Community Wind Power Development

The Challenge of Applying the European Model in the United States, and How States are Addressing that Challenge

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Defining “Community Wind”

- **Locally Owned**: One or more members of local community have a direct financial stake in the project, other than through land lease or tax revenue.
- **Utility-Scale Turbines**: 600 kW threshold for new projects, lower for older projects.
- **On Either Side of Meter**: Power sales to the grid or offsetting end-use consumption (or both).

*NOT* referring to:

- home-sized (10 kW) projects
- municipal utility projects
- standard US commercial wind development
## Experience in Northern Europe (2000)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Wind Capacity (MW)</th>
<th>Community-Owned Wind Capacity (MW)</th>
<th>% Community-Owned</th>
<th>Number of Household Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>6,161</td>
<td>~5,400</td>
<td>88%</td>
<td>~100,000</td>
</tr>
<tr>
<td>Denmark</td>
<td>2,268</td>
<td>~1,900</td>
<td>84%</td>
<td>~175,000</td>
</tr>
<tr>
<td>Sweden</td>
<td>240</td>
<td>~30</td>
<td>13%</td>
<td>~15,000</td>
</tr>
<tr>
<td>The UK</td>
<td>414</td>
<td>~3</td>
<td>1%</td>
<td>~2,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9,083</strong></td>
<td><strong>7,333</strong></td>
<td><strong>81%</strong></td>
<td><strong>292,000</strong></td>
</tr>
</tbody>
</table>
### Historical Community Wind Drivers

<table>
<thead>
<tr>
<th>Feature</th>
<th>Denmark</th>
<th>Sweden</th>
<th>Germany</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed-in laws</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Standardized interconnection</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Tax-free production income</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy/CO₂ tax refund</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Flow-through depreciation</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind turbine mfg. industry</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership restrictions</td>
<td>✓</td>
<td></td>
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</tr>
</tbody>
</table>
Why Community Wind in the US?

- Supplement and Stabilize Farmer Income
  - Preserve farming communities
  - Preserve rural landscapes, values, way of life
- Local Economic Development Benefits
- Difficulty Siting Large Projects (some areas)
- Take Responsibility for Energy Consumption
Minnesota – Policy Support

Create Demand:

• **Xcel Wind Mandate:** 1,125 MW by 2010 (at least 160 MW of this from projects ≤ 2 MW)

• **Renewable Energy Objective:** 1% of retail sales by 2005, increasing to 10% by 2015

• **Xcel Small Wind Tariff and Standard PPA:** similar to “feed-in law” for projects ≤ 2 MW (3.3¢/kWh for 20 years)

Encourage Supply:

• **Cash Production Incentive:** 1.5¢ per kWh sold over initial 10 years (for projects ≤ 2 MW that meet ownership criteria)

• **Grants:** Xcel Renewable Development Fund, State Energy Office, USDA
Minneapolis – Results

• At least **132 MW** of “small” projects already built, with another **68 MW** in the pipeline

• Financing/Ownership Structures:
  * Commercially financed (53 MW)
  * Local personal wealth (35 MW)
  * “Flip” structure (30 MW)
  * Municipal utility (9 MW)
  * LLCs of local investors with tax appetite (4 MW)

• Flips & local LLCs more common in next 68 MW

• 100 MW Trimont project – an emerging model?
Iowa

Drivers:

• Historically no size limit on net metering (now 500 kW)
• Single-part tariffs not uncommon for large end-users
• *Alternate Energy Revolving Loan Program* loans half of required funds (up to $250,000) at 0% interest

Results:

• Large, behind-the-meter projects dominate
• 8 school districts host 10 turbines (50-750 kW) totaling 3.6 MW – the most school-based turbines of any state

Future?
Wisconsin

“Wisconsin Community-Based Windpower Project Business Plan” (September 2003)

- Funded by Wisconsin Focus on Energy
- Prepared by Cooperative Development Services
- Detailed (though generic) business plan for a variant of the “flip” structures seen in Minnesota
- Financial modeling suggests that community wind may be possible in WI without state incentives

Independently, 2 small MN-style “flip” projects appear to be moving forward
Illinois

2003: Two projects funded with various grants

1) Bureau Valley School District (750 kW, behind the meter)
   - $20,000 grant for feasibility study (ILCECF)
   - $375,000 construction grant (ILCECF)
   - Has applied for a grant from RERP

2) Illinois Rural Electric Cooperative (1.65 MW, supply mix)
   - $175,000 up-front 10-year REC purchase (ILCECF)
   - $250,000 grant (RERP)
   - $438,544 grant (USDA)

2004: ILCECF considering a wind monitoring program targeted at sites with strong community interest. More construction grants also possible.
Massachusetts

MTC’s “Community Wind Collaborative” (Sept. 2003)

- Born out of contrast between Cape Wind and Hull
- Targets projects <5 MW on public land, on either side of meter, and owned or facilitated by municipalities
- MTC (with help of consultants) acts as developer on behalf of community up until build/no-build decision
- If build, community can access MTC “preferred partners”
- Status:
  * 40 communities have expressed interest
  * Wind monitoring underway in 6 communities (10 by June)
  * MTC establishing consultant pool and preferred partners
Other

New York: Recent NYSERDA solicitation may support community wind, but primarily intended to prepare communities for *large-scale* wind development (from RPS)

Oregon & Washington: Funding analysis of various ownership structures and relative local economic benefits of community wind

California: 1 MW net metering size limit and 50% cost buy-down driving at least one project (Palmdale Water District)

Idaho: $500,000 USDA grant for rancher-owned 3 MW project, will sell output to Utah Power

Tribal turbines: Rosebud Sioux 750 kW turbine in SD, a few other projects either built or under development in ND, MT, ID
Conclusions

• There is growing interest in community wind
• States providing different forms of support, which leads to different project types
• Tax-based federal incentives require innovative ownership arrangements to maximize value
• Increasingly good information on replicable models may be pushing community wind past a “tipping point”