Real Tariffs--Real Targets

. . . A Real Program for Oregon

Paul Gipe, wind-works.org

Ulverston, Cumbria, England
What’s Wrong in Oregon?

- Solar Only—Not a Renewable Policy
  Where’s Wind, Biogas, Biomass, Geothermal?
- Bidding for all but Smallest Systems
- Very Small Program Cap

Paul Gipe, wind-works.org
Ulverston, Cumbria, England
RFPs & Bidding Fails to Deliver Renewable Energy Equitably

• Fails to Bring on Renewables at the Pace & Price Bid
  Typically 50% of Contracted Capacity
  Lumpy Development--No Manufacturing

• Limits Participation
  Undemocratic & Exclusionary

• Europe Has Moved to FITs
  Germany’s Jeffersonian Rebels

Paul Gipe, wind-works.org
What’s Right in Oregon

• Tariffs Differentiated by Solar Resource
  First in North America
Challenges in North America

- Piecemeal Policy Approach
  Too Slow
  RPS for Wind, Subsidies for Solar
- “Cheap Energy Contract”
  Cheap Today--Expensive Tomorrow
  Burdens the Poor and All Consumers
  . . . in the Future
Challenges in North America

• Low Program Caps
  California: 33%?
  LABC-Los Angeles: 3%
  Oregon: 25 MW!

• Solar Only or Wind Only

• Timidity & Lack of Vision
  Do We Want Renewables or Don’t We?

Paul Gipe, wind-works.org  Friedrich-Wilhelm-Lübke-Koog, Germany
Oregon & Gainesville, Florida

- **2011**
  - 7.3 MW solar PV Installed
  - 9.7 million kWh
- **Population: 200,000**
  - 1/20th size of Oregon
  - 150 MW Equivalent
  - 640 MW Planned

### Gainesville Regional Utilities Solar PV Size Distribution 2009-2011

<table>
<thead>
<tr>
<th>Size</th>
<th>MW</th>
<th>%</th>
<th>Units</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 kW</td>
<td>0.44</td>
<td>6%</td>
<td>68</td>
<td>46%</td>
</tr>
<tr>
<td>10-25</td>
<td>0.55</td>
<td>8%</td>
<td>31</td>
<td>21%</td>
</tr>
<tr>
<td>25-100</td>
<td>1.70</td>
<td>23%</td>
<td>38</td>
<td>26%</td>
</tr>
<tr>
<td>100-250</td>
<td>0.23</td>
<td>3%</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>250-500</td>
<td>0.77</td>
<td>11%</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>500-1000</td>
<td>1.57</td>
<td>22%</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>&gt;1000</td>
<td>2.01</td>
<td>28%</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7.27</td>
<td>28%</td>
<td><strong>147</strong></td>
<td></td>
</tr>
</tbody>
</table>

Paul Gipe, wind-works.org
Renewable Tariff Design

- Simple, Comprehensible, & Transparent
- Priority Access & Purchase
- Lengths Sufficient for Profitability
- Prices Sufficient to Pay for Generation

Fair But Not Undue Profit
Through Price Differentiation

Paul Gipe, wind-works.org
Proposed Japanese FITs
What’s Right-What’s Wrong

• Tariffs Differentiated by Technology
• Undifferentiated by Size
  Solar PV, Biogas, Biomass, Geothermal
• Wind
  Undifferentiated by Resource Intensity
• Prices--Simply Too High
• What Happens When Rushed
  . . . Industry Lobbyists Rule

Paul Gipe, wind-works.org
Grading North American FITs
10 Criteria

- Program Caps
- Project Size Caps
- Contract Term
- Technologies Included
- Tariffs Based on Cost of Generation
- Tariffs Differentiated by Technology
- Tariffs Differentiated within Technology
- Wind Tariffs Differentiated by Resource
- Inflation Indexing
- Bonus Payments or Adders

Paul Gipe, wind-works.org
# Grading North American FITs

## The Gold Standard

<table>
<thead>
<tr>
<th>Country</th>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>90</td>
<td>A</td>
</tr>
<tr>
<td>France</td>
<td>90</td>
<td>A</td>
</tr>
<tr>
<td>Spain (Fixed Tariff)</td>
<td>80</td>
<td>A-</td>
</tr>
</tbody>
</table>

Paul Gipe, wind-works.org

Fuchskaute, Germany
## Grading North American FITs
### Ontario & Vermont

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Ontario</th>
<th>Vermont</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Caps</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Project Size Caps</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Contract Term</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Multiple Technologies</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Cost-Based Tariffs</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Technology Differentiation</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Technology Banding</td>
<td>20</td>
<td>12</td>
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<tr>
<td>Resource Differentiation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inflation Indexing</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Bonus or Adders</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

Paul Gipe, wind-works.org
### Grading North American FITs

#### Existing FITs

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario (2009)</td>
<td>84</td>
<td>A-</td>
</tr>
<tr>
<td>Vermont</td>
<td>54</td>
<td>D</td>
</tr>
<tr>
<td>Maine</td>
<td>43</td>
<td>F</td>
</tr>
<tr>
<td>Wisconsin IOUs</td>
<td>36</td>
<td>F</td>
</tr>
<tr>
<td>California</td>
<td>28</td>
<td>F</td>
</tr>
<tr>
<td>Oregon</td>
<td>16</td>
<td>F</td>
</tr>
</tbody>
</table>

Paul Gipe, wind-works.org
Renewable Policy--Best Practice

- **Bold Targets**
  That Can Excite the Imagination
- **Advanced Renewable Tariffs**
  . . . A System of Feed-in Tariffs

Paul Gipe, wind-works.org

Landau, Rheinland-Pfalz, Germany
Revolutionary: 100% Renewable

- Dardesheim Today--Electricity
- Schleswig-Holstein 2020--Electricity
- Rheinland-Pfalz 2030--Electricity
- Scotland 2020--Electricity
- Denmark 2035--Energy
Feed-in Tariff Best Practice

• Policies Must be Comprehensive and Inclusive . . . Open to All for All

Paul Gipe, wind-works.org
Rockenhausen, Germany
Comprehensive & Inclusive

- Wind & Solar
- Biomass & Geothermal
- Renewable Heat

Wörstadt, Rheinland-Pfalz, Germany

Paul Gipe, wind-works.org
Danger of Solar Myopia

• Renewable Energy
  = Solar & Wind & Biomass & Geothermal
• Must Balance the Cost of Solar PV with Less Costly Resources
• Only Diversity Brings Stability
  We Need it All
• Policies for Only One Technology
  Are Doomed to Fail

Paul Gipe, wind-works.org
Feed-in Tariffs for Renewable Heat

- Germany, France, Spain, Switzerland with CHP
- Slovenia without CHP
- Great Britain

Vorupør Kraftvarmeværk, Denmark

Paul Gipe, wind-works.org
## British Solar Thermal (DHW) Tariff

<table>
<thead>
<tr>
<th>Years</th>
<th>€/kWh</th>
<th>CAD/kWh</th>
<th>USD/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200 kW</td>
<td>20</td>
<td>0.097</td>
<td>0.136</td>
</tr>
</tbody>
</table>

November 2011.

Paul Gipe, wind-works.org
# British Methane Biogas Injection Tariffs

November 2011.
Paul Gipe, wind-works.org

Eifel Mountains, Germany

<table>
<thead>
<tr>
<th>&lt;200 kW</th>
<th>Years</th>
<th>€/kWh</th>
<th>CAD/kWh</th>
<th>USD/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>0.074</td>
<td>0.104</td>
<td>0.102</td>
</tr>
</tbody>
</table>
## British Ground Source Heat Pump Tariffs

<table>
<thead>
<tr>
<th></th>
<th>Years</th>
<th>€/kWh</th>
<th>CAD/kWh</th>
<th>USD/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 kW</td>
<td>20</td>
<td>0.049</td>
<td>0.069</td>
<td>0.068</td>
</tr>
<tr>
<td>&gt;100 kW</td>
<td>20</td>
<td>0.034</td>
<td>0.048</td>
<td>0.047</td>
</tr>
</tbody>
</table>

November, 2011

“Geothermal” in Canadian English.

Paul Gipe, wind-works.org
Feed-in Tariffs Best Practice for North America

- Differentiated Wind Tariffs
  Long Recommended--Time Now to Act

- Radical Revision of Solar PV Tariffs
  Breaking the Grip of US Tax Subsidies on Solar PV Prices

- Renewable Heat Tariffs

- Tariffs for Storage

Paul Gipe, wind-works.org  Dardesheim, Germany
# Feed-in Tariff Best Practice

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Best Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Caps</td>
<td>None or &gt;20%</td>
</tr>
<tr>
<td>Project Size Caps</td>
<td>None or 20 MW</td>
</tr>
<tr>
<td>Contract Term</td>
<td>&gt;20 years</td>
</tr>
<tr>
<td>Multiple Technologies</td>
<td>Wind, Solar PV, Solar DHW, Geothermal, CSP</td>
</tr>
<tr>
<td>Cost-Based Tariffs</td>
<td>For All Classes</td>
</tr>
<tr>
<td>Technology Differentiation</td>
<td>Tariffs for Each Class</td>
</tr>
<tr>
<td>Technology Banding</td>
<td>By Application &amp; Size</td>
</tr>
<tr>
<td>Resource Differentiation</td>
<td>Wind &amp; Solar PV</td>
</tr>
</tbody>
</table>

Paul Gipe, wind-works.org

Middelgrunden, Denmark
Feed-in Tariff Best Practice

• Open to All for All

Homeowners, Farmers, Business & Industry, Communities, Native Americans
Regardless of Tax Status
Tariffs with & without Tax Credits

Paul Gipe, wind-works.org

Solar Park Rodenäs
Renewables . . .
When You Look Closely . . .
. . . Worth Every Cent

Paul Gipe, wind-works.org