~~940~~ 1000 GWh. Natural gas was ~~93.9~~87 million therms, with ~~almost~~ about half of this being used to generate electricity at both the Pacific Gas and Electric Company (PG&E) Humboldt Bay Power Plant ~~and the Samoa pulp mill~~.

Growth in electricity and natural gas demand over the next 20 years ~~will~~ is expected to range from 0.5% per year to ~~2~~1.5% per year. Gasoline and diesel consumption for light duty vehicles in Humboldt County in 20~~03~~10 was about ~~71~~ 76 million gallons. ~~Between 1997 and 2003~~Historically,~~,~~ petroleum distillate consumption has ~~rose~~ increased at a rate of 1.5% per year. Future consumption rates will depend primarily on changes in vehicle miles traveled (VMT) and fleet fuel efficiency.

It is ~~estimated~~ projected that local renewable resources could provide the majority of our local electricity needs and a substantial portion of our heating and transportation energy demands. Meeting heating and transportation demand with local resources would likely include the use of electric heat pumps and electric vehicles. Key renewable energy resources include biomass, wind, wave, and small run-of-river hydroelectric. ~~the total electricity generation from local renewable resources could provide as much as six times the county's current electricity consumption rate.~~ However, ~~there is a lot of uncertainty about how much of these resources can realistically be developed. For example, over 75% of the estimated renewable electricity resource would come~~is from wave power, ~~a technology that is in its early stages of development and therefore is quite uncertain. Even for well-proven resources like wind, solar, and hydropower,~~ there are many potential barriers that could impede development, including high costs, regulatory hurdles, lack of financing, siting, and transmission access issues, and lack of public support. Nonetheless, the potential of these local resources is large and offers significant economic development potential. Using local resources to meet local energy needs would keep energy dollars circulating in the local economy, and exporting local energy resources to surrounding communities could bring in a new source of income to the county. In addition, use of local renewable energy resources can help the County meet its greenhouse gas reduction goals.

Opportunities to Reduce Energy Use

The results of statewide energy efficiency potential studies were used to estimate the efficiency potential in Humboldt County. It is estimated that in ten years, electricity savings in Humboldt County could total 98% of the county's projected total electricity use, and natural gas savings could total 01.5% of the county's projected total retail natural gas use. This represents a total retail value for electricity cost savings of $1611.9 million per year and for natural gas of $10.84 million per year.

Efforts to reduce energy consumption in the transportation sector are also critical to the establishment of a secure energy future for the county, and decreasing the number of vehicle miles traveled is probably the most effective measure for reducing transportation energy use. Implementing land use planning that locates housing, jobs, and shopping in close proximity to one another and provides bicycle, pedestrian, and public transit access will encourage alternative transportation modes and result in reduced vehicle travel. Replacing the importation of goods and exportation of waste with increased production and consumption of local goods (such as locally grown food) and local waste processing (through recycling, reusing, and composting) can also help reduce vehicle miles traveled.

Strategic Energy Planning

In Formed in 2003, the Redwood Coast Energy Authority (RCEA) was formed as is a joint powers authority (JPA), representing seven municipalities cities (the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Trinidad, and Rio Dell), the Humboldt Bay Municipal Water District, and Humboldt County. As a JPA, RCEA is governed by a board composed of a representative from each jurisdiction. RCEA's mission statement is:

> *The Redwood Coast Energy Authority's purpose is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient, and renewable resources available in the region.*

As the regional energy authority, the Board of Supervisors has designated RCEA to implement Energy Element strategies on a regional basis through a Comprehensive Action Plan for Energy. This action plan will be maintained by the RCEA Board and periodically presented to the Humboldt County Board of Supervisors for review. The County will also implement Energy Element strategies through policies, implementation measures, and standards contained in this Plan.

This Energy Element promotes self-sufficiency, independence, and local control in energy management and supports diversity and creativity in energy resource development, conservation, and efficiency. This strategy can reduce the drain on the county's economy for energy, stimulate local businesses and the economy, and help the county meet greenhouse gas emission reduction targets.