

Groton Wind Farm

August 4, 2009

Groton Board of Selectmen



**IBERDROLA
RENEWABLES**

Summary



- **Iberdrola Renewables/Groton Wind**
- **How Wind Power Works**
- **Wind Power in U.S. Summary**
- **Groton Wind Farm Status**
 - **Studies and surveys completed/planned**
 - **NH Site Evaluation Committee Process**
- **Next Steps**

Iberdrola Renewables



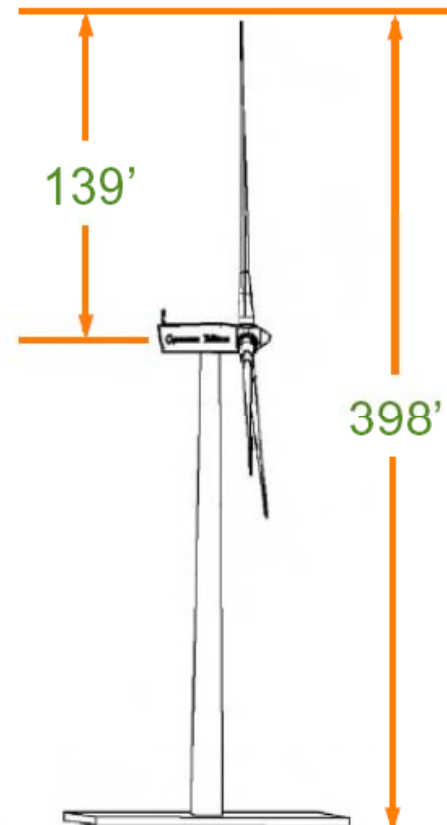
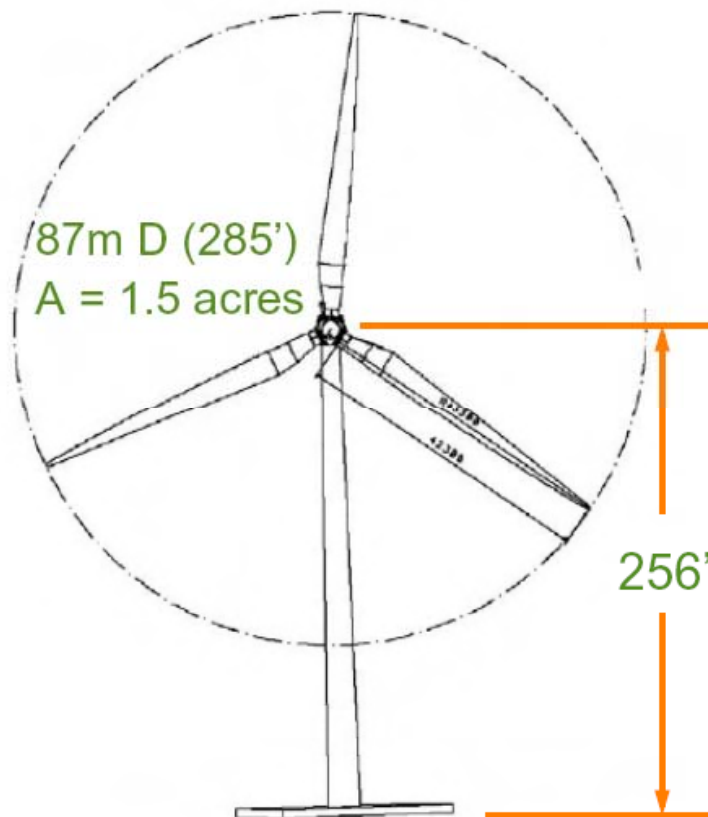
- **Largest Wind Power Company**
- **Largest Renewable Energy Company**
 - Wind, Solar, Hydro, Biomass
- **13 US Projects Built 2008**
- **34 Wind Farms in United States (3,031 MW)**
- **Completed New Hampshire's 1st commercial wind farm, October 2008 (Lempster)**



How Wind Power Works



Typical Wind Turbine – Gamesa G87

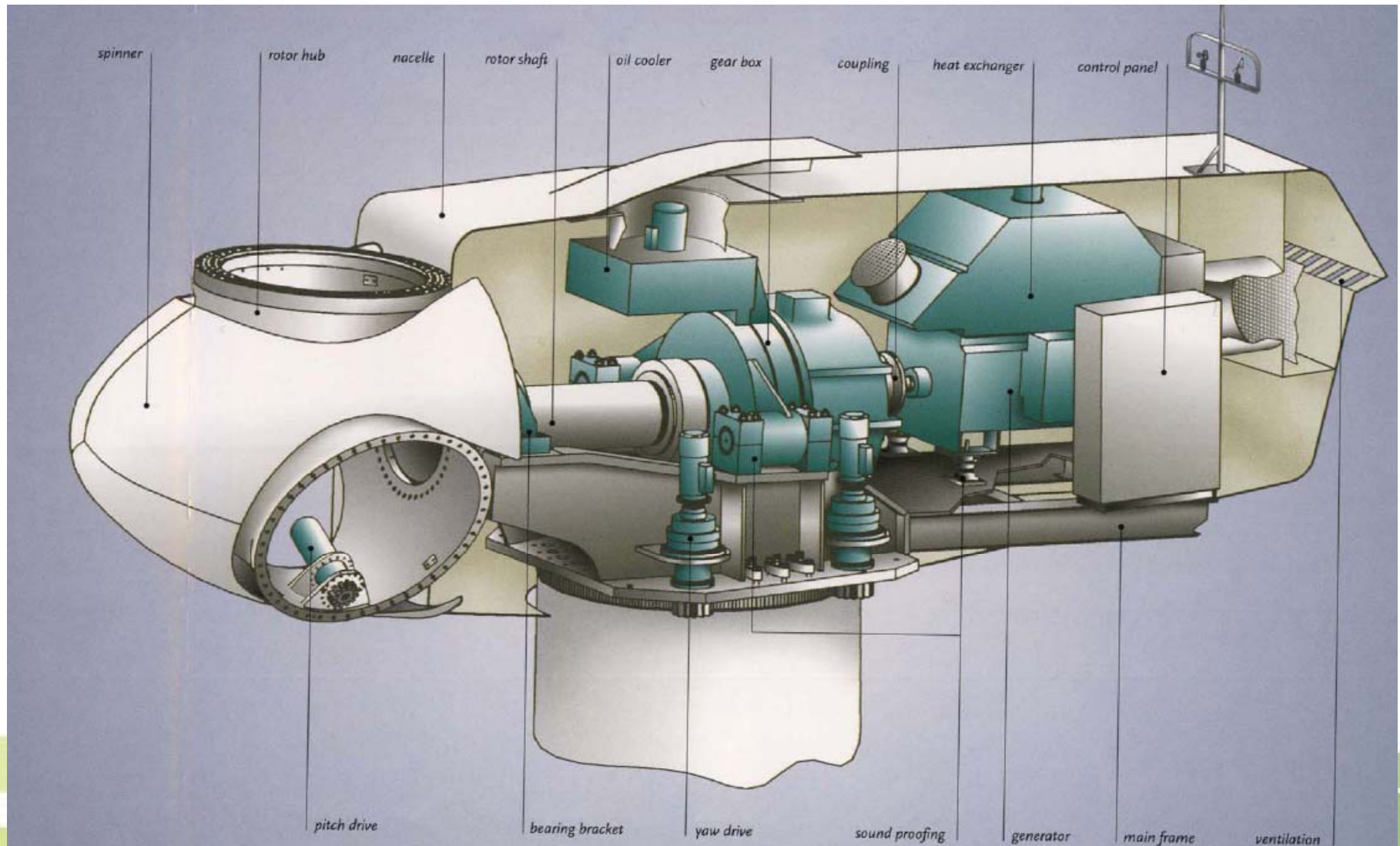


The taller the tower, the better the wind speeds

Mechanics of Modern Wind Turbines



IBERDROLA
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Modern Wind Turbine Blades



- “Rotor” contains a three-blade assembly
- Blades are 115 to 140 feet in length
- Developed for performance at low wind speeds
- Cut-in: 7 mph Cut-out: 55 mph
- 11 to 20 Revolutions Per Minute
- Swept area: 42,000 Sq. Ft.





Wind Power in the U.S.



Wind Power In U.S.



- Wind power is the fastest growing energy source in the world
- US is World Leader in Wind Power
 - U.S. DOE: wind power can provide 20%+ of all U.S. electricity
 - Current: 25,170 MW, or power for nearly 7 million US homes
 - Eliminates: 132 M tons carbon emissions (21 M cars)
- New jobs: 85,000 US Wind Power Jobs Currently

- **Benefits**

- 0 Air Emissions, 0 GHG
- No Use of Cooling Water
- No discharges of water
- Offsets and assists in retirement of older fossil-fuel power plants
- Offsets fossil fuel use



Sustainability



- **Harvesting Wind is 100% Renewable – no resources depleted**
- **Uses Local Resources**
- **Allows Landowners to Get Payments/Pay Taxes**
 - **Without Subdividing**
 - **Without Developing**
- **Does Impact Portions of Land**
 - **Access Roads**
 - **Clearings**
- **Allows Multiple Uses**

Compatibility



Hull, MA



Bear Creek, PA Wind Farm

Wind Power and Conservation



- **Keep Land with Landowners**
- **Additional Way for Landowners to Retain Land without Developing**
- **Allows for on-going, current use designation except for very small portions**
- **Allows for continued uses**
 - **Timber management**
 - **Agriculture**
 - **Recreation**
 - **Conservation**





Lempster Wind Farm



Lempster



- **First utility-scale wind project in New Hampshire**
- **24 MW Project - (12 Gamesa G87 2 MW turbines)**
 - Wind Power to Supply approx. 11,000 average NH Homes
- **Interconnection → PSNH**
- **NH SEC Approval – June 2007**
- **Construction start Dec 2007 → COD Nov 2008**



Lempster Economic Benefits



- **Town of Lempster**
 - Major Tax Revenue Source with No Demand on Local Services
- **Lempster (24 MW; 12 turbines)**
 - Over 150 Construction Jobs – nearly all construction done by New England companies and workers
 - 3 full-time operations jobs
- **Major New Hampshire, Other New England contractors**
 - Civil Design: CHA (Keene)
 - Concrete: Carroll Concrete (Keene, Newport)
 - Communications Design and Installation: FiberNext (Bow)
 - Legal: Orr & Reno (Concord)
 - Fuel, Sand, Lumber, Hauling & Transport, Hotels, Restaurants (local)

Case Study: Lempster Onnela Family Parcels

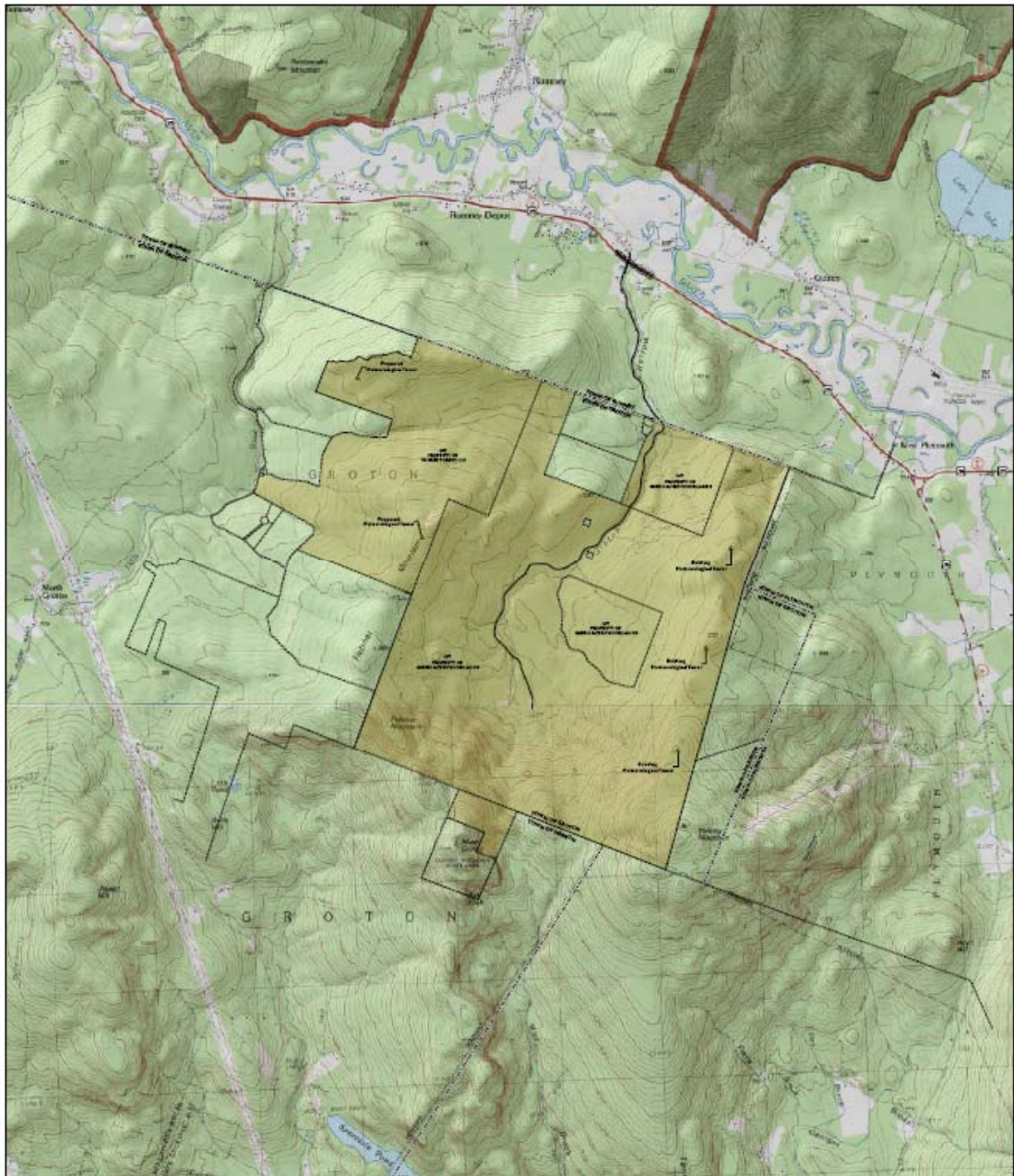


- 1,040 ac. leased
- <41 ac. for wind farm, including buffers, roads
- Allowed Onnela family to retain ownership and avoid subdividing
- Allows for continued hunting use
- All but 41 ac. remains in current use

Groton Wind



Project Area



- Legend
- Approximate Boundary Line
 - - - Approximate Adjacent Line
 - · · Approximate Town Line
 - Groton Hollow Road
 - Project Area
 - ▲ Meteorological Tower



VHB Vanasse Hangen Brustlin, Inc.
Proposed Groton Wind Farm
Project Location
Town of Groton, New Hampshire



Why Groton?



- **Excellent wind resources**
- **Compatible with sustainable forestry and conservation**
- **Existing log roads and clearings**
- **Location**
- **Landowners**
- **Local support**
- **Iberdrola's NH experience and track record**

Status



- **On-Site**
 - Total of 3 met towers on Tenney ridge (data since 2005)
 - 2 met towers proposed for Fletcher ridge
- **Studies completed**
 - Preliminary engineering and road study
 - Wetlands surveys
 - Property surveys
 - Digital topographic mapping
 - Avian radar (2 seasons)
 - Breeding birds
 - Raptor migration

On-going efforts



- **Studies Underway/Planned**
 - Electrical Interconnection (with PSNH, NH Electric Co-Op, ISO-NE [Independent System Operator – New England])
 - Engineering
 - Visual Assessment and Photosimulations
 - Consultation and study of cultural/historical
 - Peregrine Falcon
 - Sound (ambient survey and modeling underway)
 - Bat acoustical detection
- **Schedule**
 - NH SEC application Dec 2009

Benefits



- **Economic**
 - **Construction services, labor, materials**
 - **Payments to landowners**
 - **Payments to Town of Groton**
- **Improvements to area electrical grid**
- **Tourism**
- **Green power for the area, New Hampshire**
- **Uses local 100% renewable resources**
- **Allows Landowners to Get Payments/Pay Taxes, Without Subdividing**
- **Allows Multiple Uses**

Conservation



- **Groton Wind landowner Green Acre Woodlands to have Conservation Easement with Society For Protection of NH Forests**
 - Tenney ridge & Groton Hollow area
 - Allows land to remain in current ownership
 - Allows continued sustainable forestry

Coordination



- **Grafton County Economic Development Council**
- **1st District Executive Councilor Ray Burton**
- **Abutters**
- **State and Federal agencies**
- **Plymouth State University**
- **Society For Protection of New Hampshire Forests**
- **NH and other New England companies are supporting**
 - **Civil engineering and design (VHB, Bedford, NH)**
 - **Avian surveys (Audubon New Hampshire; StanTec, Brunswick, ME)**
 - **Sound analysis (Epsilon, Maynard, MA)**
 - **Cultural/historical surveys (LBG, Manchester, NH and Albany, NY)**
 - **Permitting support (Orr & Reno, Concord, NH)**

Permitting



- **New Hampshire Site Evaluation Committee (SEC)**
 - State board with representatives from all key agencies
 - Integrated permitting process for AoT, Wetlands Bureau, SEC Certificate
 - Legislature determined that siting of electric generating plants be treated as a significant aspect of land-use planning in which all environmental, economic and technical issues are resolved in an integrated fashion. N.H. RSA 162-H:1, II.
 - Legislature established the SEC process for the planning, siting and construction of such facilities. This process takes the place of individual state and local permits that would be required in the absence of RSA 162-H.

SEC Process



- **Application filing, including:**
 - **Engineering permit application (Alteration of Terrain)**
 - **Wetlands permit application (NH Wetlands Bureau)**
 - **Exhibits and data on:**
 - **Technical, management, schedule, environmental surveys: sufficient information to satisfy the application requirements of each state agency having jurisdiction**
 - **Prefiled testimony of experts**
- **SEC holds public hearings in Concord**
- **SEC holds at least 1 public hearing in Grafton County**
 - **Groton Wind provides information about the proposed project and takes questions from members of the public. Usually the subcommittee will take a tour of the site around the time that it holds this public hearing.**
- **Entire SEC process: approximately 9 months**

Next Steps



- **Open House/Town Meeting**
- **Wind Farm Agreement**
- **PILOT/payments Agreement**
- **File SEC Application**

Wind Power Information



- awea.org
 - American Wind Energy Association
- www1.eere.energy.gov/windandhydro/
 - U.S. DOE Energy Efficiency and Renewable Energy
- nrel.gov/wind/
 - National Renewable Energy Laboratory
- iberdrolarenewables.us/
 - Iberdrola Renewables
- iberdrolarenewables.us/cs_lempster.html
 - Lempster Wind website

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