GOAL 13 - ENERGY CONSERVATION

A. Introduction:

This Background report will first outline some of the highlights from the LCDC Energy Conservation Goal (Goal #13) guidelines. We will then look at the types of energy uses in the State of Oregon and Hood River County. Finally, energy conservation techniques with regard to stationary land uses and transportation uses will be outlined.

Basically, general comments are made relative to the entire County and the State while more detailed information pertaining to the City Westside and Mt. Hood areas is provided in the report entitled Goal 13 - Energy Conservation: Background Report which is part of this Goal 13 section.

B. General:

A nation that uses less energy per capita is not necessarily a nation with a low standard of living. The following table demonstrates this:

TABLE 1

	Gross National Product (GNP) Per Capita	Energy Consumption Per Capita (Gallons of oil Equivalent)
Sweden	$6,000 (1973)	1,467
West Germany	4,996 (1973)	1,080
U.S.A.	5,628 (1973)	2,460

In Hood River County, per capita energy consumption is highest in the transportation sector. This is partly due to the low density pattern of many residences in the County. Land use planning that concentrates housing can help reduce this per capita energy consumption.

C. Highlights From LCDC Energy Conservation Goal Guidelines:

Highlights from the "Guidelines" under the Energy Conservation Goal:

1. Land-use planning should, to the maximum extent possible, combine increasing density gradients along high capacity corridors to achieve greater energy transportation efficiency.

2. Land-use plans should be based on utilization of the following techniques and implementation devices which can have a material impact on energy efficiency: (a) Lot size, dimension and siting controls; (b) building height, bulk and surface area; (c) density of uses, particularly those which relate to housing densities; (d)

availability of light, wind and air; (e) compatibility of and competition between competing land-use activities; and (f) systems and incentives for the collection, reuse and recycling of metallic and nonmetallic waste.

D. Energy Uses in Oregon:

Energy use in Oregon (as of 1973), broken down by sector, works out as follows: transportation 35.6 percent, industrial 24.5 percent, household 20.5 percent, commercial 15.6 percent, electric utilities 3.5 percent (Source: Bill and Marsha Mackie, Yamhill County Planning Department Energy Office, Relationships of Energy to Land Use, 1977).

Energy use in Oregon (as of 1973), broken down as to use by the individual in his or her personal life is: automobile 56 percent, space heating 31 percent, water heating 6 percent, other 7 percent (source: Bill and Marsha Mackie, 1977).

As the above figures indicate, space heating represents a sizable proportion of per capita energy use. For the purpose of reducing energy use, the Oregon Legislative Assembly recently passed a law requiring the providers of fuel or electricity for heating purposes to have a weatherization program. If requested by one of their customers, a representative from such a company comes out to the customers home. He can advise the customer on ways to weatherize his or her home and thus save energy and money (weatherization includes such items as weather stripping, insulation and storm window installation). The company representative also can often supply names of contractors who can do the needed work.

One electric utility serving part of the County has an incentive program for home insulation. This program includes the providing of an interest-free loan to insulate all-electric homes served by the utility, the loan to be paid back as the result of a lien on the insulated home when it is sold. The company providing this home insulation program became motivated to do so partly as the result of discovering that the cost to the company to build new electricity generation facilities is 4½ cents per kilowatt hour produced. The selling price of electricity at present is only 2.4 cents per kilowatt hour (Source: Pacific Power and Light Company, Hood River office, 1978).

E. Stationary Land Uses:

Heating and cooling costs in Hood River County can be minimized by careful planning of house design and orientation before houses are constructed. If the largest wall and window areas in a house face north and south, the cost of winter heating will be lessened (the south side of a building at 40 degrees latitude receives three times as much winter sun as the east or west sides). With regard to cooling of houses in the summer, it is a good idea to either eliminate windows on the west side or to provide them with adequate shading so that the late afternoon sun will not overheat the house. Shading of the south side of a building is also important in the summer months.

Deciduous trees on the south side are a good way to provide this shading. The trees have their full foliage when shading is needed in the summer and of course are bare of leaves allowing the south side of the building to receive full sun in the winter. Properly placed trees with respect to prevailing winds can also be of value in reducing energy needs in winter. Trees or shrubs on the side of buildings receiving the winds can divert air flow. This is important when one considers that the heating load on a house in a 20 mile per hour wind is approximately 2.4 times as great as with a 5 mile per hour wind (Source; Bill and Marsha Mackie, 1977).

Increasing housing density can conserve energy in several respects. Multi-family housing uses 30 percent less energy than single-family housing because of common electrical, sewer, building walls, etc. (Source; Bill and Marsha Mackie, 1977).

Increasing housing density (whether multi-family or single-family with smaller lot sizes) adjacent to urban activity centers saves energy and costs both to the individual and the public purse because of shorter trip lengths and the elimination of excessive street, sewer, and water line development costs. Increased housing density also makes it less costly to extend public services like fire protection, public transportation, police and schools. One of the greatest areas for energy savings in high density areas is in the construction and repair of roads and highways. Redevelopment of previously developed areas also presents an opportunity to save on energy costs. Finally, requiring that all new sources of employment locate near cities and towns will prevent the migration of the various economic functions to the urban fringes and the countryside. It is suggested that citizens who wish to learn additional details about ways to save energy and monetary costs with regard to housing and other land uses refer to the handout made earlier this summer entitled “Planning Considerations: Compact Development vs. Low Density Development". The Planning staff can also provide additional references.

F. Transportation:

Although automobiles are here to stay for a while, it is important to maintain and develop alternative modes of transportation in the interests of conserving energy and other resources, and providing some means of getting about for all of our citizens (including the elderly, those with low incomes and the handicapped). The fact that the amount of land under pavement in the U.S.A. is equal in size to the State of Georgia, and the fact that our national balance of payments has of late consistently been in the red due primarily to oil imports should also be of concern to our country.

With regard to efficiency of energy use, bicycling and walking appear to perform the best. The Citizens Advisory Group has identified provisions of bicycling ways as a need in the County. The use of energy per passenger mile, figured on the basis of probable loads, for several other modes of transportation are as follows: bus 1,600 BTU, train 2,900 BTU, automobile 3,400 BTU (Source: Erik Hirst, Energy Intensiveness of Passenger and Freight Transportation Modes, 1950 to 1970, Oakridge National Laboratory, 1973). The automobile is the major source of air pollution in areas where most of the American population lives. Air pollution currently costs the U.S.A. 6 billion

dollars annually in sickness and premature deaths (Source: Environmental Protection Agency). In light of the above, it would appear that bicycling and walking when feasible are all steps that can be taken for the best interests of all of us.

The lay-out of our housing and our streets can have significant impacts upon the community's use of energy, as has been previously indicated. If we locate most of our housing on cul-de-sacs and loops, we find that street installation costs (and use of energy for same) are less. Additional benefits are that there can be more variety in lot size and shape, there is less danger to children and less noise, and the sense of neighborhood cohesiveness can be heightened. Energy costs can be reduced if neighborhood streets are narrowed. Neighborhood streets are those which provide access from loops, cul-de-sacs, and houses located in other areas to collector and arterial streets and activity centers. Neighborhood streets need often be no wider that 26 feet - 28 feet without impeding the flow of traffic. This width can allow two moving lanes of traffic. On-street parking should be held to a minimum but can be provided in strategic locations.

G. Commercial Services:

The strategic and central placement of commercial services greatly contributes to energy conservation. Commercial enterprises that are clustered together in easily accessible locations for the patrons make convenient shopping and energy conservation. The Citizen Advisory Group has identified the communities of Odell and Mount Hood as being the only locations where commercial zoning is appropriate in the Central Valley area. These communities are in relatively centralized locations. Patrons who can walk from store to store instead of driving save time, energy and money. Businesses that locate close to one another greatly aid in alleviating “strip development”. Strip development is not only a big energy waster but also a visual eyesore. To date the Central Valley area does not have a strip development.

H. Inventory; Energy Conservation Opportunities:

The County has inventoried energy conservation measures and due to the overall plan consolidation they are applicable to the entire County including the Mt. Hood area. These conservation measures include: (1) weatherization and home insulation programs through the utility or fuel companies; (2) attention to house design, orientation and landscaping (passive solar); (3) increasing housing densities adjacent to urban activity and commercial centers, to shorten trip lengths and reduce costs of extending public resources; (4) provision of alternative types of transportation (i.e., bicycle and pedestrian walkways); (5) development by clustering commercial uses. Recycling efforts are noted through the Hood River Citizens for Recycling, in conjunction with the Hood River Garbage Service. The County transfer station operated by the Hood River Garbage Service does provide countywide recycling services. They recycle glass, tin cans, aluminum, corrugated cardboard, and newspaper. They are hoping in the future to recycle motor oil.

The Hood River Citizens for Recycling was instrumental in setting up an ongoing countywide recycling program. This program was inherited by the County transfer station and provides countywide services. The Citizens for Recycling group currently monitors recycling activities throughout the County including the transfer station and provides recycling information and educational support. The Lions Club and groups salvage newsprint and some glass.

As a result of an energy grant, the City of Cascade Locks is pursuing energy conservation programs and further consideration of small hydro-electric projects including transmission line development. The City has developed long term and short term projects and has budgeted dollars (1983-84) to implement the above programs.

The following is a brief overview regarding the Hood River Conservation Project. The Hood River Conservation Project is a major two year research effort. The Project evolved out of needs identified after the passage of the Pacific Northwest Electric Power Planning and Conservation Act (Regional Act). Under this legislation the Northwest Power Planning Council (Regional Council) was created and directed to prepare a plan defining how the region's long-term power needs will be met. The Project applies to all of Hood River County except for the City of Cascade Locks.

The most actively involved local agencies include (among others) Hood River Electric Cooperative and Pacific Power and Light Company.

The cost of the research effort is estimated to be $19.7 million. Of the total projected budget, 72.2% or $14.2 million will support residential weatherization measures; 19.3% or $3.8 million is allocated to evaluation; the remaining 8.5% or $1.7 million will sustain Project marketing, communications and administration.

The Hood River Conservation Project is designed to accomplish five specific research objectives:

1. To determine the maximum realizable penetration rate of potentially cost-effective residential weatherization measures.

2. To determine the impact of residential conservation on transmission and distribution system, individual customer load characteristics, and kilowatt hour savings.

3. To determine the effectiveness of general media, personal contact and community approaches to conservation marketing.

4. To assess the characteristics of community dynamics under maximum conservation program conditions.

5. To determine the costs associated with the development and implementation of a maximum conservation effort.

Each objective will be accomplished within the context of a carefully constructed research and evaluation plan.

The Hood River Project will be managed by the Pacific Power and Light Company through its Energy and Conservation Services Department (E&CS). In conclusion, the Hood River Conservation Project is a research and development effort. It is designed to produce empirically derived information upon which objective long-range conservation planning and model standards can be reliably based. The Project represents a timely and vital component in the region's resource planning.

I. ORS 215.044: Solar Access Ordinance:

State Statute (ORS 215.044) encourages consideration of solar energy but does not mandate it outside City Limits. Implementation of adequate solar ordinance will require development of adequate standards for orientation of new streets, lots and parcels; the placement, height, bulk, and orientation of new buildings; the type and placement of new trees on public street rights-of-way and other public property; and require answering questions such as what energy conservation methods will work best in Hood River county?, what funding is available to support an energy conservation program?, etc.

The development of a solar ordinance will require more in-depth review by the Board of County Commissioners primarily due to the following reasons: (1) it is not State mandated; (2) budget impacts must be evaluated; and (3) it could take two years to implement such a program; for example, it took Deschutes County over two years to implement an energy conservation program. This program must be considered as a post-acknowledgment program to be addressed by December, 1984.

Because of the above, the following Strategy has been added to the County Policy Document:

> "The County to further consider the implications of implementing solar access ordinance(s) during post-acknowledgment, by December, 1984. At least the following items will be considered: (1) Evaluation of the provisions in ORS 215.044 (solar access ordinances; purpose; standards); (2) standards for subdivision lot design that maximize solar use capacities; (3) standards to allow reduction in minimum lot sizes when the subdivision design incorporates solar energy techniques; (4) standards for "solar rights" (a separate property right like water or minerals) that would allow adequate sunlight to make contact with a dwelling roof a minimum number of hours per day; (5) standards for orientation of new streets, lots and parcels; (6) standards for the placement, height, bulk, and orientation of new buildings; (7) standards for the type and placement of new trees on public street rights-of-way and other public properties; (8) standards for planned uses and densities to conserve energy, facilitate the use of solar energy or both; (9) coordination with the State Department of Energy; (10) what energy conservation methods would work the best in Hood River County; and (11) what funding is available to support energy conservation programs at the local level."

J. Exception:

The original Mt. Hood Plan took exception to Goal 13 - Energy Conservation. This is not consistent with the intent of Rule 2. The LCDC Critique addresses Goal 13 concerns. The compliance tasks for the Mt. Hood area include: adopt energy conservation policies and inventory conservation opportunities. These items have been addressed, consequently all references to an exception to Goal 13 are deleted.

K. Conclusions and Observations: Findings:

1. Energy conservation reduces environmental pollution and conserves scarce resources. Benefits to human health, as well as monetary cost savings, result from energy conservation.

2. Increasing housing density; building housing where utilities, employment opportunities, and other activity centers already exist; and reducing street requirements for width where feasible all save the public energy and monetary costs.

3. It is less expensive to maintain energy supplies through conservation than through the construction of additional electric generation facilities.

4. Nearly one-quarter of all direct energy used in Oregon is consumed by the private automobile. Considering the fact that the average household makes seven one-way automobile trips, daily, most being of less than five miles in distance, much energy can be saved by using alternative modes of transportation and/or carpooling.

5. Maintaining and enhancing ridership on public transportation conserves energy; helps the needs of the elderly, handicapped, and those with low incomes; and promotes social cohesion.

6. Utilization of solar energy for water and space heating will promote the conservation of our resources.

7. The Community Action Program (CAP) provides a home winterization program for low income residents.

8. Support and include the Strategy noted above in Section "I" (ORS 215.044 - Solar Access Ordinance) in the County Policy Document.