Disclaimer: The views expressed are those of Paul Gipe and are not necessarily those of the sponsor.

Disclosure: Paul Gipe has worked with Aerovironment, ANZSES, APROMA, ASES, AusWEA, AWEA, BWEA, BWE, CanWEA, CAW, DGW, DSF, EECA, ES&T, GEO, GPI Atlantic, IREQ, KWEA, MADE, Microsoft, ManSEA, NRCan, NRG Systems, NASA, NREL, NZWEA, ORWWG, OSEA, PG&E, SeaWest, SEI, USDOE, WAWWG, WE Energies, the Folkecenter, the Izaak Walton League, the Minnesota Project, the Sierra Club, and Zond Systems, and written for magazines in the USA, Canada, France, Denmark, and Germany.
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 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

Paul Gipe, wind-works.org

Hohe Westerwald, Germany
Distributed Wind Energy

Wisconsin, USA

Michigan, USA

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

Paul Gipe, wind-works.org
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

Paul Gipe, wind-works.org
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
Planning Agreement
Landowners
Land & Lease Agreement
Land & Lease Agreement
Land. Assoc.
Planning Agreement
Ltd. Co.
Lease Agreement
on Wind Plant Location
Wind Plants
WP 1
WP 2
WP 3
WP 4
Paderborn Co-op
Royalty Sharing Among Farmers
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>40%</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>Denmark</td>
<td>65%</td>
<td>25%</td>
<td>10%</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
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
Michigan

- More Like Germany than Texas
  Population Density
  Farm Size
  Settlement Patterns

- Projects More Like Germany than Texas?
  Smaller Projects
  Clusters of Turbines
  Single Turbines

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
Aesthetic Guidelines: Design As If People Matter

Paul Gipe, wind-works.org
Increasing Acceptance #2

• Minimize Wind’s Footprint
  Physical--Roads, Foundations, Buildings
  Environmental & Visual
• Seek Harmony
  with Neighbors & the Environment
• Wind as a part of the Landscape
• Not a Wind Landscape
  as in California

Paul Gipe, wind-works.org
Public Opinion Surveys

- “Beauty is in the Eye of the Beholder”
  True, But Most People Agree on “Beauty”
- Broad Support ~ 70%-90%
  On Both Sides of the Atlantic
- In the Abstract!
  Benefits Global
  Impacts Local

Paul Gipe, wind-works.org
Provide Visual Uniformity

Paul Gipe, wind-works.org
Keep Them Spinning

Paul Gipe, wind-works.org
Keep Them Clean

Use a Drip Pan or a Diaper (Nappie)

Paul Gipe, wind-works.org
Bury All Intra-Project Lines

Paul Gipe, wind-works.org
Bury All Intra-Project Lines
Avoid “Industrialization”

Paul Gipe, wind-works.org
Minimize Roads

- Use Existing Roads
- Use Existing Tracks
- Minimize Width
- Minimize Radius
- Harden Where Needed

Paul Gipe, wind-works.org
Harmonize Structures
With Other Structures on Landscape

Buildings

Paul Gipe, wind-works.org
Harmonize Structures

Buildings
No Billboards

Paul Gipe, wind-works.org
No Logo!

Or Subtle Logo Only

Paul Gipe, wind-works.org
Revegetate Site

Paul Gipe, wind-works.org
Eliminate Fencing

Sends the Wrong Message

. . . “Keep Out, Danger”

Paul Gipe, wind-works.org
Use White, Off-White, or Gray

Paul Gipe, wind-works.org
Avoid Garish Patterns

Paul Gipe, wind-works.org

Tvind, Denmark, 2005
Keep Sites Tidy

Paul Gipe, wind-works.org

Yorkshire, Great Britain
Inform Public

Simpler is Better

Paul Gipe, wind-works.org
Provide Access
In Sum . . . Be A Good Neighbor

Paul Gipe, wind-works.org
Wind Energy is Compatible With Most Existing Land Uses ... With Rural Residential

Yorkshire, England

Paul Gipe, wind-works.org
... With Row Crops
. . . With Grazing

Noordoost Polder, the Netherlands

Paul Gipe, wind-works.org
... With Harbors

Paul Gipe, wind-works.org
... With Commercial Uses
With Schools

Paul Gipe, wind-works.org

Forest City, Iowa
With Religious Sites

Montefalcone, Italy

White Deer, Texas

Paul Gipe, wind-works.org
... With Some Parks
Depending Upon the Level of Protection

Wellington (Brooklyn), NZ

Paul Gipe, wind-works.org
With Outdoor Recreation

Paul Gipe, wind-works.org
... With Tourism

Paul Gipe, wind-works.org
... With Cycling

Paul Gipe, wind-works.org  Cros de Georand, France
... With Walking & Jogging

Paul Gipe, wind-works.org

Dunkerque, France
. . . With Hiking (Rambling)
Community Wind is About People and Opportunity

Paul Gipe, wind-works.org
Community Power

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

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

Technology for Life*

*from N.F.S. Grundtvig

Paul Gipe, wind-works.org