

Explanation of the Public Service Board’s reasons for accepting or rejecting requested changes to the original proposed rule.¹

The Public Service Board (“Board”) received hundreds of comments on the proposed rule. Some supported the proposed sound levels of 42 dBA during the day and 35 dBA at night as well as the proposed setback. Others believed that the proposed levels and setback should be applicable at a wind project’s property boundary, not the 100 feet from a neighboring residence proposed by the rule. Some also believed that the rule should be expanded to specifically regulate low-frequency sound and infrasound. Some believed that the setback was not large enough. Still, others commented that the sound levels and the setback in the proposed rule were overly restrictive and would functionally ban the development of new wind projects in Vermont. These commenters were supportive of a more relaxed standard that would allow for the state to continue its transition away from its reliance on fossil fuels, assist the state in meeting its renewable energy goals, support the renewable energy economy, and help combat climate change.

Below is an explanation of the Board’s reasons for accepting or rejecting requested changes to the proposed rule contained in these public comments. The explanation proceeds through the rule section-by-section, discusses the comments relevant to each section, and explains the Board’s reasons for either accepting or rejecting the comments and any changes made to each section in the proposed rule as a result thereof.

Additionally, minor technical changes were made both in response to comments and as a result of the Board’s ongoing review of the original proposed rule.

Lastly, the original proposed rule was reorganized generally to make it more readable and understandable.

5.701 Purpose and Applicability

Summary

This section sets forth the purpose of Rule 5.700 and clarifies that it is applicable to petitions for a certificate of public good (“CPG”) for wind-powered electric generation facilities pursuant to 30 V.S.A. § 248 or § 8010 filed on or after July 1, 2017.

5.702 Definitions

Summary

This section sets forth definitions for material terms used throughout Rule 5.700.

¹ Per 3 V.S.A. § 841(b).

Response to Comments

The Board received several comments critical of the definition of “Residence,” asserting that it is too narrow because it excludes camps and properties that are used only occasionally. The Board has elected to retain the definition in the proposed rule because it has used this approach in past proceedings and has not received any information that it is not working. Additionally, extending the definition to include camps or occasional-use properties could unintentionally prohibit an otherwise well-sited project due to what would amount to very limited effects.

One commenter suggested adding definitions for Ldn and dBC and adding language to the definition of “Participating landowner” to prohibit facility operators from entering agreements with landowners that would prohibit the landowner from being critical of a project. The Board has declined to adopt these recommendations. The rule does not rely on the Ldn or dBC metrics, and the definitions are therefore not needed. The Board also does not believe it should restrict the abilities of negotiating parties to agree to otherwise legal terms that they believe are appropriate.

The Board added a definition for “Contributing turbines” because of changes made to the monitoring and data analysis methodology for determining compliance. The Department of Public Service (“Department”) and Resource Systems Group (“RSG”) both submitted comments recommending that the proposed rule be revised to include a mechanism for removing ambient sounds when determining whether a wind facility is in compliance with the applicable sound limits. This change, discussed below, necessitated the addition of the new definition. The definitions were also rearranged to be in alphabetical order.

5.703 General Rule

Summary

This section creates the basic sound standards with which wind-powered generation facilities must comply.

Facilities with a capacity greater than 150 kW must be sited so that all turbines and sound-producing equipment located within the footprint of the turbine array are a horizontal distance of at least 10 times the height of the turbines, with a blade tip in its vertical position, from the nearest residence of a non-participating landowner. Additionally, the facility must be operated so that sound pressure levels do not exceed 42 dBA at 100 feet from a non-participating residence during the daytime and 39 dBA at night, defined as the hours between 9:00 p.m. and 7:00 a.m. Compliance with the sound limit is demonstrated through post-construction monitoring.

Projects with a capacity above 50 kW and up to 150 kW are subject to a 42 dBA sound limit that applies both during the day and at night and may demonstrate compliance either through post-construction monitoring, or by siting the turbines and any sound-producing

equipment located within the footprint of the turbine array a horizontal distance of at least 10 times the height of the turbines, with a blade tip in its vertical position, from the nearest residence of a non-participating landowner.

The rule also creates a small turbine category, meaning those with a capacity that does not exceed 50 kW. For these turbines, there is no minimum setback requirement or a requirement for sound monitoring post-construction. Instead, petitions for small turbines must include certain certification documents regarding the sound levels produced by these turbines and a simplified demonstration that sound pressure levels at the closest residence will be within the applicable limit. The Board retains discretion to require sound monitoring for small turbines for cause shown on a case-by-case basis. Tonal sounds from small turbines are specifically addressed in this section as well. Tonal sounds for large and medium turbines are addressed through an adjustment to monitoring results as described in Section 5.710(B)(3).

Response to Comments

The original proposed rule established differing sound limits for turbine operations during the daytime and nighttime. The daytime level was 42 dBA and the nighttime level was 35 dBA and was applicable between the hours of 9:00 p.m. and 7:00 a.m. This section generated the greatest amount of comments as compared to any other section of the rule. Comments were both supportive and critical of the proposed limits. Of those who were critical, some commenters felt the limits were too restrictive (*i.e.*, too low) and would bring a halt to any future wind-powered electric generation in Vermont. Others believed the levels were not set low enough and would result in continued sound complaints regarding new projects subject to the rule, while some were critical of the lack of a sound limit for low-frequency sound and infrasound. Still others believed the sound limit and setback should be imposed at the property boundary of a wind facility.

The Board received well over 100 comments from individuals who believed that the 35 dBA sound limit established by the proposed rule was too restrictive and would halt all future development of wind-powered generation in the state. Some of these commenters called the 35 dBA standard unsubstantiated and unprecedented, and the setback distance in the rule unnecessary and arbitrary, asserting that neither had any scientific basis in studies addressing sound from wind turbines. Some others described the 35 dBA level as a sound level somewhere between a whisper and a babbling brook, or a quiet library, noting that many common sources of sound in our daily environment exceed this level on a regular basis, including the sound of the wind in the trees. Still others urged a less restrictive level so as not to interfere with Vermont's transition to renewable energy, with some suggesting the rule is the result of pressure from fossil-fuel industry groups.

As mentioned above, some were critical of the lack of standards for low-frequency sound and infrasound, asserting that such limits are necessary to protect human health. At least one commenter was critical of the lack of controls for amplitude modulation, the swishing noise produced by large wind turbines. Still others were critical that the rule did not establish sound limits to be measured at the property line, claiming that allowing unwanted sounds to encroach onto their property amounted to an unconstitutional taking of that property.

Some commenters also expressed dissatisfaction with the differing levels for daytime and nighttime operations, stating that it would require developers to design to the lower nighttime standard or require the Board to police projects to ensure operators were curtailing operations on a nightly basis to meet the lower limit for nighttime operations.

Some commenters characterized the proposed setback as unnecessary and overly restrictive while others strongly supported it as being protective of neighbors and an efficient tool for screening out poorly sited potential projects.

The Board has carefully considered all of these comments and decided to retain the 42 dBA daytime limit and to change the nighttime limit to 39 dBA for large turbines and projects for six reasons.

First, the Board was persuaded by arguments regarding the potential impact of a 35 dBA limit on wind development in Vermont, and by extension the associated economic impacts in the form of lost tax revenues and ancillary economic activity from employment related to wind turbine development. Information presented by Renewable Energy Vermont (“REV”) demonstrated that a 35 dBA limit would eliminate from potential turbine development many sites in Vermont with a wind resource sufficient to support a utility-scale wind generation facility. The Board’s goal in developing the rule was to create a standard that would first and foremost be protective of public health. Second, the Board wanted to also reduce annoyance levels that some people might experience from turbine sounds. Lastly, the Board sought to balance those two goals with the state’s policy, as evidenced by several legislative actions, to encourage renewable energy development and to significantly reduce the state’s reliance on fossil fuels. The Board believes the two new levels strike the right balance between these competing interests. While the Board expects that the 42 dBA daytime level and the 39 dBA nighttime level will limit the number of complaints regarding sound levels from any new projects, it does not expect that such complaints will be entirely eliminated. However, the Board believes that a sound limit that would be low enough to eliminate all complaints would need to be so low that it would act as an effective bar to the development of any new commercial- or utility-scale wind projects in Vermont, an outcome contrary to the state’s legislated policy of promoting renewable energy development.

Second, the World Health Organization (“WHO”) stated in its 1999 Guidelines for Community Noise, and reiterated in its 2009 Night Noise Guidelines for Europe, that an interior equivalent sound pressure limit of 30 dBA for continuous sounds is appropriate to protect against sleep disturbance. In turn, protecting against sleep disturbance protects against a variety of secondary health-related symptoms that can arise from disturbed sleep. The objective in establishing the 39 dBA exterior nighttime limit for large turbines is to ensure that, except in unusual circumstances, an indoor limit of 30 dBA is realized based on attenuation between the exterior and the interior of a residence, even with windows partially or fully open. According to the WHO, sound levels attenuate between 10 and 17 decibels from the outside of a dwelling to the inside of a dwelling with windows partially open. The Board has elected to be conservative and rely on the low end of that spectrum and believes that the 39 dBA nighttime exterior limit for large turbines will result in a 30 dBA or lower indoor level in the majority of circumstances.

While there may be occasional exceptions, setting an outdoor limit low enough to avoid those exceptions would again require a limit so low as to act as an effective bar to future projects. The Board's reasoning on this point is supported by other sources as well. For example, a 2007 study performed in the UK² showed weighted level differences between 7 and 26 dB with windows open 0.2 m² for transportation sounds, with most values in the 10 to 17 dB range. Additionally, the United States Environmental Protection Agency developed typical windows-open sound level reductions for transportation noise in both warm and cold climates.³ For warm climates a 12 dB sound level reduction was specified and for cold climates a 17 dB sound level reduction was specified, with both scenarios assuming an open area of two square feet. Lastly, the Federal Highway Administration has specified a 10 dB windows-open "noise reduction," used to estimate interior levels of traffic noise.⁴

Third, the majority of the literature on the subject indicates that both the 42 dBA and 39 dBA levels are conservative for ensuring against direct health impacts from wind-turbine sound. Literature equates a 40 dBA level to sound levels in a library or those produced by a stream or a refrigerator. Additionally, the limits are applied 100 feet from neighboring residences and levels would naturally be lower inside a residence.

Fourth, the 39 dBA exterior nighttime limit for large turbines eliminates the need for an interior standard and the resulting complexities and expense associated with measuring sound levels in the interior of a residence to determine compliance. Interior monitoring is expensive and difficult to perform given pre-existing interior background sound levels from a variety of sources such as refrigerators and air handlers. The monitoring process is also highly intrusive and interferes with a homeowner's use of the home, particularly because the monitoring should occur in the bedroom where the homeowner would normally sleep. Reliance on an exterior limit that is low enough to ensure an appropriate indoor level avoids the complexity and expense associated with indoor monitoring.

Fifth, one of the control technologies that is available to large turbine operators seeking to limit the sound output of turbines is known as Noise Reduced Operations mode ("NRO"). That technology can typically achieve up to a 3-decibel reduction in the sound output of a turbine. While it is technologically possible to achieve up to 4 decibels of reduction,⁵ using a 4-decibel difference between the day and night levels could have the effect of significantly limiting turbine selection, and thus project design. Additionally, if a developer was not confident that a project could achieve a 4-decibel reduction through the use of NRO, that project would need to be designed to meet a standard lower than the allowable daytime limit, which would again be contrary to the state's policy of promoting renewable generation.

Sixth, the Board respectfully disagrees with those commenters who asserted that the previously proposed daytime and nighttime levels for large turbines would effectively halt wind-

² Waters-Fuller and Lurcock, Department for Environment, Food and Rural Affairs, UK, 2007.

³ U.S. Environmental Protection Agency Office of Noise Abatement and Control. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare. Arlington, Virginia, 1974.

⁴ Federal Highway Administration. "Highway Traffic Noise: Analysis and Abatement Guidance." 2011.

⁵ One commenter asserted that there was a single turbine model made by a single manufacturer that can achieve up to 5 decibels of sound level reduction when operating in NRO mode.

powered electric generation in Vermont. It is true that site selection will need to be more carefully considered than under the 45 dBA exterior limit the Board has imposed on some existing projects. However, the comments submitted by REV also demonstrate that, while lower limits will reduce the number of sites available with a sufficient wind resource, they do not eliminate them. Additionally, the limits apply only to the residences of non-participating landowners. Therefore, if a developer engages with the neighbor of a proposed project early in the process, the developer may be able to take steps to reach agreement with that neighbor on becoming a participating landowner, thus removing the sound limits for that residence. It is the Board's goal that more "buy-in" from neighbors during the planning process will lead to projects with more support and less controversy.

The Board also disagrees with recommendations that the sound levels apply at the property line. The levels established by the rule are intended to protect against sleep disruption during the night and to prevent undue annoyance during the daytime and are appropriately focused on the area surrounding a residence. The Board acknowledges that many Vermonters own land that extends well beyond their residences and that some percentage of those people may well use all their land for various activities, such as hiking, hunting, riding recreational vehicles, or farming and gardening. However, given the attenuation of sound over distance and the levels applicable near a dwelling, the Board expects that sound levels at property lines will be well below levels at which direct health effects, such as hearing loss, are of concern. The Board also disagrees, as a legal matter, that the encroachment of sound onto a neighboring property at the levels anticipated by the rule constitutes an unconstitutional taking of property.

The Board also does not believe that the rule needs to establish limits for low-frequency sound or infrasound. Based on scientific literature, the Board believes that at sound levels as low as those prescribed by the rule, the levels of low-frequency sound and infrasound that would be emitted are so low as to not be a concern for human health. For example, a study performed in Denmark, which has a low- frequency limit of 20 decibels, concluded that the A-weighted sound-level limits were the controlling factor (i.e., compliance with the A-weighted limits resulted in compliance with the low-frequency limits).

With respect to setbacks for large turbines, the Board has decided to keep the setbacks in place, but to expressly provide for a waiver on a case-by-case basis for cause shown. This allows for projects to be sited at a lesser distance from non-participating residences where, for example, it can be convincingly demonstrated that a project would meet the applicable standards at a lesser distance due to unique terrain features or future improvements in turbine technology.

The original proposed rule allowed projects with capacities of 150 kW or below to rely on the rule's setback as an alternative to performing post-construction monitoring. The final proposed rule divides this group of projects into small and medium sizes, with the option to rely on setbacks instead of monitoring available to the medium-sized group, and with the small-sized group treated differently, as explained below. The medium-sized group of turbines is subject to a single 42 dBA limit. It is the Board's understanding that turbines of this size are incapable of operating in NRO mode and therefore cannot reduce sound levels other than through shutdowns. However, as is explained below for the small turbines, the medium turbines will tend to be sited

closer to receptors so that background sound levels at a receptor will increase as wind speeds at the turbine increase.

The Board was persuaded by comments that a small wind category should be created to allow different treatment from the larger turbine projects. With large turbines located on a ridgeline, residences located on the lee side of the mountain may be exposed to very little wind even though the wind is blowing strongly at higher elevations. The result is the ridgeline turbines producing at or near maximum sound levels with very low ambient levels at the residence below, making the turbine sounds noticeably audible. On the other hand, small turbines tend to be sited at the same elevation as and nearer to sound receptors than large turbines. As a result, when a small turbine is operating, the same amount of wind is blowing at receptor locations as is blowing at the turbine location. As wind speeds increase and a turbine produces more sound, ambient sound levels at nearby residences also increase and serve to partially mask the sound of the turbine. Small turbines also do not emit low-frequency sound or infrasound at the levels emitted by large turbines. Because of these differences, the Board was persuaded that there was no justification for imposing the same standards on small turbines as large turbines. As a result, the final proposed rule establishes a limit of 42 dBA at the nearest residences that must be met 95% of the time. The standard allows occasional levels above the 42 dBA limit because of the correlation between increases in turbine sound levels and background sound levels at the receptor location.

5.704 Pre-Construction Sound Modeling

Summary

This section requires that sound modeling be included with any petition for a wind generation facility with a capacity greater than 50 kW and describes the modeling information that must be included with the petition. The section requires that conservative assumptions be used in the inputs to the model and includes margins of error to account for uncertainties in the modeling process. The purpose of these conservative assumptions is to ensure that proposed projects are in fact capable of operating within the rule's sound limits. Turbine projects with a capacity up to 50 kW are not required to perform sound modeling. Instead, they may submit with their petition certain certification documents regarding expected sound levels and a simplified demonstration that sound pressure levels at the closest non-participating residences will be within the applicable limit.

Response to Comments

The Vermont Public Interest Research Group (“VPIRG”) commented that the modeling requirements contain too many conservative assumptions, in particular the requirements that the model include uncertainty factors for turbine sound power levels and for the sound model itself. According to VPIRG, these requirements dictate that a project must be capable of actually operating at a sound level as low as 30 dBA in order to demonstrate compliance with the applicable limit through the modeling because the conservative assumptions required by this section will increase the sound levels calculated through the model.

On the other hand, Vermonters for a Clean Environment (“VCE”) commented that the rule’s allowance for a ground attenuation factor is inappropriate in mountainous terrain such as Vermont’s, contending that ground attenuates sound only in flat terrain. VCE also recommends using a different model from the one specified in the proposed rule, asserting that it is more accurate.

The Department was generally supportive of the modeling approach and its conservative assumptions.

The Board has carefully considered both VPIRG’s and VCE’s comments and has decided to retain the section in its current form. The Board believes it is preferable to rely on conservative assumptions in modeling and realize a quieter project than what was modeled, than to set aside those assumptions and create the risk of a project that fails to comply with the applicable sound level limits even though modeling indicated that it would comply. The uncertainty levels for turbine sound power and the sound model itself are known, and the Board believes it is therefore appropriate to use them to err on the side of caution and avoid after-the-fact compliance enforcement actions. The Board was also persuaded by other commenters that some level of ground attenuation remains appropriate, even in Vermont. The allowed level of 0.5 is also in itself conservative. The Board believes that the allowed attenuation factor in combination with use of the sound power and modeling uncertainty levels will ensure that modeling results are conservative and highly likely to produce results than can be relied upon to ensure sound level compliance prior to construction so that post-construction complaints and complex enforcement actions can be minimized.

We also decline to accept VCE’s recommendation that we use a different model. While the model indicated by the final proposed rule can be described as having some shortcomings when applied to modeling wind turbines, these shortcomings appear to be largely theoretical as the results of the model have been shown to be accurate when post-construction monitoring has been performed. This fact, coupled with the use of conservative assumptions, gives the Board confidence in the results that will be produced by the model selected. The model indicated by the rule also has the advantage of widespread use in the United States.

VPIRG also requested the following changes to this section:

- Change the term “maximum” to “full rated” throughout the section to be consistent with language in IEC 61400-11.
- In 5.705(F), now identified as section 5.704(B)(6) due to general reorganization of the rule, require that “potential compliance” testing locations be identified, since actual locations should be selected after construction, given changes to the surrounding landscape that can happen over time.
- Reduce the modeled receiver height from 4 meters to 4-5 feet to match the compliance testing microphone height.

The Board has considered VPIRG’s requests and has accepted one, adding the term “potential” as a modifier to compliance testing locations. The Board declines to adopt the other two recommendations. First, the IEC standard does not use the phrase “full rated” and second,

the 4-meter modeled receiver height is appropriate because many bedrooms are located on second floors. However, the final proposed rule requires modeling at both 1.5 and 4 meters.

5.705 Post-Construction Sound Monitoring Applicability

Summary

This section establishes the applicability of post-construction monitoring requirements for the three size categories of turbine projects. Turbine projects up to 50 kW are not required to perform post-construction monitoring. However, the Board may require monitoring if it is determined that exceedances of the applicable sound-level limit are probable or as part of an investigation into one or more complaints. The rule does not detail the requirements for performing any such modeling because small turbines are different from medium and large turbines. As a result, the Board believes it is appropriate to develop monitoring protocols when required on a case-by-case basis.

Medium-size turbines and projects have the option to demonstrate compliance either through use of the rule's setbacks or through post-construction modeling.

Large-size turbines and projects are required to perform periodic post-construction modeling.

5.706 Post-Construction Sound Monitoring General Requirements

Summary

This section establishes the basic requirement for post-construction sound monitoring and makes clear that monitoring will be used both to establish facility compliance with the applicable sound limits and to verify the accuracy of the pre-construction sound modeling. The section requires that monitoring take place under the direct supervision of a state agency designated by the Board. This is intended to address concerns over the potential for turbine operators to influence the monitoring.

5.707 Post-Construction Sound Monitoring Methodology

Summary

This section establishes the procedures that must be followed when gathering sound data during a monitoring period. The section establishes requirements for personnel and equipment to be used in monitoring as well as requirements for the Board-approved monitoring locations. These requirements are intended to ensure that properly trained personnel and properly calibrated equipment are used in monitoring. The locational and equipment placement requirements are intended to minimize contamination from background sound levels in order to obtain a more accurate measurement of facility-only sound levels and to obtain worst-case scenario, turbine-only sound levels at receptor locations.

5.708 Determination of Background/Ambient Sound Levels

Summary

This is a new section and is needed to create a mechanism for determining background sound. It is consistent with the comments by participants who recommended the rule account for background sound when determining compliance with the applicable sound limits.

5.709 Post-Construction Sound Monitoring Measurements

Summary

This section identifies the data that must be monitored and measured and establishes a one-minute interval for sound, meteorological, and turbine operational data.

Response to Comments

The original proposed rule relied on a 10-minute measurement interval for collection of the required data. The Department was critical of the 10-minute interval because its length increased the possibility of contamination by transient events, such as a dog barking, a car passing by, or a plane flying overhead. Such transient contamination would result in having to discard the entire 10-minute sample, making collection of the required minimum number of samples difficult.

The Board has considered the Department's comments and decided to amend the proposed rule by decreasing the length of the measurement period to one minute and increasing the minimum number of valid samples to 120 for a calculation of the arithmetic average. Reducing the measurement interval will decrease the likelihood of individual measurements containing contaminated data; and, where a measurement period contains contaminated data, only a one-minute sample will need to be discarded rather than the 10-minute sample required under the original proposed rule.

Several commenters were critical of the proposed rule's use of averaging to determine compliance and instead advocated for an instantaneous limit known as "Lmax." Some of these commenters contend that a turbine operator will run a project at sound levels far above the applicable limit for a period of time, and then restrict operations for a period of time, thereby meeting the sound limit through averaging. Under the Lmax approach, an exceedance of the applicable limit as brief as a second or less would constitute a violation.

The Board disagrees with the use of Lmax for determining wind turbine compliance with sound limits. The Board believes that Lmax is more appropriate for compliance determinations of isolated or periodic loud sounds as opposed to the more continuous, steadier levels of sound from wind turbines. Additionally, because the decibel scale is logarithmic, loud sound events that are properly attributed to turbine-only sounds will have a greater impact on compliance results than quieter periods of time.

5.710 Post-Construction Sound Monitoring Data Analysis

Summary

This section sets forth the procedures for analysis of data gathered during post-construction monitoring. It classifies qualifying data samples as either “Ambient” or “Turbine On” and establishes a method for removing ambient sound levels measured when the turbines are turned off from total sound levels measured while the turbines are operating. This allows for a calculation of a turbine-only sound level for compliance purposes. Data samples that do not meet the specified qualifications are excluded from the analysis. The one-minute sound measurements are separated into “bins” based on one-meter-per-second increases in ground level wind speeds at the measurement location up to 5 meters per second (i.e. there are six bins, one for each meter-per-second from zero to five). The binning methodology allows an understanding of how turbine sound levels affect receptor locations at varying wind speeds. The section also requires a minimum of 120 valid one-minute intervals, which must be comprised of at least 40 valid intervals across at least three different bins. However, if the required minimum number of samples is not realized by the end of 10 weeks of monitoring, the agency overseeing the monitoring may either continue the monitoring or report its results up to that point with its recommendation to conduct additional monitoring, to monitor at a different location, or to rely on the monitoring performed to determine compliance with an explanation of why that is appropriate. The Board will then make a determination whether further monitoring is required based on the information and recommendation provided.

Response to Comments

The Department and RSG both strongly recommended that the original proposed rule be changed to account for the removal of background sound and transient contaminating events to more accurately identify turbine-only sound levels. There was concern that, while the approach in the original proposed rule could be used to accurately demonstrate compliance, it could not reliably demonstrate non-compliance, especially in the event of small exceedances of the limit because such a conclusion could always be challenged on the grounds that ambient levels were the actual cause of the violation. Additionally, monitoring would have to be performed based on weather forecasts and conditions on the ground could easily vary from what was forecast, making obtaining the required number of valid samples a potentially difficult and uncertain endeavor.

The original proposed rule required that monitoring be performed under certain meteorological conditions when ambient sound levels were expected to be insignificant in relation to turbine sound levels, thereby eliminating the need to account for background sound levels. However, after reviewing the Department’s and RSG’s comments the Board was persuaded that the Department’s proposal was appropriate and has included it in the final proposed rule. This should both produce more accurate results and allow for an increased likelihood of a measurement campaign meeting the required minimums for valid measurement samples.

5.711 Compliance Data Collection, Measurement, and Retention Procedures

Summary

This section establishes the requirements for data collection and retention and sets forth the schedule on which monitoring must occur. Monitoring must occur during the first year of project operations and every five years thereafter. The first-year monitoring includes a requirement for sound-power testing, which tests the sound level actually being produced by the turbine as opposed to the sound level being experienced at a receptor location. This requirement will help the Board assess complaints that turbines have become louder over time by establishing a baseline the Board can use for comparison to sound-power levels measured at a future date. The section also allows for the Board to order additional monitoring in response to complaints on a case-by-case basis.

Response to Comments

Several commenters object to the periodic monitoring requirements established by the rule and recommend that full-time, continuous monitoring with access to real-time data for the life of a project be required for assessing compliance. These recommendations are largely based on a concern that turbine operators might scale back operations during monitoring periods to achieve compliance, and then scale up operations when monitoring is not being performed, thereby operating above the allowable limits much of the time. This in turn would require turbine neighbors to act as enforcers by complaining to the Board, with resolution of compliance questions coming potentially long after the fact.

The Board appreciates these concerns but does not believe that full-time, continuous monitoring is needed to reliably determine compliance. A petitioner for a CPG for a wind facility must demonstrate through conservative modeling that a project will meet the applicable limits and the monitoring is used in part to confirm the accuracy of the modeling. The conservative assumptions used by the rule for modeling mean it is more likely that a project will operate at a slightly lower level than its modelling indicated. Additionally, under the rule, monitoring will be performed under the supervision of a state agency that has access to operational information from the facility being monitored. Thus, any reductions in facility operations during a monitoring campaign would be readily apparent. Lastly, the requirement for periodic monitoring at five-year intervals will ensure that if a project becomes louder over time, any non-compliance will be captured.

5.712 Reporting of Compliance Measurement Data

Summary

This section requires that sound-monitoring reports be filed with the Board no later than 60 days after the completion of the monitoring period.

Response to Comments

Some commenters would like to have the sound-monitoring reports submitted earlier than 60 days. While the Board appreciates the concept of a shorter time period, a significant amount of data analysis is required to reach a conclusion about facility-only sound levels following a monitoring campaign. Accordingly, the Board believes a maximum 60-day period is reasonable.

5.713 Complaint Response Procedures

Summary

This section requires CPG holders to respond to complaints about sound consistent with the complaint response procedures developed by the Department.

Response to Comments

Several commenters understood this section to require that all complainants follow the Department's complaint resolution procedure. That was not the Board's intent. It was the Board's intent to require only CPG holders to respond to complaints in that manner. Nothing in the rule prevents the Board from acting in response to a complaint filed directly with the Board or to act on its own in the event it has information that warrants action. Minor edits were made to the language of the section to clarify this intent.