

# ENERGY CONSERVATION

## (Goal 13)

### TABLE OF CONTENTS

1.	Overview .....	2
2.	Findings and Policies .....	3
2.1	County Programs .....	3
2.2	Land Use .....	5
2.3	State Development .....	7
2.4	Existing Housing .....	9
2.5	Renewable Energy .....	11
2.6	Commercial and Industrial Sector .....	12
2.7	Recycling .....	13
2.8	Transportation .....	14

## ENERGY CONSERVATION

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#### 1. Overview

A comprehensive and long-range approach to energy policy requires that energy not be isolated as a district, technical issue. Rather, energy should be considered as a fundamental resource whose future price and availability will strongly influence many physical, economic and social development patterns. Energy drives all processes in the County. If the supply of any form of energy is interrupted, it can be extremely disruptive to the local economy unless we have planned for the substitution of more readily available forms of energy. Since it can be seen that fossil fuels are becoming more scarce and expensive and that central thermal (coal and nuclear) electric generating plants are becoming increasingly expensive, the County must begin now to incorporate considerations of energy impact into its decision-making process.

There are double economic benefits from energy conservation. First, it is well documented that it is cheaper to save a unit of energy than it is to produce a new unit of energy. And energy conservation not only saves money and energy, but it also creates jobs in the County. Secondly, energy conservation slows or even reverses growth in energy demand, which in turn reduces capital requirements for new energy supplies, which in turn keeps energy prices down. In addition, energy conservation provides a more efficient use of capital than most new energy supply projects through its shorter payback periods.

Energy efficiency is a means to provide energy which cannot otherwise be obtained. The future vitality of industry and business, and subsequent jobs, will be significantly affected by the ability of the Bonneville Power Administration and the Tillamook People=s Utility District to provide additional electrical energy and by the supply of petroleum on the international market. A comprehensive conservation program can made available for the County electricity that is currently wasted, and it can cut down the out-flow of dollars for petroleum.

The development of solar and other renewable sources of energy within the County will also have a positive impact in regard to the County=s economy. As with conservation, it will keep some of the money that is currently being spent outside the County on energy at home, and will create local jobs in renewable energy fields.

The economic feasibility of solar and wind installations in enhanced by both federal and state tax credits. For homeowners, the two tax credits can amount to as much as 65 percent of the cost of these renewable energy systems. Whit these

substantial incentives, it is reasonable to expect an increased number of installations of renewable energy systems in the County. The County can act to promote this development by removing present regulatory barriers.

Planning for energy conservation can help maintain lower energy costs and can benefit other important community objectives, such as lowering public service costs and housing costs. Energy conservation reinforces the choice of a more compact pattern of urban development that discourages low-density sprawl. For example, the Northwest Energy Policy Project has reported that multi-unit housing can save from 20 to 60 percent of the energy used for residential space heating.

Conserving energy through energy-conscious planning and site design will reduce energy load requirements. Siting and orientation are basic factors which should be considered in the design of residential and commercial buildings. Energy conservation guidelines could be developed which would become part of the existing development approval process.

Planned unit developments, even at low densities, yield significant savings over conventional subdivision grid development. Increased energy efficiencies result from savings in materials and energy used in constructing streets and other infrastructures. In addition, because streets are shorter, trips within these projects are shorter and may be more likely to be traveled by foot or bicycle.

It is necessary that energy conservation and renewable energy resources development be integrated with related County policies and programs, including land development, transportation, solid waste management, housing and community rehabilitation, economic development and County operations. Tillamook County can pursue local self-reliance in energy by giving highest priority to locally-owned and operated renewable energy resource development, by achieving compatibility of County policies and programs with energy policies, by actively encouraging support from federal and state government agencies located in the County, by coordinating energy efficiency activities throughout the County, and by development of citizen interest in and support of the County=s energy efficiency policies.

In summary, Tillamook County=s overall objectives shall be to conserve energy and utilize renewable energy resources to the extent feasible and economic while preserving environmental quality.

## 2. Findings and Policies

### 2.1 County Programs

#### Findings

County buildings and operations are primary targets for energy efficiency measures. By implementing conservation actions directly within its own operations and procedures, the County can serve as a local example by reducing its own energy costs and saving taxpayers= money.

The County is the government closest to the citizens and its actions will be noted by those citizens. Many local governments across the nation have already successfully decreased energy consumption after reviewing their own staff, and adopting life-cycle costing and purchasing practices. By adopting conservation practices in its existing buildings alone, the County should be able to reduce energy consumption by 15 to 25 percent.

The County can also set an example in the use of renewable energy systems in any new construction or major rehabilitation. Through such actions it can develop local skills in building and maintaining the systems.

Along with other local jurisdictions, the County is well equipped to implement community based conservation programs. In addition to the leadership role in energy efficiency and use of renewables, the County has specific opportunities to assure the accomplishment of the policies of their energy strategy and the enforcement of already existing energy efficiency requirements in new building construction.

#### Policy

The County shall operate public facilities and deliver county services in an energy efficient manner.

#### Implementation Methods

1. Conduct energy audits of all public buildings and weatherize them to recommended standards.
2. Analyze County structures in order to identify excessive lighting levels and install daylight and task lighting whenever possible.
3. Develop and implement a life-cycle costing procedure in order to procure the most energy efficient buildings and equipment.
4. Develop staff expertise in energy efficiency principles and practices.
5. Establish and maintain an energy monitoring and accounting system to track energy consumption and costs in order to identify conservation opportunities and to prepare an annual energy

consumption and conservation report.

6. Require that optimum energy conservation measures are used in any new construction or major renovation in which County funds are used.
7. Investigate opportunities to co-generate or recover energy within County operations and implement those which are cost-effective.
8. Institute an employee suggestion program to receive and evaluate suggestions on how to conserve energy in County operations and provide incentives for those suggestions acted upon which result in reduced energy consumption.
9. Establish a paper recycling program in County offices.
10. Allow County employees the option of a 4-day work week and others can participate.
11. Coordinate carpools and vanpools in which County employees and others can participate.
12. Insure maximum fuel efficiency in the purchase and maintenance of County vehicles.
13. When available, purchase goods manufactured from recycled materials.
14. Offer leadership in energy planning and conservation by setting an example for other agencies, institutions and the general public through energy efficient operation of County services and facilities and by encouraging energy conservation activities throughout the County.
15. Implement conservation measures and renewable resource development through a program which encourages involvement of affected Tillamook County citizens in the key policy and programmatic decisions.

## 2.2 Land Use

### Findings

Land use patterns and settlement densities have a direct effect on energy consumption. And land use decisions are the area in which the County will have the greatest impact. Land use policies and patterns affect energy use

primarily in two ways: (1) they affect the amount and kind of travel through the arrangement of land uses; and (2) they determine the number, design and the orientation of buildings which can be built in a given area.

Energy conservation through land use planning is a long-range strategy. If future energy savings are to be realized through changes in land use patterns, the County must give attention now to the relationship of development practices and the consumption of energy. Decisions made now will be a key factor determining how much energy and money it will require to run our local economy. It will also help determine from what sources we shall be able to obtain that energy. While stressing the importance of energy in land use decisions, it is also recognized that there must be a balance between energy efficiency and the use of renewable forms of energy and the attainment of other community goals and policies.

The County's land use decisions directly control density, which can increase the number of buildings with shared walls and common facilities, the conversion of existing buildings to higher density, the in-filling of buildings, and the opportunities for use of waste heat in mixed-use areas. The site requirements embodied in land use policies can have significant impact on total energy use and on the feasibility of using renewable forms of energy, such as wind, solar energy, and hydro power.

The ability to regulate and implement land use policies is a crucial tool in efficient energy management. Energy efficient land use policies are, therefore, a complement to other energy conserving strategies, and offer opportunities for beneficial economic, environmental, and social effects.

#### Policy

Tillamook County shall promote energy efficiency through land use planning. It shall develop and implement land use programs and related planning techniques that give consideration to projected energy impacts and optimize energy efficiency.

#### Implementation Methods.

1. Control the development of land uses in a manner which optimizes the efficient use of all forms of energy.
2. Review applicable land use codes and ordinances as they affect long-range demands for energy, and as they affect the use of renewable energy resources.
3. Promote compact development within existing or designated urban

service boundaries within Tillamook County.

4. Encourage the development of vacant land near presently developed areas within cities and within intensively developed areas and encourage development of substandard lots in such areas.
5. Encourage mixed use development and close spatial relationships among developments for living, working, shipping, and recreations.
6. Discourage development of strip, isolated, and scattered commercial areas in favor of more concentrated developments with convenient access to major transportation corridors.
7. Where safety permits, encourage commercial or larger residential structures that can make use of excess steam from industrial processing to locate close to those industries which have this source of energy available.
8. Encourage energy efficiency in new and existing industrial development by establishing guidelines for industrial location to take advantage of waste head opportunities.

## 2.3 Site Development

### Findings

Conservation and use of renewable energy ultimately takes place locally and involves individuals who build or purchase specific systems and materials and install them with the approval of local building code officials and other local authorities. It is because conservation and use of renewable energy resources takes place on such a local level that local governments can have an impact in facilitating the development of renewable energy resources. The areas of conservation and renewable energy resources offer a unique opportunity for local governments to become involved in the planning and control of their own energy future.

Zoning and land division codes are tools by which energy-related land use policies may be implemented on a more localized scale than comprehensive plans. These policies can affect energy conservation through such matters as building shape, sharing of walls, access to solar energy, reduced street widths, bike and foot paths, use of total community energy systems and integrated mixed uses which reduce the need for transportation and which offer the possibility of reuse of waste heat from one process to another. Planning for energy conservation can help maintain lower energy costs. For example, planned unit developments, even at low densities, yield significant

savings over conventional subdivision grid development. Increased energy efficiencies result from savings in materials and energy used in constructing streets and other infrastructures. In addition, because streets are shorter, trips within these projects are shorter and may be more likely to be traveled by foot or bicycle.

Since transportation accounts for two-fifths of total energy consumed, and since one-half of the petroleum we use is imported, savings in transportation are important. Development should be planned so that the most efficient mode of transportation is facilitated.

Conserving energy through energy-conscious planning and site design will reduce energy load requirements. Energy conservation guidelines can be developed which can become part of the existing development process. Siting and orientation are basic factors which should be considered in the design of residential and commercial buildings. For example, providing for access to solar energy by proper site design can alleviate the need for later regulations or easements to protect such access. A reconsideration of past practices and regulations can lead to changes which make a renewable energy source more economically feasible. Experience in other jurisdictions which have adopted such changes has shown the cost of implementation of such changes to be minor.

Options for flexible setback requirements, street alignments, separate bicycle and pedestrian access, cluster development, and planned unit development also affect the opportunities for energy efficient site design. For example, the shape and orientation of a building is often determined by the street orientation and the setback requirements.

The microclimate of a site with its characteristics of wind, sunlight and air drainage has a direct influence on the amount of energy necessary to regulate the interior environment of any building in that location. The orientation of a building on its site can help utilize or avoid solar radiation according to the season of the year, and thereby reduce space conditioning needs. A 90-degree building rotation and a change in window location can dramatically affect summer and winter heating and cooling. Likewise, by taking into account the effect of coniferous trees, topography, landscape features, or the arrangement of buildings, significant reductions can be made in the infiltration rates of buildings.

#### Policy

Require that measures be utilized in all development and rehabilitation projects to achieve energy efficiency through combinations of building design, construction practices, and site planning.



## Implementation Methods

1. Review County codes and eliminate code provisions which unnecessarily impede energy efficiency.
2. Revise applicable codes and ordinances to provide flexible setback requirements conducive to the solar orientation of structures.
3. Adopt and implement standards for new subdivisions which incorporate energy efficiency principles of street orientation, street construction, lot orientation, placement of structures, and landscaping.
4. Encourage the increased use of common wall and cluster housing.
5. Work with the Tillamook People=s Utility District to promote the construction of new residences which incorporate energy efficiency.
6. Adopt a program for the conservation and rehabilitation of existing housing.
7. Encourage residential energy conservation by giving public recognition to energy savers.
8. Develop and coordinate with the Tillamook People=s Utility District, the Area Education District, the Oregon Department of Energy and local citizens an effective public information program on energy efficiency design techniques and on the installation and use of renewable energy technologies.

## 2.4 Existing Housing

### Findings

Energy efficiency measures offer clear advantages to Tillamook County. Conservation is the least expensive source of new power available, and other new sources of power are two to ten times more expensive than conservation. It is the most readily available source of new power. While most other sources require three to ten years to be brought on-line, conservation measures can be implemented today. The Bonneville Power Administration, which supplies electricity to Tillamook PUD, is proposing that its customer utilities achieve a 15 percent conservation goal by 1989. But achieving that level of conservation will take an increased commitment on

the part of Tillamook PUD and its customers. Finally, conservation is a uniquely local resource, which offers significant community benefits.

Most structures built prior to the adoption of minimum energy efficiency standards are inefficient in their consumption of energy. In that these structures will represent the bulk of the buildings in the county for the foreseeable future, it is desirable from the perspective of consumer benefit, energy efficiency, and social and economic interests to take measures which will increase their energy efficiency.

The County may incorporate energy efficiency standards into a County housing code should it decide to adopt such a code. Incorporating energy efficiency into the housing code by including weatherization improvements would be an important, effective and equitable step toward increased energy efficiency. As a society we have made numerous decisions about what constitutes minimally adequate housing. Through housing codes we assure that dwellings are habitable. Energy efficiency is becoming an aspect of what constitutes basic housing, because it determines if it will be affordable to keep the house warm. These types of energy efficiency standards are currently in effect for all new residential construction. Bringing all residences up to appropriate standards through a housing code would assure that all citizens have the same right under law.

We currently apply different economic standards to energy efficiency measures and to new generation. These different standards discourage individual initiative. We require that each person bear almost the full cost of conserving, but we share the costs of new generation among all electricity users, the thrifty and wasteful alike. Further, by charging average instead of marginal prices, the payback period of an individual's conservation measures is extended.

At present those who have already conserved see their rates continue to rise, though their total bill is less because of the actions they have taken. But they are penalized by the wastefulness of others as long as new generation plants must be built to satisfy a growing demand. But if all conserve, everyone benefits doubly: (1) the total bill is less and the home is more comfortable; and (2) although rates may continue to rise, the increase will not be as steep as it would be without conservation.

The final step in bringing about an equitable standard of energy efficiency in existing housing is to assure that the implementation of such a program is affordable to the owner of the dwelling. There are several possible avenues. The Columbia Community Action Agency offers weatherization services for low income persons. It is probable that the Tillamook PUD could offer no-interest or low interest financing by the time a housing code could be

adopted. The Bonneville Power Administration is presently conducting a pilot loan program with several public utilities and cooperatives. Finally, the state may act in the next legislative session to offer a financing program for weatherization, such as it offers for renewable energy devices. It is likely that appropriate financing mechanisms can be worked out.

#### Policy

The County shall establish energy efficiency standards as part of a housing code, at the time of adoption of such a code.

#### Implementation Methods

1. Develop cost-effective standards for residential housing.
2. After adoption of a housing code, require that the owner of a dwelling unit certify that it has been brought up to standard within 120 days of change in electric service.
3. Work with Tillamook PUD, to Columbia Community Action Agency, and the State of Oregon to arrange adequate financing measures.

### 2.5 Renewable Energy

#### Findings

The use of renewable energy resources, coupled with improving energy efficiency, can have a beneficial impact on the economic self-reliance in steadier energy prices, increased local employment in energy and conservation-related fields, and economic development based on locally available energy resources. The primary emphasis which should be given to development of renewable energy resources should be given to development of renewable energy resources should be toward solar energy for space and water heating, toward wind and hydro power for electrical energy generation, toward wood for space heating and industrial co-generation, and toward other biomass resources for alcohol fuels and methane production.

Not all renewable resources have the same degree of environmental impact. Solar energy applications and building conservation measures are generally environmentally benign as well as highly cost-effective. Large wind farms, hydro power developments, and large, biomass-fueled generation facilities will have some adverse environmental impacts. These facilities will be subject to certain state regulations, but the County will also have to balance the impact of energy facility development with other County goals and policies.

Work has already begun through the Tillamook People=s Utility District, the Water Resources Research Institute at Oregon State University, the Department of Atmospheric Sciences at OSU, and the Army Corps of Engineers to identify wind and hydro power resources in the county. The County can work with these institutions in utilizing their inventories to identify areas in which the resources should be protected for future development. For residential and farm scale applications, the County can insure that its policies and procedures are not an unplanned impediment to such development.

### Policy

The County shall promote and facilitate the use of renewable energy resources.

### Implementation Methods

1. Revise applicable codes and ordinances to permit, where appropriate, the use of on-site, renewable energy facilities, including individual home-site and integrated community/neighborhood renewable energy systems whose energy sources include solar, wind, micro-hydro, and biomass energy forms.
2. Develop a model solar access easement which can be used by County residents.
3. Work with appropriate local and state institutions and agencies to identify and protect sites for renewable energy resource use.

## 2.6 Commercial and Industrial Sector

### Findings

The industrial sector offers many opportunities for energy conservation. Some major firms have reduced their energy consumption 30 to 50 per cent. Industries consume large blocks of direct energy locally as electricity, oil, or wood. Likewise, manufacturing processors are in some instances large producers of heat. In these cases, when steam is used for heat, it is possible to use this steam both for heating and to produce electricity, in a process called co-generation. There is a co-generation facility at Publishers Paper in Tillamook which operates when it has steam it does not need for drying wood. The process is also fired by wood wastes. Louisiana Pacific Corporation operates a similar facility at its plant at the Port of Tillamook Bay Industrial Park.

Sharing of industrial heat is feasible in some instances if industries are in close enough proximity to each other. It is also possible to use waste heat from an industrial process as heat for a business district or local residential heating system.

It is important for local planning officials to consider the ratio of jobs to energy in any new industries which seek to locate in the County. Large new industrial loads require new generation capacity, the construction of which can raise the energy costs of all ratepayers. If the County is going to promote or seek new industries, it should be concerned that its efforts go toward helping industries locate in the County which use energy efficient processes.

Commercial sector energy use can be made more efficient by more effective energy management practices through careful monitoring of energy use and improved operational techniques for mechanical systems. The Oregon Department of Energy provides information on programs to reduce energy use in existing commercial buildings. The Uniform Building Code requires energy efficient construction of new buildings.

#### Policy

The County shall encourage the adoption of energy efficiency practices and the use of renewable energy sources in the commercial and industrial sectors of the economy.

1. Encourage industrial co-generation and shared use of process and waste heat.
2. Encourage development of industries employing processes that have high employment and high value added per unit of energy consumed.
3. Give public recognition to commercial and institutional energy savers who reduce energy use by significant amounts.
4. Encourage industries which produce energy efficient goods and services and which utilize renewable energy resources.
5. Incorporate energy efficiency policies into the County's Overall Economic Development Plan.

## 2.7 Recycling

## Findings

According to the Oregon Department of Energy, over one-fifth of the total U.S. energy budget is spent on materials production, and the majority of these materials are discarded after one use. It is estimated that two-thirds of these discarded materials could be reused, while reducing energy use and extending the life of local solid waste landfills. The Oregon Department of Environmental Quality now requires that waste reduction, through programs such as recycling, be a part of county solid waste management plans.

Other than reducing excess packaging, which is beyond the scope of County actions, source separation of residential and industrial waste is the most economical and energy-efficient means to deal with recycling of solid waste. Mechanical separation of wastes after they have been mixed is a technology which has proven unworkable.

The County controls the solid waste stream through its operation of the landfill and transfer stations and through the franchises it grants garbage haulers. It has an excellent opportunity to institute recycling as a key element to its solid waste management plan through these waste handling systems. It can expand its effectiveness in promoting recycling through a well designed educational campaign which instructs people on how to separate waste materials so that recycling becomes a routine part of handling what they discard.

## Policy

The County shall support and encourage the recycling of solid waste.

## Implementation Methods

1. The County shall establish and maintain recycling facilities at the transfer stations and the central landfill.
2. The County shall encourage the franchised garbage hauling companies to operate a recycling pick-up service for their customers.
3. The County shall actively promote recycling through public information campaigns.

## 2.8 Transportation

### Findings

Transportation is a major energy consuming sector in the County, with private automobiles accounting for a major portion of that consumption.

although the County has a predominantly rural character which encourages private auto use, the County can reduce the need for transportation through proper land use, through providing bicycle and pedestrian pathways, and through investigating ways for establishing a coastal public transportation service and a Tillamook-Portland public transportation link.

Not only are local residents and businesses directly affected by high fuel prices and the instability of our international supply but so is the very important tourist industry in the County. Establishing a better public transportation link with Portland and expanding the coastal transportation service can contribute savings to County residents while encouraging coast access from the Portland metro area. The connection to Portland might either by weekend bus service or by reactivation of the rail line. If these measures are not immediately feasible, the County could be prepared to promote them when they become so.

Public transportation systems offer the best opportunity for fuel savings. To be used widely, a public transit system requires high densities of living areas, working and shopping places along major transportation routes. While there is not sufficient density to support transit service in Tillamook County, there is potential for some public transportation service in that most of the population is concentrated along the coast. An expansion of the present jitney service would be a first step.

There are also steps the County can take to encourage car-pooling. It can establish its own system and coordinate it with other employees in the area, and it can allow its own employees more flexibility in their reporting and departing times so they can participate with others in car-pools.

#### Policy

The County shall encourage and facilitate efficient modes of transportation.

#### Implementation Methods

1. Determine the feasibility of establishing a weekend and vacation beach-bus service on the 26-101-6 Highway loop.
2. Determine the feasibility of reestablishing passenger train service on the Portland-Tillamook Nehalem River rail line.
3. Determine the feasibility of establishing a full-service coastal jitney.
4. Encourage home occupations and cottage and rural industries by revising zoning regulations.

5. Adopt standards for all roadway projects which accommodate and encourage alternative forms of transportation, including pedestrians, bicycles and park=n= ride.
6. Seek new sources of revenue to fund efficient alternative transportation projects.
7. Provide bicycle paths and footpaths to encourage non-motorized transit.