

DUNCAN CABLE TV

Docket No. 7250

Petition of Deerfield Wind, LLC, for a certificate of public good authorizing it to construct and operate a 16-turbine, 34-35.7 MW wind generation facility, and associated transmission and interconnection facilities, on approximately 80 acres in the Green Mountain National Forest, located in Searsburg and Readsboro, Vermont, with 7 turbines to be placed on the east side of Route 8 on the same ridgeline as the existing GMP Searsburg wind facility (Eastern Project Area), and 10 turbines along the ridgeline to the west of Route 8 in the northwesterly orientation (Western Project Area)

RE: CPG conditions related to broadcast television interference mitigation in Public Service Board (PSB) Docket No.7250, Deerfield Wind.

Jan. 19, 2009

State of Vermont
Susan Hudson Clerk
Public Service Board
120 State Street
Montpelier, VT 05602

Dear Ms. Hudson,

At this time I wish to present my company's finding of facts brief as well as CPG conditions related to broadcast television interference mitigation, as it pertains to Public Service Board (PSB) Docket No.7250, Deerfield Wind.

My premise since the onset of these proceedings has been to protect DCTV rate payers from being financially responsible for the cost of any television interference mitigation, resulting from Deerfield Wind's proposed construction of 16 industrial wind turbines. More than at any other time in these proceedings I'm convinced that these devices are capable of disrupting television broadcast signals in this region. I therefore believe that, should the PSB grant D. W.'s request for a CPG, the Board must address and make absolutely clear within its' ruling how any mitigation of wind turbine interference shall occur. Anything short of that has significant potential of delaying the corrective measures needed to both, determine the cause as well as the timely steps to be taken to correct the root cause of any wind turbine interference. The Board must also decide and spell out, if and to what degree, DCTV subscribers should be financially responsible for either the trouble shooting portion or the necessary corrective measures needed to restore lost or degraded services due to such interference. The Board must be clear as to the time-line from determining the cause of such interference to taking corrective measures to mitigate such interference.

Considering, what evidence and testimony Deerfield Wind has provided thus far in these proceeding, DCTV has grave concerns as to the capability of this developer to mediate any interference the proposed project might cause. I offer the following examples of what these proceeding have demonstrated in support of this belief.

1. Deerfield Wind's parent company's mitigation of the interference encountered at Maple Ridge was less than adequate.

Maple Ridge, wind facility:

A. Performed a less than adequate pre-build study which did not accurately predict the loss of important regional broadcast channels to 240 residents and businesses in the surrounding Tug

Hill region.

- B. As a 50% owner of this facility, this developer, 2 years later was still mitigating television interference. Ref: *Deerfield 10.8.08 Supplemental Response to Duncan Cable's 2nd set of Discovery Requests, Doc KG_168*
- C. As severe as the interference in Lowville was, this developer chose not to further understand how this experience could be better avoided in the future, by not performing a post build study of television interference there. Ref: *Technical Hearings Testimony of Les Polisky, Engineer for Comsearch Corp. Deerfield's Expert witness regarding Television Interference.*
- D. DCTV was informed by Deerfield that it's Habig panel, would testify at the technical hearings for this Docket, and would be able to answer questions DCTV had regarding the Maple

Ridge

television interference experience. Unfortunately, this panel couldn't adequately respond to the most fundamental of questions regarding Maple Ridge such as, the names of people on the front lines of their television interference mitigation.

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By the end of their testimony little relevant information regarding television interference at the Maple Ridge facility was obtained from this panel. Ref: *Technical Hearings Testimony of Habig Panel, Deerfield's Expert witnesses regarding Television Interference at Maple Ridge.*

- E. During testimony of Les Poliski, Deerfield's expert television interference witness, Poliski testified that with the upcoming transition of broadcast television signals from analog to digital, that DCTV would not experience wind turbine interference due to digital signals more robust nature. DCTV pointed out to Mr. Polisky that television translators and low power television stations would continue analog broadcasts beyond the 2/17/09 transition date under FCC rules. DCTV felt it was important to point out this fact because translators are often used in mountainous, rural areas like Vermont to improve broadcast signal coverage. Mr. Polisky stated that he did not know this to be true and challenged the accuracy of DCTV's assertion to this affect. Ref: *FCC Consumer Advisory, The DTV Transition and LPTV/Class A/Translator Stations* (See Copy Attached)

In addition, DCTV pointed out to Mr. Polisky that after the 2/17/09 analog, the digital transition date, that most television broadcast stations would be transmitting at significantly less power levels digitally than they had previously transmitted in analog. DCTV wanted to point out that lower transmit levels would increase the potential of devices like wind turbines to interfere with regional broadcast signals, essentially countering Mr. Polisky's assertion that digital signals would be more robust.

DCTV asked Mr. Poliski if he was aware that regional broadcast stations would be transmitting their new digital signals at substantially lower levels than previous analog signals, after the transition. Mr. Polisky stated that he did not know this to be true and challenged the accuracy of DCTV's assertion to this fact. Ref: *Regional Broadcast Station Information provided by Wikipedia Online Encyclopedia, as Well as a Copy of an Email From WTEN, Albany N.Y. Television Station Chief Engineer, Skeeter Lansing* (Copies Attached)

- F. During testimony of Les Poliski, Deerfield's expert television interference witness, Poliski testified that DCTV's Headend was far enough away that attenuation due to signals passing through the wind turbines would not adversely affect television signal levels received at Duncan's location. Mr. Poliski's employer, Comsearch, produced an "Executive Summary" titled, "Off-Air TV

Reception Analysis for Proposed Wind Turbine Facility Lowville, New York’> (See Copy attached.) Page 3 of this summary states, “There is also electromagnetic noise generated from the wind turbines but it will affect the low VHF frequency Channels only and only TV sets less than 0.1 of a mile from the wind turbine facility.” During cross-examination, DCTV showed copies of maps provided by Deerfield Wind indicating the locations of 200 + residents who had complained to Maple Ridge that they were experiencing degraded television reception after the wind turbine construction. According to Maple Ridge’s own “TV Interference Case Log” the vast majority of complaints were the result of interference on channels VHF channel 7 and UHF channels 16 and 50. These channels are broadcast from Watertown, N. Y. which is 28 miles from Lowville. These complaints included interference symptoms such as, Horizontal lines across screen, wavy lines, shadows, static, moving background to complete loss of these channels.

Mr. Polisky had no specific explanation as to why Deerfield’s maps indexing the locations in the Maple Ridge region indicated residents, whose antenna reception angle was not in line with the Maple Ridge turbines or the turbines were actually to the rear or behind some resident’s receive antenna’s, had experienced degraded television reception. DCTV pointed out that according to Deerfield’s Maple Ridge TV interference maps, residents as far away as 4 miles from the turbines experienced the same interference. Mr. Polisky had no specific explanation as to why Lowville residents that far away would have suffered television interference.

If the Public Service Board approves Deerfield’s CPG application it must condition such CPG to assure that DCTV subscribers are protected from any unknown causes of interference having learned the extent which commercial scale wind turbines have caused television interference. With “experts” like Les Polisky unable to offer solid explanations and understanding as to the affects wind turbines have had on television reception, this CPG must assure that Cable Television rate payers in Vermont are not inconvenienced or left on the hook for the cost of remediation of any turbine television interference resulting from D. W.’s project .

There are 2 main areas of concern which the Board should both consider and address within it’s CPG ruling.

1. Pre-existing interference:

It is my understanding that D.W. has agreed to perform a baseline study to log signal levels as well as qualify any pre-existing interference at DCTV’s headend. This should include at a minimum the following.

A. Measured levels and performance parameters of all regional broadcast signals received at DCTV’s Headend, both analog and digital. These measurements and performance parameters to be obtained should include:

1. Actual levels of all measurable off air analog or digital signals.
2. Logging any analog or digital in-band and out-of-band analog carriers. Including the strength, direction and likely source of such analog or digital carriers or interferers.
3. Analyzing all measurable ATSC 8VSB Digital television signals for the following:
 - A. Signal to noise ratio
 - B. Carrier to noise ratio
 - C. Error vector magnitude
 - D. R S (Uncorrectable packets)
 - E. Symbol rates of each channel
 - F. M E R
 - G. Line B E R
 - H. Additive white Gaussian noise
 - I. Echoes

- J. Amplitude and group delay distortion
- K. Phase jitter
- L. Shoulder attenuation
- M. Identify potential interferers already in existence
- B. Make a 3 minute video recording (Picture and Sound on a content indexed DVD) of each regional broadcast signal available at DCTV's Headend, both analog and digital.
- C. Log all results of baseline study in both electronic version and indexed hardcopy.
- D. Deerfield Wind's contractor performing an industry standard baseline study, should collect all data in the presence of DCTV technical staff.
- E.. DCTV staff shall make every effort to accommodate D. W.'s contractor's schedule

2. Post build interference resulting from D.W.'s facility.

This should include at a minimum the following.

- A.. Time line to respond to an initial report to D.W. that DCTV has concluded, through it's own initial analysis, that D.W.'s wind turbines are suspected of interfering with signals received at DCTV's headend facility.
- B. The course of action and process by which D.W. and DCTV shall work together to conclude the source/cause of the interference.
- C. Once the source/cause has been determined, the course of action and process by which D.W. shall either shut down it's turbine facility until the interference has been eliminated. or, has reached an agreement with DCTV to take corrective measures without shutting down it's facility. Based on the severity and the estimated time to remediate, DCTV shall have the final say regarding the necessary shut down of any or all of D. W.'s wind turbines.
- D. In the event this project disrupts DCTV's signals and or service reception, the outcome shall not cause DCTV subscribers to be financial responsible for whatever courses of action are necessary to complete a successful interference mitigation.

DCTV has provided below a framework and base language that it seeks to be included as a condition of any Deerfield Wind CPG approval.

Deerfield Wind, (DW) shall perform a base-line interference study. The purpose of this study is to document the levels of all measurable television and FM radio broadcast channels as well as the existence of any level of interference present at Duncan Cable TV's (DCTV) headend facility. Testing for the study shall be performed utilizing commonly used antennas to receive digital as well as analog VHF and UHF regional broadcast television and FM radio stations. DW and DCTV shall work together, cooperatively, in an effort to perform and achieve the necessary measurements. RF levels measured as well any interference present at the time of the study shall be logged and recorded. Any interference visible on the screen of a conventional monitor test set shall be recorded. The following, further details what DCTV requests to be included in this base-line study.

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- A. Measured levels and performance parameters of all regional broadcast signals received at DCTV's Headend, both analog and digital. These measurements and performance parameters to be obtained should include at a minimum:
 - 1. Actual levels of all measurable off air analog or digital television and FM signals.
 - 2. Logging any analog or digital in-band and out of band analog carriers. Including the strength, direction and likely source of such analog or digital carriers or interferers.
 - 3. Analyzing all measurable ATSC 8VSB Digital television signals for the following:
 - A. Signal to noise ratio

- B. Carrier to noise ratio
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- J. Amplitude and group delay distortion
- K. Phase jitter
- L. Shoulder attenuation
- M. Identify potential interferers already in existence

B. Make a 3 minute video recording (Picture and Sound on a content indexed DVD) of each regional broadcast signal available at DCTV's Headend, both analog and digital.

C. Log all results of baseline study in both electronic version and indexed hardcopy.

D. Deerfield Wind's contractor performing an industry standard baseline study, should collect all data in the presence of DCTV technical staff.

E.. DCTV staff shall make every effort to accommodate D. W.'s contractor's schedule

DCTV and DW shall work together, cooperatively, to determine the source of any interference found to be present. This study shall be completed between 30 and 45 days prior to the commencement of any construction at the DW turbine site.

Once the construction of the turbines is complete, DW shall notify DCTV prior to DW's initial production of electricity.

For 7 days following DW's notification to DCTV, DW shall place each turbine online individually, enabling DCTV to monitor and observe if any broadcast television interference is the result of

each or all turbine activation. Once DCTV is satisfied that the wind turbines are not interfering with regional broadcast channels received at it's headend facility, DW is free to complete any other testing or other necessary procedures required to bring the wind turbines on line.

II.

Deerfield Wind (DW) will remediate any future material DW turbine interference at the Duncan Cable TV headend facility that is caused by operation of the Project. Deerfield Wind shall provide DCTV with current specific and updated telephone and email contact information to reach DW personnel who shall be personally responsible for fulfilling all arrangements as set forth within these conditions.

1. Within 24 hrs of receipt of a complaint from Duncan Cable TV, DW will arrange Deerfield Wind site access to DCTV technicians and or it's contractors for the purpose of interference analysis. After such analysis, if DCTV concludes that interference is originating from DW's turbine facility and that such interference is affecting broadcast or satellite signals received by it's subscribers, DW shall execute the following actions within the stated time frames.
2. Within 48 hours of DCTV's initial notification of television or radio interference to DW:
 - a. At DCTV's discretion, DW technicians' shall coordinate a systematic shut down of each turbine individually. As each turbine is shut down, DCTV shall monitor any effect on the

interference. If no affect on the interference is the result of a turbine being shut down, an additional turbine shall be shut down. If necessary, additional DW turbines shall be shut down in this manner, leading to a potential shut down of all turbines if necessary. Should interference remain after all turbines have been shut down, DW shall discontinue all electrical service to each turbine and it's respective tower to determine if a device within or a part of each tower is the source of such television interference.

3. Once it is determined that any Deerfield Wind turbines or facility infrastructure are the source of television interference, and a shut down has been undertaken,
 - A. DW shall not restart any turbines which have been identified by DCTV or it's contractors, as the source of interference, until DCTV agrees that the interference has been eliminated.
 - B. If the source of such interference is intermittent in nature, DW shall not restart any turbines without first obtaining DCTV's consent that the interference has been mitigated.
4. In the event this project disrupts DCTV's signals and or service reception, the course of action and or outcome shall not cause DCTV subscribers or Duncan Cable Television company to be financial responsible for the costs of such action(s) as are necessary to complete a successful interference mitigation.

I respectfully request that the above proposed language be included as a condition of any future Deerfield Wind Certificate of Public Good.

Sincerely

Cliff Duncan

DUNCAN CABLE TV

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