Wind Energy Facility Siting and Permitting in South Dakota

Tim Binder
Staff Analyst
Tim.Binder@state.sd.us

21 October 2009
Wind Energy Basics

• Large Wind
  – Wind Farms: Buffalo Ridge, Hyde County

• Small Wind
  – Residential and Small Commercial Use

• Medium Wind
  – Local Commercial Use, CBED
Small Wind Turbines

- Generators < 100 kW
- Tower heights range from 30’ to 120’
- Typically used for residential consumption
- Siting small wind not at all the same as siting large wind farms
Large Wind Turbines

- Towers are typically 250’
- Blades @ about 150’
- Total tower height is about 400’
- Generating Capacity of 1.5MW to 3MW
Large Wind Basics

• Sited in rural areas along ridges:
  – Turbine Strings
  – Access Roads
  – O&M Facilities
  – Collector Lines and Transmission Lines
  – Substation*
Sample Large Wind Projects

- SD Wind Energy Center – 40.5 MW
- MinnDakota – 54 MW
- Tatanka I – 88.5 MW
- Buffalo Ridge I – 50.4 MW
- Wessington Springs – 51 MW
- Buffalo Ridge II – 300+ MW
Wind Development Benefits

• Local Tax Contributions
• Lease payments to landowners can be substantial
  • $2,000 to $8,000 per tower per year
• Temporary construction jobs
• Small number of permanent operation & maintenance jobs
Wind Challenges

1. Unpredictability
2. Generation profile vs. load
3. SD load growth/market
4. Cost
Incentives for Development

• Alternative Tax
  – $3/kWh of nameplate capacity
  – 2% gross receipts tax

• Rebate for collector and transmission lines
  – 90% of cost for first five years
  – 50% of cost for next five years
  – May be a rebate or tax credit
Wind Energy Development

1. Wind Resource - Does the wind blow?
2. Site Control - Do you have land access?
3. Financing - Got cash?
4. Buyer/Market – Where will the power go?
5. Permits - Have you received the go ahead?
Wind Energy Development:

1. Wind Resource

• Not just “Windy”:
  – Height
  – Speed
  – Direction
  – Time of Day
  – Seasonality
  – Consistency/Force
Wind Energy Development:

2. Site Control

• Option for Easements or Leases
  – Void if no development within 5 years

• Wind Easements or Leases
  – Maximum term of 50 years per agreement

• Wind rights not severable from the land

• Landowner Beware!
Landowner’s Handbook

• Available:
  – www.SDEIA.com
  – 605-773-3201
  – wind@state.sd.us
Wind Energy Development:

3. Financing

- Tower/Turbine $1.5-2.5 million each
- Buffalo Ridge II estimated $620 million
  - 306MW from 150-200 towers
- Federal Tax Credits
  - PTC Production Tax Credit
  - ITC Investment Tax Credit
Wind Energy Development:

4. Buyer

- Power Purchase Agreement (PPA)
- Location, Location, Location
- Existing sources of power are cheap
  - Wholesale 3.5¢
- Wind is more expensive
  - w/o PTC = 6.5¢  w/ PTC = 4.5¢
Wind Energy Development:

5. Permits

- State Level Permitting
  - South Dakota Laws
    - SDPUC Permitting
  - State Agencies

- Local Government
  - County Commissions/Zoning
  - City Councils/Townships

- Federal Considerations
SD PUC Jurisdiction

- “Wind Energy Facility“ **Siting** ≥ 100MW

- “Small” Wind Facility **Notification** ≥ 5MW
SD PUC Permitting Process

• Six month notification of intent
• Application for Permit
• Public Hearing within 60 Days
• Decision within Six Months of application
Siting

• Permit the “Box”
  – Turbine Strings
  – Collector Lines
  – Transmission to Substation

• Setbacks (New for 2009!)
  – 500 ft or 1.1 height for property lines
    • SDCL 43-13-21 - 24

• EL08-31 “Buffalo Ridge II”
Other State Agencies

- SD Game, Fish & Parks (GF&P)
  – Protecting grasslands, wetlands and wildlife
- State Historic Preservation Office (SHPO)
  – Protecting culturally significant land and sites
- Dept. Environment & Natural Resources (DENR)
  – Protecting Air and Water Quality
- Dept. of Transportation (SDDOT)
Local Government

- PUC may supersede local rules
- Local Control
  - Current PUC Commission generally defers to local ordinances and permits if available
  - Road use/damage a prime concern
- Model Ordinances
  - Tower Working Group
  - Guidance for County and City Governments
Tower Working Group’s Model Wind Ordinance

Brian Rounds
Brian.Rounds@state.sd.us

Tim Binder
Tim.Binder@state.sd.us

605-773-3201
Tower Working Group

Objective:
To provide local government officials with the information they need to site wind and wireless towers responsibly and efficiently
The Tower Working Group
Wind Tower Concerns

Noise

• Can be as high as 70 dB right next to the turbine
• Large wind setback of 1000-1500’ from residences will keep noise level down
• Noise levels for small wind turbines varies
• Best to Practices levels such as 55 dB
Wind Tower Concerns

Aesthetics

• Beauty is in the eye of the beholder
• Modern towers are huge: 200-400 feet tall
• Shadow Flicker: Strobe-like effect caused by shadows of moving blades
• Local property values are a concern to homeowners
• Tourism may be affected positively or negatively
Wind Tower Concerns

Decommissioning

• For projects > 100 MW, SDPUC has siting authority, and typically requires decommissioning bonding

• For projects < 100 MW, local authorities may want to take this into account

• Wind farms may limit urban sprawl due to 1,000 to 1,500 ft setbacks

• Safety net should be in place in case of project failure
Wind Tower Concerns

Siting Authority

• 100MW+ SDPUC; Less than 100MW???
• Brookings, Yankton, and Deuel counties have established siting ordinances for large farms
• Lawrence and Yankton counties have specific ordinances for **Small Wind**.
• Otherwise typically a variance for towers over 35'
TWG Model Wind Ordinance

- 2 Classes of Wind Turbines
- **Small Wind**
  - Tower Height < 75’
  - Primarily used for on-site consumption
- **Large Wind**
  - Everything else
TWG Model Wind Ordinance

Small Wind

- Setbacks of 1.1 times the system height
- Noise 55 dBA at the closest neighbor
- Utility notification required
- Applicant must attain a building permit
  - Procedure is established
  - Application requirements are defined
  - Permit expires after 2 years w/out installation
TWG Model Wind Ordinance

Large Wind

• Setbacks
  – 1,000’ from residences, business, public buildings
  – 500’ or 1.1 system height from landowner’s residence, right-of-way, or property lines

• Noise limits of 55 dBA at the closest neighbor’s dwelling

• Minimum blade height of 25’
TWG Model Wind Ordinance

Large Wind

• Special requirements for electromagnetic interference, lighting, turbine spacing, electric cables, and feeder lines

• A list of mitigation measures are defined which include requirements to identify heavy use roads and develop a soil erosion and sediment control plan
TWG Model Wind Ordinance

Large Wind

Permit application requirements also include:

• Consultation with SDGFP, SD State Historical Society, and USFWS
• Project Schedule and Mitigation Measures
• Developers must file preliminary turbine layouts, as well as an “as-built” survey following completion
• Decommissioning
Tower Working Group’s Model Wind Ordinance

Brian Rounds
Brian.Rounds@state.sd.us

Tim Binder
Tim.Binder@state.sd.us

605-773-3201