Electricity Rebels--Creating an Energy Revolution

for Bakersfield Cactus & Succulent Society

by

Paul Gipe

Paul Gipe, wind-works.org

Tera Kora, Curaçao, Netherlands Antilles
Electricity Rebels--the Rallying Cry

“Wind is a Local Resource. It is Our Resource. And We Want to Make Money from it.” --Wolfgang Paulsen (Stromrebelle)
Electricity Rebels--the Revolution

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

• We Want Renewable Energy
• We Can Do It Ourselves
• We Bring Our Own Risk Capital and Invest in Our Own Region
• We Accept the Change in the Landscape that Results

Hans-Detlef Feddersen on the Bürgerwind Movement.

Landau, Rheinland-Pfalz, Germany

Paul Gipe, wind-works.org
Elements of Successful Electricity Rebels

- Transparency
- Cooperation & Compromise
- Creative Problem Solving
- “Together, We’re Strong”

Hans-Detlef Feddersen on the Bürgerwind Movement.

Paul Gipe, wind-works.org
Rockenhausen, Rheinland-Pfalz, Germany
Meet the Rebels

Jutland, Denmark

Paul Gipe, wind-works.org
Meet the Rebels

Paul Gipe, wind-works.org

Tre Kroner, Kobenhavn, Denmark
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
Fesa B32 Solar PV Project

- 365 kW
- 400,000 kWh/yr
Ursula Sladek, EWS
(Elektritzitätswerke Schönau)

- 31,000 Customers
- Hydro, Solar, & Wind
François Pélissier, Erélia

- Le Haut des Ailes, Lorraine
- 32 MW

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

• Manages 16 Wind Farms
• in 16 Villages
• All Locally Owned
  15 Owners in Smallest
  400 Owners in Largest
• Now Planning Their Own
  Transmission Line
The Farmers of Friedrich-Wilhelm-Lübke-Koog

- 1990 First Locally-Owned Wind Farm
- First Repowering (w/ Bigger Turbines)
- 2009 Added 30-50 kW Solar PV
The Farmers of Nordfriesland

- **0.5% of California**
  
  2,000 km²; 165,000 Population

- **850 MW of Wind**
  
  90% Community-Owned
  
  6,000 Investors (4% of Population)
  
  <1% of Land

- **1.3 TWh/yr**
  
  More than Altamont, More than San Gorgonio
  
  ~Tehachapi Pass
  
  €100 million ($150 million)/yr

Paul Gipe, wind-works.org
Friedrich-Wilhelm-Lübke-Koog, Germany
Never Underestimate the Ingenuity of Farmers

- When the Barn Doesn’t Face South—No Problem
- Build a Rack That Will!

Paul Gipe, wind-works.org
Friedrich-Wilhelm-Lübke-Koog, Germany
Meet the Entrepreneur

- Matthias Willenbacher
- juwi
- 1,000+ Employees
- . . . And Growing
Who Started a Revolution in His Family’s Backyard

- Willenbacher Farm
- Schneebergerhof, Rheinland-Pfalz
Schneebergerhof

- Wind, Solar, Biogas (from Manure)

Paul Gipe, wind-works.org
Juwi: Wörstadt Rheinland-Pfalz

• Practice What They Preach
Morbach: Beating Swords into Plowshares

- Former US Air Force Base Weapon Storage Bunkers

Paul Gipe, wind-works.org
Morbach: Beating Swords into Plowshares

Paul Gipe, wind-works.org
Meet the Young Man with a Career

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

Nico Petersen, Solar Park Rodenäs

Paul Gipe, wind-works.org
Dardesheim
The Renewable Energy Village
--A Revolution in the Former DDR

Paul Gipe, wind-works.org
Dardesheim--We are driving with Wind and Solar energy
1. regenerative Strom-Tankstelle

CO₂-frei

in Sachsen Anhalt

Wir fahren mit Wind-
und Solarstrom

www.naturstrom.de
Meet the Proud Mayor of Dardesheim
Bürgermeister Rolf-Dieter Künne

• Proud of Männerchor
• Proud of Brass Band
• Proud of Wind & Solar
  100% Renewable Energy

Paul Gipe, wind-works.org
Dardesheim Streetscape

Paul Gipe, wind-works.org
Dardesheim Streetscape

Paul Gipe, wind-works.org
Dardesheim
Streetscape
Dardeshim’s Hotel Adler

Paul Gipe, wind-works.org
Dardeshim--
All Information is Public

Paul Gipe, wind-works.org
Dardeshim: Solar Pig Sty

Paul Gipe, wind-works.org
Druiberg--
German Sacred Ground

- In the Distance--Brocken
- Harz Mts. Highest Point
- Site of Goethe’s Witches’ Sabbath in “Faust”
Heinrich Bartelt--Revolutionary Leader

“Lupinus” or Lupine

Paul Gipe, wind-works.org
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
Ralf Voigt--
Regenerative Kraftwerke Harz

Paul Gipe, wind-works.org
Thomas Radach--Windpark Druiberg

• Pioneering Wind Family
• Installed First Wind Turbine in Former DDR
• Turbines Are Still Operating

Paul Gipe, wind-works.org
Revolutionary: 100% Renewable

- Dardesheim Today--Electricity
- Schleswig-Holstein 2020--Electricity
- Rheinland-Pfalz 2030--Electricity
- Scotland 2020--Electricity
- Denmark 2050--Energy

Paul Gipe, wind-works.org

Druiberg, Sachsen-Anhalt, Germany
Schleswig-Holstein, Germany
Conservative Government

- Doubling Land Area for Wind
- Raising Renewables from 50% to 100%
- Highest Density of Wind in Germany
- Highest Percent Locally Owned
- Wind Generates More than Coal, Oil, & Gas Combined
  Only Nuclear Produces More
  Now to be Phased Out by 2022

Paul Gipe, wind-works.org
Schleswig-Holstein, Germany
Conservative Government
2015 Targets

• Wind: 3,000 MW to 5,000 MW
• ~Triple Solar PV
  540 MW to 1,400 MW
• Biogas: 300 MW*
  from 600 Plants

*Biogas USA: 50 MW in 2009.

Paul Gipe, wind-works.org
Schönau, Germany

900 German Churches . . .
 . . . Protecting Creation

Paul Gipe, wind-works.org
Community Renewables
Is North America Being Left Behind?

• No
  Time to Get It Right
• It’s Not Easy Here
  Frustrating? Yes!
• Only the Beginning
  Minnesota & Ontario
Toronto’s WindShare . . . A Pioneer in Canada
And North America
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
Toronto’s WindShare
Democratizing Generation

• One Person, One Vote
• Equal Opportunity

2006 WindShare AGM Toronto

Paul Gipe, wind-works.org
Toronto’s WindShare
It Takes a Village!

Ed Hale

Basia Piori

Dave MacLeod

Evan Ferrari

Dave Hermans, Dave Timm

Stewart Russell

David Robertson
. . . And a Cast of Hundreds
Jim Young
One Tough Hombre
Medicine Bow, WY

- Rebuilt 65 kW
- Developed Project
Phil Littler
Shafer Systems
Iowa

• 500,000 kWh/yr
• Local Landmark
• One Person Can Make a Difference

Paul Gipe, wind-works.org
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

Paul Gipe, wind-works.org

Fuchskaute, Germany
Community Power

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

Paul Gipe, wind-works.org
Germany’s Renewable Tariffs
The Results (2010)

• 17% of Electricity
• 11% of Primary Energy
• Jobs: 366,000
  Wind: 96,000
  Solar: 120,000
  Biomass: 122,000
• 26 Billion Euros Invested in 2010

Paul Gipe, wind-works.org Hohe Westerwald, Germany
2009 Solar PV Market in Germany
80% Rooftop (Distributed Generation)

- Rooftop Residential: 12%
- Building Integrated: 1%
- Rooftop Industrial: 14%
- Groundmounted: 19%
- Rooftop Small Business: 54%

2009: 3,800 MW

Bundesverband Solarwirtschaft (BSW)
Paul Gipe, wind-works.org
Ownership of Renewables in Germany 2009

- Individuals: 42%
- Farmers: 15%
- Developers: 13%
- Utilities: 11%
- Investment Funds: 9%
- Others: 4%
- Regional Suppliers: 7%
- Industries: 2%

www.unendlich-viel-energie.de
Paul Gipe, wind-works.org
Ownership of Renewables in Germany 2009

- 51% Farmers & Individuals
- Own 22,000 MW!
  Wind, Solar, & Biogas
- US Wind: ~35,000 MW
  Owned by Utilities, Subsidiaries, & Developers

Paul Gipe, wind-works.org
Wörstadt, Rheinland-Pfalz, Germany
Time for North Americans to Take the Road to the Future

Paul Gipe, wind-works.org

Freiburg, Germany
A Challenge Worthy of Great Nations

Paul Gipe, wind-works.org

Vestas V110, Denmark
Move From A Culture of Consumption to A Culture of Conservation

--Ontario Premier Dalton McGuinty

Paul Gipe, wind-works.org

Montfort, Wisconsin
Move From
A Nation of Consumers
to
A Nation of Producers

Paul Gipe, wind-works.org  
Lackawanna, New York
No Time for Half-Measures

No Time to Lose

Paul Gipe, wind-works.org
We Need A Lot More Wind . . .
. . . A Lot More Solar

Paul Gipe, wind-works.org

Hinesburg, Vermont
The Revolution Has Begun!

Paul Gipe, wind-works.org

Tera Kora, Curaçao