

## Long Range Energy Planning for Oregon's South Willamette Valley

Ronald Logan  
Version date: 2004

### Introduction

The combined effects of peak oil and climate change will require significant changes in the development and use of energy resources in Oregon's South Willamette Valley. If appropriate changes are not made, economic vitality and the quality of community life will be severely diminished. The conclusions of the *Hirsch Report* on oil depletion (*Peaking of World Oil Production*) suggest that it is already too late for a smooth transition to a viable energy path to occur. So the task of reconfiguring energy sources and uses needs to be taken up in an expedited fashion. This will require committed leadership, community support, mobilization of capital, and clarity of vision.

This PROUT Institute policy paper presents brief conceptual notes on a coherent vision for securing sustainable, renewable energy for the South Willamette Valley. It does not address how to obtain the political commitment, public support, or capital investment necessary for this vision to be implemented.

### Demand Reduction

Demand reduction should continue to be the central objective of long-range energy planning at this time, as costs for new generation are likely to continue to climb. The following observations can be made about opportunities for creating demand reduction:

- 1] Additional gains to be had from building insulation and weatherization are diminishing.
- 2] Incentives to encourage demand reduction are now well established for:
  - efficient heating systems
  - solar hot water heaters and PV systems
  - energy efficient appliances
- 3] Use of incentives to promote reduced energy use through new technologies should be explored. Examples include:

- LED ultra low wattage lighting
- appropriate technology appliances such as solar food dryers, solar cookers, and solar refrigerators attached solar green houses (where viable)

4] Significant gains could come from making additional energy efficiency modifications to building codes. (Sebastapol, California, by way of example, does not issue building permits unless construction documents demonstrate adequate attention to incorporating aggressive energy efficiency features.)

- New housing should be required to include passive solar design features and should have roof pitches and orientation optimal for locating solar water heaters and PV arrays.
- Housing developments should maximize energy efficiencies through siting that protects solar access and protects houses from heat loss.
- Houses having a large floor area should pay mitigation fees for extra energy usage.
- LEED type standards should become mandatory in new housing.
- A transitional strategy to requiring zero net energy housing should be set in place.

### **Diversified, Renewable, Local Energy Sources**

A diverse mix of sustainable, locally available energy sources should be developed. These energy sources should be tailored to the intended uses, to the location of use, and to the season of use. And they should be developed in a way that creates balance in the overall energy system.

The South Willamette Valley is fortunate to have a wide variety of locally available, renewable energy sources that have potential for development. Some of these sources are appropriate for wide-scale development; others are only useful in niche situations. A local energy system can gain resiliency from developing diverse energy generating potentials, so long as the energy sources do not operate at a loss.

Listed below are energy sources that have potential for local development:

- wave generators [promising prototype developed by OSU researchers]
- biomass generators [in extensive use in Scandinavia]
- charcoal fueled generators [cleaner burning than wood biomass]
- methane generators located at dairy farms
- wind generators [possible for select coast locations]
- PV solar arrays [including incorporation in skins of new office buildings]
- parabolic solar steam generators [a simple technology for on-site electricity]
- co-generation generators
- biodiesel generators using crops such as silkweed or meadowfoam
- biodiesel generators using algae [promising combined with biomass generators]
- micro-hydro generators [good rainy season complement to PV systems]
- river current hydro generators
- hydrogen [efficiently produced using seasonal surplus energy—eg, hydro in winter]
- alcohol [efficiently produced using seasonal surplus energy—eg, solar in summer]

Some of the above energy sources produce fuel for combustion engines, rather than electricity.

Local energy utilities should evaluate the compatibility of fuel production with electricity production. For some energy needs, sustainably produced hydrocarbon fuel can be substituted for electricity, thus freeing electrical energy for other uses.

### **Additional Facets of a South Willamette Valley Energy System**

Strategies should be implemented to extensively develop cooperative and small, private energy generation facilities that would contract to sell the energy they produce to EWEB/EPUD. This would be an extension of the arrangement in which homeowners can establish net metering contracts with their local utility.

EWEB/EPUD should provide special support in the form of capital access, marketing help, research assistance, and tax incentives, to local enterprises producing sustainable energy generation products, energy conservation products, low energy appropriate technologies, etc. In appropriate situations, local utilities could become investors in such enterprises.

Energy intensive industries should only be permitted to locate in the area if they produce essential goods for which there is no substitution.

As the local community becomes increasingly stressed by rising oil costs, EWEB/EPUD should promote opportunities to substitute locally generated electrical energy for petroleum energy. Generator aided bicycles and Gizmo mini-cars are examples of vehicles that can efficiently run on electricity, rather than petroleum.

Surplus energy produced at peak generating times should be used to produce biofuels or hydrogen fuels.

### **Support Services for Energy Cooperatives**

EWEB/EPUD could provide support services for local, small-scale energy cooperatives, helping them with such aspects of development and operation as:

- planning and installation assistance
- assessing of the costs of production
- assuring that there would be a market for energy produced
- promoting research to develop increased productivity
- providing capital assistance

EWEB/EPUD would help agro-industries and forestry industries in rural areas establish net-metered, on-site energy sources, so that energy is generated close to its place of use thereby minimizing the need for investment in energy grid infrastructure.