Our mission is to support strategic growth, responsible development and sustainable living.
What is Sustainable?

Desire to Displace Coal and Foreign Oil Dependency
Wave Technology vs. Habitat and Fishing Industry
Hydro vs. Fish Passage and Fishing Industry
Wind vs. Visual Impacts. Bats and Migratory Birds
Section 1039 Grants Not subject to NEPA
BioPower: Crops (weeds) and Bi-products as Fuel
Hydro Opportunities:
Well mounted micro-hydro
Generating pressure relief valves
Existing reservoir dams
Wind on the Horizon?
Uncertainties of Coastal Performance

Prototype model PROPRIETARY
3 Blade HAWT (5997 data points)

[Graph showing power output vs. wind speed]

Wind speed corrected to sea level (mph)

Power (Watts)
Solar Electric Viability in our Region:
1 acre = 300 kWh/yr DC

<table>
<thead>
<tr>
<th></th>
<th>Eugene</th>
<th>North Bend</th>
<th>Medford</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWh/Yr</td>
<td>342,000</td>
<td>378,000</td>
<td>396,000</td>
</tr>
<tr>
<td>homes</td>
<td>50-54</td>
<td>56-60</td>
<td>59-63</td>
</tr>
</tbody>
</table>
Solar Thermal Efficiency

50-60% of domestic heating needs during winter months
Getting from here to there

CENTRAL vs. DISTRIBUTED GENERATION

Central Generation

Distributed Generation

Solar
Fuel Cell

Central Plant

Building

Wind

Micro-Turbine Generator
Electric Utilities:

• Manic Pricing on the Wholesale market
• Increasing customer demands – with or without census growth
• Varied states of grid readiness (line maintenance, substation communications, smart meters)
• Diminishing returns on conservation for long established programs

• OR

• Fledgling conservation programs with limited contractor capacity to deliver Renewable Portfolio Standards (RPS)
Municipalities and Non-Profits

• Limited ability to use tax credits
• Limited staff and budget
• Depressed tax base
• Third Party Ownership (PPA’s)
• USDA Grants (15% up to 50k) for small towns
• Increasing pressure from constituents to implement renewable programs
• Higher electricity costs and established Utility incentives
• OR
• Lower electricity costs with no Utility incentives
• House Bill 2620 (1.5% for solar in all new public buildings)
Private Industry

- Economic and technological uncertainty
- Section 1603, Federal Grant Option (30%)
- USDA REAP Grants for Rural businesses (25%)
- Pass-through of BETC or 50% over 5 years
- Umpqua Lending Program
- USDA Loan Underwriting
- Green Marketability
- Attractive ROI
- Some Utility Incentives
Residents

- Economic and technological uncertainty
- Section 1603, Federal Grant Option (30%)
- USDA REAP Grants for Rural businesses (25%)
- $6,000 State Tax Credit Potential
- Ecology, National or Personal Independence
- Local wind regulations often prohibitively expensive to address
- Greatly Improved ROI
- Some Utility Incentives
- Umpqua Lending Program
The reality of leveraging investments

$73.8M in B&RETC in Oregon, 2006 resulted in: 1,240 new jobs
Each $1 of Energy Tax Credits resulted in:
- $1.93 increase to state economy
- $0.25 in wage increases
- $0.14 increase in tax revenues
- $0.65 in energy cost savings

Projection for the next 15 years of average project life:
- $1.26 increase to state economy
- 889 additional new jobs
- $0.13 increase in tax revenues

Economic Impacts of Oregon Tax Credit Programs in 2006
(EconNorthwest, 2007 for Oregon Dept of Energy)
Residential Market

- **Home Value:**
  - $4,000 per 2kW

- **State Tax Credits:**
  - Solar Electric $3/Watt (capped at $6,000 = 2 kW)
  - Solar Hot Water $.60/Watt (capped at $1,500)
  - Wind, Hydro, Biodeisel

- **Federal Tax Credits:**
  - 30% of costs (solar), no cap
  - 30% of costs (wind), $4,000 cap
Residential Solar without incentives

2,000 Watt DC Installation
$18,000 Project Cost
($6,000) State Tax Credit
($6,000) Federal Tax Credit
$6,000 Net Cost
Produces 2,520 kWh/yr
Savings of $201.60/yr

ROI of 22 years
Assumes 3% annual increases in power costs.

2,400 kWh/yr Hot Water
$9,000 Project Cost
($1,500) State Tax Credit
($3,000) Federal Tax Credit
$4,500 Net Cost
Savings of $192/yr

ROI of 18 years
### Residential Utility Incentive Comparison

#### Solar Electric

<table>
<thead>
<tr>
<th></th>
<th>ETO: PPL</th>
<th>EWEB</th>
<th>City of Ashland</th>
<th>Consumer’s Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive</td>
<td>$2/W_{DC}$</td>
<td>$2/W_{AC}$</td>
<td>$2.25/W_{DC}$</td>
<td>$500/kW_{DC}$</td>
</tr>
<tr>
<td>Customer ROI</td>
<td>9 Years</td>
<td>12 Years</td>
<td>7 Years</td>
<td>19 Years</td>
</tr>
<tr>
<td>Equivalent Utility Avoided Cost</td>
<td>$83/MWh</td>
<td>$67/MWh</td>
<td>$94/MWh</td>
<td>$10/MWh</td>
</tr>
</tbody>
</table>

* Cash incentive or 0% loan for purchase of system, 5 yr terms

ETO: Energy Trust of Oregon  
EWEB: Eugene Water & Electricity Board  
City of Ashland: Conservation Department  
Consumer’s Power: Private Non-Profit  
*Source: Database of State Incentives for Renewables and Efficiency*
# Residential Utility Incentive Comparison

## Solar Thermal

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<thead>
<tr>
<th>Incentive</th>
<th>ETO: PPL</th>
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</thead>
<tbody>
<tr>
<td>Incentive</td>
<td>$.40/kWh&lt;sub&gt;AC&lt;/sub&gt; Annual</td>
<td>*$600/System maximum</td>
<td>*$.40/kWh&lt;sub&gt;AC&lt;/sub&gt; Annual</td>
<td>$500/System</td>
</tr>
<tr>
<td>Customer ROI</td>
<td>16 Years</td>
<td>17 Years</td>
<td>16 Years</td>
<td>17 Years</td>
</tr>
<tr>
<td>Utility Avoided Cost</td>
<td>$20/MWh</td>
<td>$15/MWh</td>
<td>$20/MWh</td>
<td>$13/MWh</td>
</tr>
</tbody>
</table>

* Cash incentive or 0% loan for purchase of system, 5 yr terms
ETO: Energy Trust of Oregon  EWEB: Eugene Water & Electricity Board
City of Ashland: Conservation Department  Consumer’s Power: Private Non-Profit
Source: Database of State Incentives for Renewables and Efficiency
Commercial & Industrial Markets

- **Oregon Department of Energy:**
  - 50% Tax Credit
  - MACRS (Five Year)

- **Internal Revenue Service:**
  - 30% Tax Credit
  - MACRS (Five Year)

- **USDA REAP Grants**
  - 25% of Project Grant
Commercial Solar without Incentive

10,000 Watt DC Installation
$82,500 Project Cost
($41,250) State Tax Credit
($24,750) Federal Tax Credit
($32,175) Accelerated Depreciation
$42,730 Net Cost Yr 1
Produces 12,600 kWh/yr
Savings of $829/yr

12,600 kWh/yr Hot Water
$54,000 Project Cost
($27,000) State Tax Credit
($16,200) Federal Tax Credit
($21,060) Accelerated Depreciation
$27,837 Net Cost Yr 1
Savings of $829/yr

ROI of 5 years

Note: Assumes 3% annual increases in power costs.
# Commercial Utility Incentive Comparison

## Solar Electric

<table>
<thead>
<tr>
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<th>City of Ashland</th>
<th>Consumer’s Power</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incentive</strong></td>
<td>$1.50/W_{DC}</td>
<td>$1/W_{AC}</td>
<td>$1.00/W_{DC}</td>
<td>na</td>
</tr>
<tr>
<td><strong>Customer ROI</strong></td>
<td>2.2 Years</td>
<td>3.1 Years</td>
<td>2.8 Years</td>
<td>5 Years</td>
</tr>
<tr>
<td><strong>Equivalent Utility Avoided Cost</strong></td>
<td>$75/MWh</td>
<td>$40/MWh</td>
<td>$50/MWh</td>
<td>$0/MWh</td>
</tr>
</tbody>
</table>

**Incentive Consideration:** $1/W_{DC}

**Goal:** Minimize up-front costs during credit crisis, attract businesses & PPA’s

ETO: Energy Trust of Oregon

EWEB: Eugene Water & Electricity Board

City of Ashland: Conservation Department

Consumer’s Power: Private Non-Profit

*Source: Database of State Incentives for Renewables and Efficiency*
## Commercial Utility Incentive Comparison

### Solar Thermal

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<tr>
<td>Incentive</td>
<td>35% Project Cost</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Customer ROI</td>
<td>2.25 Years</td>
<td>5 Years</td>
<td>5 Years</td>
<td>5 Years</td>
</tr>
<tr>
<td>Equivalent Utility</td>
<td>$75/MWh</td>
<td>$0/MWh</td>
<td>$0/MWh</td>
<td>$0/MWh</td>
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**Incentive Consideration:** $.40/kWh annual rating (same as residential)

**Goal:** Minimize up-front costs during credit crisis, attract businesses & PPA’s

ETO: Energy Trust of Oregon  
EWEB: Eugene Water & Electricity Board  
City of Ashland: Conservation Department  
Consumer’s Power: Private Non-Profit

**Source:** Database of State Incentives for Renewables and Efficiency
### Non-Profit Solar without Incentives

<table>
<thead>
<tr>
<th>DC Installation: 10,000 Watt</th>
<th>12,600 kWh/yr Hot Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>$82,500 Project Cost</td>
<td>$54,000 Project Cost</td>
</tr>
<tr>
<td>($27,638) State Tax Credit</td>
<td>($18,090) State Tax Credit</td>
</tr>
<tr>
<td>($0) Federal Tax Credit</td>
<td>($0) Federal Tax Credit</td>
</tr>
<tr>
<td>$54,862 Net Cost</td>
<td>$35,910 Net Cost</td>
</tr>
<tr>
<td>Produces 12,600 kWh/yr</td>
<td>Savings of $829/yr</td>
</tr>
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</tr>
<tr>
<td><strong>ROI of 37 years</strong></td>
<td><strong>ROI of 28 years</strong></td>
</tr>
</tbody>
</table>

*Note: Assumes 3% annual increase to power costs.*
Non-Profit Utility Incentive Comparison

Solar Electric

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<td>$1/W_{AC}$</td>
<td>$1.00/W_{DC}$</td>
<td>na</td>
</tr>
<tr>
<td>Customer ROI</td>
<td>29 Years</td>
<td>34 Years</td>
<td>33 Years</td>
<td>37 Years</td>
</tr>
<tr>
<td>Equivalent Utility Avoided Cost</td>
<td>$88/MWh</td>
<td>$40/MWh</td>
<td>$50/MWh</td>
<td>$0/MWh</td>
</tr>
</tbody>
</table>

Incentive Consideration: $1.20/W_{dc}$, avoided cost of $60/MWh

Goal: Matching Grant fund leveraging.

Source: Database of State Incentives for Renewables and Efficiency
## Non-Profit Utility Incentive Comparison

### Solar Thermal

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<td>Customer ROI</td>
<td>21 Years</td>
<td>28 Years</td>
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<td>$75/MWh</td>
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Incentive Consideration: $1,20/kWh annual, avoided cost $60/MWh, ROI 19 yr

Goal: Matching Grant fund leveraging.

*Source: Database of State Incentives for Renewables and Efficiency*
Bottom Line Opportunities

**USDA REAP Grants**
- 25% private, 15% public renewable facilities
- 100% ($30k) for development of municipal Renewable Energy Development Audits

**Utility Incentives**
- Target projects with utility based incentive funds to leverage investment

---

EnergyTrust of Oregon, Inc.
EWEB
AEP Energy West
American Recovery & Reinvestment Act

Develop “Roof Ready” Community Demonstration Projects

- Immediate Job Creation
- Use of Oregon Companies
- Promote Renewable Energy, Carbon Reduction and Sustainable Development
- Potential to Incorporate Green Job Training Opportunities
- Use of Innovative Green Technologies
- Showcase Oregon's Commitment to Sustainability to Attract More Federal Dollars
Hurdles to Overcome

Availability of Renewable Energy Tech’s in rural areas

Misconceptions about Renewable Technology Viability

Development of local green collar workforce

Up-front investment costs – prohibit projects for those who need it most

Development of Programs in smaller Utilities
Collaborative Example

Oregon Coast Community Action, Sol Coast Companies, Energy Trust of Oregon, Low Income Solar Access, Oregon Dept. of Energy (invited collaboration with CLPUD, & Schuco Solar):

Expand existing low income (200% of poverty level) weatherization program to include:

- Domestic solar hot water installations
- Expand renewable energy technician training to the coast
- Net zero multi-housing rental unit demonstration project
Local investment in renewable, distributed power.

Wise management of today’s assets for sustained livelihood of the generations to come.

More power to you!