

Section

7



Energy and Air Quality

Energy and Air Quality

GOAL EA-1

Utilize construction strategies and technology to minimize impacts to the local infrastructure and environment.

ENERGY

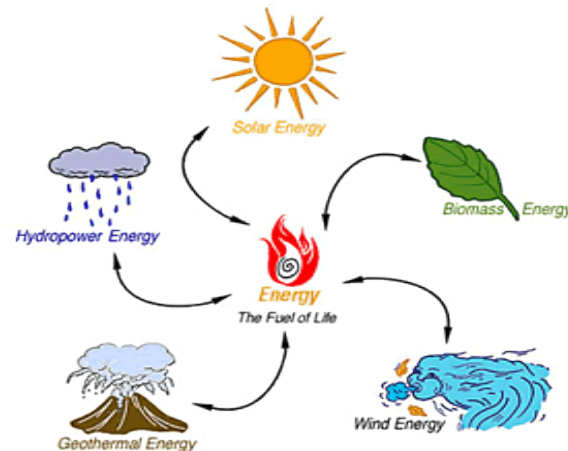
Energy is the driving force behind our current way of life. It is used to power vehicles, run equipment, and heat and light up buildings. Energy exists in many different forms such as petroleum, natural gas, wood, wind, water and sunlight and can be transmitted via electricity. As beneficial as energy is, its use does create environmental impacts to the air, water, and/or the use of land. At the same time, an overwhelming percentage of the energy we rely on is finite in nature and will diminish in dependability. Growing concern over environmental degradation, climate change, and the stability of energy supplies in the future provide

the impetus for the public policy discussion on energy and air quality matters found in this section of the plan.

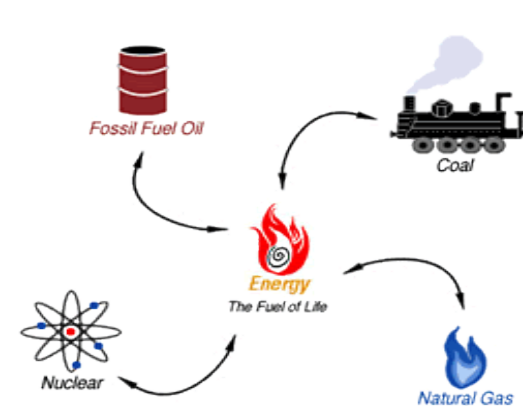
Energy use and Suppliers in the Ukiah Valley

Within the Valley, the largest use of energy (gasoline and diesel) is to power our transportation system. Heating and cooling needs within structures ranked second, with the use of natural gas, propane, electricity and even wood. The use of electricity to run our lights, machinery, and appliances is also quite significant.

Renewable Energy



Non-Renewable Energy



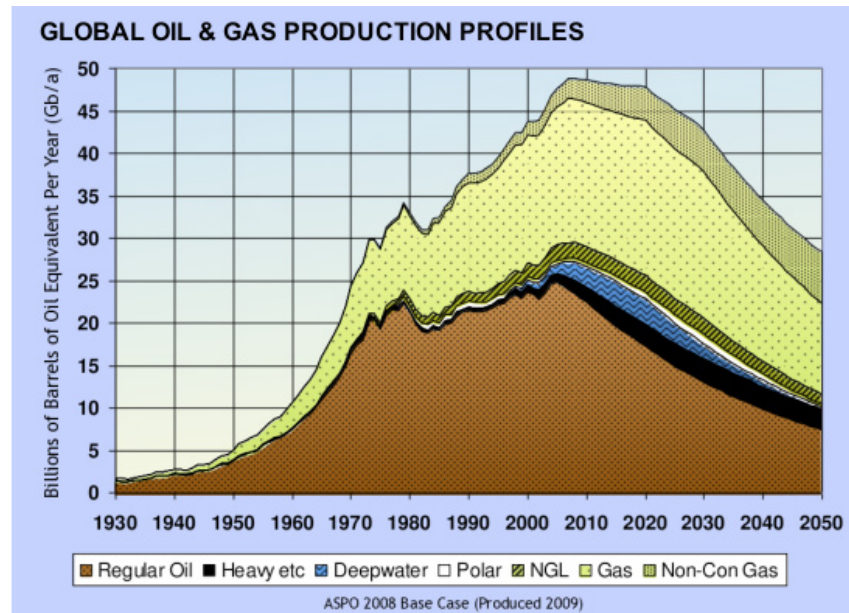
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The energy providers in the Valley are as diverse as the uses. Transportation fuels, along with propane, are supplied by a variety of privately owned companies that are subsidiaries of or purchase petroleum products from major oil producing companies such as Chevron. Investor-owned Pacific Gas & Electric Company (PG&E) provides electricity and natural gas services for the entire planning area. Only 75-80% of all structures are connected to the natural gas distribution network however. In addition to the larger energy companies, smaller firms and individual contractors install solar water heating and photovoltaic (PV) systems to residents and businesses of the Valley while a number of local businesses and land owners sell firewood and wood pellets to those with wood-burning devices.

ENERGY SUPPLY AND DEMAND CONCERNS

With minimal population growth and decreasing industrial activity over the past few decades, the energy infrastructure in the Ukiah Valley is capable of meeting existing demands. Even though future development of new residences and businesses under the UVAP will increase the demand for electricity and natural gas, PG&E indicates that it has substantial unused capacity to serve this new development. Although the local infrastructure is sufficient to meet the demands of the community, there are well-founded concerns that many of the non-renewable energy sources that we depend on will become increasingly scarce and more expensive over the planning period; of greatest concern are petroleum and natural gas.

Petroleum is a non-renewable resource that depletes and as such has a finite lifespan. Although we do not know how long petroleum products will be available, and at what price, we do know that global production has leveled off since 2004 even



though demand has continued to increase. During the lifespan of this document, all reputable forecasts (from geologists, government officials and oil industry officials) predict that oil production will begin to decrease due to geological limitations. At the same time, costs are forecast to increase. The only unresolved issues pertain to timing and severity of the changes in the energy supply as well as changing state and federal regulations on the energy sector. There are similar concerns in regards to natural gas supplies as well.

These nonrenewable energy supply concerns will affect many aspects of valley life but none more so than the transportation sector. Petroleum is used in almost all transportation vehicles in the Valley including the shipment of goods to and from the

Valley. With our County's dependence on vehicular transportation and shipping, increasing costs will affect many household and business budgets. Although it is unknown when and to what extent declining energy supplies will affect the Valley, it is prudent to plan for this transition ahead of time to help minimize negative impacts in the future.

ENERGY CONSERVATION AND PLANNING

While local government has no authority to mandate vehicle efficiency or use, it can lead the way in reducing dependence on fossil fuels by encouraging the construction of energy efficient buildings, the use of renewable energy sources (hydro, solar, wind and biomass), and by establishing land use policies that promote the use of non-vehicular means of transportation.



Passive solar design techniques reduce energy demand.



Additionally, land use choices taken by the County to protect agricultural lands help preserve the Valley's ability to grow more food locally.

Building design and location play an important role in facilitating long-term energy conservation. Through design review guidelines and land use and building codes, structures can be designed and arranged to promote optimal heating, cooling, and cogeneration opportunities. Energy incentives can encourage the use of energy efficient construction practices and technology, while minimizing eventual energy use and resultant adverse environmental effects.

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Sprawling, low-density land use patterns increase dependency upon automobiles and fossil fuels by limiting opportunities for mass transit use, bicycling, and walking. The County can require land use patterns that optimize the use of public transit, biking, and walking, reducing the dependence on nonrenewable resources. This can be accomplished by locating relatively dense residential development, as well as employment and retail centers, along public transportation routes and integrated transportation corridors, thus creating a more resilient community that will be less affected by the economics of declining energy resources.

AIR QUALITY

Setting

The Ukiah Valley is located within the North Coast Air Basin (which includes Del Norte, Humboldt, Trinity, Mendocino, and northern Sonoma Counties), where the climate is characterized by warm dry summers and cool damp winters with winds primarily from the northwest during the summer. Although the Ukiah Valley does have good air circulation, the area does frequently experience temperature inversions between storms in the winter months. This meteorological event occurs when a layer of warm air covers a cooler layer near the ground, trapping pollutants in the Ukiah Valley and restricting vertical mixing. The lack of surface wind compounds this effect. During these periods, pollution build-up from open fires and wood burning appliances can build up with each day's new emissions added to the residual from the day before.

Major Pollutants

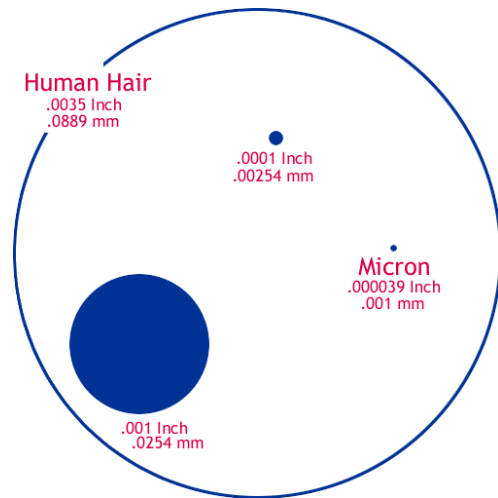
Major pollutants of concern for the planning area are very small particulate matter and ozone.

Particulate Matter

Particulate matter is composed of small bits of unburned fuel, dust, ash, soot, soil and other material. Secondary particulate matter forms when gaseous pollutants combine, creating solid material such as nitrates and sulphates. Particulate matter irritates the human respiratory tract and is a threat to human health. Particulates smaller than 10 microns in diameter (PM10) can reach the lungs and cause adverse health impacts. Air quality standards now also exist for particles less than 2.5 microns in diameter (PM2.5) a size believed to be small enough to bypass the body's natural filtration system and lodge deep in the lungs. The primary sources of particulate matter in the County are dust emitted from unpaved and paved roads, residential fuel combustion, wildfires, construction and demolition.

Ozone

The most significant air pollutant in many Californian urban areas is ozone. Ozone is a colorless gas with a pungent odor and a profound detrimental effect on human health. At concentrations near the State ozone standard, those with asthma, emphysema and other respiratory problems become uncomfortable. At higher concentrations, almost everyone's breathing is impaired and vigorous activities are not recommended. At the highest concentrations (0.06 ppm and above) ozone can even damage sensitive plants such as leafy vegetables and citrus. Long-term exposure at these levels damages crops, such as grapes, and reduces harvests. Ozone is produced when oxides of nitrogen (which gives the reddish-brown color to urban smog) and certain hydrocarbons, called reactive organic gases (ROG) react under the sunlight. Oxides of nitrogen come from incomplete combustion, whether from an open burn, a boiler or an automobile engine. Reactive



This illustration shows a micron (0.000039 inch) compared to a human hair. PM₁₀ particles are ten microns across.

organic gases come from vehicle fueling and exhaust, paints and solvents and industrial processes. The primary sources of ozone precursors in the Ukiah Valley, as throughout California, are automobiles in summer and wood stoves in winter. Biogenic or natural sources of ROG are also thought to be a major component of locally generated precursors of ozone.

Air Quality Conditions

Air quality in the region is controlled by meteorological conditions and the rate of pollutant emissions. Conditions, such as wind speed, atmospheric stability and mixing height affect the atmosphere's ability to mix and disperse pollutants. The rate of emissions in the area varies by the season and pollutant type. In the 1960s and 1970s, open field burning, lumber mill teepee burners, and other sources of pollutants created poor air

quality in the Ukiah area. Improvements have occurred due to more effective controls, closure of many of the lumber mills and processing activities, improvements in motor vehicles and fuels, and increased enforcement of District burn regulations. Overall the County has good to excellent air quality, due in large part to the low population levels and proximity to clean Pacific Ocean air.

Despite the good air quality, there are times of the year when pollution levels become elevated.

PM₁₀ and PM_{2.5} pollution remain a greater concern as the Valley's geography, microclimate, and population can lead to violations of federally set air quality standards for particulates. The most significant levels of particulate matter emissions from residential wood combustion occurs during the winter months. These emissions, coupled with the winter meteorological conditions mean that almost all particulate matter (PM₁₀) violations occur in winter. Summer particulate matter levels can become elevated because of seasonal activities, such as agricultural construction, seasonal grading activities and wildfires.

Ozone levels are highest in the Ukiah valley during late spring through early fall, when emissions of the precursor pollutants are highest and meteorological conditions are conducive. Monitored ozone levels have slowly decreased, due to more stringent vehicular emission controls, minimal population growth in the Valley and a decrease in industrial operations. The County has not recorded a single ozone violation day since 1996. The Ukiah Valley remains vulnerable to ozone level increases due to transport from North Bay sources as well as from unmitigated emissions arising out of renewed population or

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economic growth. Valley-wide, motor vehicles create the largest amount of anthropogenic ozone precursors.

Air Quality Enforcement

The Mendocino County Air Quality Management District is charged with planning for and enforcing air quality throughout the entire county, including the incorporated areas. The District conducts continuous measurement of particulates, ozone, carbon monoxide, nitrogen oxides, and weather data in Ukiah. The District also monitors state legislation and restrictions, to help with enforcement.

Energy and Climate Change

The subject of energy and climate change is intricately linked. Energy use is second nature to most people and essential to maintaining a functioning economy. At the same time, most energy sources used today emit greenhouse gases (GHG) such as carbon dioxide that have been scientifically demonstrated to

cause climate change. Most GHG emissions are directly related to our energy use (cement manufacture, refrigerants and agriculture account for the rest). In 2006 the State enacted Assembly Bill 32, the California Global Warming Solutions Act of 2006. This bill established the first set of limits on GHG emissions for the state of California and put into place the regulatory framework needed to reach those targets. AB 32 set the 1990 GHG emissions level as a target to be achieved by 2020. As part of AB32, local jurisdictions were required to inventory and develop plans to reduce their GHG emissions. Under the California Environmental Quality Act (CEQA), jurisdictions are also required to analyze, disclose, and to the best extent possible, mitigate GHG emissions resulting out of land use decisions.

Implementation measures on energy and air quality included with the UVAP will also help reduce GHG emissions, particularly from sources attributable to new growth and development. Measures that improve building energy efficiency and reduce vehicle-miles-traveled (VMT) will lead to both decreased energy consumption and GHG emissions. Furthermore, Action Items RM-50.1 through RM-50.3 in the 2009- adopted General Plan specify that the County shall inventory GHG sources, create GHG reduction plan for the unincorporated area and adopt measures that reduce fossil fuel consumption.

Note:

For additional policies that may apply, please see the County of Mendocino General Plan, adopted August 2009.



GOAL EA1

Utilize construction strategies and technology to minimize impacts to the local infrastructure and environment.

Policy EA1.1: Promote energy efficient planning practices.

EA1.1a: Energy Efficiency

Coordinate with recommendations from the Energy Working Group to revise zoning code and develop design review guidelines to promote responsible design through the use of energy efficient techniques and equipment; setbacks and height limitations to promote optimal heating, cooling and cogeneration opportunities;

materials and construction practices that minimize adverse environmental effects. Adopt energy efficient standards and conservation requirements and integrate them as an energy efficiency ordinance into the development review and building permit process.

EA1.1b: Energy Incentives

Offer permitting incentives to encourage the use of energy-efficient construction practices and technology to minimize impacts to the local infrastructure and environment. Provide incentives such as fee reductions and expedited processing for facilities that use renewable resources for energy production. Projects that conserve more energy than the minimum required by new County energy efficient building standards will be given priority in obtaining building permits under the Growth Management Program developed under UVAP Policy LU4.1

EA1.1c: Solar Design

Integrate requirements for passive solar building design into design review guidelines. Ensure that building design maximizes air circulation, natural lighting, views, solar orientation, and shading areas to interior and exterior spaces. Require orientation of buildings to maximize solar heating during cool seasons, avoid solar heat gain during hot periods, enhance natural ventilation, promote effective use of daylight, and optimize opportunities for on-site solar generation.

EA1.1d: County Facilities

The County shall adopt and implement energy efficient standards and conservation requirements for new County facilities. The County shall strive to replace its vehicle fleet with fuel-efficient vehicles.

EA1.1e: Renewable Resources

Preserve opportunities for development of renewable energy resources. Promote renewable energy.

EA1.1f: Community Choice Aggregation

Evaluate and pursue implementation of Community Choice Aggregation if it proves to be a cost-effective and low-risk strategy to accelerate the use of renewable resources.

EA1.1g: Green Building Standards

New construction shall comply with the California Green Building Code. Adopt and integrate green building standards into the development review and building permit process. Offer incentives to encourage green building practices.

EA1.1h: Building Code Standardization

The County of Mendocino will work together with the incorporated cities to establish a uniform set of building standards for all new construction.

EA1.1i: Fleet Vehicle Replacement Program

Mendocino County will replace their vehicle fleet with more fuel efficient and/or clean-burning models and will encourage other entities to do the same. The County promotes the use of all-electric vehicles for local use and hybrids for extended replacements.

EA1.1j: Electric Vehicle Incentives

Mendocino County shall investigate potential electric vehicle purchase incentives for individuals and/or businesses.

EA1.1k: Prepare and Adopt a Qualified Greenhouse Gas Reduction and Energy Management Plan

Mendocino County shall prepare and adopt a Qualified Greenhouse Gas Reduction and Energy Management Plan that establishes a baseline inventory of GHG emissions from all sources, GHG reduction targets that are consistent with the goals of AB32, and enforceable GHG emission reduction strategies and performance measures. Unless revised by additional analysis done while preparing this plan, the targets will be to reduce emissions 22% countywide from today's levels by 2020 and by 83% by 2050. The plan will include enforcement and monitoring tools to ensure regular review of progress in meeting the reduction targets to allow revising the plan as needed.

Policy EA1.2: Encourage efforts to promote recycling.

EA1.2a: Recycling Programs

Continue to enforce the Construction and Demolition Ordinance as it relates to recycling programs. Encourage residential, commercial and industrial concerns to evaluate and reduce their waste streams and to participate in waste exchanges and used goods resale programs.

Policy EA1.3: Maintain and improve air quality.

EA1.3a: Particulate Matter Guidelines

Revise the land development code to require measures to reduce particulates from road and site construction, grading and demolition to the maximum extent feasible.

Require new access roads and parking areas to be covered with pavement or other appropriate material to reduce or eliminate

air quality and watershed impacts when warranted, based on projected fugitive dust, erosion and other factors.

Encourage the use of landscaped buffers between agricultural operations and watercourses.

Work with the Mendocino Air Quality Management District to develop a program to reduce particulate emissions from County-maintained roads.

EA1.3b: Clean Air Heat Sources

Update the County building code and other relevant ordinances to require that primary heat sources in all new development and additions involving space heating use low/no air emission heat sources (solar, electricity, natural gas, propane or butane), verify through plan-check process.

Support the Mendocino County Air Quality Management District in the development of incentive programs to encourage voluntary replacement of older, highly polluting wood stoves and fireplaces in existing homes with EPA certified clean burning appliances.

EA1.3c: Healthy Buildings

Offer development incentives to encourage the use of “green” and non-toxic building materials and advise builders to apply for regional, state and national incentives programs.

EA1.3d: Transportation and Air Quality

Develop a comprehensive strategy to mitigate traffic and air quality impacts from new development using alternatives to the automobile, such as incentives to increase public transit ridership or construction of bus stops at convenient locations.

EA1.3e: Separate Air Pollutant Emission or Odor Sources and Sensitive Land Uses

Do not allow land uses that emit toxic air contaminants and/or odors near residential uses or other sensitive receptors. Do not allow residential and other sensitive land uses in the vicinity of air pollution sources (which may include freeways, manufacturing, agricultural, hazardous materials storage, painting shops, landfills, food processing, wastewater treatment, and other similar uses). Require that project applications involving sensitive receptors proposed near Highway 101, truck access roadways, truck distribution centers, or chemical dry cleaning operations include an analysis of the potential health risks and mitigation measures to reduce these risks.