

# **Friends of Maine's Mountains**

## **Considerations for Towns that may Become the Site for Wind Power Developments**

### *Introduction*

Wind Energy, like other renewable energies, may play a part in this country's approach to addressing electricity needs. However, Wind Energy Facilities, like other large energy facilities, are industrial scale developments that will have industrial scale impacts on the community in which they are located. As Wind Energy Facilities become more prevalent, more information has become available about the real-world impacts such developments have on communities and residents located in close proximity. Municipalities that will be the site of future Wind Energy Facilities can learn from the experiences of other municipalities, and can proactively address some of the potential problems that have arisen elsewhere. A municipality can take a number of steps to ensure that Wind Energy Facilities are sited appropriately, built to adequate safety and performance standards, do not adversely impact the health safety and welfare of its residents, and that the developer—not the municipality and its residents—bears the risk of a Wind Energy Facility's actual impact being more severe than predicted.<sup>1</sup>

### *Relationship to DEP Permitting Process*

The State requires site location permits for many grid-scale wind energy facilities located in municipalities under the state's site-location development standards. These permits are issued by Maine Department of Environmental Protection (DEP) pursuant to 35-A M.R.S.A. §3451, et seq. (Expedited Permitting of Grid-Scale Wind Energy) or Title 38 M.R.S.A § 481, et seq. (Site Location of Development Act). The State Planning Office's model municipal wind ordinance is based on an assumption that municipalities will want to defer to DEP findings as a way to save money and time in their review of wind energy projects.<sup>2</sup> Most municipalities that have chosen to adopt their own municipal ordinances have found many aspects of the state review deficient for the protection of municipal concerns, and as a result have allowed the municipal reviewing authority to consider findings made by the DEP but required that authority to makes its own determinations on each issue.<sup>3</sup> Also, a municipality that chooses to have its permitting authority defer to a State finding on issues such as a proposed facility's scenic impact should recognize that the State review process does not take into account areas of local significance. The municipality should therefore be careful to draft its ordinance in a way that allows its reviewing authority to take into account any areas of local significance such as those that may be identified in the municipality's comprehensive plan.

### *Zoning vs. Stand Alone Ordinance*

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<sup>1</sup> When using citations to ordinances, the following abbreviations will be used: Montville (M), Jackson, (J), Buckfield (B), Dixmont, (D), Thorndike (T), State Planning Office Model (S).

<sup>2</sup> State Planning Office draft guidebook section 14.7 Relationship to DEP Certification and Permitting, *available at* [http://www.maine.gov/spo/landuse/docs/draft\\_windenergyfacilityorgguidebook\\_feb2010.pdf](http://www.maine.gov/spo/landuse/docs/draft_windenergyfacilityorgguidebook_feb2010.pdf)

<sup>3</sup> Compare SPO model Ordinance (S § 4) with Montville (M § 15.2.8), Jackson (J § 11.3, 17.2.8, 17.3.5 ), and Buckfield (B § 11.2, 15.2.7). Dixmont and Thorndike do not address the issue.

Many municipalities have chosen to adopt a stand-alone ordinance related to Wind Energy Facilities.<sup>4</sup> Stand-alone ordinances can help address many wind-specific issues and can be enacted by a town without the adoption of a comprehensive plan or zoning ordinance. However, enactment of a stand-alone wind energy ordinance without also enacting a comprehensive plan, zoning ordinance and zoning map means that a commercial wind power project could be located anywhere within the municipality, so long as it meets the standards in the wind power ordinance. Thus, a stand-alone ordinance does not provide the same level of local control over the location of a wind energy project that could be achieved through the use of a zoning approach.

If a municipality currently has zoning regulations, or wishes to engage in a zoning approach, it could amend its comprehensive plan and zoning ordinance to provide for commercial wind energy generation as: (1) a permitted use within specific zoning districts; (2) a conditional use or special exception use within certain zoning district(s); or (3) within overlay district(s), which would allow the municipality to designate places in the municipality where development of wind projects is deemed appropriate, regardless of existing zoning district boundaries. A municipality that takes such an approach could also adopt the site plan and performance standards outline in the stand-alone ordinances, either by adopting a stand-alone ordinance, or by integrating its provisions into an existing site plan or performance standard ordinance. A zoning approach in conjunction with wind-specific performance criteria gives a municipality the most control over where and how a wind energy facility is located, built and operated.

### *Site Permit and Operational License*

Almost all municipalities that choose to regulate wind include a site permit and its related review by the planning authority that occurs prior to the construction of the facility. In addition, many municipalities are adopting an operational license requirement for grid-scale wind energy facilities. An operational license requirement provides a procedural mechanism to ensure ongoing monitoring and review by the municipality throughout the period of operation of the wind energy facility. License conditions may require an operator to engage in periodic testing and reporting regarding compliance with the operational standards of the ordinance. Many municipalities have the license terminate upon transfer of the ownership or operational responsibility of the facility. This allows a municipality to review the financial sureties and operational expertise of a subsequent operator. Municipalities have taken different approaches to the length of time a license remains valid and whether an initial license issues concurrently with

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<sup>4</sup> Examples of Maine municipal ordinances that may be looked to for guidance include:

Montville, available at <http://www.montvillemaine.org/uploads/WIndOrdFinal.pdf>

Dixmont, available at <http://www.dixmontwind.org/>

Buckfield, available at

<http://www.townofbuckfield.com/vertical/Sites/%7BA9492AA8-D983-4C9E-97D1-8C1FBE2915DB%>

Thorndike, available at <http://thorndikeplanningboard.blogspot.com/>

Jackson, available at [http://eastbrookwind.org/docs/jackson\\_ordinance.doc](http://eastbrookwind.org/docs/jackson_ordinance.doc)

Oakfield Wind Energy Review Committee Report, available at

<http://www.bangordailynews.com/external/Assets/Oakfield.pdf>

State Planning Office model ordinance and draft guidebook, available at

<http://www.maine.gov/spo/landuse/docs/ModelWindEnergyFacilityOrdinance.pdf>

[http://www.maine.gov/spo/landuse/docs/draft\\_windenergyfacilityorgguidebook\\_feb2010.pdf](http://www.maine.gov/spo/landuse/docs/draft_windenergyfacilityorgguidebook_feb2010.pdf)

the site plan approval or must be separately applied for after the facility is built.<sup>5</sup> These different approaches provide for varying levels of ongoing involvement with the facility by the municipality, and can put an increased regulatory burden on the municipality. Most municipalities that adopt such a requirement also attempt to assure that the applicant alleviates some of the cost of this increased burden. This is typically achieved through license fees, as well as a requirement for reimbursement of a municipality's cost to hire experts in the review process. Furthermore, a municipality should be aware that the way that an operational license requirement is structured could impact the ease and availability of commercial financing available for the applicant.

### *Classification of Wind Turbines*

The issues surrounding small individual wind turbines as compared to large grid-scale wind energy facilities can be very different. Some municipalities attempt to address both in a single ordinance, while others focus primarily on the impact of the large facilities.<sup>6</sup>

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<sup>5</sup> The SPO Model Ordinance does not contain an operational license requirement.

Montville requires an operational license that must be renewed every 5 years (M § 10.2.3); the application for the initial license is concurrent with the permit but the license is not issued until the facility passes a post-construction engineering review (M § 10.2.4.2); the license terminates upon transfer of operation or ownership of the facility (M § 10.2.6) or upon non-operation for twelve consecutive months (M § 10.2.9) or amendment to the permit (M § 10.2.7).

Jackson requires an operational license that must be renewed every 5 years (J § 12.3); the initial license is granted concurrent with a site permit but conditional on a post-construction engineering review (J § 12.4.2); the license terminates upon transfer of operation or ownership of the facility (J § 12.8) or upon non-operation for twelve consecutive months (J § 12.7) or amendment to the permit (J § 12.9).

Dixmont requires an operational license that must be renewed every 20 years (D § VIII.(b)); the initial license must be issued prior to construction (D § II.(d)); the license terminates upon transfer of operation or ownership of the facility or upon non-operation for twelve consecutive months (D § VIII.(c)-(d)) or amendment to the permit other than a minor change (D § VIII.(e)).

Thorndike requires an operational license that must be renewed every 20 years (T § 8.2); the initial license must be issued prior to construction (T § 2.2); the license terminates upon transfer of operation or ownership of the facility or upon non-operation for six consecutive months (T § 8.3-4).

Phillips (June 13, 2010 draft ordinance) requires an operational license that must be renewed every 2 years (P § 15.3.2); application for the initial license may not be made until the facility is fully built (P § 15.3); the license terminates upon transfer of ownership of the facility (P § 15.3.3). The license is automatically revoked, and the facility must cease operations if the Planning Board determines the facility is violating any standards or requirements of the ordinance (P § 15.3.3).

Buckfield requires an operational license that must be renewed every 5 years (B § 10.2.3); the initial license is granted concurrently with the permit but is conditional on a post-construction engineering review (B § 10.2.4.2); the license terminates upon transfer of operation or ownership of the facility (B § 10.2.6) or upon non-operation for twelve consecutive months (B § 10.2.9) or amendment to the permit (B § 10.2.7).

<sup>6</sup> The SPO Model Ordinance uses aggregate capacity, turbine height and number of turbines to differentiate classification (S § 8);

Montville (M § 9) uses turbine nameplate capacity, height, and number of turbines to classify wind turbines. It has two types of classification for what would typically be considered grid-scale turbines, but the ordinance treats them essentially in the same way with the same requirements.

Jackson uses a classification similar to Montville (J § 9.0); The primary difference in the way the ordinance treats these two types of classifications is that for facilities that have three or fewer turbines with nameplate capacities of under 1 MW, a DEP certification serves as a rebuttable presumption that certain ordinance provisions are met, while for the large facilities no such presumption is created, and there is a large application fee for the projects (J § 17.2.8, Appendix D & E);

## *Setbacks*

Setbacks are used to address several different issues related to wind turbines. Physical safety is one issue where setbacks can help minimize hazards related to pieces of the turbine falling or being thrown in the event of a structural failure, debris such as ice being thrown from the rotating blades. Setbacks are also used to prevent environmental damage to sensitive areas. And finally, setbacks can be used to help alleviate many of the other health and safety issues related to wind turbines such as impacts related to sound, shadow flicker and blade glint. Setbacks typically run from other turbines, property boundaries, public and private rights-of-way, overhead utility lines that are not part of the proposed facility, occupied buildings (in some cases including buildings occupied by livestock), and areas around occupied buildings that are used frequently such as yards.

Ordinances that use setbacks only for the first set of hazards, such as the Maine State Planning office ordinance or the Oakfield Wind Energy Review Committee final report,<sup>7</sup> have the shortest setbacks that are approximately equivalent to 1.5 times the turbine height. Ordinances that use setbacks to address all of the above issues tend to have setbacks that are closer to a mile or more. The Town of Montville, in its separate “Findings and Rationale” portion of its Wind Turbine Generator Ordinance surveys the international use of setbacks concluding that most areas use a setback of between 1 and 3 miles.<sup>8</sup> Many Towns are taking an approach where the setbacks are set at a distance of about a mile, but that setbacks related to sound, shadow flicker and blade glint can be reduced if the affected land owner signs a waiver that of those safety protections that is recorded in the registry of deeds and runs with the land. It should be noted that this approach is relatively new and has not traditionally been used for other types of land use ordinances. It therefore has not been tested extensively in the courts. A municipality that engages in this approach should work closely with the municipal attorney to ensure that this portion of an ordinance is drafted in a legally enforceable manner that will achieve the municipality’s goal.

Almost all municipalities that have adopted ordinances have adopted minimum setbacks of approximately a mile from occupied structures.<sup>9</sup>

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Buckfield uses a classification system similar to Montville’s but does not appear to treat the two grid-scale classifications any differently under the ordinance.(B § 9).

Phillips (June 13, 2010 draft ordinance) uses a classification similar to Montville’s but does not differentiate between the two types of grid-scale turbines (P § 15.3.3).

Dixmont only applies to large grid scale projects (D § III.(ee)).

Thorndike only applies to large grid scale projects (T § 3.EE).

<sup>7</sup> Town of Oakfield Wind Energy Review Committee Final Report section 1.B *available at* <http://oakfieldme.org/vertical/Sites/%7BD2794B8C-60B4-4246-A7A2-B97C2A034DA9%7D/uploads/%>

<sup>8</sup> Montville Wind Turbine Generator Ordinance Findings and Rationale *available at* [http://www.montvillemaine.org/uploads/Findings\\_and\\_Rationale.pdf](http://www.montvillemaine.org/uploads/Findings_and_Rationale.pdf)

<sup>9</sup> The SPO Model Ordinance uses a setback of 150% of the turbine height from property boundaries, rights-of-way, and overhead utilities that can be waived by an abutting property owner, or reduced if there is evidence of adequate safety standards. (S § 12.1);

Montville uses a setback from abutting property lines of the greater of a mile (or 13 times turbine height) which can be waived by an abutting property owner, a setback from roads of 4 times the turbine height for ice throw and other hazards that can’t be waived, and a prohibition on noise levels, shadow flicker and blade glint falling on defined receptors that can be waived by the owners of those receptors. (M § 12). Jackson and Buckfield use similar setback standards with only slight differences. (J § 13.0); (B § 12). Dixmont and Thorndike have setback distances

### *Noise, Shadow Flicker and Blade Glint*

Noise, shadow flicker and blade glint are addressed by all Maine's adopted municipal ordinances. The visual impacts of shadow flicker and blade glint depend on a combination of sun angle and wind direction. Because wind direction changes the orientation of the turbines, the areas affected by these visual impacts can vary depending on time of year, time of day, and prevailing wind direction. Many municipalities require a pre-project model of impacted areas followed by a post construction system of complaint-based monitoring.

Noise is a very important and technically complicated issue. The topography of Maine's ridges and the presence of large amounts of acoustically reflective granite ledge can cause noise impacts to extend farther than they would under different geologic and topographic conditions. Furthermore, wind energy facilities are often located in quite rural areas, and the noise standards must be formulated to address that fact rather than be based on acceptable noise levels in crowded urban areas. Wind turbines generate noise both in the audible range, and in a low frequency range sub-audible range. Noise can come from the mechanical parts, wind passing over the rotors, and the low-frequency vibrational noise created by the rotators passing in front of the monopole. The noise may vary based on wind speed, and can come in repeating or tonal patterns that are particularly hard to acclimate to. The DEP approach to noise regulation is not wind-specific and as a result does not take into account (or even regulate) the low-frequency noise. Municipalities must therefore ensure that their noise regulation is comprehensive and effective. Noise will vary considerably throughout the year, and most municipal ordinances require a full year of pre-permit noise measurements.

For a discussion of noise issues, municipalities should consult the Findings and Rationale of the Montville ordinance, the explanation of the Town of Oakfield review committee final report, and the various approaches taken by each of the municipalities to adopt an ordinance.<sup>10</sup> Most municipalities and the State permit the applicant to overcome noise issues by purchasing a noise easement from any of the affected properties. Because this relief is available, a municipality should not shy away from adopting strict but reasonable noise requirements. Municipalities may also desire prohibition of or requirements for disclosure of noise easement provisions, such as non-disparagement clauses.

Shadow flicker and blade glint are generally measured from defined "receptors" such as occupied buildings or the lawn area around those buildings.<sup>11</sup> The amount of shadow flicker or blade glint is usually calculated based on the equivalent of a yearly aggregate. There is also a safety issue when shadow flicker or blade glint falls on a road or intersection in a way that could

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that are essentially similar for a 400' turbine, but are calculated as set distances rather than a product of turbine height (D § V.(b)); (T § 5.2).

<sup>10</sup> Montville restricts noise at all property lines so that audible levels may not more than 5 dBA above the pre-development ambient noise levels, and low-frequency levels may not be more than 20 dBC above pre-development ambient levels with a maximum of 50dBC. (M§ 12.2.2); Jackson has similar restrictions applied to all property lines within two times the maximum setback for the turbine. (J§ 13.2.2); Buckfield has similar restrictions with a slightly more restrictive nighttime limit. (B § 12.2). Dixmont and Thorndike take a slightly different approach *see* (D § V.(a)) (T § 5.1).

<sup>11</sup> Montville includes protections for buildings occupied by livestock, in addition to those occupied by people (M § 12.3). See also J § 13.3; B § 12.3; D § V.(h); T § 5.8.

distract or temporarily blind drivers, so municipalities sometimes completely forbid any impact on these types of receptors.

It is important that a municipality have a mechanism to ensure that if the actual noise, shadow flicker or blade glint issues are different than the pre-construction modeling or representations to the municipality, it is the developer, not the municipality and its residents who shoulder the cost of mitigation. Some form of post-construction noise monitoring is therefore highly desirable. The municipality should have the ability to shut down operation of the wind energy facility until the noise issue is corrected.

### *Other Performance Standards*

There are a number of other performance standards that tend to be addressed by most municipalities that adopt wind energy ordinances. The following list gives an indication of the standard followed by citations to particular provision for reference. This list and citations are representative and are not meant to be exhaustive:

1. Conformance with building codes and safety standards organizations such as American National Standards Institute (ANSI), Underwriters Laboratories, and similar certifying organizations. (P 12.1; SPO 12.3 14.10; M 13.1, 14.2.1; J 15.1, 16.2.1)
2. Electrical code compliance with applicable local, state, and national codes (SPO 12.5; 13.2; J 15.2)
3. Limitations on access to and ability to climb towers (SPO 12.5, 14.2.2; J 16.2.2)
4. Limitations on home-made turbines. (P 12.2)
5. Geological stability of the site. (P 12.3; J 17.4.3)
6. Underground electrical lines (P 12.4; J 17.4.2)
7. Requirement of a Public Utility Grid Impact Statement (P12.5; J 17.4.3)
8. Redundant braking system including mechanical and aerodynamic controls (P 12.7; SPO 12.4 – no mechanical; M 13.3; J 16.2.4)
9. Designed and sited to prevent the disruption or loss of radio, telephone, television, or similar signals. (P 12.8; SPO 12.8; M 13.5, 15.7; J 15.3, 17.7)
10. Minimum distance between the ground and the blades. (P 12.9 – 25’; SPO 12.7; M 13.4 – 100’; J 16.2.5- 25’)
11. Monopoles with no guide wires (P 12.10; SPO 12.9 – waived if no alternative 12.11 no building-mounted; M 13.6)
12. Bird diverters required when guide wires permitted (P 12.10; SPO 12.9; M 13.6; J 15.4)
13. Unobtrusive color such as off-white or gray. (P 12.11; SPO 12.12.1; M 14.1.1; J 16.1.1; D V.(d); T 5.4)
14. Buildings blend into natural setting (M 14.1.2; J 16.1.2)
15. Site Turbines to maximize existing or provide new vegetative screening (M 14.1.5, 14.1.6; J 16.1.5)
16. Lighting and light pollution limitations (P 12.12; SPO 12.12.2; 14.1.3; J 16.1.3)
17. Restriction on signs and advertising (P 12.13; SPO 12.12.3; 14.1.4; J 16.1.4)
18. Voltage warnings signs. (P 0.0; SPO 14.3; M 14.2.3; J 16.2.3)
19. Shadow-Flicker Modeling (P 13.4; SPO 14.6)
20. Firefighting response plan (P.13.5; SPO 14.8; J 17.6.1)

21. Hazardous materials handling (P 13.6; J 17.6.2)
22. Blasting Plan (P 13.7; 17.6.3; M 15.6.3; B 15.6.3; J 17.6.3)
23. Road and traffic impact study, insurance to cover road damage (P 13.8-10; SPO 14.2; J 17.8)
24. Mandatory notification of safety incidents (P 13.12; J 17.9)
25. Demonstration of financial viability of the project (P 14.1; SPO 0; M 15.1; J 17.1)
26. Demonstration of adequate insurance (P 14.2, SPO 14.9; M 14.4; J 16.3)
27. Decommissioning standards and financial sureties (P 14.3; J 24.0, M 22.0)
28. Tax valuation agreement that estimates impact and contractually binds applicant not to later sue to change valuation status (P14.4, J 25, M 24)
29. Environmentally Sensitive Areas (P 15.1; M 15.2.2; J 17.2)
30. Wildlife Protection (P 15.2; SPO 14.4; M 15.2.3; J 17.2.3)
31. Erosion Control (P.15.3; SPO 12.10; M 15.2.5; J 17.2.5)
32. Groundwater Protection (P 15.4; M 15.2.6; J 17.2.5)
33. Light Pollution (P 15.5; M 15.2.7 – lighting plan required; J 17.2.7)
34. Scenic Resource Standards (P 15.6; SPO 12.13, 14.5; M 15.3)
35. DEP Site Location of Development Act Permit (P 15.7; M 15.2.8)
36. Natural Resource Protection (SPO 12.2)
37. Bird sensing radar (M 13.6)
38. Minimize raptor habitat (SPO 14.4; M 15.2.4; J 17.3.4)
39. Visual impact assessment (M 15.3.1)
40. Contact person to handle Public Inquiries and Complaints (SPO 14.11)

#### *Pre construction and Post Construction monitoring*

One way that a municipality can help ensure that it is the developer, not the municipality and its residents, that bears the risk of impacts being more severe than predicted is to establish some mandatory post-construction monitoring. Several ordinances have a mandatory post-construction certification of performance standards by an engineer.<sup>12</sup> Some provide for mandatory post-construction sound monitoring.<sup>13</sup> Some provide for mandatory post construction surveys to assess impacts on wildlife such as bird-kills.<sup>14</sup> An ordinance should be drafted to clearly indicate what performance standards must continue to be met post-construction (as opposed to simply being design standards). Also, an ordinance should be clear as to whether the permit holder conducts the monitoring and reports to the municipality, or whether the municipality conducts the monitoring at the expense of the permit holder. A municipality must decide what types of post-construction monitoring should be conducted on regular intervals (such as license renewals), and which should be triggered solely or additionally by landowner complaints.

#### *Ethical Standards*

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<sup>12</sup> J § 17.5.3, M § 14.3, B § 14.3, D § V.(p), T § 5.16.

<sup>13</sup> D § V.(a).(4), T § 5.1.B.5; Sometimes sound-monitoring requirements are not triggered unless there is a complaint of excessive sound. (J §12.2.3, M § 12.2.3, § 12.2.3.

<sup>14</sup> J § 17.3, M § 15.2.3, B § 15.2.2.

Many ordinances have attempted to ensure the wind project review is conducted openly. All municipal reviews must be conducted openly, and there are number of general purpose laws that require this. A wind ordinance should clearly outline what types of relationships constitute a conflict-of-interest that would require the recusal of an individual serving on the review committee.<sup>15</sup> A municipality might also consider conflict-of-interest requirements for the municipally-contracted industry experts.

### *Tax Agreements and Decommissioning Sureties*

If a project does not perform as predicted, a typical investor in a wind energy facility may walk away or abandon a project. A municipality needs to ensure that if that happens, there will be funds available to decommission and remove the turbines, as well as restore the landscape. Most ordinances do this by requiring a decommissioning fund to be established. Municipalities vary in the degree to which they require the fund to be funded up front, and the degree to which a developer is allowed to merely promise to add to the fund in the future. Obviously, a municipality is better protected the more upfront the funding requirements are.<sup>16</sup> Municipalities have been led to believe that the scrap value of a decommissioned Wind Energy Facility will be sufficient to cover much of its cost, however, such a scenario is speculative.

There also may be incentives for a developer to later seek more favorable tax treatment. In order to protect itself a municipality should incorporate contractual requirements which require the owner of the turbines to agree not to contest, challenge or endeavor to seek more favorable property tax treatment during the project's projected operational period (generally around 20 years) even if change in law permits it or project performance deteriorates.<sup>17</sup>

### *Conclusion*

As more and more wind projects are proposed and completed around Maine and throughout the country, municipalities should look to the experience of others to determine what has worked and what has created problems. By addressing the many areas that have been problematic for unprepared municipalities in the past, a municipality can proactively address many of those issues. A comprehensive ordinance gives the municipality the tools to ensure that it has all the information and resources necessary to conduct a comprehensive review of the proposed project. Most Maine municipalities to address the issue have found that the State's site planning requirements and the State's model municipal ordinance do not provide adequate protection to insulate municipalities from the business risk taken on by developers. Municipalities should look to the set of issues addressed by those who have gone before them. Several existing ordinances provide guidance on ways that municipalities can ensure that it is the developer who takes the risk that the development will perform based on the developer's projections and predictions, and that it is not the municipality or its citizens that shoulder the burden of an unsuccessful generating facility.

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<sup>15</sup> M § 26.3, J §28.3, B § 26.3, D § XII.(c),

<sup>16</sup> M § 22.5 (requiring 100% up front funding); J § 24.4.2 (requiring at least 25% funding to increase over time), T § 5.14 (funds increase over time), D § V.(n)

<sup>17</sup> M § 24, J § 25.



