

Towers

and other Aeromatic Problems

Presented to: North and South Dakota Aviation Users

By: Brian Schuck

Date: October 27 & 28, 2010



Federal Aviation
Administration





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Towers

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Pilots: Towers really stink!

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Towers



Presentation Title – Towers

October 27 & 28, 2010



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Towers

- **More than 85,000 communication towers in the USA in 2005.**
- **7,000 new towers built each year.**
- **At that rate, the number of towers will double by 2017.**

Statistics from July/August Agricultural Aviation Magazine



Wind Generators



Presentation Title – Towers

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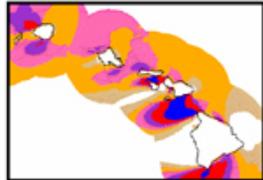
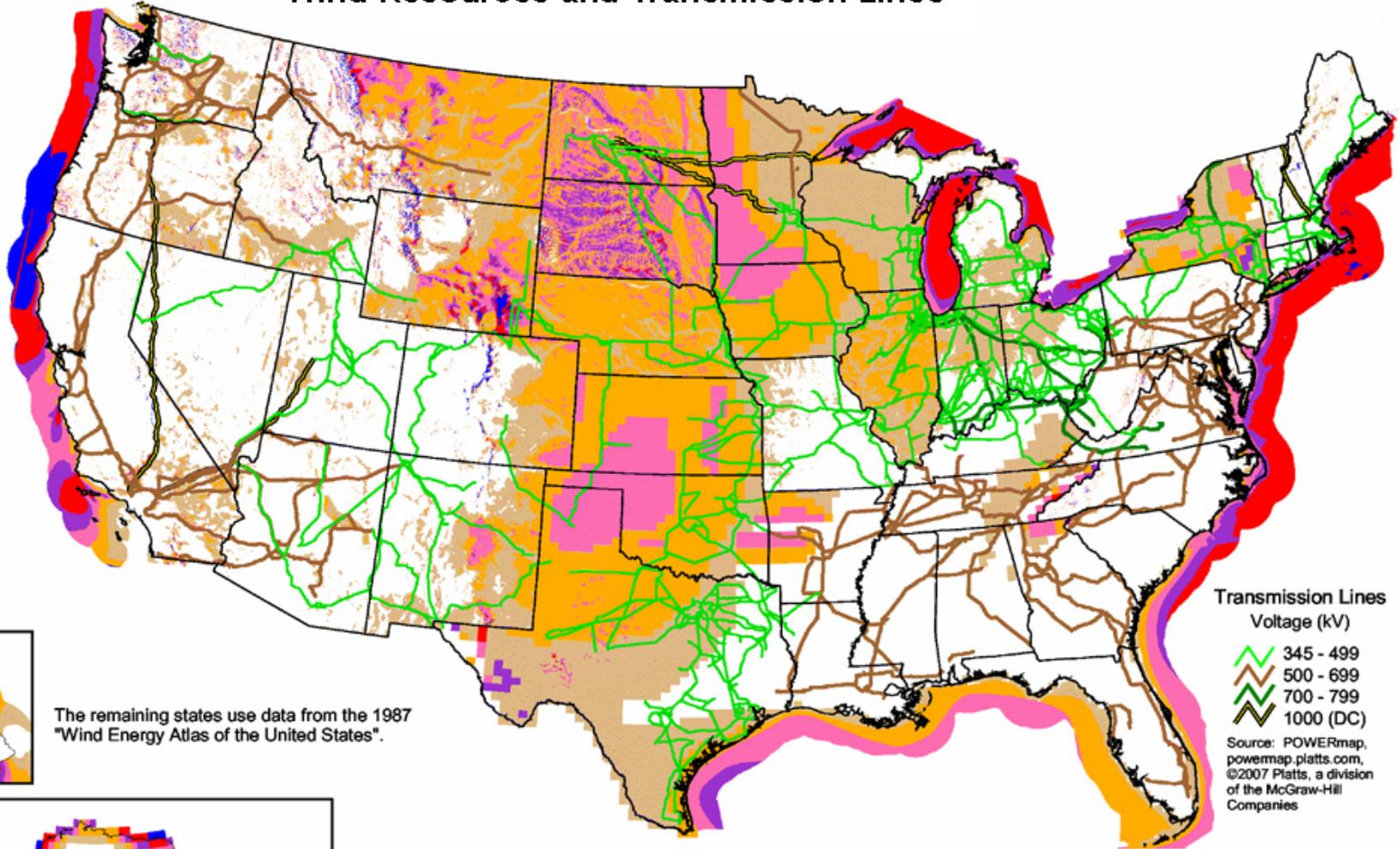


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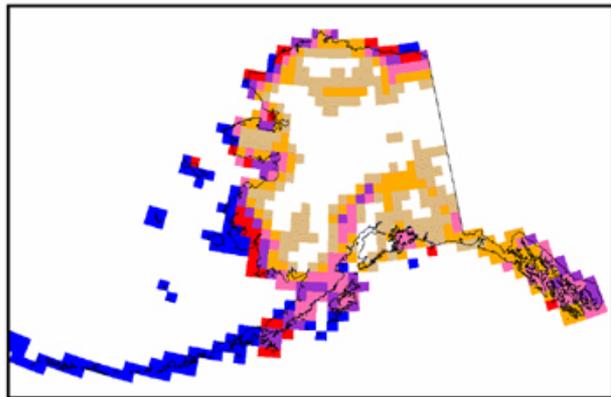
NREL Updated Maps:

- Arizona (2003)
- California (2002)
- Colorado (2004)
- Connecticut (2001)
- Delaware (2002)
- Hawaii (2004)
- Idaho (2002)
- Illinois (2001)
- Indiana (2004)
- Maine (2001)
- Maryland (2002)
- Massachusetts (2001)
- Michigan (2004)
- Missouri (2005)
- Montana (2002)
- Nebraska (2005)
- Nevada (2003)
- New Jersey (2002)
- New Hampshire (2001)
- New Mexico (2003)
- North Carolina (2002)
- North Dakota (2000)
- Ohio (2004)
- Oregon (2002)
- Pennsylvania (2002)
- Rhode Island (2001)
- South Dakota (2001)
- Texas mesas (2000)
- Utah (2003)
- Vermont (2001)
- Virginia (2002)
- Washington (2002)
- West Virginia (2002)
- Wyoming (2002)

Wind Resources and Transmission Lines



The remaining states use data from the 1987 "Wind Energy Atlas of the United States".



Transmission Lines
Voltage (kV)

- 345 - 499
- 500 - 699
- 700 - 799
- 1000 (DC)

Source: POWERmap, powermap.platts.com, ©2007 Platts, a division of the McGraw-Hill Companies

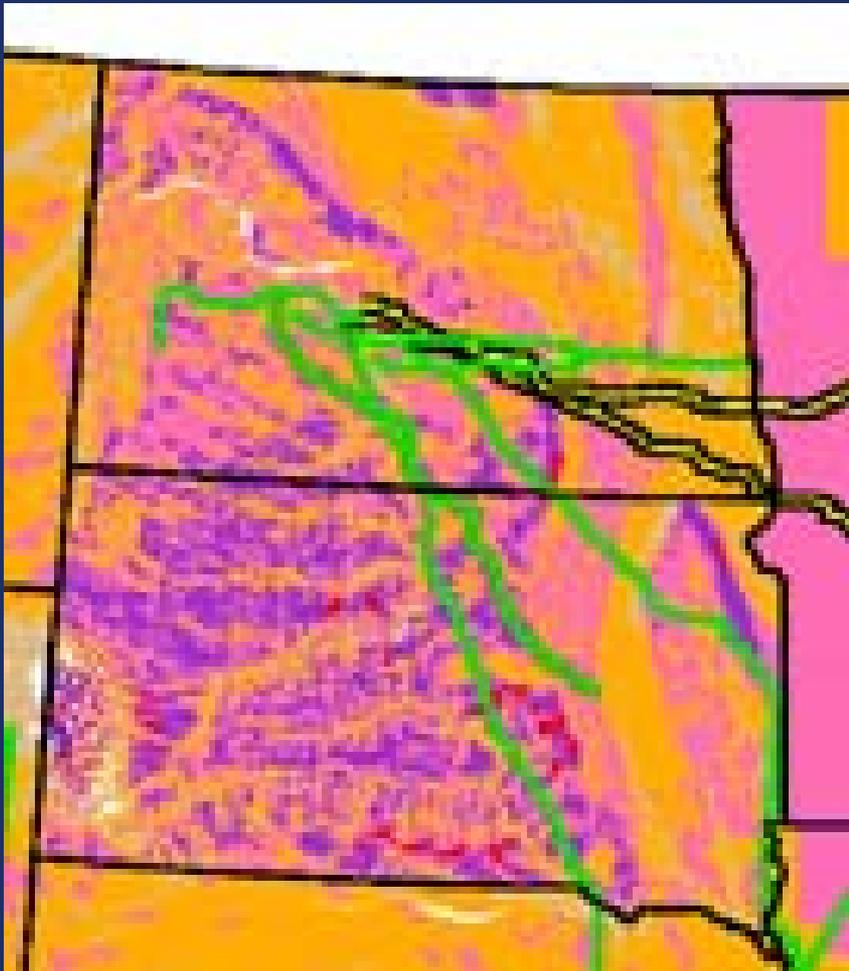
Wind Power Classification

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m ²	Wind Speed ^a at 50 m m/s	Wind Speed ^a at 50 m mph
	2 Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
	3 Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
	4 Good	400 - 500	7.0 - 7.5	15.7 - 16.8
	5 Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
	6 Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
	7 Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

^a Wind speeds are based on a Weibull k value of 2.0

U.S. Department of Energy
National Renewable Energy Laboratory





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Wind Generators

- **The growth rate of wind generators is expected to exceed that of communication towers.**
- **The Dakotas are a prime location for wind farms.**
- **Increasing fuel costs will make wind farms more competitive.**
- Statistics from July/August Agricultural Aviation Magazine



Test Towers



- **Test towers are typically less than 200' so typically they do not need to be obstruction lighted or marked.**
- **They are set up for a duration to determine the sites wind potential, then moved, making them a constantly changing location.**

Statistics from July/August Agricultural Aviation Magazine

Structures

- **Grain Elevators**
- **Buildings**
- **Power lines**
- **Wildlife attractants**
- **Lights**



Airspace Study

- **Structures meeting filing criteria must be studied.**



Airspace Study

- **Study will determine if it is:**
 - Not an obstruction
 - No objections determination
 - Obstruction
 - The proposal will be circulated to people who may be impacted.
 - A determination will be made:
 - Not a hazard – no object
 - Hazard – determination will be objectable



Hazard Prevention

Who stops the construction of the hazard – FAA?

- The FAA does not have the ability to stop construction of a hazard.
- The airport is responsible for stopping the construction.

20. **Hazard Removal and Mitigation.** It will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.



Hazard Prevention

How can I protect my airport?

- **Land acquisition**
 - Fee
 - Easement
- **Zoning**
- **The Dakotas have state laws that prohibit construction of obstructions to public airports.**



WWW.OEAAA.FAA.GOV

Obstruction Evaluation / Airport Airspace Analysis (OE/AAA)

News Flash!! AC70/7460-1K has been updated and will be effective on February 1, 2007. It is available on the FAA advisory circular website, and on this site ([AC70/7460-1k](#)). This is available online only; no hard copies will be printed.

In administering Title 14 of the Code of Federal Regulations CFR [Part 77](#), the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace. To accomplish this mission, aeronautical studies are conducted based on information provided by proponents on an FAA Form 7460-1, Notice of Proposed Construction or Alteration.

[Advisory Circular 70/7460-2K](#), Proposed Construction or Alteration of Objects That May Affect the Navigable Airspace, provides information to persons proposing to erect or alter an object that may affect the navigable airspace. [Advisory Circular 70/7460-1K](#), Obstruction Marking and Lighting, describes the standards for marking and lighting structures such as buildings, chimneys, antenna towers, cooling towers, storage tanks, supporting structures of overhead wires, etc.

OE/AAA Filing Process

If your organization is planning to sponsor any construction or alterations which may affect navigable airspace, you must file a **Notice of Proposed Construction or Alteration (Form 7460-1)** with the FAA.

If construction or alteration IS NOT LOCATED on an airport:	If construction or alteration IS LOCATED on an airport:
You may file forms 7460-1 and 7460-2 electronically via this website - New User Registration .	You must file form 7460-1 via US Postal Mail.
or	Find the FAA Airports Region / District Office having jurisdiction over the airport on which the construction is located, and file to that address.
You may file forms 7460-1 and 7460-2 via US Postal Mail to: Express Processing Center Federal Aviation Administration Southwest Regional Office Obstruction Evaluation Service, AJR-32 2601 Meacham Boulevard Fort Worth, TX 76137-0520.	
Questions? Please contact the appropriate representative .	

Who Needs to File

[CFR Title 14 Part 77.13](#) states that any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA:

- any construction or alteration exceeding 200 ft above ground level
- any construction or alteration :
 - within 20,000 ft of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 ft
 - within 10,000 ft of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft
 - within 5,000 ft of a public use heliport which exceeds a 25:1 surface
- any highway, railroad or other traverse way whose prescribed adjusted height would exceed that above noted standards
- when requested by the FAA



Questions?

