# Licensing and Monitoring of RES

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# Siting and Permitting Wind Turbines

Varies significantly by state:

* Mandatory requirements based on state-level wind siting statutes
* Voluntary state guidelines for siting
* Local government siting rules
* Model ordinances for local governments to apply
* Voluntary checklists and resources for local governments to recommend

# Siting and Permitting Wind Turbines

May require:

* Environmental studies – biological, botanical, cultural, water quality, visual, noise, geology, soils
* Energy sales
* Land use permits
* Environmental permits, State fish & game
* County construction permits

# Common Elements in Siting Policy

| Type of Impact | Approach |
|---|---|
| Environmental | Minimize and mitigate impacts on vulnerable ecological features, such as: wetlands, waterways, floodplains, dunes, native prairie, bird migration corridors, bat shelters |
| Cultural/ Archeological | Minimize and mitigate impacts on areas of cultural/historic significance and recreational areas, such as archeological sites, recreational trails, state and local parks, and other recreational areas |
| Public Health/Safety | Setbacks from homes, other buildings, and roads; heights standards; minimum distances between turbines |
| Visual/Audio (real or perceived) | Specifications on color and finish of turbines; avoid shadow flicker |
| Navigable Airspace | Protect against interference of navigable airspace of public or private airports |
| Electromagnetic Interference | Protect from interference with radar installations, television signal reception, radio signal reception or personal communication signal reception |

# Iowa Siting Policy

* State-level siting policy for generation
  * Siting certificates required for new generation with total capacity of 25 MW or larger
  * Waivers for wind projects if total capacity on each feeder line is less than 25 MW
* State-level siting policy for transmission line
  * Certificate required for lines 69 kV or higher
  * Public notice and informational meetings required
  * Hearing is required if there is public opposition

# Iowa Siting Policy


- Small wind innovation zone model ordinance
  - State law encourages voluntary adoption of uniform local government requirements for smaller wind turbines (100 kW or less)

# Siting in Other States

## Oregon:

- Site certificates required
- Public hearings
- Siting standards
- Guidelines for applicants for Energy Facility Site Certificates

| State | State/Provincial Permit Required? | State/Provincial Guidelines |
|---|---|---|
| Illinois | No | No |
| Indiana | No | No |
| Michigan | No | Yes |
| Minnesota | Yes. Minnesota Public Utilities Commission Permit | Yes, for municipalities that oversee 5-25 MW projects |
| New York | No | Yes, for pre-and post-construction bird and bat surveys |
| Ohio | Yes. Ohio Power Siting Board Certificate of Environmental Compatibility and Public Need | Yes |
| Ontario, Canada | Yes. Ontario Ministry of Natural Resources Renewable Energy Approval | |
| Pennsylvania | No | Yes. Voluntary Cooperative Agreement for pre-and post-construction monitoring of birds, bats and threatened or endangered species |
| Quebec, Canada | Yes. Quebec Council of Ministries Governmental Decree and Ministry of Sustainable Development, Environment and Parks Authorization Certificate | Yes. Landscape integration and harmonization |
| Wisconsin | Yes. Public Service Commission of Wisconsin Certificate of Public Convenience and Necessity (projects over 100MW and all projects built by a utility) | Yes |

# Iowa Interconnection Policy

* State rules for interconnection with utility's local distribution system
  * Uniform standards for interconnection, safety and operating reliability based on IEEE 1547
  * Expedited review procedures for smaller facilities (2 MW or less) certified by a national testing laboratory under the UL 1547 equipment standard
  * More complex procedures for facilities larger than 2 MW and facilities that require upgrades to the utility's distribution system

# Iowa Interconnection Policy

* Federal rules for interconnection with the interstate transmission system
  * Federal jurisdiction pre-empts state jurisdiction
  * Interstate transmission system determined by the Federal Energy Regulatory Commission (FERC)
  * FERC determination of interstate transmission lines considers both voltage level and line function

# Monitoring – Midwest Renewable Energy Tracking System (M-RETS)

- A computer-based system for creating, tracking, and retiring electronic Renewable Energy Certificates (RECs)
- Used by state governments in the Midwest region for monitoring utility compliance with state RES requirements
- Helps ensure that renewable energy used for meeting a state's requirement is not counted more than once – necessary in a multi-state regional energy market
- Governed by an independent board of directors that represents state governments in the Midwest region, also utilities and power marketers and environmental groups

# Monitoring – M-RETS

* Individual renewable generators and their information are registered with M-RETS:
  * Generator name and location
  * Owner / M-RETS account holder
  * Renewable technology / fuel type
  * MW nameplate capacity
  * State renewable programs for which the generator is eligible (requires state confirmation)

# Monitoring – M-RETS

* Each generator's total MWh production is reported to M-RETS every month by independent Qualified Reporting Entities (QREs)
* QREs must register and be approved by M-RETS
* QRE must demonstrate independence from generator owner, purchasing utility, and third-party power marketers
* Most generator MWh production is reported by the regional independent transmission system operator (Midwest ISO)

# Monitoring – M-RETS

* For each generator, M-RETS converts the reported monthly MWh production data into unique numbered RECs
* 1 REC = 1 MWh of renewable generation
* Each REC represents all environmental attributes of the renewable generation as a bundled whole – individual attributes (such as zero $CO_2$ emissions) cannot be unbundled and separated from the certificate
* Each electronic REC is coded with:
    * Certificate number
    * Generator registration data
    * Month of MWh production

# Monitoring – M-RETS

* RECs can be:
  * Held for future use
  * Transferred to another M-RETS account holder (sales transactions happen separately outside of M-RETS)
  * Exported to other regional tracking system based on agreement between systems
  * Retired
* For monitoring utility compliance with state renewable energy purchase requirements:
  * Utilities transfer the RECs intended for state renewable requirements to special retirement accounts
  * States monitor retirement accounts for utility compliance
  * RECs transferred to retirement accounts are "retired" and cannot be used for any other purpose