Community Wind--The Third Way
Wind Energy As If People Matter

1. Large Wind Power Plants
2. Small Wind Turbines
3. Locally-Owned Commercial Turbines
Why the European Success?

• #1 Community Involvement
  Germany & Denmark

• #2 Advanced Renewable Tariffs
  16 EU Countries use Electricity Feed Laws

Paul Gipe, wind-works.org
Increasing Acceptance #1

“Your Own Pigs Don’t Stink”

Paul Gipe, wind-works.org  
Jutland, Denmark
Why Community Wind?

- Participation = Greater Acceptance
- Distributed = Greater Resiliency
- Clean & Green (Mostly)
- Human Scale
- Enables Local Ownership
- New Cash Crop For Farmers
What is Community Power?

- Local
  Rooted in and Responsible to the Community
- Locally Owned
  Cooperative, First Nation, Farmer-Owned
- Commercial-Scale Generation
- Small Projects Making a Big Difference

Paul Gipe, wind-works.org
Era of Distributed Generation

- Here Now
- Resilient, Not Brittle
- Short Lead Times
- Near Load, Less Losses
- Opportunity for Many
- Fosters Energy Awareness

Alberta, Canada

Ontario, Canada
Distributed Wind Energy

Hohe Westerwald, Germany

Paul Gipe, wind-works.org
Distributed Wind Energy

Thy, Denmark

Paul Gipe, wind-works.org
Kennemerwind Co-op
Noord Holland

- 18 x 80 kW
- 10 Owned by Co-op
- 650 Members
- 1.5-2 Million kWh/yr

Paul Gipe, wind-works.org
Wieringemeer
Noord Holland

- 5 x 600 kW
- Co-owned
  1/2 by Two Farmers
  1/4 by NEG-Micon
  1/4 by Utility
Sydthy Kabelaug, Denmark

- 16 km of Buried Cable
- Direct to HV Network
- 26 x V27s (225 kW)
- ~1 Million kWh/unit
- Mostly Pig Farmers

Paul Gipe, wind-works.org
Danish Co-ops
(Vindmøllelaug or Fællesmølle)

- 1/4 Capacity Nationwide
- ~ $1.7 Billion
- 100,000 Households Own Shares
- 5% of Population

Thyborøn-Harboøre Vindmøllelaug

Anton Bro

Paul Gipe, wind-works.org
Lynetten Co-op København

- 7 x 600 kW
- 4 Owned by Co-op
- 3 Owned by Municipal Utility
Middelgrunden Co-op København

- 20 x 2 MW Off-shore
- 1/2 Owned by Co-op
- 1/2 Owned by Utility
- 8,500 Investors
- €570 per Share
- Visible from Christiansborg Palace

©Paul Gipe, wind-works.org
German Co-ops (*Bürgerbeteiligung*)

- 1/3 Capacity Nationwide
- €4,000 Million
- 200,000 Own Shares
- 2/3 Schleswig-Holstein
- 4/5 Nordfriesland Amt

Schauensland, Germany

Paul Gipe, wind-works.org
Paderborn Co-op

- 4 Wind Plants
- 17 Companies
- 80 x V66 & E66
- 110 MW
- €140 Million
- 780 ha (2,000 ac)
- All Companies Local
  Paying Local Taxes

Paul Gipe, wind-works.org
Paderborn Co-op
Royalty Sharing Among Farmers

Landowners

Land & Lease Agreement

Planning Agreement

Lease Agreement on Wind Plant Location

Land & Lease Agreement

Ltd. Co.

Wind Plants

WP 1

WP 2

WP 3

WP 4
PEI Royalty Revenue Sharing

- 70% of Royalties
- 20% of Royalties
- 10% of Royalties

Paul Gipe, wind-works.org
## Co-Op & Farmer-Owned Wind

<table>
<thead>
<tr>
<th>Country</th>
<th>Farmer</th>
<th>Co-op</th>
<th>Corporate</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Netherlands</td>
<td>60%</td>
<td>5%</td>
<td>35%</td>
</tr>
<tr>
<td>Germany</td>
<td>10%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Denmark</td>
<td>64%</td>
<td>24%</td>
<td>12%</td>
</tr>
<tr>
<td>Great Britain</td>
<td>1%</td>
<td>1%</td>
<td>98%</td>
</tr>
<tr>
<td>Spain</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Dave Toke, University of Birmingham, 2005.

Paul Gipe, wind-works.org
## Minnesota Distributed Wind

<table>
<thead>
<tr>
<th>Developer Type</th>
<th>MW</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Developer</td>
<td>104</td>
<td>12%</td>
</tr>
<tr>
<td>Farmer Owned</td>
<td>74</td>
<td>8%</td>
</tr>
<tr>
<td>Locally Owned</td>
<td>72</td>
<td>8%</td>
</tr>
<tr>
<td>Municipal Utility</td>
<td>19</td>
<td>2%</td>
</tr>
<tr>
<td>Rural Electric Cooperative</td>
<td>6</td>
<td>1%</td>
</tr>
<tr>
<td>College/University</td>
<td>5</td>
<td>1%</td>
</tr>
<tr>
<td>School</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>281</td>
<td>31%</td>
</tr>
</tbody>
</table>

Source: Windustry.org, March 2007

Paul Gipe, wind-works.org
How Renewable Energy Can Benefit Farmers

- **#1 Royalties**
  Lowest Risk--Lowest Reward
  % of Gross Revenue (2-4%)

- **#2 Ownership**
  Highest Risk--Highest Reward
  Farmer Retains Profit

Cros de Georand, France

Paul Gipe, wind-works.org
## Royalties & Land Rents

<table>
<thead>
<tr>
<th>Location</th>
<th>1-10</th>
<th>10-20</th>
<th>20-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Germany</td>
<td>5-8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior Germany</td>
<td>3-5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cielo Wind Power, NM</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cappeln, Germany</td>
<td>4%</td>
<td>5.9%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Indian Mesa, TX</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Woodward Mesa, TX</td>
<td>4%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>US BLM, CA</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freiburg, Germany</td>
<td>3.8%</td>
<td>5.4%</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>2.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ontario</td>
<td>1.5-2.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Paul Gipe, wind-works.org
Potential per Farm

• Turbines Use Only ~5-10% Land Area!
• Potential to Significantly Boost Farm Income
For Best Royalties

- Contact OFA, NFU, CF
- Do Your Homework--First
- OSEA’s Landowner’s Guide

Paul Gipe, wind-works.org
Montfort, Wisconsin
For Best Royalties

- % of Revenue Stream
- with Minimum Payment/yr
- Don’t Be Misled by MW Size
  It’s the Revenue That Counts
- Form Land Association
  Val-Éo (Quebec) Model

Paul Gipe, wind-works.org
Montfort, Wisconsin
What Do Farmers Need?

• Higher Tariffs
  OPA: $0.11/kWh
  Works for Windy Areas
  OSEA: $0.13/kWh in 2004!

• Priority Connection

• Priority Purchase

• Simpler Permitting
  German Farmers are “Privileged”

• Anglophone Val-Éo Model

• Stronger Distribution System
  Ontario’s System Antiquated

Paul Gipe, wind-works.org
Potential per Farm

- 2MW Turbine, 80 m Ø, 80 m Tower
- ~$4 million Installed
- ~3.5 million kWh/Year (~6 m/s)
- ~$350,000/yr @ $0.10/kWh
- Simple Payback: 11 Years
- After Payback: ~$350,000/yr

Skibsted Fjord, Denmark
Paul Gipe, wind-works.org
Community Wind--The Third Way

Is North America Being Left Behind?

- No  
  Time to Get It Right
- It’s Not Easy Here  
  Frustrating? Yes!
- Only the Beginning  
  Minnesota
  Ontario

Paul Gipe, wind-works.org

Chateau de Lastours, France
Distributed Wind Energy in North America

- Niche Market?
- Major Potential?
- Upper Midwest
  Minnesota & Iowa
- Southern Plains
  Texas--Yes, Texas!
- Canada
  Nova Scotia
  Ontario--Slow Start
- John Deere

Paul Gipe, wind-works.org
WindShare
Toronto, Canada

- First Urban Turbine in N.A.
- Co-Owned
  WindShare Co-op
  450 Members
  Toronto Hydro
- Prominent Location
- Highly Visible
- Highly Popular

Paul Gipe, wind-works.org
WindShare
Toronto, Canada

Paul Gipe, wind-works.org
Toronto WindShare
Urban Wind

- Large Turbines in Cities & Villages
- Near Shore Turbines
- Not Small Turbines on Rooftops
- Not Turbines in Buildings
Nevada, Iowa

Urban or Village
Urban or Village

Forest City, Iowa