

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 Humboldt Bay Generating Station. This replaced the existing Humboldt Bay Power Plant (HBPP) with a new 163-megawatt natural gas-fired power plant that will 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 (million 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 2010 Humboldt County spent \$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 18.5 trillion BTUs. Humboldt County electricity use totaled 1000 GWh. Natural gas was 87 million therms, with about half of this being used to generate electricity at both the Pacific Gas and Electric Company (PG&E) Humboldt Bay Power Plant.

Growth in electricity and natural gas demand over the next 20 years is expected to range from 0.5% per year to 2.5% per year. Gasoline and diesel consumption for light duty vehicles in Humboldt County in 2010 was about 76 million gallons. Historically, petroleum distillate consumption has 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 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 89% of the county's projected total electricity use, and natural gas savings could total 1.5% of the county's projected ~~total retail~~ natural gas use. This represents a total retail value for electricity cost savings of \$16.9 million per year and for natural gas of \$1.8 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.

12.4 Goals and Policies

Goals

- E-G1. Countywide Strategic Energy Planning.** An effective energy strategy based on self-sufficiency, development of renewable energy resources and energy conservation that is actively implemented countywide through Climate Action Plans, local General Plans and the Redwood Coast Energy Authority's Comprehensive Energy Action Plan.
- E-G2. Increase Energy Efficiency and Conservation.** Decrease energy consumption through increased energy conservation and efficiency in building, transportation, business, industry, government, water and waste management.
- E-G3. Supply of Energy from Local Renewable Sources.** Increased local energy supply from a distributed and diverse array of renewable energy sources and providers available for and local purchases and export, from a distributed and diverse array of local renewable energy sources and providers.
- E-G4. Local Management of Energy Supply.** ~~Increased local control, management, and ownership of energy sources with greater diversification and competition among suppliers.~~

Policies

- E-P1. Land Use and Development Review.** ~~The County shall provide incentives for discretionary development incorporating renewable energy sources and conservation measures consistent with this Plan. The County shall adopt a residential and commercial energy conservation ordinance that establishes energy conservation incentives and performance standards exceeding state mandates for building construction, retrofit and sales. (Alternative A Version)~~
- E-P2. Oil and Gas Development.** Oil and gas development shall be permitted consistent with the following:
- A. The development is performed safely and consistent with the geologic conditions of the well site.
 - B. New or expanded facilities related to such development are consolidated, to the maximum extent feasible and legally permissible, unless consolidation will have adverse environmental consequences and will not significantly reduce the number of producing wells, support facilities, or sites required to produce the reservoir economically and with minimal environmental impacts.
 - C. Such development will not cause or contribute to subsidence hazards unless it is determined that adequate measures will be undertaken to prevent damage from such subsidence.
 - D. Hydraulic fracturing for release and recovery of hydrocarbons is prohibited.

- E-P3. ~~Local Management and Ownership of Energy Supply.~~** ~~The County shall support projects consistent with this Plan that increase local management and ownership of energy supply and decrease expenditures for imported energy.~~
- The County shall support energy development projects including biomass, wind, solar, "run of the river" hydro-electric, and ocean energy, consistent with this Plan that increase local management and ownership of energy supply and decrease expenditures for imported energy. (Modified Alternative A Version)
- E-P4. ~~Transportation Energy Conservation and Alternative Fuels Substitution. Revitalization and Reinvestment in Existing Resources.~~** ~~Support revitalization and infilling of Urban Development Areas to reduce long-term vehicle miles traveled as an energy conservation strategy. Support the development and implementation of Electric Vehicle (EV) charging stations to encourage substitution of alternative fuels for plug in electrical sources. Favor rehabilitation and revitalization of older existing buildings over replacement when doing so would conserve energy resources.~~
- E-P5. ~~Regional Energy Authority.~~** ~~Recognize the Redwood Coast Energy Authority (RCEA) as the regional energy authority, which will foster, coordinate, and facilitate countywide strategic energy planning, implementation and education through a Comprehensive Action Plan for Energy. Direct RCEA to administer the Comprehensive Action Plan for Energy.~~
- E-P6. ~~Comprehensive Action Plan for Energy.~~** ~~The County shall assist in the implementation and align its energy strategy with the Redwood Coast Energy Authority (RCEA) Comprehensive Action Plan for Energy, as amended.~~
- E-P7. ~~County Government Energy Consumption.~~** ~~The County government shall reduce building and transportation energy consumption by implementing energy conservation measures and purchasing renewable energy and energy efficient equipment and vehicles whenever cost-effective. Conservation and renewable energy investments should be planned and implemented in accordance with and performance-based action plan and County Greenhouse Gas Emission Reduction goals.~~
- E-P8. ~~County Building Design Standards.~~** ~~Design, construct and operate all new and renovated County-owned facilities to U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED)"Silver" or better energy efficiency standards consistent with State Executive Order S-20-04, or to similar California Green Building Standards.~~
- E-P9. ~~Electrical Transmission.~~** ~~Promote PG&E funded capacity upgrades to main electric distribution lines to facilitate distributed renewable energy production and electricity export from the county.~~
- E-P9x. ~~Electricity Buyback.~~** ~~Support revisions to the electricity buyback program that encourages more distributed local generation and more equitably compensates such generation.~~

- E-P10. Transportation Management Plans.** Major commercial, business, industrial, or mixed-use facility developments shall be required to submit a transportation management plan that addresses energy conservation measures such as connectivity to alternative transportation modes; preferential parking for carpools, vanpools, motorcycles, mopeds, and bicycles; shuttle services; alternative fueling stations; transit passes; bike lockers; and locker-room facilities. (Modified Alternative A Policy)
- E-P11. Energy-efficient Landscape Design.** Require energy-efficient landscape design in development projects, subdivisions, and in new and existing streets and parking areas in order to reduce impervious surfaces, minimize heat and glare, control soil erosion, conserve water, and promote pedestrian safety and vehicular traffic calming measures. **Split Vote 3-2** (Modified Alternative A Policy)
- E-P13. Water Efficiency.** Promote the efficient use of water in residences, businesses, industries, and agriculture by requiring water-saving plumbing and landscaping devices in new developments or plumbing-related remodels. (Modified Alternative A Version)
- E-P15. Wind Energy Overlay Zone.** The County shall develop a wind energy overlay zone to protect potential wind energy sites identified as having "excellent" wind energy potential by the California Department of Water Resources in their Humboldt County Wind Resource Map (1985). (Alternative A Policy)

12.5 Standards

- E-S1. Oil and Gas.**
- A. Development associated with onshore oil and gas wells shall be conditionally permitted by a conditional use permit in agricultural, timber, rural lands, industrial general, and resource-related industrial land use classifications.
 - B. A permit will be required for each drill site and a separate permit will be required for production facilities. Additional wells proposed for an approved drill site may be administratively approved provided that they can be accomplished within the limitations and conditions of the original use permit for the drill site.
- E-S2. Application and Initial Study Information Requirements and Standards for Oil and Gas Energy Exploration or Extraction Projects.** California Environmental Quality Act (CEQA) applications for oil and gas exploration or extraction projects shall include the following:
1. Applications for oil and gas energy exploration or extraction projects shall include:
 - A. A plot plan for the entire area under lease or ownership, showing the relationship of the proposed facilities to ultimate potential

- development, and a map showing the relationship of contours, buildings, structures, and/or natural features.
- B. A description of the relationship of the proposed facilities to existing facilities.
 - C. Procedures for the transport and disposal of all solid and liquid wastes to meet discharge requirements of the North Coast Regional Water Quality Control Board (NCRWQCB).
 - D. Grading plans and procedures for minimizing erosion.
 - E. Where public views are affected by production facilities, landscaping plans and measures for minimizing visual impacts.
 - F. Fire prevention procedures.
 - G. Air emission control measures.
 - H. Oil spill contingency procedures.
 - I. For production facilities, a phasing plan for the staging of development, indicating an approximate anticipated timetable and production levels for the project.
 - J. Procedures for the abandonment and restoration of the site, which provide for removal of all equipment; disposal of wastes; and re-contouring, reseeded, and planting to conform to surrounding topography and vegetation.
- 2.~~K~~ Drill sites should generally not be established at a density greater than one per 80 acres.
- 3.~~L~~ All solid and liquid wastes shall meet the discharge requirements of the NCRWQCB.
- 4.~~M~~ Projects shall meet all applicable air quality regulations.
- 5.~~N~~ All earthen sumps or other depressions shall be regraded to restore the area to its original condition.
6. Hydraulic fracturing for release and recovery of hydrocarbons is prohibited.
7. Financial assurance requirements may be imposed on the property owner at the discretion of the Planning Commission to ensure site restoration consistent with 1.J. above.

E-S3. Wind Generating Facilities.

- A. Unless allowed by right pursuant to California Government Code, Section 65892.13(f) as amended, wind generating facilities shall be a conditionally permitted use in all land use designations except "resource dependent" (MR).

- B. The following shall be considered in reviewing proposed wind generating facilities: parcel size, relationship to other structures, effect on potential down-wind sites, compliance with Uniform Building Code and national Electrical Code, rotor and tower safety, noise, electromagnetic interference, utility notification, height, liability insurance, and appearance and design.
- C. Findings necessary for project approval shall be:
 - 1) The proposed use is not detrimental to the public health, convenience, safety, and welfare.
 - 2) That the use of the property for such purposes will not result in material damage or prejudice to other property in the vicinity.
 - 3) Within the Coastal Zone, the project will not have a significant adverse effect on coastal resources, including wildlife qualities.

E-S4. Oil and Gas Pipelines. For pipelines serving oil and gas facilities, the following shall apply:

- A. Pipelines should, where feasible, avoid sensitive habitat areas and archaeological sites and follow existing utility corridors where they are present. Active faults or other geologically unstable areas should be avoided where feasible, or be designed to mitigate against such hazards.
- B. When avoidance of a sensitive habitat area is not feasible, effective mitigation measures shall be employed to minimize adverse impacts. Directional drilling shall be employed to avoid wetlands and riparian habitats, unless an independent engineering contractor selected by the County determines that to do so would not be feasible.
- C. All right-of-ways shall be regraded and revegetated to their original state. When a responsible agency identifies a degraded habitat along the proposed right-of-way, when it might be preferable to restore it to a condition other than its present state, said agency shall recommend plans to the lead agency for restoration of the habitat. The lead agency shall require restoration of the habitat as a condition of approval, unless a review of the public record indicates it would be more appropriate to do otherwise.
- D. All compressor, metering, or odorizing stations shall be visually and acoustically buffered with vegetation and other means as necessary.
- E. Above-ground pipelines should be sited to minimize visual impacts, when feasible. When an aboveground pipeline must be sited in a highly scenic area, it shall be visually buffered with vegetation and other means as necessary.
- F. For liquid carrying pipelines passing through important coastal resource areas including recreation, habitat, and archaeological sites and geologically unstable areas, segments shall be isolated by automatic shutoff valves. The County may determine whether spacing of automatic

shutoff valves is required at intervals less than the maximum set by the U.S. Department of Transportation to protect sensitive coastal resources.

E-S5. Electrical Transmission Lines.

- A. Transmission line rights-of-way shall be routed to minimize impacts on the viewshed in the coastal zone, especially in highly scenic areas, and to avoid locations that are on or near habitat, recreational, or archaeological resources, whenever feasible. Scarring, grading, or other vegetative removal shall be minimized and revegetated with plants similar to those in the area.
- B. Where above-ground transmission line placement would unavoidably affect views, underground placement shall be required where it is technically and economically feasible, unless it can be shown that other alternatives are less environmentally damaging. When above-ground facilities are necessary, design of the support towers shall be compatible with the surroundings to the extent safety and economic considerations allow.
- C. Above-ground transmission lines should be sited so as to minimize visual impacts.
- D. Siting of transmission lines should avoid the crests of roadways to minimize their visibility on distant views. Where visual impacts would be minimized, lines should cross the roadway at a downhill low elevation site or a curve in the road.
- E. New major steel tower electrical transmission facilities should be consolidated with existing electrical steel-tower transmission facilities unless there are social, aesthetic, or significant economic concerns.
- F. Existing rights-of-way should be utilized for other related utilities to provide consolidated corridors wherever such uses are compatible or feasible.
- G. Access and construction roads should be located to minimize landform alterations. Road grades and alignments should follow the contour of the land with smooth, gradual curves where possible.

E-S6. Consistency with Climate Action Plan. The County's implementation of the Redwood Energy Authority (RCEA) Comprehensive Action Plan for Energy shall be consistent with the Board-adopted Climate Action Plan.

E-S7. Solar Access Protection. Proposed structures and landscaping associated with planned unit developments and/or subdivisions that create five (5) or more new parcels shall be designed and located to avoid blocking views and solar access from other properties to the maximum extent feasible. The lot size, configuration, and proposed building envelope in a subdivision or planned development shall be oriented to ensure that no additional shadows will be cast on the south side of an existing building between the hours of 10:00 a.m. and 2:00 p.m. on December 21. A shade projection map shall be required showing the height and orientation of existing and proposed

buildings and the slope of land and that identifies the length of shadows projected.

12.6 Implementation Measures

- E-IM1. Alternative Energy Use.** Develop or modify regulations that eliminate obstacles to alternative energy use. Regulations may include, but are not limited to:
- A. Allowing height exceptions for solar equipment.
 - B. Allowing alternative heating and cooling systems components such as collectors, shading louvers, or reflectors to project into yards in a manner similar to cornices and canopies.
 - C. Defining solar heating systems and cogeneration facilities as accessory uses.
 - D. Preventing planned development covenants, conditions, and restrictions (CC&Rs) from unreasonably restricting alternative energy systems.
- E-IM2. Comprehensive Action Plan for Energy.** Seek funding and support efforts to implement the Redwood Coast Energy Authority (RCEA) Comprehensive Action Plan for Energy, ~~as amended.~~
- E-IM3. County Energy Consumption Reduction.** Develop a comprehensive program to reduce County energy consumption in operations including: public buildings and facilities, street lighting, vehicle fleet management, equipment procurement, and employee energy awareness program.
- E-IM4. Install County Systems.** Pursue the installation of cost-effective conservation measures, renewable energy systems, cogeneration systems, and distributed energy systems in County facilities.
- E-IM5. Wind Energy Development.** Develop wind-permitting guidelines for residential and small commercial-scale wind energy systems. Adopt and modify, as appropriate, the guidelines established in California State Law AB 1207. Educate the public about the benefits of small-scale wind energy systems.
- E-IM6. Energy-conserving Landscaping.** Consider the use of natural and drought-resistant planting materials and efficient irrigation systems and the siting of trees to reduce energy demand in the preparation of the County landscaping ordinance.
- E-IM7. Small Hydroelectric Development.** Support local efforts to develop cost-effective, environmentally sensitive, small-scale, run-of-the-river hydroelectric facilities in the County.
- E-IM8. Energy Efficiency Standards.** Develop and implement energy-efficiency standards for subdivision, mixed use, infill, and planned unit development that shall incorporate Green Building standards, which may include incentives such as tax credits, fee reductions, or faster-track permitting for silver rating or

higher compliance with Green Building standards.

- E-IM9.** **Develop Incentives for Private Sector.** Develop incentives to encourage the installation of cost-effective energy efficiency measures, distributed generation, and solar electric and solar heating systems in all new construction and building retrofits. Develop incentives that support the development and implementation of Electric Vehicle (EV) charging stations and heat pumps in new commercial developments and retrofits. Incentives may include: density bonuses, fast-track permitting, fee reductions, expedited low-cost approval of standardized designs, property tax exemptions, sales tax rebates, and award programs that recognize builders and developers for well-designed systems.
- E-IM-10.** **County Energy Efficiency and Renewable Energy Improvements Plan.** The County shall develop and maintain a performance-based action plan to guide the implementation of energy efficiency and renewable energy improvements in county operations.
- E-IM11.** **County Facility Efficiency and Alternative Energy Fund.** Establish a “County facility efficiency and alternative energy fund” to support implementation of County energy efficiency and alternative energy investments in County owned or operated facilities. The fund would receive up to 75% of the County’s monetary savings from improved County energy efficiency and conservation practices. The estimate of monetary savings will be based on the likely energy costs that would have been incurred had the energy efficiency measures and/or conservation practices not been implemented.
- E-IM12.** **Existing Regulations.** Assess and revise as necessary the existing subdivision, zoning, and building code implications associated with the potential development of renewable energy and distributed energy generation facilities and related electrical transmission lines. (Modified Alternative A Implementation Measure)
- E-IM13.** **Renewable Energy Permitting Process.** Develop a clear permit process to provide for the installation of renewable energy and distributed energy generation systems. Identify zones where renewable energy and distributed energy generation facilities will be allowed as a permitted use. Identify small-scale systems that meet annual onsite energy needs, and that would not require a use permit. Zoning regulations should address the following types of renewable energy and distributed energy generation facilities: commercial wind farms, wave and tidal energy facilities, biomass energy facilities, biogas energy facilities, small-scale hydroelectric facilities, cogeneration and distributed generation facilities, and solar electric and solar heating facilities. (Modified Alternative A Implementation Measure)
- E-IM14.** **Energy Conservation and Green Building Ordinance.** The County shall adopt a residential and commercial energy conservation and green building ordinance that establishes energy conservation incentives and performance standards exceeding state mandates for building construction and retrofit. (Modified Alternative A Implementation Measure)