ATTACHMENT C NVDA Wind Study Committee: Propositions on Wildlife and Stormwater

1. Billy Coster, Vt Agency of Natural Resources (ANR), reports that the agency developed draft guidelines for review of energy generation projects in 2006 and new guidelines will be developed.[1]
   1.1. ANR has been a strong advocate for the protection of wildlife, natural communities, and water quality, from the impacts of high elevation industrial wind energy development. The Public Service Board does not always agree with the agency's positions.
   1.2. The bar of "undue adverse impact" can be difficult to demonstrate. If ANR believes a project poses an undue adverse impact to the natural environment that cannot be mitigated, it will recommend the PSB find against the petition on those grounds.[2]

2. ANR natural resource requirements for a CPG and recommendations in the PSB decisions and mitigation measures include pre and post studies. ANR personnel work closely with developers' consultants to set up studies, develop methodologies, etc.[3] Example studies in the Kingdom Community Wind Project and First Wind Project include,
   - Potential impacts of First Wind Project on wildlife resources, including impacts to migrating birds, as well as small and large mammals (except bats) and their respective habitats (2006)
   - Evaluating Bird and Bat Post – Construction Impacts at the Sheffield Wind Facility, Vermont, Bat Conservation International and First Wind (2013)
   - Bird and Bat Pre-Construction Surveys for Kingdom Community Wind Project in Lowell, VT – Stantec Consulting, Inc. for Green Mountain Power (2010)
   - Potential impacts of KCW project on significant natural communities and the large, relatively unfragmented habitat on the Lowell Mts. (2010)
   - Impacts of Sheffield project related to stormwater and other environmental criterion (2006)
   - Impacts of Sheffield project to wetlands (2006)
   - ANR Aquatic Biological Sampling Results for Sheffield (2006 – 2012)

3. Billy Coster of ANR states that some agency personnel were surprised at the <u>unexpected landscape change</u> from the wind projects regarding the amount of earth and site work, specifically at Lowell. The amount of blasting and clearing for the Lowell wind project was significantly more than the Sheffield project.[4] There are dust control and blasting plans for both projects.

4. ANR Stormwater Construction and Operational Permits
   4.1. Post-construction stormwater permit issued for a wind project requires an Annual Inspection be completed by the permittee, which covers inspection and maintenance of the Best Management Practices on site (stormwater pond, level spreaders, vegetative buffer, etc) as needed and identify any issues. Every three years the permittee is also required to provide a Designer's Restatement of Compliance, which is a higher level

[1] Billy Coster, Vermont Agency of Natural Resources, NVDA Wind Study Committee Meeting April 24, 2013.
[2] Overview of Section 248 Process, pdf.
[3] Billy Coster, April 24, 2013.
[4] Coster, April 24, 2013.

review of the system by a qualified designer. First Wind is required to undergo a Designer's Restatement of Compliance summer of 2014.[5]

4.2. GMP/Kingdom Community Wind stormwater permit is an individual permit (vs. general permit as Sheffield) because they implemented an *alternative stormwater treatment practice design*, utilizing some conventional Best Management Practices such as stormwater ponds. They installed a site specific design, utilizing a number of level spreaders combined with established vegetated areas for stormwater dispersal. The alternative design requires that they implement a stormwater monitoring plan of the alternative system, which will go into effect in 2014. They are also subject to additional water quality/biomonitoring of the streams as required by their 401 Water Quality Certification. GMP is also subject to the recertification and annual inspection requirements, but not likely for a couple years.[6]

4.3. GMP/KCW project had a violation during construction October 2011- a stormwater discharge due to failure to control sediment after a major rain event. Though the First Wind/Sheffield project did not violate the stormwater permit, private professionals found evidence of stormwater discharge during construction. Individuals appealed the stormwater permits issued to both projects and in both cases, the permits were upheld (Sheffield in the Environmental Court and Lowell in the Vermont Supreme Court).

5. ANR Water Quality Permit

5.1. First Wind Project = ANR Biomonitoring and Aquatic Studies Program. Results in 2011 and 2012 tests show that the project has not had an adverse impact to water quality and aquatic life of near-by cold-water streams.[7]

5.2. KCW = As required by Section 401 Water Quality Certification, fish population monitoring was conducted by Bear Creek Environmental, Inc.[8]

6. Bird and Bat Fatality Monitoring.

6.1. A special Endangered and Threatened Species Takings Permit was issued by Vermont Secretary of ANR to each wind project for incidental take of listed bat species (no more than four bats per annum.)[9] The permits were issued because the both First Wind and GMP demonstrated "an economic hardship" if they were required to curtail turbine operation during specific times when bats were present (one half hour before sunset and sunrise, wind speed below 6.0 m/s, and temperatures above 49 degrees Fahrenheit.) Economic hardship is one of six reasons for granting a takings permit.

6.2. First Wind project is conducting a 2 year project, Evaluating Bird and Bat Post-Construction Impacts at the Sheffield Wind Facility, Vermont. The findings of the study will help to inform the Vermont Department of Fish and Wildlife in determining future methods of mitigation to reduce the impacts of wind energy on bats and birds in Vermont.[10] The study started in 2012 and the area was resurveyed in 2013; a final report is due out in December 2014.

6.3. Results of the 2012 First Wind bat study: three different bat species were found (all migratory tree-roosting bats) and carcasses were collected at all 16 turbines. The total

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[5] Email with Kevin Burke, Vermont Agency of Natural Resources, Watershed Management Division
[6] ibid
[7] Vermont Agency of Natural Resources Biomonitoring and Aquatic Studies Program (2013)
[8] Bear Creek Environmental, http://www.bearcreekenvironmental.com/projects/biological-investigation
[9] 10 V.S.A. § 5408
[10] Colleen Martin, Evaluating Bird and Bat Post-Construction Impacts at the Sheffield Wind Facility, 2012.

bat fatality estimated for the project site was 235 with an estimate of 14.65 bats killed per turbine.[11]

6.4. The research methods included curtailment of several turbines at specific times to determine if operational mitigation would have an impact on bat fatality. Researchers found that operational mitigation had an estimated 60% reduction in bat fatality on site and they reported this as a "statistically significant effect" (average of 1.0 bats/turbine following operational mitigation compared to 2.7 bats/turbine following full operation.)[12] Operational mitigation was curtailment ½ hour before sunset and sunrise, when winds are less than 6.0 meters/second (13.42 mph), and temperature greater than 49 degrees Fahrenheit.

6.5. Results of the 2012 First Wind bird study: twelve different bird species were found and carcasses were collected at 13 of 16 turbines. The total bird fatality estimate for the project site was 211 with an estimate of 13.17 bird fatality per turbine.[13]

6.6. A memorandum between GMP and ANR was accepted by the PSB in which a one year post construction bat survey and a three year bird survey be conducted by GMP for review by ANR.[14] GMP is making payment of $18,438 annually to support Vermont's bat colony conservation efforts as a form of mitigation for the lost of bats at the wind project.[15] Bird and bat fatalities were found in first year study of the GMP project.

7. Land Conservation and Habitat Mitigation.

7.1. Both projects include habitat mitigation efforts which intent to offset impacts. Conservation easements have been procured (GMP 2,800 acres; Sheffield 2,700 acres).

7.2. There are concerns about unknown wildlife impacts. Vermont Department of Fish and Wildlife biologists Cedric Alexander and John Austin are interested in our work to investigate broader effects of the Lowell wind project. "It's an issue that is of interest to the Department as well." (email from John Austin, January 10, 2014). They have shared big game harvest numbers from 2013 and 2012 and further studies should be done to better understand potential impacts on wildlife and wildlife habitat.

7.3. Other studies:

- UHS and RPInc – William Kilpatrick – First Wind project impacts on wildlife but not limited to birds, bats, bear and deer. Concerns about fragmentation of remote wildlife habitat (2006)
- UHS and RPInc. – Marc Lapin – natural resource values of the site proposed wind-power development with specific regard to natural communities, wetlands, and rare plants. (2006)
- Black Bear Use Response to a Wind Energy Project in Southern Vermont David Tidhar1, Cecily Costello1, Forrest Hammond and Trent McDonald *Western EcoSystems Technology, Inc.1; Vermont Fish and Wildlife Department2* (2006)
- Population Ecology of American Marten in New Hampshire: Impact of Wind Farm Development in High Elevation Habitat - Alexejpeder Kelly Siren (2013)

8. The NVDA Study Committee takes the following positions:

8.1 Regional environmental impacts of industrial wind development are not well understood, such as high elevation stormwater runoff, bird and bat fatalities, wildlife habitat

[11] ibid
[12] ibid
[13] ibid
[14] GMP and ANR Memorandum of Understanding, PSB Docket #7628, October 22, 2010
[15] Lowell GMP, ANR reach deal on bats death, Caledonia Record, September 20, 2013

destruction, and loss of connectivity across the Northeast Kingdom landscape. Further research should be conducted.

8.2 Alternative stormwater technologies, such as level spreaders, need to be proven for their effectiveness.

8.3 Because there is limited data on the impacts of wind projects in the Northeast Kingdom on birds and bats, it is recommended that GMP continue to monitor bat fatalities beyond the one year post construction survey and follow methods used in the Sheffield Bird and Bat Post-Construction Study.

8.4 The Sheffield Bird and Bat Post-Construction Study Final Report is due in December 2014 and the Vermont Department of Fish and Wildlife determination of future methods of mitigation based on this information will need to be followed.

8.5 Agency of Natural Resources wind development guidelines need to be updated. This is consistent with the Energy Generation Siting Policy Commission Recommendations 2013: ANR shall provide detailed guidelines on assessment and "undue" impact.