So You Want to be a Community Wind Developer

CERTS Conference

January 17, 2007

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Community Wind Handbook

- Handbook is part of larger Tool Box, includes:
  - New proforma model tool
  - Annotated examples of various legal agreements
  - Detailed review of policy incentives
  - New case studies
- Expected to be online Spring 2007

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Community Wind Handbook

- Practical tips on what to expect when developing a 2-50 MW community wind project
- Handbook - Sponsors
  - AURI/Center for Producer Owned Energy
  - Southwest Initiative Foundation
  - MN Corn Growers Association
  - Windustry
  - CERTs
    - The Minnesota Project
    - Rural Minnesota Energy Board
- Developed and reviewed by broad team of community wind, legal, engineering & financial experts

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Wind Development Phases:

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Community Wind Project Development Steps

- Community wind projects parallel development of ethanol plant
- Multi-million dollar business requires:
  - Experts in business, finance & engineering
  - Diverse Board of Directors
  - Patience and perseverance
  - Attract equity/debt finance partners
- Substantial rewards for community

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Critical Development Milestones

- Secure land with demonstrated bankable wind resource
- Secure permits & development financing
- Complete negotiation of PPA, interconnection & transmission agreements
- Arrange capital financing
- Procure wind turbines, contract construction
- Build & commission project

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Project Goals: Decisions to Make Up Front

- Business objectives need to be clear at outset, drive many decisions along way
  - New business for local community members to own
  - Develop a project as hedge against rising energy prices for farming operation
  - Create long-term revenue stream
  - Economic return
- Scale of project often dictated by # of investors, size of site, and utility grid
  - Some questions, such as land area available for development, may be flexible

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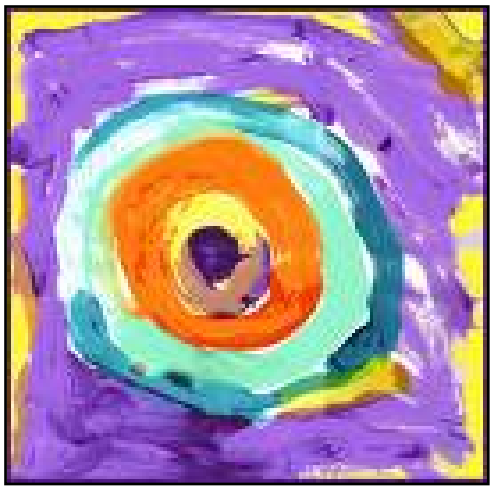
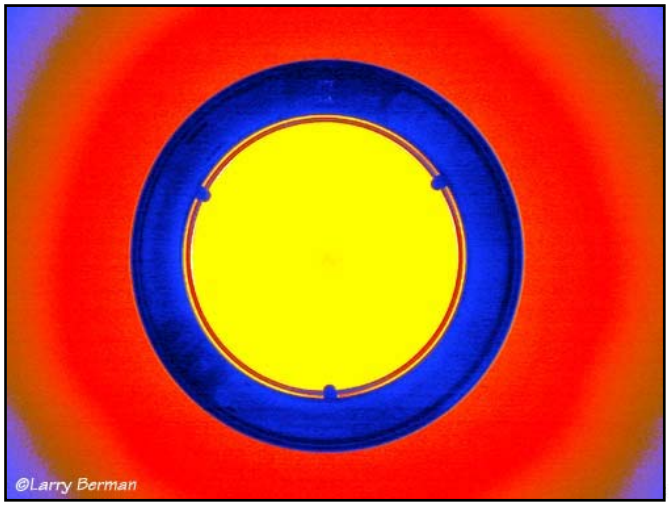
Keep Mission Statement in Mind ALWAYS!

Does the Project Pro Forma Accomplish Original Goals?





Project Goals:
Decisions to Make Up Front

- Join forces with others, aggregate into larger project to improve economics?
  - $85M 50 MW project may bring substantially greater returns than $4M 2 MW project
  - Incentives targeting 2-5 MW projects make smaller projects more feasible, easier to justify
- Decide level of involvement, based on:
  - Time & effort you want to contribute
  - Risk and return you are willing to take
  - Legal feasibility of your situation

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Community Wind Can Pave the Way

Massachusetts

- Hull Municipal Utility installed 660 kW turbine in 2001
- Project was so successful that town installed much more visible 1.8 MW turbine at landfill in 2006
- IBEW installed 100 kW turbine with 50% MTC funding in 2005 along major Boston highway
  - Countering opposition to Cape Wind, which could provide numerous jobs for licensed electricians

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Choosing a Business Structure

- 3 basic ways to participate in wind:
  - Lease your land to wind developer
  - Join with others in investing
  - Own turbine(s) yourself
  - Any combination
- Eligibility requirements for various incentives and financing options
- Establish bylaws & charter, investors' required Rate of Return

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Small Projects Can Lead the Way for More

Spirit Lake, Iowa

- School District installed 250 kW wind turbine 1993
- Project was so successful that School District installed a 750 kW turbine in 2001
- Community welcomed multiple large wind farm developments
- Iowa now hosts 22 MW of locally-owned and 814 MW of commercial-scale wind

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Do you have what it takes?

- Putting together a wind project is complex - you need to know your strengths and weaknesses
- Entrepreneurship matters
- Choose your team
  - Independent thinker
  - Self-discipline and Drive
  - Creativity
  - Risk taking
  - Intuitive, Confident, Flexible, Receptive

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Putting Together Your Project Team

- Entrepreneurial spirit
- Need experienced leadership and sound governance to provide accountability for decision-making
- People that you bring together can make or break project
- Strong business operations structure and CEO to steer through management issues, ensure ongoing oversight

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Minwind Energy, Luverne, Minnesota

Farmer Ownership:

- Nine LLCs, 11 wind turbines owned by 200+ local investors.
- Installed in 2002 and 2004.
- Goals: local economic dev., maximize return on investment, diversify local economy.

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Other Key Team Members

- Strong & diverse board
  - Community members with business & legal expertise to assure investors funds will be used responsibly
- Effective project manager
  - Team leader assigns tasks, ensures deadlines met & efficient use of resources
- Hire expertise in:
  - Wind resource assessment, EIS, engineering, interconnection, construction, legal contracts

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The Business Plan

- Wind Projects are require disciplined use of business methods and tools –
  - Energy is capital intensive!
  - By the time you break ground – your path is determined for years to come.

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The Business Plan

What is a business plan?

- Any plan boils down to three questions:
  - Where am I?
  - Where do I want to be?
  - How do I get there from here?
- A business plan is a document and a process
  - Helps the entrepreneur determine if a new venture is feasible,
  - Helps the business “Go to the Bank” and
  - Helps the business guide operational plans with strategic directions.
- Ultimately Guides Action!

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The Business Plan

- What is your product:
  - Wind energy = electrons + “environmental attributes”
    - Can you brand for higher value?
    - How does it fit into a system.
    - Risk management
      - Future carbon costs
      - Hedge against gas prices
      - System reliability
    - Low cost electrons
      - Short turn around time
    - Regulatory compliance
      - Renewable Electricity Standard
      - C-BED Goal
      - Interstate Air Quality Rules

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The Business Plan

- What is your market and how do you make a sale?
  - Utilities → Renewable Electricity Standard drives a market beyond the value of the electrons.
  - C-BED creates a further "market" enabling higher value.
  - Non-utilities – Behind the meter large users
    - Corn Plus Ethanol Plant.
    - Federal Facilities
  - Tradable Renewable Credits
    - Fortune 500 Companies, Socially Conscious Buyers, "Green" Companies

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The Business Plan

- How you define your product and market interact to define your project:
  - Xcel/ Great River Energy – 20+ MW
  - Medium Muni - 10 MW
  - Small Muni - 2 MW
  - Ethanol plant – 5 MW

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The Business Plan – The SWOT

	Strengths	Weaknesses
Internal	- Control good site - Good relationships with local utilities	- Too small to secure a turbine directly from mfg.
	Opportunities	**Threats**
External	-Expanded Renewable standard -Local utility wants to do a local project	-PTC expiration -Changing turbine market

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The Business Plan

- Who are your competitors and how do you beat them or find ways to work with them?
  - Existing utility generation
    - Gas/hydro/coal/nukes
  - Energy efficiency
  - New generation capacity
    - Other renewable technologies
    - Fossil technologies
  - Other wind developers
    - National / International Developers
    - Other community wind developers
    - Utility self-build projects

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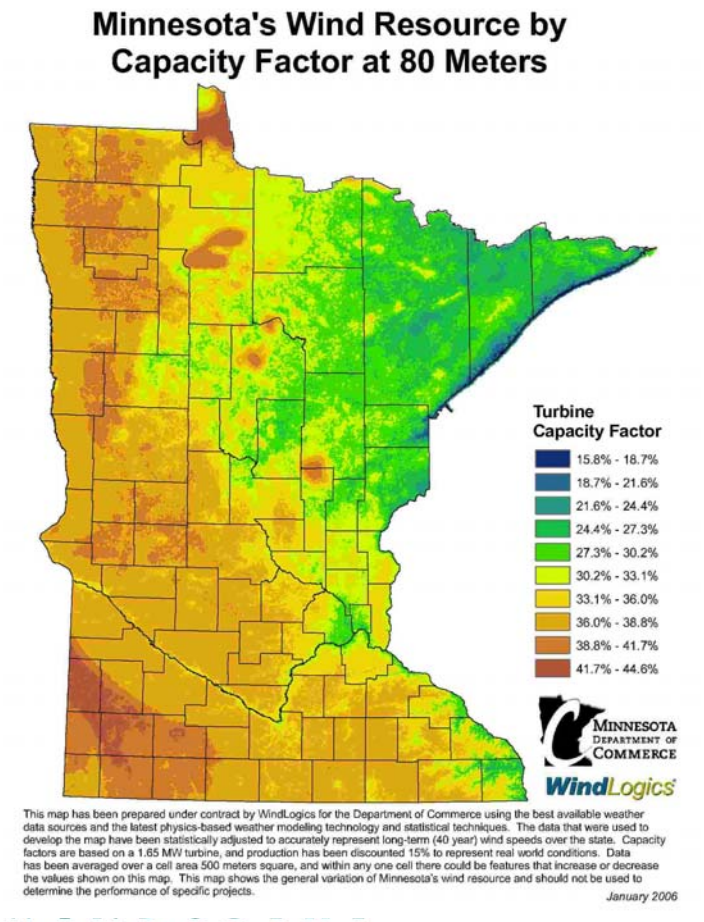
Siting – Wind Resource



- It's all about the wind, right?
- Yes and no:
- Wind resource drives production potential, but not necessarily the value.
- Other factors matter too – access to the grid and regulatory constraints.

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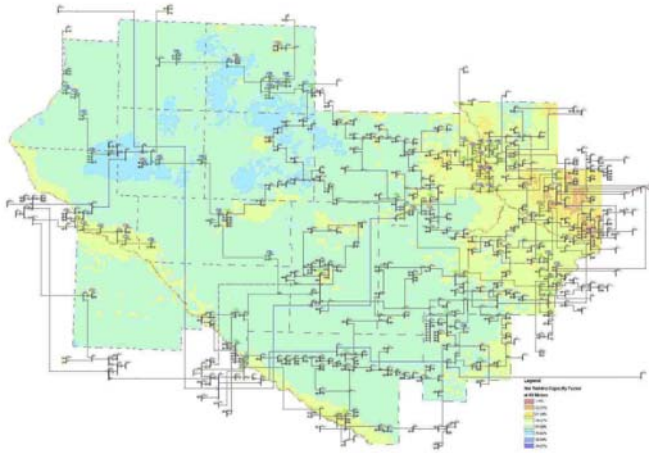
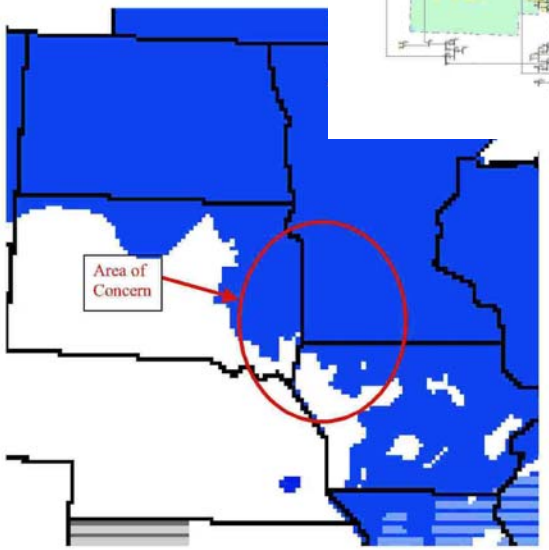
Siting - Transmission

You need wires, and cost effective access to the wires.





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Siting – Permitting Issues

Wind is good, but not in the wrong place!

Permitting is designed to protect the Public:

- Health
- Safety
- Welfare

Even if you like it, your neighbors might not.

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Siting – Permitting Issues

- Who regulates?
  - Minnesota PUC and Local Governments
  - Under 5 MW → Local Government
  - Over 5 MW → Minnesota PUC / DOC
    - Clarity is lacking on how to measure 5 MW.
  - Legislative changes likely
    - Clarify that aggregated projects are sited as one project and allow Counties to elect to regulate up to 25 MW.

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Siting – Permitting Issues

- Who else is involved?
  - Federal Aviation Administration – if over 200 feet.
  - Federal Environmental Review – if "federal action" such as a USDA grant is involved
    - Triggers Agency Notice including
      - DNR, USFW, Tribes, Mn Historical Society, etc.
  - State permits involve "alternative environmental review" also triggering agency notices.

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Siting – Permitting Issues

- Fatal Flaws or serious issues
  - Airport Impacts
  - Rare Species / Sensitive Habitats
  - Archeological Resources
  - Conflicting Land Uses
  - Scenic Resources
  - Microwave beam paths

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Wind Resource Assessment

- Rough estimate on state wind map and other available data
- Potential sites:
  - Class 4 or higher
  - Clear of trees and buildings
  - Higher than surrounding land
  - In close proximity to 3-phase distribution or transmission lines
- Site-specific meteorological study

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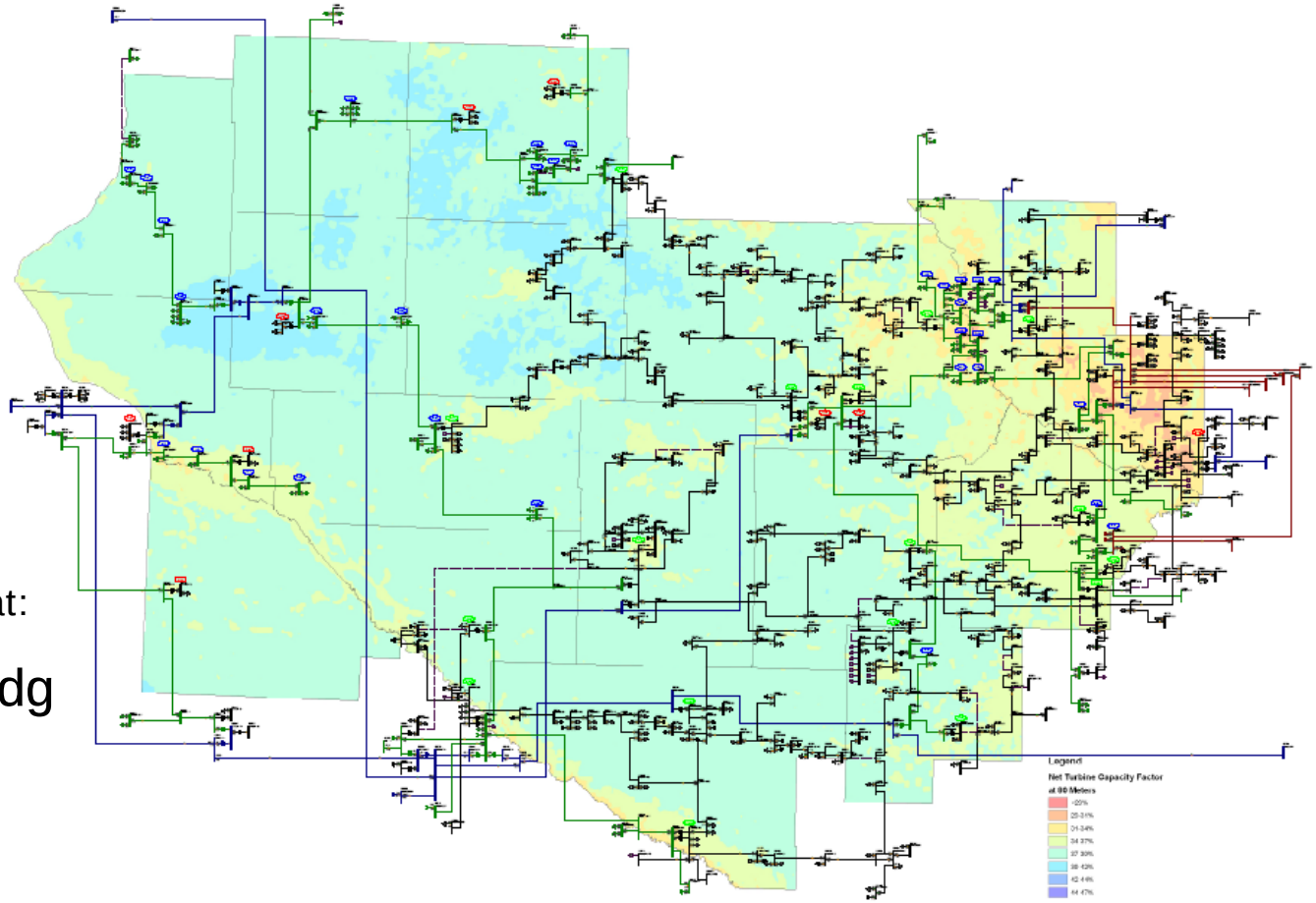
New Transmission and Wind Resource Maps



Find maps and study report at:

www.windustry.org/dg

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Study performed by CapX 2020 Utilities

Wind Project Proforma

- It's essentially a financial plan or projection for how the project will perform over it's life of 20-30yrs
- It includes capital costs, revenue, expenses and operating assumptions
- All combined on a worksheet it provides a tool for analyzing impact of project risk, returns and uncertainties

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Overview of Proforma

Cost components include land leases, turbines, towers, construction costs, interconnection & system upgrades, Property taxes, O&M, insurance, cost of financing

- Revenues include PPA, Green Tags, Prod. Incentives

- What can the proforma tell you
  - How uncertainties in the wind speed will affect returns to investors
  - How changes in financing assumptions affect project economics
  - How changes in project layouts affect costs and project economics

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Project Financing:
What Will Your Banker Want to Know?

- Can your project cover debt service?
  - Solid business plan
  - Review of PPA
  - Review of the proforma
  - Wind resource assessment done properly
  - Proper legal structure
  - Site control
  - Competency of board and investors

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Power Purchase Agreements

- Legal document defines financial obligations between project and utility purchasing energy
  - When project can and can't produce energy
  - Payment schedules
  - Reporting obligations
  - Indemnity clauses
  - Rate(s) of purchase

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Connecting to the Grid

- Working with your utility
- Choosing a consultant
- MISO steps to determine cost & capability
  - Interconnection application
  - Initial feasibility study
  - System impact study
  - Facility study
  - Optional study
  - Interconnection agreement

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Turbine Procurement

- Selection depends primarily on turbine availability and:
  - Wind resource & goals of project
  - Price & down payment required to secure order
- Long waiting lists, often several years

- Talk with other wind developers to choose manufacturer & model
- Do your homework, negotiate solid warranty

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Resources for Prospective Wind Developers

- General Wind Resources
  - Clean Energy Resource Teams www.cleanenergyresourceteams.org
  - Windustry: www.windustry.org
  - C-BED Steering Committee: www.cbed.org
  - American Wind Energy Association: www.awea.org
  - US DOE Energy Efficiency and Renewable Energy http://www.windpoweringamerica.gov
  - National Renewable Energy Laboratory www.nrel.gov
  - National Wind Coordinating Committee www.nationalwind.org
  - Minnesota Dept. of Commerce www.commerce.state.mn.us

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Resources for Prospective Wind Developers

- Business Development Resources
  - Economic Development Professionals
    - See your local government for specifics
  - Regional Development Organization www.mrdo.org
  - Small Business Development Centers www.mnsbdc.com
  - MN Dept. of Employment and Economic Development www.deed.state.mn.us

    Starting a Business in Minnesota
  - Rural MN Initiative Foundations www.mcknight.org/greatermn/initiatives_foundation.aspx
  - Economic Development Association of Minnesota www.edam.org
  - Cooperative Development Services www.cdsus.coop

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Resources for Prospective Wind Developers

- Transmission Resources
  - Midwest Independent System Operator www.midwestiso.org
  - Wind on the Wires www.windonthewires.org
  - Transmission Utilities aka Capx2020 www.capx2020.com
  - Minnesota Electric Transmission Planning www.minnelectrans.com
  - Minnesota Distributed Generation Interconnection Standards www.newrules.org/dgtariff/
  - Transmission Line Map http://www.mnplan.state.mn.us/maps/ElecTran03.pdf

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Resources for Prospective Wind Developers

- Siting and Permitting
  - Minnesota Public Utilities Commission http://energyfacilities.puc.state.mn.us/
  - Minnesota Department of Commerce
    - Contact: Larry Hartman
  - Local County Planning and Zoning Administrator
  - CERTs Model Wind Ordinance www.cleanengeryresourceteam.org
  - Federal Aviation Administration Notice of Proposed Construction
  - http://forms.faa.gov/forms/faa7460-1.pdf
  - Guidance on Notice in Advisory Circular AC 70/7460-2K

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Resources for Prospective Wind Developers

- MN DNR
  - Rare Species Info (Natural Heritage Database) http://www.dnr.state.mn.us/ecological_services/nhnrp/index.html
  - Local Wildlife Offices: http://files.dnr.state.mn.us/contact/wildlife_managers.pdf
- Minnesota Historical Society (State Historical Preservation Office) Archeological Site Database www.mnhs.org/shpo/
- MNDOT Office of Electric Communications – 800 MHZ Microwave Public Safety Communication System http://dot.state.mn.us/oec/statewide/statewideinfo.html

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Major Points to Keep in Mind

- Rapid expansion of community wind due to improving economics and effective public policies
- Economic, social and environmental advantages accrue to local community
- Be prepared to explain to your neighbors how the project will help keep their power costs down and answer their basic questions

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Major Points to Keep in Mind

- Projects take hard work, innovation, champions and public policy support
  - Planning and development typically takes several years
  - Dedicated team of professionals with consultants in business, finance, easements, PPAs, engineering, construction & project management
- Provide major new economic opportunities connecting main street America with a new industry

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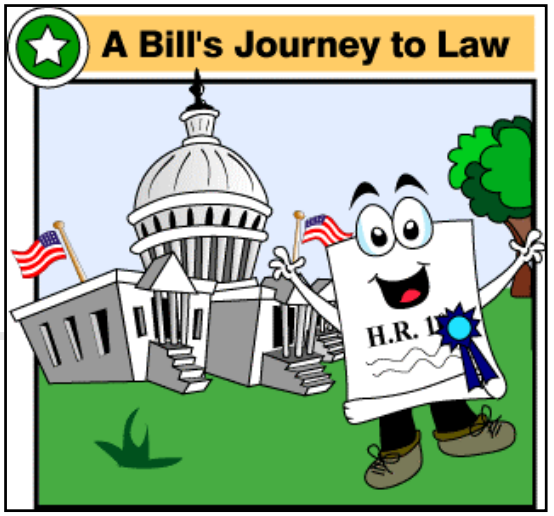
Policy Opportunities



- Energy topics are hot at both the state and federal level
- Multiple energy bills moving ahead

Now is the time to open dialogue with elected officials

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