Community Power is About People and Opportunity

Paul Gipe, wind-works.org
What is Community Power?

• Local
  Responsible to the Community

• Locally Owned
  Cooperatives, First Nations, Farmers, Homeowners

• Commercial-Scale Generation
Community Power

- Greater Acceptance
- More Power More Quickly
- More People Involved Locally
- More Money Locally
- More Jobs Locally

Paul Gipe, wind-works.org
Aggressive Targets Require Aggressive Measures

German Renewable Energy Targets

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>12.5%</td>
<td>30%</td>
<td>45%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Paul Gipe, wind-works.org
Why the European Success?

#1 Community Involvement
Germany & Denmark

#2 Advanced Renewable Tariffs
18 EU Countries use Electricity Feed Laws

Paul Gipe, wind-works.org
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

WindShare Meeting,
Toronto, Canada

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

- Participation = Greater Acceptance
- Distributed = Greater Resiliency
- Clean & Green (Mostly)
- Human Scale
- Enables Local Ownership
- New Cash Crop For Farmers
Public Acceptance Critical

- Acceptance Necessary
  For Continued Political Support
- As Renewables Grow
  Entrenched Players Threatened
  Organized Opposition Grows
  from Coal & Nuclear Industry

Paul Gipe, wind-works.org
Building Acceptance

• Must Share Opportunity
• Public Must Participate
  by Creating Equal Opportunity for All
• For Renewables
  To Reach Their Potential

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

“Your Own Pigs Don’t Stink”

Paul Gipe, wind-works.org

Jutland, Denmark
Wieringemeer
Noord Holland

- 5 x 600 kW
- Co-owned
  1/2 by Two Farmers
  1/4 by NEG-Micon
  1/4 by Utility
Lynetten Co-op København

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

Paul Gipe & Assoc.
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 & Assoc.

©Bonus a/s
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
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 & Assoc.
German Co-ops (*Bürgerbeteiligung*)

- 1/3 Capacity Nationwide
- $6 Billion
- 200,000 Own Shares
- 2/3 Schleswig-Holstein
- 4/5 Nordfriesland Amt

Schauinsland, Germany

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
# 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, 2008

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

<table>
<thead>
<tr>
<th>Category</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
## Community Wind Economic Impact

<table>
<thead>
<tr>
<th></th>
<th>Community Wind (5%)</th>
<th>Community Wind (8%)</th>
<th>Corporate Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value Added</strong></td>
<td>$1,300,000</td>
<td>$640,000</td>
<td>$250,000</td>
</tr>
<tr>
<td><strong>Jobs</strong></td>
<td>14.5</td>
<td>8.2</td>
<td>4.3</td>
</tr>
</tbody>
</table>

From Operations

Arne Kildegaard
University of Minnesota, Morris

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

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

- **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>

Paul Gipe, wind-works.org
PEI Royalty Revenue Sharing

10% of Royalties

20% of Royalties

70% of Royalties
Paderborn Co-op
Royalty Sharing Among Farmers

Landowners

Land & Lease Agreement

Land. Assoc.

Planning Agreement

Ltd. Co.

Wind Plants

WP 1

WP 2

WP 3

WP 4

Lease Agreement on Wind Plant Location
Potential per Farm

• Turbines Use Only ~1-5% Land Area!
• Can Significantly Boost Farm Income
Royalties: For Best Royalties

• Contact FoA, NFU
• 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?

• Sufficiently High Tariff
• Sufficiently Differentiated
• Priority Connection
• Priority Purchase
• Simpler Permitting
• Anglophone Val-Éo Model
• Stronger Distribution System
  3-Phase Distribution Enabler & Feeder Lines

Paul Gipe, wind-works.org
Potential per Farm

- 2MW Turbine, 80 m Ø, 80 m Tower
- ~$5 million CAD Installed
- ~4 million kWh/Year (~6.5 m/s)
- ~$500,000 CAD/yr @ $0.135/kWh
- Simple Payback: ~10 Years
- After Payback: ~$400,000 CAD/yr
Rural Economic Benefit

- 25% RE Target; 1,8 TWh/yr
- ~1,000 MW; 500 Turbines
- $240 Million CAD/Year Total Turnover

Money Stays Within Province
Money Circulates Through Rural Economy
Hypothetical Ontario Barn Roof Solar PV

- 30 kW; ~$275,000
- 30,000 kWh/yr
- $21,000/yr
- Simple Payback ~13 years

Paul Gipe, wind-works.org

Edison, California
Cities Have Always Driven Renewable Energy Policy

• Aachen, Germany
  Where it All Began
• Freiburg, Germany
  Solar Stadt (City)
• Toronto, Ontario
  TREC, OSEA, GEA
• Gainesville, Florida

Paul Gipe, wind-works.org
Aachen (Aix-en-Chapelle) Model Began a Revolution

• Municipal Utility
  Where the People Wanted Solar PV
• Paying for the Cost of Generation
  Paying What Solar Cost
• June 1993 City Approves Solar Tariff
  ~$1.28/kWh!
• 1993-1997
  30 Bavarian Villages Follow Suit
• The Basis for Germany’s RESA

Paul Gipe, wind-works.org
Toronto, Ontario
Hotbed of Community Activists

- 2003 TREC Coop Turbine
  After 5-year Effort!
- 2004 OSEA Formed & Launches
  Campaign for Advanced Renewable Tariffs
- 2006 SOC Program Spring
- 2007 GEA Forms for FITs
- 2009 Feed-in Tariff Program

Paul Gipe, wind-works.org
Gainesville, Florida
A Made in America Success

- Overwhelming Success
  2009 & 2010 Reservations Exceeded
  8 MW Contracted
  2 MW Installed (April 2010)
  vs 300 kW from Previous Program
  $5 Million in Private Investment

Paul Gipe, wind-works.org
Toronto’s WindShare . . . A Pioneer in Canada

Paul Gipe, wind-works.org
... And North America
Stromrebellen (Electricity Rebels)

- Democratizing Generation
- Creating Local Investment
- Creating Local Jobs
- Creating Opportunity--and Hope
- Denmark, Germany, and France, Minnesota, Ontario and . . . ?

Paul Gipe, wind-works.org

Friedrich-Wilhelm-Lübke-Koog, Germany
Anton Bro
Thyborøn-Harboøre Vindmøllelaug

• Near Offshore
• Share Cooperative
• 4 x 2 MW
• 35 Million kWh/yr
• All Information Public
  on the Web

Paul Gipe, wind-works.org
Josef Pesch, Fesa

- 45 MW
- 60 million kWh/yr
- Just One of Many

Paul Gipe, wind-works.org
Ursula Sladek, EWS
(Elektrizitätswerke Schönau)

• 31,000 Customers
• Hydro, Solar, & Wind
Heinrich Bartelt, Dardesheim

- 62 MW Wind
- 380 kW Solar PV
- 5% Royalties
  1% for Nearby Villages
  2% for Landowners with Turbines
  2% for Landowners without Turbines

Paul Gipe, wind-works.org
François Pélissier, Erélia

- Le Haut des Ailes, Lorraine
- 32 MW

Objectives
- New Jobs Locally
- New Opportunity Locally
Local People Helping Local People
Hans-Heinrich Andresen

- Manages 16 Wind Farms
- in 16 Villages
- All Locally Owned
  15 Owners in Smallest
  400 Owners in Largest
- Now Planning Their Own Transmission Line!

Paul Gipe, wind-works.org
Local Entrepreneurs Building Local Projects

- 2.6 MW Locally Owned Solar Plant
- Locally Developed, Locally Built, Locally Owned

Nico Petersen, Solar Park Rodenäs

Paul Gipe, wind-works.org
The Farmers of Friedrich-Wilhelm-Lübke-Koog

- 25 Farms, 160 Residents
- 1990 First Locally-Owned Wind Farm
- 2009 Each Added 30-50 kW Solar PV
Never Underestimate the Ingenuity of Farmers

• When the Barn Doesn’t Face South
• Build a Rack That Will!

Paul Gipe, wind-works.org
Friedrich-Wilhelm-Lübke-Koog, Germany
Community Power is also about Faith in Yourself and in Your Community. Yes, You Can Do This. You Don’t Have to be Danish, German, or French.

Paul Gipe, wind-works.org
Community Power--The Third Way

Technology for Life*

*from N.F.S. Grundtvig

Paul Gipe, wind-works.org