
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.

Roughly half of the electricity serving Humboldt County is generated at the Pacific Gas and Electric Company Humboldt Bay Generating Station. This new 163-megawatt natural gas-fired power plant is 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, a large portion 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 gas production in the county in 2010 was 785 MMCF (million cubic feet). Active gas wells are concentrated in the Tompkins Hill gas field 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 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. However, 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 9% of the county's projected total electricity use, and natural gas savings could total 1.5% of the county's projected retail natural gas use. This represents a total retail value for electricity cost savings of \$16 million per year and for natural gas of \$1.4 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

Formed in 2003, the Redwood Coast Energy Authority (RCEA) is a joint powers authority (JPA) representing seven cities (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, 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 local purchase and export.

Policies

- E-P1. Energy Conservation Standards and Incentives.** Develop incentives to encourage residential and commercial building plans that exceed California Building Standards Code requirements for energy.
- E-P2. Oil and Gas Development.** Oil and gas development shall be permitted consistent with the following:
- A. The development is performed safely and is 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 Renewable Energy Supply.** The County shall support renewable energy development projects including biomass, wind, solar, “run of the river” hydro-electric, and ocean energy, consistent with this Plan that increases local energy supply.
- E-P4. Transportation Energy Conservation and Alternative Fuels Substitution.** Support revitalization and infill projects within Urban Development Areas as a means to reduce long-term vehicle miles traveled as an energy conservation strategy. Support the development and implementation of Electric Vehicle (EV) charging stations and other alternative fueling infrastructure.
- 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.
- E-P6. 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 performance-based action plans and County Greenhouse Gas Emission Reduction goals.

- E-P7. 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-P8. Electrical Transmission.** Promote PG&E funded capacity upgrades to electric distribution lines to facilitate distributed renewable energy production and electricity export from the county.
- E-P9. 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, or industrial, 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. Develop incentives for projects not deemed as major that incorporate such energy conservation measures.
- E-P11. Energy-efficient Landscape Design.** Encourage and incentivize 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, and conserve water.
- E-P12. Water Efficiency.** Promote the efficient use of water in residences, businesses, industries, and agriculture.
- E-P13. Incentives for Using Alternative Energy.** Encourage the use of renewable energy and environmentally preferable distributed energy generation systems in the county.
- E-P14. Renewable Energy Overlay Zones.** Develop renewable energy overlay zones based on community input to protect the unique value of sites that are identified as having substantial renewable energy potential and/or will be critical for renewable energy infrastructure while still allowing uses permitted in the underlying zone.
- E-P15. Land Use Planning and Compatibility.** Coordinate with local agencies, communities, and landowners to assess potential wind and offshore renewable energy development. Such an assessment shall consider site suitability, energy potential, and potential impacts to biological and cultural resources.
- E-P16. Sustainable Biomass Energy Production.** Coordinate with local agencies, communities, and landowners to develop biomass energy plans that are consistent with forest management, hazardous fuels reduction, and restoration needs and priorities.

- E-P17 Residential Design.** Proposed single-family residential structures should be designed to maximize solar access, energy conservation and passive solar energy generation. Solar access potential should be evaluated based on each climate zone within the County as established by the National Weather Forecast Center in Eureka.

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 Requirements and Standards for Oil and Gas Energy Exploration or Extraction Projects.

- A. Applications for oil and gas energy exploration or extraction projects shall include:
 - 1. 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.
 - 2. A description of the relationship of the proposed facilities to existing facilities.
 - 3. 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).
 - 4. Grading plans and procedures for minimizing erosion.
 - 5. Where public views are affected by production facilities, landscaping plans and measures for minimizing visual impacts.
 - 6. Fire prevention procedures.
 - 7. Air emission control measures.
 - 8. Oil spill contingency procedures.
 - 9. For production facilities, a phasing plan for the staging of development, indicating an approximate anticipated timetable and production levels for the project.
 - 10. 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.

- B. Drill sites should generally not be established at a density greater than one per 80 acres.
- C. All solid and liquid wastes shall meet the discharge requirements of the NCRWQCB.
- D. Projects shall meet all applicable air quality regulations.
- E. All earthen sumps or other depressions shall be regraded to restore the area to its original condition.
- F. Hydraulic fracturing for release and recovery of hydrocarbons is prohibited.
- G. 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 pipelines should be designed to mitigate 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. Solar Access Protection.** Proposed structures and landscaping associated with planned unit developments and/or subdivisions that create five (5) or more new parcels should 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.** Support efforts to implement the Redwood Coast Energy Authority (RCEA) Comprehensive Action Plan for Energy.
- E-IM3. County Energy Consumption Reduction.** Develop a comprehensive program to reduce the County's 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 owned/operated 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, efficient irrigation systems, utilizing pervious surfaces and the siting of trees to reduce energy demand in the preparation of the County landscaping ordinance.

- E-IM7. Small Hydroelectric Development.** Support development of 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 cost effective measures.
- 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-IM10. 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-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.
- 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.
- E-IM14. Energy Conservation Ordinance.** The County shall adopt a residential and commercial energy conservation ordinance for building construction and retrofit that establishes energy conservation incentives and performance standards for projects exceeding state building codes.