

## **APPLICATION OF**

**HIGHLAND NEW WIND DEVELOPMENT, LLC**

**CASE NO. PUE-2005-00101**

**For Approval to Construct, Own and Operate an Electric Generation Facility in Highland County, Virginia pursuant to §§ 56-46.1 and 56-580 D of the Code of Virginia**

### **REPORT OF ALEXANDER F. SKIRPAN, JR., HEARING EXAMINER**

**March 1, 2007**

Highland Wind seeks authority to construct nineteen wind turbines, each approximately four hundred feet in height, along a ridge near the Virginia-West Virginia border in Highland County, Virginia. The proposed project was approved by the Highland County Board of Supervisors, but opposed by a substantial number of Highland County residents. Based on the record developed in this proceeding, I recommend that the Commission approve the application subject to recommended conditions designed to minimize adverse environmental impacts.

### **HISTORY OF THE CASE**

On November 8, 2005, Highland New Wind Development, LLC (“Highland Wind” or the “Applicant”) filed an Application for approval to construct, own and operate an electric generation facility in Highland County, Virginia.

On December 2, 2005, Ralph H. Swecker; Christopher T. Swecker; Pendleton Stokes Goodall, III; McChesney Goodall, III; William Stokes Goodall; Wayne Stokes Goodall; and Gregory Warnock (collectively, “Highland Citizens”) filed a Notice of Participation and moved to dismiss the Application (“First Motion to Dismiss”). Highland Citizens contended that the Application did not contain the information required by § 56-580 D of the Virginia Code or Rule 20 VAC 5-302-25 of the Commission’s regulations. On December 16, 2005, Highland Wind filed its response in which it asserted that the Application contained sufficient information for the Commission to initiate its review and advised that additional information would be provided. On December 28, 2005, the Commission issued its Order for Notice and Hearing in this proceeding, which, among other things, provided for a filing schedule for responses to Highland Citizens’ First Motion to Dismiss and assigned the matter to a hearing examiner. On March 3, 2006, Highland Wind filed its Supplemental Response to the First Motion to Dismiss. Highland Wind maintained that its Application permitted Staff to begin its review of the project and that the additional information referenced by Highland Citizens is not required by the Commission’s rules. Also, on March 3, 2006, Staff filed its Response to the First Motion to Dismiss. Staff maintained that many of the concerns raised in the First Motion to Dismiss could be explored in the process begun in the Commission’s Order for Notice and Hearing and that the procedures adopted for this case would develop all of the information necessary to make a decision on the Application. Therefore, Staff opposed the First Motion to Dismiss. On March 8, 2006, Highland

Citizens filed their Reply. Among other things, Highland Citizens pointed out that for lack of information, the Department of Environmental Quality (“DEQ”) had suspended its environmental review. The First Motion to Dismiss was denied in a Hearing Examiner’s Ruling dated March 15, 2006.

On December 28, 2005, the Nature Conservancy in Virginia (“Nature Conservancy”) filed a Notice of Participation for this proceeding. On February 10, 2006, the Highland County Board of Supervisors (“Highland County”) and Michel A. King, *pro se*, filed Notices of Participation in this proceeding.

Two hundred sixteen individuals<sup>1</sup> filed written or electronic comments in opposition to the proposed project. Ninety-three individuals<sup>2</sup> filed written or electronic comments in support of the proposed project.

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<sup>1</sup> Written or electronic comments in opposition were submitted by the following individuals: Michael A. Dymersky, Carl M. Deffner, Lawrence C. Held, Valerie Kelley, Charlotte A. Stephenson, William F. Richards, Barbara G. Richards, Nickie Athanason-Dymersky, Alexander Dymersky, Warren E. Garber, Timothy Downs, Susan B. Blanchard, David Y. Miller, Patti A. Reum, John L. Rowlett, Wilson Smith, Tom Brody, Raymond Curry, Maragret Curry, Glenn Riggelman, Patricia Ann Wefer, Viola Riggelman, Elizabeth H. McClung, Garvin K. McClung, Sarah V. Mustoe, Stephen R. Young, Betty Rowe, Carolyn Rowe, Chad H. Rowe, David E. Rowe, David, F. Rowe, David K. Rowe, David M. Rowe, Debbie Rowe, Katie Rowe, Suzanne Rowe, Stephen T. Vermillion, Rick Webb, John C. Vinson, Janie M. Hughs, Karen H. Goldstein, Natalie Tempe Brown, Jim Brown, Karen A. Praeg, Robert, W. Maupin, Clarence P. Young, Clay Hamilton, McChesney Goodall, Anne M. Stewart, Faye M. Chapman, Earl T. Flowers, Don Faulkner, James C. Monger, Bobby Leby, Joyce Flowers, Ida L. Ptsenbarger, Aimee J. Weldon, Marianne W. Wilson, Regina G. Honaker, Mary McCoy, Nancy F. Witschey, Sandy C. Hevener, John A. Vrugtman, Annette Naber, Robert S. Carneal, Katharine S. Windsor, John L. Walters, David W. Kiser, Owen D. Simmons, Vernon M. Sylvest, Betty C. Kiser, Diane Klein, Betty J. Smith, Dwight File, Sandy C. Spencer, Norman H. Bell, Isaac C. Simmons, James H. Hughes, Wayne S. Goodall, Susan L. Webb, William Banks, Karin Banks, Kenneth R. Schaal, Bethel J. Crummett, Judith A. Key, Jim R. Key, Steven L. Fullerton, Anne McCaig, Virgil H. Marshall, Karen Gallagher, Stephen Gallagher, William R. Lowe, Richard R. Shamrock, Pendleton S. Goodall, Deborah R. Huso, R. Hunt MacMillan, Rachael L. Brody, Jeannette B. Robinson, Debra H. Colaw, Heather Scott, Shirley J. Weissenborn, Barbara Downs, Rhet Wilson, Bruce B. Hill, William H. Funk, Gary W. Robinson, French C. Grimes, Jane S. Bergamin, Donna Alliston, John V. Deehan, Winifred W. Richardson, Theresa E. Floriano, Daniel Kauffman, Kirk Billingsley, Nancy M. Mackey-Oliver, Laurie E. Berman, Jennifer H. Westerman, Chris Scott, Somers Stephenson, Linda L. Holman, Clarissa M. Elliott, Jo Anne Yamaka, Doris V. Griswold, Richard S. Holman, William N. Boyd, Daniel J. Bieker, Susan W. Johnston, Lorraine G. White, Caroline B. Smith, Ernest W. Elliott, Paul Klein, Susan R. Swecker, Jeffrey H. Burton, Sara S. Bell, Nelson P. Lewis, James R. Depoy, Gregg S. Morse, James L. White, Charles M. Hughes, Larry V. Thomas, Rebecca K. Thomas, Mary D. Ellison, Angelika R. Levien, Carolyn H. Pohowsky, Evelyn M. MacWelch, Pamela K. Risdon, Taylor M. Cole, Cornelia C. Vranian, Mary L. Ellenburg, William K. Ellenburg, Garland Dever, Frances D. Davenport, Ann S.

(continued...)

On January 12, 2006, Highland Wind filed a Motion for Protective Ruling. On January 26, 2006, Highland Wind filed an Amendment to Motion for Protective Ruling in which it stated that based on discussions with the Staff, Highland Wind amended Paragraph (6) of its proposed Protective Ruling to allow the release of confidential information to the parties themselves, subject to the non-disclosure provisions of the Protective Ruling. The Amended Protective Ruling was adopted in a Hearing Examiner's Ruling dated January 27, 2006.

On February 14, 2006, Highland Wind filed a Motion for Scheduling Order in which it proposed a procedural schedule consistent with the streamlined schedule specifically established for consideration of small, 50 MW or less generating units. A Hearing Examiner's Ruling dated February 15, 2006, provided for an expedited response and reply to the motion. On

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Bowman, Bruce W. Bowman, Valerie Hilliard, Elizabeth McCoy, Margaret G. Boesch, Michael M. Boesch, William Crisp, Sandy Bratton, Abby Dworkin-Brodsky, John M. Roberts, Judy L. Skeen, Stuart Ridsen, Patrick M. Lowry, Greg Warnock, Nellie A. Brown, Shawna Bratton, Mark A. Swecker, John Spahr, Karen S. Dworkin, James Brodsky, Stephanie Anne Neofotis, Gregg A. Alexander, Lucile S. Miller, Gil Lunsford, Thomas M. Stevens, Patricia B. Pray, Arthur H. Applegate, Arthur Davies, Lynda Davies, Steve Hise, Susan Applegate, Mark D. Carter, Douglas M. Craft, Natialy A. Walker, Melissa L. Moyers-Jarrells, W. Baxter Perkinson, Jr., Charles M. Wilke, Arthur H. Garrison, Richard P. MacWelch, Nathan W. White, Margaret A. Sheridan, Margaret L. Silkstone, Amory Mellan, John F. Hafner, Jeff Gould, Vernon W. Nesselrodt, John Simpson, Kevin P. Eley, Samuel K. Ellington, E. Keith Tekin, Brenda Tekin, David Glendinning, Susan Glendinning, Edmund R. Hevener, Jr., Dennis L. Coppedge, James W. Morse II, Dr. Orren LeRoyce Royal, Lucia Stanton, Eve Firor, M.C. Veasey, Walter L. Williams, Dennis J. McCleary, Carolyn E. McCleary, and D. Dan Boone.

<sup>2</sup> Written or electronic comments in support were submitted by the following individuals: Debra A. McClane, John C. Wiegard, Jordan R. Arens, Elizabeth H. Hefner, Tom Collins, Gary Skulnik, Faye C. Rockwell, Stanley J. Sersen, Dave Michaels, Loren Denton, Scott Sklar, Polina Pinchevsky, Rose Wells, Matthias Paustian, George A. Reynolds, Michael D. Tinyk, Michael S. Hough, Cynthia Gaver, Rick S. Kunkel, Robert Kovacs, Kristen Rannels, Pamela M. Hudson, Damon Werwie, Paul Jaffe, Alison M. Uecke, Grant Moosha, Robert N. Mowbray, Kevin E. Castellucci, John W. Duemmel, David Roth, Mary E. Dawley, Nancy J. Byrd, Rachel L. Lettre, Tina Thuermer, Roberta K. Brown, Heather Phipps, Rebecca G. Verna, Joel L. Steinberg, Peter Kent, Jonathan I. Braman, Mark J. Lerman, Leslie White, Stephen Pierett, Katelyn Keefe, Edith W. Ashman, Johnny D. Kincer, Aydan Kalyoncu, Anne E. Havemann, Judy Knoke, Jeffrey Perkins, Anne M. Brophy, Tahani Rivers, Melanie Szulezewski, Jennings B. Wilson, Garnett R. Turner, Chris Wray, Victoria J. Antonich, Virginia Shover, Lorie A. Peterson, Octavia Williams, Heather Schildge, Kimberly Petry, Janette D. Sherman, Michael Thompson, Diane Shemer, Terese Winslow, Howard M. Mitnick, Sandi Stiles, Roxanne Wackenhuth, Kelly Ross Gillespie, Dan Redmond, Donna R. Ellis, Janet C. Sheldon, Laura Gemery, Nancy L. Cichowicz, Kevin Carpenter, Tracey R. Shover, Judy M. Ballard, Matthew F. Bucci, Mark Shover, Kyle A. Paulson, Ralph R. White, Edward V. Allison, Jr., James Jackson, Ronald Turner, James Watt Bradshaw, Adam Blagg, Elaine Broadhead, Robert Hopkins Strickler, Al H. Sobel, Diana Dasclu, James Blagg, and Tracey Blagg.

February 16, 2006, Staff filed its response wherein Staff objected to being required to file testimony approximately two weeks after receiving Respondents' testimony. Staff contended that the Application is the first of its kind in the Commonwealth, with novel environmental issues and that Staff would require thirty days after the filing of Respondents' testimony to prepare Staff testimony. On February 17, 2006, Nature Conservancy filed its response in which it maintained that it would require a minimum of sixty days after the filing of the DEQ report to address the environmental concerns raised by the Application not addressed by DEQ. On February 22, 2006, Highland Citizens filed a response and contended that the Motion should be denied. On February 24, 2006, Highland Wind filed its reply in which it reiterated its need for expedited treatment and the requirement for construction to begin by December 31, 2007, to preserve federal tax credits. In addition, Highland Wind asserted that because the issuance of the Conditional Use Permit by Highland County leaves only a subset of issues, Staff and the parties did not require the additional time requested. A Hearing Examiner's Ruling dated March 3, 2006, established the timing of the procedural schedule based upon the filing of DEQ's Report. Specifically, Respondents' testimony was scheduled for thirty calendar days after the filing of DEQ's Report. Staff testimony was scheduled for thirty calendar days after Respondents' testimony and Highland Wind's rebuttal testimony was scheduled for seven business days after the filing of Staff's testimony.

On March 13 and 14, 2006, local hearings to receive public testimony were held in the Highland Elementary School Gymnasium, Myers-Moon Road, Monterey, Virginia. John W. Flora, Esquire, appeared on behalf of Highland Wind. David S. Bailey, Esquire, and John C. Singleton, Esquire, appeared on behalf of Highland Citizens. Melissa Ann Dowd, Esquire, appeared on behalf of Highland County. Michel King appeared *pro se*. Wayne N. Smith, Esquire, and Donald H. Wells, Esquire, appeared on behalf of Staff. Twenty-seven public witnesses testified on March 13<sup>th</sup> and thirty-nine public witnesses testified on March 14<sup>th</sup>.

In a Hearing Examiner's Ruling dated March 16, 2006, the date for the filing of public comments, in either written or electronic form, was extended until one week after the filing of the DEQ Report.

On June 8, 2006, Highland Citizens filed their Second Motion to Dismiss ("Second Motion to Dismiss"), in which Highland Citizens contended that Highland Wind failed to provide information requested by agencies such as the Virginia Department of Game and Inland Fisheries ("DGIF"). Highland Citizens argued that because of the lack of information, neither DEQ nor the Commission could satisfy the environmental requirements of §§ 56-580 D and 56-46.1 of the Virginia Code. On June 22, 2006, Highland Wind filed its response and asserted that the issues raised in the Second Motion to Dismiss are not ripe for consideration, are not a basis for dismissal, and that it has the right to respond to the comments contained in the DEQ Report after it is submitted to the Commission. On June 28, 2006, Staff filed its response in which it urged denial of the Second Motion to Dismiss.

On June 30, 2006, DEQ filed its report in which it listed six permits or approvals required by the project and provided fourteen recommendations to the Commission.

On July 7, 2006, Highland Citizens filed their Reply concerning the Second Motion to Dismiss. Highland Citizens referred to the DEQ Report and emphasized a number of the concerns expressed by some of the reporting agencies and noted that the Applicant had failed to provide the information required by the environmental agencies. A Hearing Examiner's Ruling dated July 11, 2006, denied the Second Motion to Dismiss and established a procedural schedule to include responses to the DEQ Report, including additional testimony, exhibits, or legal memorandum.

On August 9, 2006, Highland Wind filed the Supplemental Testimony of Dr. Paul Kerlinger and a motion for leave to file Dr. Kerlinger's testimony out of time. On September 1, 2006, Highland Citizens filed a motion to allow the testimony of John Rowlett to be placed in the record or that he be cross-examined at a time when he would be available. On September 13, 2006, Highland Wind objected to Mr. Rowlett's testimony being made part of the record without cross-examination, but agreed to schedule his testimony for the afternoon of October 3. A Hearing Examiner's Ruling dated September 18, 2006, granted the Applicant's motion for leave to file Dr. Kerlinger's testimony out of time and scheduled a hearing for October 3, 2006, for the receiving of Mr. Rowlett's testimony.

On October 3, 2006, a hearing was convened in the Commission's Richmond courtroom to receive the testimony of John L. Rowlett. Brian Brake, Esquire; Richard D. Gary, Esquire; and Charlotte McAfee, Esquire, appeared on behalf of the Applicant. Anthony J. Gambardella, Esquire, appeared on behalf of Highland Citizens. Wayne N. Smith, Esquire, and William H. Chambliss, Esquire, appeared on behalf of Staff.

On October 3, 2006, the Nature Conservancy filed a motion to have the testimony of Dr. Merlin D. Tuttle placed on the record. There were no objections and the motion was granted during the October 30<sup>th</sup> hearing.<sup>3</sup>

On October 30 through November 1, November 6, November 15 and 16, 2006, evidentiary hearings were held for this matter. John W. Flora, Esquire; Brian Brake, Esquire; Richard D. Gary, Esquire; and Charlotte McAfee, Esquire, appeared on behalf of the Applicant. Anthony J. Gambardella, Esquire; and Daniel Summerlin, Esquire, appeared on behalf of Highland Citizens. Wiley F. Mitchell, Jr., Esquire, appeared on behalf of the Nature Conservancy. Michel A. King appeared *pro se*. Wayne N. Smith, Esquire, and William H. Chambliss, Esquire, appeared on behalf of Staff. Twenty-two public witnesses offered testimony during the evidentiary hearings. Transcripts of all of the hearings are filed with this report.

## **SUMMARY OF THE RECORD**

The Applicant proposed to construct and operate a wind energy generating facility in Highland County, Virginia, near the West Virginia border, just northeast of State Route 250 on parts of Allegheny Mountain known as Red Oak Knob and Tamarack Ridge.<sup>4</sup> The proposed

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<sup>3</sup> Tr. at 648, 651.

<sup>4</sup> Application at 2.

facility would consist of up to twenty wind turbines of 2.00 MW nominal capacity, each mounted on free-standing tubular towers with the rotors reaching up to a height of 400 feet.<sup>5</sup> A new substation with transformers and other equipment would interconnect the proposed facility to an existing 69 kV line operated by Allegheny Power and part of PJM.<sup>6</sup> Highland Wind projects that the annual county tax revenue generated by this project will be between \$175,000 and \$225,000 per year.<sup>7</sup> On July 14, 2005, the Board of Supervisors of Highland County granted the proposed project a conditional use permit.<sup>8</sup>

### **Applicant's Direct Testimony**

On February 8, 2006, Highland Wind filed the testimony of Jeffrey C. Paulson, Esquire, of the law firm Jeffrey C. Paulson & Associates, Ltd.; Dr. Paul Kerlinger, environmental consultant and principal of Curry & Kerlinger, L.L.C.; Dr. D. Scott Reynolds, managing partner for North East Ecological Services; and Dr. Edwin D. Michael, professor of wildlife management at West Virginia University.

**Jeffrey C. Paulson, Esquire**, described his practice as focusing on representation of renewable energy developers and projects, from conception to completion to operation.<sup>9</sup> In regards to this project, Mr. Paulson stated that he has been hired to negotiate: (i) a purchase power agreement; (ii) the sale of any "green tags;" (iii) turbine acquisition agreements and related operations and maintenance agreements; and (iv) the balance of plant contracts.<sup>10</sup> Mr. Paulson testified that the proposed site appears to be appropriate for wind generation as it has good wind resources, adequate interconnection and transmission capacity, adequate transportation access, and is suitable from an environmental perspective because

it has been previously used for agricultural purposes and will not disturb virgin land, and it is located at a reasonable distance from occupied residences and businesses which might be directly impacted by noise, shadowing or other issues arising from close proximity to turbines in operation.<sup>11</sup>

Mr. Paulson confirmed that the final layout for the wind turbines is dependent on the specific turbines to be used and will be designed to minimize wake and array losses, maximize production and minimize construction costs.<sup>12</sup> Mr. Paulson testified that access roads will be installed at the site and that the transmission lines between turbines will all be installed

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<sup>5</sup> *Id.* at 7.

<sup>6</sup> *Id.* at 7-8.

<sup>7</sup> *Id.* at 8.

<sup>8</sup> *Id.* at 9.

<sup>9</sup> Exhibit No. 21, at 2.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.* at 3.

<sup>12</sup> *Id.*

underground.<sup>13</sup> As for the substation that will be built to convert the power from the project to 69 kV, Mr. Paulson advised that the interconnection facilities and substation will include switches and other disconnection and safety equipment necessary to shut down the substation in the event of an emergency or for other safety reasons.<sup>14</sup> In addition, Mr. Paulson acknowledged that all power delivered from the proposed project must meet the safety and power quality standards of PJM.<sup>15</sup> Mr. Paulson estimated that the proposed project should have a useful life of twenty to thirty years.<sup>16</sup>

Mr. Paulson maintained that the proposed project was financially viable.<sup>17</sup> Mr. Paulson contended that revenues derived from the sale of energy and capacity, and through renewable energy credits (“RECs”) will be sufficient to meet operating expenses, repay long-term debt, if any, and offer investors a sufficient return.<sup>18</sup> In addition, Mr. Paulson asserted that the proposed project would have no material adverse effect upon the reliability of electric service provided by any regulated public utility.<sup>19</sup> Mr. Paulson pointed out that there are various other wind generation projects in operation in the PJM region that have had no adverse effects on the transmission system or otherwise.<sup>20</sup>

As for the economic impact of the proposed project on the local economy, Mr. Paulson referred to the projected annual tax revenues of between \$175,000 and \$225,000, and observed that the second largest current taxpayer in Highland County pays approximately \$33,000 per year.<sup>21</sup> Moreover, Mr. Paulson stated that during construction, Highland Wind would attempt to use local contractors and labor. The balance of plant contract work will involve millions of dollars of expenditures and Highland Wind will make an effort to use local sources for material and labor.<sup>22</sup> After completion of the proposed project, Mr. Paulson estimated that one or two technical and management personnel may be located in the County near the site.<sup>23</sup>

Mr. Paulson testified that any adverse effect on the local environment must be balanced against the broader context of global and U.S. environmental issues.<sup>24</sup> Finally, Mr. Paulson maintained that the proposed project will enhance electric competition and help meet the demand of consumers seeking a renewable energy choice.<sup>25</sup>

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<sup>13</sup> *Id.* at 4.

<sup>14</sup> *Id.* at 5.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* at 6.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.* at 7.

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> *Id.* at 8.

<sup>23</sup> *Id.*

<sup>24</sup> *Id.* at 10.

<sup>25</sup> *Id.* at 10-11.

**Dr. Paul Kerlinger** testified on the potential impact of the proposed project on birds.<sup>26</sup> Dr. Kerlinger sponsored four reports.<sup>27</sup> The first report was the Phase I Avian Assessment, which was designed to determine the potential for risk to birds at the proposed site as well as recommend measures to avoid, minimize or mitigate potential impacts.<sup>28</sup> Dr. Kerlinger reported that the proposed project would have no adverse impacts with regard to endangered or threatened species.<sup>29</sup> For instance, for Bald Eagles, Dr. Kerlinger found:

Available data indicate that the federally threatened Bald Eagle has not been recorded nesting in Highland County or surrounding areas, nor is there significant aquatic habitat for this species in the Project vicinity. Therefore, the likelihood of Bald Eagles using the Project site or airspace on a regular basis is very low. In any event, Bald Eagles are not known to be particularly susceptible to colliding with structures such as wind turbines . . . or communication towers . . . .<sup>30</sup>

With respect to migratory birds, Dr. Kerlinger concluded that the proposed project site would not attract migratory waterfowl or other water birds, and that nocturnal songbirds can be expected over a broad front and occur at high altitudes, well above the proposed site.<sup>31</sup> For migratory hawks, Dr. Kerlinger acknowledged that hawks may occasionally concentrate along Allegheny Mountain during fall migration, but at significantly less numbers than at sites considered to be more significant hawk watches fifty miles to the east-southeast of the proposed project site.<sup>32</sup>

Regarding nesting birds, Dr. Kerlinger observed that agricultural grassland habitat is suitable to a number of grassland birds including Eastern Meadowlark, Bobolink, Savannah Sparrow, Vesper Sparrow, Horned Lark, and Grasshopper Sparrow.<sup>33</sup> Dr. Kerlinger acknowledged the remote possibility of the breeding or nesting at the site by the threatened Loggerhead Shrike, Upland Sandpiper, special-concern species Dickcissel, Hermit Thrush, Magnolia Warbler, Winter Wren, and Brown Creeper.<sup>34</sup>

With respect to wintering birds, Dr. Kerlinger found only the special-concern species Northern Harrier might possibly forage at the proposed project site.<sup>35</sup>

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<sup>26</sup> Exhibit No. 22, at 2.

<sup>27</sup> *Id.*

<sup>28</sup> *Id.* at 3, Attached Exhibit B.

<sup>29</sup> *Id.* at 4.

<sup>30</sup> *Id.*

<sup>31</sup> *Id.* at 5.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.* at 5-6.



Dr. Kerlinger testified that the proposed project may displace some of the grassland nesting species noted above and to a lesser degree, some woodland and woodland-edge nesting species.<sup>36</sup> Dr. Kerlinger stated that fatality numbers and species impacted at the proposed project are likely to be similar to those found at existing Midwestern and Eastern U.S. projects, and are not likely to be biologically significant.<sup>37</sup> In his Phase I Avian Assessment, Dr. Kerlinger's recommendations included: (i) underground electrical lines between turbines; (ii) free-standing and unguyed permanent meteorology towers; (iii) minimally sized roads and turbine pads; and (iv) minimal lighting of turbines and other infrastructure.<sup>38</sup>

The second report presented by Dr. Kerlinger was the Night Migrating Bird Assessment, which assessed the potential for collision risk to night migrating birds at the proposed project.<sup>39</sup> At the heart of the report was a radar study conducted by ABR, Inc., a company that Dr. Kerlinger described as having conducted radar studies at wind power sites dating back to 1994 and has conducted field research for various state and federal agencies, including the U.S. Fish and Wildlife Service and non-profit organizations such as The Nature Conservancy.<sup>40</sup> Data from the fall radar study showed the proposed Highland site to have the highest fall passage rate of the eastern sites reported.<sup>41</sup>

<b>Site</b>	<b>Mean Passage Rate Per Kilometer</b>	<b>Mean Altitude of Flight Above Ground Level</b>	<b>Below Rotor Height of 410 feet</b>
Highland Wind, VA	385 targets	1,450 feet	11.5%
Liberty Gap, WV	229 targets	1,797 feet	8.0%
Mount Storm, WV	220-292 targets	1,401-1,548 feet	≈16.0%
Dans Mountain, MD	188 targets	1,778 feet	7.0%
Casselman, PA	174 targets	1,430 feet	8.0%
Martindale, PA	187 targets	1,469 feet	8.0%
Chautauqua, NY	238 targets	1,745 feet	4.0%
Flat Rock, NY	158 targets	1,361 feet	8.0%
Prattsburgh, NY	200 targets	1,197 feet	9.0%
Searsburg, VT	178 targets	1,659 & 2,047 feet	0.1% - 5.0%
Sheffield, VT	114 targets	1,857 feet	1.0%

Dr. Kerlinger estimated that the mortality for songbirds and similar small birds at the proposed site would be four to seven birds per turbine per year.<sup>42</sup> Dr. Kerlinger concluded that such a level of mortality would not be biologically significant.<sup>43</sup>

<sup>36</sup> *Id.* at 6.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.* at 6-7.

<sup>39</sup> *Id.* at 7, Attached Exhibit C.

<sup>40</sup> *Id.* at 7.

<sup>41</sup> *Id.* Attached Exhibit C, at 7, 18.

<sup>42</sup> *Id.* at 8.

<sup>43</sup> *Id.*

In his third report, Dr. Kerlinger conducted an FAA Lighting Assessment to determine whether the use of flashing red strobe-like L-864 lights on wind turbines increases the risk of collision by attracting or disorienting night migrating birds.<sup>44</sup> Dr. Kerlinger testified that data from sixteen different wind power sites do not suggest that the flashing red L-864 lights attract or disorient night migrants.<sup>45</sup>

No fatality event involving large numbers of birds has ever been reported from these or other structures when they are lit with L-864 flashing red lights nor is there a significant difference in fatality rates between turbines at the same site that are lit with L-864 red flashing lights and turbines without lights.<sup>46</sup>

Dr. Kerlinger's fourth report is an FAA Lighting Assessment to determine whether the use of flashing red L-864 lights on wind turbines increases the risk of collision by attracting or disorienting bats.<sup>47</sup> Based on data of bat fatalities at seven wind projects located across the United States, Dr. Kerlinger concluded there was no evidence that turbines equipped with FAA L-864 lights elevated fatality rates over turbines without such lighting.<sup>48</sup> Dr. Kerlinger noted that at the Mountaineer site in West Virginia, moth activity and consequently bat activity was slightly greater at turbines with such lights, but the number of fatalities at these turbines were not statistically greater than at turbines without such lights.<sup>49</sup>

**Dr. D. Scott Reynolds** presented a report titled, "An Overview of the Current State of Knowledge of Bats with a Specific Reference to the Potential Impacts of Wind Power" ("*Overview of Bats Report*").<sup>50</sup> Dr. D. Scott Reynolds testified that the *Overview of Bats Report* was based on: (i) available bat literature and databases, in both Virginia and West Virginia; (ii) consultation with Craig Stihler of the West Virginia Division of Natural Resources and Richard Reynolds of DGIF; and (iii) literature, reports, studies and databases concerning the impact of wind turbines on bats.<sup>51</sup> In his *Overview of Bats Report* Dr. D. Scott Reynolds stated that "[s]erious concern has been raised over the level of bat mortality experienced at several sites in the eastern United States, and existing data suggest eastern wind development sites experience higher rates of bat mortality."<sup>52</sup> Indeed, the *Overview of Bats Report* showed the estimated bat mortality at the Mountaineer Wind facility in West Virginia to be between 38 and 47.5 bats per turbine per migratory season.<sup>53</sup> Dr. D. Scott Reynolds concluded that the proposed project is

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<sup>44</sup> *Id.* at 9, Attached Exhibit D.

<sup>45</sup> *Id.* at 9.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.* at 10, Attached Exhibit E.

<sup>48</sup> *Id.* at 10.

<sup>49</sup> *Id.*

<sup>50</sup> Exhibit No. 49, Attached Exhibit B.

<sup>51</sup> Exhibit No. 49, at 2.

<sup>52</sup> *Id.* Attached Exhibit B, at 13.

<sup>53</sup> *Id.* Attached Exhibit B, at 14.

unlikely to have a significant adverse effect on the population of endangered species such as the Indiana Bat, the Gray Bat, and the Virginia Big-Eared Bat.<sup>54</sup> Dr. Scott Reynolds maintained “there is currently no documentation of turbine-related mortality for any threatened or endangered species of bats at any wind project in the eastern United States.”<sup>55</sup>

Dr. D. Scott Reynolds recommended that bat-related research focus on: (i) monitoring bat activity at the proposed site during the spring and fall migration period; (ii) determining whether summer populations of bats are utilizing the proposed project area; (iii) designing a post-construction mortality survey that describes the total level of bat mortality and develops meteorological predictors of high bat activity; and (iv) developing deterrent technologies to reduce total bat mortality.<sup>56</sup> Finally, Dr. D. Scott Reynolds maintained that bat any related conditions of approval should be limited to post-construction mortality surveys.<sup>57</sup>

**Dr. Edwin D. Michael** presented a report titled, “The Northern Flying Squirrel Survey at Site of Proposed Highland New Wind Development, Highland County, Virginia.”<sup>58</sup> Dr. Michael attempted, unsuccessfully, to live trap Northern Flying Squirrels for ten nights from September 18, 2005, to October 8, 2005.<sup>59</sup> During that time, Dr. Michael confirmed setting 100 traps and capturing eight chipmunks, five red squirrel, one gray squirrel, and three Southern Flying Squirrels.<sup>60</sup> Dr. Michael testified that no Northern Flying Squirrels were captured and that suitable habitat for the Northern Flying Squirrel does not exist on Red Oak Knob or along Tamarack Ridge.<sup>61</sup>

### **Local Hearings – March 13-14, 2006**

During the local hearings held on March 13 and 14, 2006, in the Highland Elementary School gymnasium, Monterey, Virginia, sixty-six public witnesses appeared. A summary of their testimony, in the order they appeared, is provided below.

**Sandy Hevener**, of Blue Grass, Virginia, opposed the project.<sup>62</sup> Ms. Hevener contended there was strong opposition to the local permit and that the promised economic benefit to the County remains an unknown.<sup>63</sup> Ms. Hevener testified that the project jeopardizes the income she earns from photographing the natural beauty of Highland County and its ridgetops.<sup>64</sup> Ms. Hevener asserted that the proposed wind turbines would be visible to a large portion of the

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<sup>54</sup> Exhibit No. 49, at 3.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> *Id.*

<sup>58</sup> Exhibit No. 24, Attached Exhibit B.

<sup>59</sup> Exhibit No. 24, at 2.

<sup>60</sup> *Id.* Attached Exhibit B, at 6.

<sup>61</sup> Exhibit No. 24, at 3.

<sup>62</sup> S. Hevener, Tr. at 8-9.

<sup>63</sup> *Id.* at 10.

<sup>64</sup> *Id.* at 13.

county, including from her house.<sup>65</sup> Ms. Hevener questioned the environmental impact the proposed project would have on endangered species, such as the Northern Flying Squirrel and on birds and bats.<sup>66</sup> Ms. Hevener stated that she has seen Bald Eagles fly over the site and Bald Eagles and their young near her home.<sup>67</sup> As for the need for wind power as an alternative to fossil fuels, Ms. Hevener maintained that more could be accomplished by “using what I call a solar clothes dryer, you know, hanging clothes up on the line.”<sup>68</sup>

**Andrew Luther**, of Hightown, Virginia, offered to provide a free analysis of any business plan that may be offered in support of the project.<sup>69</sup> Mr. Luther expressed concern for the political risk, or risk of lost government incentives, and the risk of obsolescence brought about by the development of competing technologies, such as solar technologies.<sup>70</sup> Mr. Luther testified that solar dishes, which are approximately thirty-six feet in diameter and contain ninety reflective mirrors used to heat hydrogen gas to drive an electric generator, are available today.<sup>71</sup> Mr. Luther contended that a solar dish farm 100 miles by 100 miles and located in the southwestern United States, could produce enough electricity for the entire United States.<sup>72</sup> Mr. Luther documented plans by Southern California Edison to build a solar dish farm in the Mojave Desert that will produce 850 megawatts by 2008, and for San Diego Gas & Electric to build another solar dish farm that may grow to 900 megawatts.<sup>73</sup> Mr. Luther asserted that solar power has advantages over wind power in that it is more abundant, peaks at the same time as the demand for electricity, and provides “wholesale quantities” of electricity.<sup>74</sup> In summary, Mr. Luther asked the Commission if it “want[ed] to burden the citizens, as well as the taxpayers, of Virginia with a 19<sup>th</sup> century, antiquated technology, specifically wind energy, when there is a killer application that will make the current wind technology obsolete in the near future?”<sup>75</sup>

**Jacob Hevener**, of Hightown, Virginia, testified that increases in land values, and the resulting property taxes, make it difficult for retired farmers to retain their land.<sup>76</sup> Mr. Hevener stated that he has toured windmills in Somerset, Pennsylvania, and Tucker County, West Virginia.<sup>77</sup> Based on what he has seen, Mr. Hevener supported construction of windmills in

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<sup>65</sup> *Id.* at 13-15.

<sup>66</sup> *Id.* at 16-18.

<sup>67</sup> *Id.* at 18-19.

<sup>68</sup> *Id.* at 20.

<sup>69</sup> Luther, Tr. at 21-23.

<sup>70</sup> *Id.* at 23-27.

<sup>71</sup> *Id.* at 29-32.

<sup>72</sup> *Id.* at 33.

<sup>73</sup> *Id.* at 34-35.

<sup>74</sup> *Id.* at 36.

<sup>75</sup> *Id.* at 37.

<sup>76</sup> J. Hevener, Tr. at 43.

<sup>77</sup> *Id.* at 44-45.

Highland County.<sup>78</sup> Mr. Hevener contended that farmers need other alternatives to earn income from their land to pay property taxes.<sup>79</sup>

**G. K. McClung**, of Monterey, Virginia, maintained that he wrote the first local anti-wind turbine letter to the editor in the local newspaper.<sup>80</sup> Mr. McClung stated these so-called “farms” are designed to take advantage of tax credits and tax shelters, and will result in “the permanent and widespread destruction of unspoiled lands.”<sup>81</sup> Mr. McClung testified that before permitting this project, thorough studies should be made of the possible losses of wildlife, including endangered species; potential construction run-off and pollution of wells; and damage to tourism.<sup>82</sup> Mr. McClung asserted that this project is the first of many planned wind projects.<sup>83</sup>

**Rick Lambert**, of Monterey, Virginia, testified that he was a member of the Virginia Highlands Grotto of the National Speleological Society, a local caving club.<sup>84</sup> Mr. Lambert offered nine comments on the report, “An Overview of the Current State of Knowledge of Bats with Specific Reference to the Potential Impacts of Wind Power, Highland New Wind Project, Highland County, Virginia.”<sup>85</sup> First, Mr. Lambert contended Hupman’s Saltpeter Cave is located in Highland County, not Bath County as provided in the report.<sup>86</sup> Second, Mr. Lambert found the report’s claim that there are no known Indiana Bat maternity colonies or hibernacula in Highland County to be false.<sup>87</sup> Third, Mr. Lambert maintained that the report is incorrect in stating that only two of the eight counties known to contain Indiana Bat hibernacula are within fifty miles of the project site, as there are eight counties in Virginia and West Virginia within fifty miles of the project site that contain Indiana Bat hibernacula.<sup>88</sup> Fourth, Mr. Lambert pointed out that the project site lies within fifty miles of twenty-nine Indiana Bat hibernacula caves, which represents sixty-nine percent of the total known Indiana Bat hibernacula in Virginia and West Virginia.<sup>89</sup> Fifth, Mr. Lambert testified that Indiana Bat populations are declining nationally and regionally, yet less than twenty-eight miles from the project site is a cave wherein the numbers on Indiana Bats have almost doubled over the prior fifteen years and now represent approximately three percent of the entire known population.<sup>90</sup> Sixth, Mr. Lambert argued that the Virginia Big-Eared Bats in the Virginia counties of Highland and Rockingham, along with the Virginia Big-Eared Bats in the West Virginia counties of Tucker, Grant, and Pendleton, are

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<sup>78</sup> *Id.* at 46.

<sup>79</sup> *Id.* at 47.

<sup>80</sup> McClung, Tr. at 49.

<sup>81</sup> *Id.* at 50.

<sup>82</sup> *Id.* at 51-52.

<sup>83</sup> *Id.* at 52.

<sup>84</sup> Lambert, Tr. at 54.

<sup>85</sup> Exhibit No. 49, Attachment B.

<sup>86</sup> Lambert, Tr. at 56-57.

<sup>87</sup> *Id.* at 57.

<sup>88</sup> *Id.* at 57-58.

<sup>89</sup> *Id.* at 59.

<sup>90</sup> *Id.* at 59-60.

an isolated sub-population.<sup>91</sup> Seventh, Mr. Lambert asserted that there are eight Virginia Big-Eared Bat caves in Highland County, and argued that this indicates Virginia Big-Eared Bats are more widely distributed than initially thought and closer to the Highland Wind project site than initially reported.<sup>92</sup> Eighth, Mr. Lambert stated that there are nineteen caves in Pendleton County, West Virginia, that are used by Virginia Big-Eared Bats, with the major caves less than twenty-five miles from the proposed Highland Wind site.<sup>93</sup> Ninth, Mr. Lambert testified that the proposed Highland Wind site would be within the mean migratory maximum range of all but four of the known Virginia Big-Eared Bat caves in the region and that Virginia Big-Eared Bats are attracted to cleared areas at high elevations.<sup>94</sup>

In addition, Mr. Lambert contended that the location of the proposed Highland Wind site is bio-geographically dissimilar from other wind projects and is more likely than Mountaineer to have a negative impact on Indiana Bats.<sup>95</sup> Finally, Mr. Lambert testified that the proposed project has failed to follow the U.S. Fish and Wildlife Service guidelines for siting and evaluation of wind energy sites.<sup>96</sup> Specifically, Mr. Lambert argued that the proposed location fails to avoid known bat hibernation, breeding and maternity/nursery colonies; fails to determine the presence and magnitude of bird and bat migration based on three years of data; and failed to include federal or state agency wildlife professionals in its pre-development evaluation team.<sup>97</sup>

**Lawrence C. Held**, of Monterey, Virginia, stated that his wife believed an industrial wind development would harm wildlife, especially birds and bats.<sup>98</sup> Mr. Held noted Highland County's mountain roads.<sup>99</sup> Mr. Held expressed concern for the delivery of the equipment necessary to build the wind turbines.<sup>100</sup> Mr. Held asked who will decide when highways will be blocked to transport the oversized tower components and who will pay for the damage to our roads?<sup>101</sup> In addition, Mr. Held questioned the impact blasting for foundations would have on well water, springs, downhill streams, nearby caves and wildlife.<sup>102</sup> Finally, Mr. Held contended that there are more effective ways of reducing global warming, such as through replacing regular incandescent light bulbs with efficient compact fluorescent bulbs.<sup>103</sup>

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<sup>91</sup> *Id.* at 60.

<sup>92</sup> *Id.* at 61-62.

<sup>93</sup> *Id.* at 62-63.

<sup>94</sup> *Id.* at 63-64.

<sup>95</sup> *Id.* at 65-66.

<sup>96</sup> *Id.* at 68-69.

<sup>97</sup> *Id.* at 69-70.

<sup>98</sup> Held, Tr. at 80-81.

<sup>99</sup> *Id.* at 81.

<sup>100</sup> *Id.* at 81-82.

<sup>101</sup> *Id.* at 83.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.* at 84-85.

**Eve Firor**, of Franklin, West Virginia, opposed the Highland Wind project and the proposed Liberty Gap US Wind Force project in Pendleton County, West Virginia.<sup>104</sup> Ms. Firor testified that scientists do not have a clear understanding of the true impacts to wildlife from wind power.<sup>105</sup> Ms. Firor contended that the proposed Highland Wind site will imperil endangered bats such as the Indiana and Virginia Big-Eared Bats.<sup>106</sup> Ms. Firor expressed concern for the cumulative impact of wind energy generation facilities in the Mid-Atlantic.<sup>107</sup> Ms. Firor requested that the Commission delay consideration of the application of Highland Wind until the Commission promulgates comprehensive siting regulations for wind projects, similar to those adopted by the West Virginia Public Service Commission.<sup>108</sup>

**Jim Hughes**, of James City County, Virginia, stated that he owns forty-four acres in Halterman Hollow on Monterey Mountain, and is opposed to an industrial wind facility in his backyard.<sup>109</sup> Mr. Hughes expressed concern for the impact of this and future projects on the viewshed.<sup>110</sup> Mr. Hughes argued destruction of the viewshed will have a negative economic impact on property values and tourism.<sup>111</sup> Mr. Hughes predicted a potential loss in county revenues from lowered property values, reduced tourism, and less movement of new people into the County.<sup>112</sup> Mr. Hughes maintained that the benefits of this project will likely go to the northeastern states that have renewable energy portfolio standards.<sup>113</sup> In addition, Mr. Hughes raised questions regarding the application, including decommissioning and the impact of the proposed facility on Camp Allegheny, a Civil War historic site located within 1.5 miles of the proposed project.<sup>114</sup>

Though he opposed the wind facility, Mr. Hughes recommended imposing the following conditions if the project is approved. First, Highland Wind should be required to conduct three-year studies on: (i) bat and bird mortality; (ii) degradation to the natural habitat; (iii) economic impact on Highland County's tourism, population growth, and housing development.<sup>115</sup> Second, a moratorium on approving future industrial wind projects should be implemented for at least three years.<sup>116</sup> Third, a decommissioning fund should be established.<sup>117</sup>

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<sup>104</sup> Firor, Tr. at 85-86.

<sup>105</sup> *Id.* at 86-87.

<sup>106</sup> *Id.* at 87-88.

<sup>107</sup> *Id.* at 89.

<sup>108</sup> *Id.* at 89-91.

<sup>109</sup> Hughes, Tr. at 92.

<sup>110</sup> *Id.* at 93.

<sup>111</sup> *Id.* at 94-95.

<sup>112</sup> *Id.* at 95-96.

<sup>113</sup> *Id.* at 97.

<sup>114</sup> *Id.* at 98.

<sup>115</sup> *Id.* at 99-100.

<sup>116</sup> *Id.* at 100.

<sup>117</sup> *Id.* at 100-01.

**Ann Wefer**, of McDowell, Virginia, contended that the death toll on migratory birds attributed to wind turbines should include birds that die at breeding sites due to fatigue and stress.<sup>118</sup> Ms. Wefer likened the approval of this project in Highland County to the state of Arizona approving their first industrial wind turbines on the rim of the Grand Canyon, just to see how well it works.<sup>119</sup>

**Orren L. Royal, M.D.**, of Dublin, Virginia, strongly opposed the siting of industrial wind turbines in Highland County and argued that “[w]ind towers 100 feet taller than the Statue of Liberty would pollute the view of the vistas for which Highland is famous.”<sup>120</sup> Dr. Royal stated that wind turbines in Altamont Pass, California, have “killed more than 500 eagles, hawks, owls and other raptors every year.”<sup>121</sup> Dr. Royal testified that the blades of a wind turbine can reach speeds of 220 miles per hour, too fast for a bird’s retina to process.<sup>122</sup> Dr. Royal pointed out that at the Tucker County wind farm in West Virginia, during a six-week period in 2004, approximately 2,000 bats were killed. This is also the site of the largest known single-night songbird mortality, which occurred on a foggy night during a spring migration.<sup>123</sup> Dr. Royal asserted that banning wind turbines all along the Allegheny Front would be a major contribution to the stability of our planet.<sup>124</sup>

**Brian Richardson**, of Monterey, Virginia, stated that he is an attorney and the president of the Highland County Chamber of Commerce.<sup>125</sup> Mr. Richardson testified that since the County approved the wind farm, he has experienced a decline in the number of relocation packet requests from 200 per year to about 50 per year, and a drop in his real estate practice.<sup>126</sup> Mr. Richardson compared total land sales for the five months following approval of the turbines to the same five-month period for the prior year and found for the period after approval, the number of real estate transactions declined from forty-five to thirty-eight, and the dollar value of transactions declined from \$8,539,000 to \$3,910,000.<sup>127</sup> Based on the relocation packet requests and real estate transaction data, Mr. Richardson concluded that the proposed project “has already had some adverse effect on my livelihood and the well-being of the County.”<sup>128</sup>

**Austin L. Shepherd**, of Monterey, Virginia, testified that while he was on the Highland Industrial Development Authority (“Authority”), that organization recommended unanimously against changing the existing comprehensive plan and zoning ordinance to permit the height of

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<sup>118</sup> Wefer, Tr. at 102.

<sup>119</sup> *Id.* at 103.

<sup>120</sup> Royal, Tr. at 105.

<sup>121</sup> *Id.* at 106.

<sup>122</sup> *Id.* at 107.

<sup>123</sup> *Id.* at 108.

<sup>124</sup> *Id.* at 110.

<sup>125</sup> Richardson, Tr. at 112.

<sup>126</sup> *Id.*

<sup>127</sup> *Id.* at 113.

<sup>128</sup> *Id.* at 113-14.



structures to be greater than 150 feet.<sup>129</sup> Mr. Shepherd saw the project producing only one job after completion.<sup>130</sup> Mr. Shepherd believed that the project would permit wind turbines to spread to every ridgetop in Highland County and Virginia.<sup>131</sup> Therefore, Mr. Shepherd requested that the Application be denied.<sup>132</sup>

**Barbara Downs**, of Jackson River Road, Virginia, opposed the project due to concerns about the impact on the scenic areas and wildlife, and the precedent of granting this application.<sup>133</sup> Ms. Downs also expressed concerns about what would happen in twenty years or when the subsidies end.<sup>134</sup>

**Tim Downs**, of Jackson River Road, Virginia, asked that the scope of review of this project focus on whether there is “a” material adverse effect and whether the project is adverse to the public interest, with particular emphasis upon the environment.<sup>135</sup> Mr. Downs recommended the use of a very high standard of review for changing the current status quo, because once changed, current ecology, economics, and society cannot be brought back.<sup>136</sup>

**Kathy Patterson**, of Highlands Turnpike, Virginia, stated that she will be able to see the tops of the turbines from her home.<sup>137</sup> Ms. Patterson testified that she and her husband retired to Highland County to enjoy the peaceful, pristine landscape.<sup>138</sup> Ms. Patterson asked if we should “[s]acrifice our chosen future so that others can waste electricity in other places?”<sup>139</sup> Ms. Patterson asserted that the project should not be considered until the following questions can be answered:

Can you assure us that no eagles will die, that no bats that eat bugs and mosquitoes will vanish? Can you assure us that our water from caves that riddle this county will not be affected by the blasting? Will our right to quiet enjoyment be forever lost?<sup>140</sup>

**Margaret Boesch**, of Hightown, Virginia, asked that the Commission hear the concerns expressed by many landowners regarding the potential destruction of the scenic views that make Highland County such a great Virginia natural resource.<sup>141</sup>

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<sup>129</sup> Shepherd, Tr. at 117.

<sup>130</sup> *Id.*

<sup>131</sup> *Id.*

<sup>132</sup> *Id.*

<sup>133</sup> B. Downs, Tr. at 119.

<sup>134</sup> *Id.* at 120.

<sup>135</sup> T. Downs, Tr. at 121-23.

<sup>136</sup> *Id.* at 123-24.

<sup>137</sup> Patterson, Tr. at 126.

<sup>138</sup> *Id.* at 127.

<sup>139</sup> *Id.*

<sup>140</sup> *Id.* at 128.

<sup>141</sup> Boesch, Tr. at 129-30.

**Carolyn Ingle**, of Franklin, West Virginia, agreed with everyone who sees the danger of the turbines and opposes them.<sup>142</sup> Ms. Ingle testified that with global warming, bats are becoming more important to human health as they eat moths and mosquitoes, which carry diseases such as West Nile Virus, malaria, and Asian bird flu.<sup>143</sup> Ms. Ingle maintained that undeveloped land, not used for human gain or money, is not wasted.

[I]t's an ecosystem, and there are other beings in wild areas that are important, not to everyone, but they're important in the whole system of ecology. . . . [N]ature and its beauty give spiritual uplift to many, which is not related to money, but it's still an inherent value. Natural areas are God's gardens that are planted as they will be.<sup>144</sup>

**John R. Sweet**, of Mustoe, Virginia, addressed various statements in the Application of Highland Wind. Mr. Sweet testified that wind turbines are an inefficient means of generating electricity in the Appalachian region, with average capacity factors of about thirty percent, and less than half that in the summer when demand is greatest.<sup>145</sup> Mr. Sweet contended that wind projects are never cost effective and the wind industry lives off federal subsidies that cover as much as sixty-five percent of the capital costs of a project.<sup>146</sup> Mr. Sweet asserted that the wind industry overstates the environmental benefits of wind turbines and ignores the serious impacts of wind turbines on wildlife, noise and light pollution, and on viewsheds.<sup>147</sup> Mr. Sweet stated that the amount of local tax associated with the project is unknown and if the loss of taxes from upscale homes not built due to the turbines is considered, the result could be a net loss of tax revenues.<sup>148</sup> Mr. Sweet maintained that this project has received overwhelming public opposition from its inception.<sup>149</sup> Indeed, Mr. Sweet argued that this project was approved by a single vote on the County Board of Supervisors, which overruled the will of the citizenry.<sup>150</sup> Mr. Sweet recommended that the Application be denied and that it be made clear that future wind projects in Virginia must be preceded by extensive studies of wildlife impacts, development of measures to mitigate those impacts, and a detailed scoring system for evaluating wind energy sites statewide.<sup>151</sup>

**Scott Foster**, of Hightown, Virginia, agreed with the statement in the Application that the proposed turbines will not be seen from the parking lot and visitors' interpretive area of Camp

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<sup>142</sup> Ingle, Tr. at 131.

<sup>143</sup> *Id.* at 131-32.

<sup>144</sup> *Id.* at 133.

<sup>145</sup> Sweet, Tr. at 135-36.

<sup>146</sup> *Id.* at 136.

<sup>147</sup> *Id.*

<sup>148</sup> *Id.* at 136-37.

<sup>149</sup> *Id.* at 138.

<sup>150</sup> *Id.* at 139.

<sup>151</sup> *Id.* at 139-40.

Allegheny, but pointed out that Tamarack Ridge can be seen from the battlefield.<sup>152</sup> Mr. Foster testified that there are no modern incongruities over the entire viewshed.<sup>153</sup> Mr. Foster questioned whether the few megawatts that can be generated from the proposed wind turbines are as important to the electric power industry “as the rare quality of this historic site [is] to Pocahontas and Highland Counties?”<sup>154</sup>

**Rick Webb**, of Highland County, Virginia, testified that he is a senior scientist with the Environmental Sciences Department at the University of Virginia and a member of a National Academy of Sciences committee looking at the effects of wind projects.<sup>155</sup> Mr. Webb offered his comments on behalf of Virginia Wind, a not-for-profit organization addressing the need for effective environmental assessment prior to utility-scale development in the western Virginia and central Appalachian region.<sup>156</sup> Mr. Webb maintained that the proposed project “presents a risk of unacceptable environmental harm and . . . that the potential benefits of the project are minimal.”<sup>157</sup> Mr. Webb pointed to Highland Wind’s finding that nocturnal passage rates of birds and bats at the proposed project site were the highest observed in the eastern United States as an indicator of the high risk to wildlife.<sup>158</sup> Mr. Webb agreed with state and federal wildlife agencies that have recommended multiple-year, multiple-season, pre-permitting studies, and argued that such studies are necessary for the development of mitigation strategies.<sup>159</sup> Mr. Webb contended that the proposed project represents a risk to raptors, such as Golden and Bald Eagles, Red-Tail Hawks, and Kestrels; and to endangered species, such as the Virginia Northern Flying Squirrel, the Indiana Bat, the Virginia Big-Eared Bat, and the Southern Water Shrew, which have been documented in the vicinity of the proposed project.<sup>160</sup> Mr. Webb criticized the environmental studies undertaken on behalf of Highland Wind for failing to consult with and involve agency wildlife specialists.<sup>161</sup> Mr. Webb asserted there was a need to study the cumulative impact of wind projects in the region prior to further permitting and raised concerns regarding potential pollution of the Laurel Fork watershed.<sup>162</sup>

As to the energy supply benefits of wind power, Mr. Webb calculated that it would take 3,752 wind turbines, covering 469 miles of ridgetops, to replace the electricity generated at the North Anna Nuclear Power Plant.<sup>163</sup> Mr. Webb testified that the large footprint required to provide wind generation is compounded by the seasonality of wind power, and that wind power

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<sup>152</sup> S. Foster, Tr. at 141-42.

<sup>153</sup> *Id.* at 143.

<sup>154</sup> *Id.* at 144.

<sup>155</sup> Webb, Tr. at 145-46.

<sup>156</sup> *Id.* at 146.

<sup>157</sup> *Id.*

<sup>158</sup> *Id.* at 147-48.

<sup>159</sup> *Id.* at 148.

<sup>160</sup> *Id.* at 149-50.

<sup>161</sup> *Id.* at 150.

<sup>162</sup> *Id.* at 151-52.

<sup>163</sup> *Id.* at 153-54.

is least available when demand for electricity is greatest.<sup>164</sup> Furthermore, Mr. Webb argued that wind energy will have little if any impact on reducing emissions, as electricity generated by wind will likely displace gas-fired generation, not coal.<sup>165</sup>

**Diana Dascalu**, of Arlington, Virginia, stated that she is a staff attorney for the Chesapeake Climate Action Network.<sup>166</sup> Ms. Dascalu testified in support of the proposed facility and focused on global warming, our addiction to coal and other fossil fuels, and preservation of human and animal life and habitat in Virginia.<sup>167</sup> Ms. Dascalu argued that global warming is the most significant environmental problem of our time and is responsible for destructive hurricanes and increases in ocean levels.<sup>168</sup> Ms. Dascalu asserted that the electric grid is a zero sum game; each megawatt generated by wind eliminates a corresponding megawatt that would have been produced from fossil fuels.<sup>169</sup> Ms. Dascalu contended that the real killer of birds and bats is the loss of habitat caused by global warming.<sup>170</sup> Moreover, Ms. Dascalu maintained that recent studies show that wind turbines cause very few bird deaths each year as migratory birds fly well above the rotation blades of wind turbines.<sup>171</sup> Ms. Dascalu testified “[t]he effects of climate change to Virginia’s ecosystems, people and property are astounding, and by making the switch to renewable energy, such as wind power, project by project, we can stop or slow these effects before it’s too late.”<sup>172</sup>

Ms. Dascalu also focused on coal’s direct negative impacts on the health and welfare of Virginia.<sup>173</sup> Ms. Dascalu contended that mountaintop removal practices associated with coal mining “are wreaking havoc on the waterways and entire ecosystems where many endangered and threatened species reside.”<sup>174</sup>

**Daniel Foster**, of Monterey, Virginia, stated that he had many environmental concerns regarding the proposed project.<sup>175</sup> Mr. Foster agreed with state environmental agencies that called for more information.<sup>176</sup> As a director on the Mountain Soil and Water Conservation District, Mr. Foster expressed specific concern regarding the impact of the project on Laurel

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<sup>164</sup> *Id.* at 155-56.

<sup>165</sup> *Id.* at 159-63.

<sup>166</sup> Dascalu, Tr. at 196.

<sup>167</sup> *Id.* at 196-97.

<sup>168</sup> *Id.* at 197.

<sup>169</sup> *Id.* at 199.

<sup>170</sup> *Id.* at 200-01.

<sup>171</sup> *Id.* at 201.

<sup>172</sup> *Id.* at 206.

<sup>173</sup> *Id.*

<sup>174</sup> *Id.* at 207.

<sup>175</sup> D. Foster, Tr. at 224.

<sup>176</sup> *Id.* at 224-25.

Fork, which runs through the project site.<sup>177</sup> Mr. Foster testified that many questions concerning Laurel Fork cannot be answered without the site plan.<sup>178</sup>

**Michael Veasey**, of Monterey, Virginia, corrected an earlier letter he had submitted to the Commission regarding provisions of NAFTA that supercede Virginia state law and the United States Constitution.<sup>179</sup> Mr. Veasey warned that the project may be purchased, eventually, by a multi-national corporation which could trigger application of some superceding authority.<sup>180</sup> Mr. Veasey pointed out that the tax credits related to this project were the product of the same lobbyist that crafted this country's energy policy in secrecy.<sup>181</sup>

**Elizabeth McClung**, of Hightown, strongly opposed the Application.<sup>182</sup> Ms. McClung questioned whether "the wholesale destruction of the Commonwealth's western viewshed and our beloved ecology in Highland County [is] equal to the importance of installing an experimental industrial complex?"<sup>183</sup> Ms. McClung stressed the need to investigate and consider historic and archeological resources in the area of the proposed site, along with viewsheds.<sup>184</sup> Ms. McClung suggested incorporating the public interest standard used by the Army Corps of Engineers, which includes consideration of cumulative impacts; wetlands; fish and wildlife; water quality; historic, cultural, scenic and recreational values; effects on limits of the territorial area; consideration of property ownership and other federal, state or local requirements; water supply and conservation; energy conservation and development; environmental benefits; economics; and mitigation.<sup>185</sup> Ms. McClung asserted that with the assistance of Highland County's Board of Supervisors, Highland Wind has ignored the outcry of the majority of county citizens.<sup>186</sup>

**Faye Caldwell**, of Fincastle, Virginia, opposed the proposed wind turbines.<sup>187</sup> Ms. Caldwell argued that the size of the wind turbines, the lack of harmony with the surroundings of the proposed site, and the low yield of energy "make these steel monsters not feasible for a beautiful area."<sup>188</sup> Ms. Caldwell expressed concern that approval of this Application will open the door to other wind projects, and related transmission lines, over mountaintops in the county.<sup>189</sup> Ms. Caldwell testified that she visited the wind turbines near Thomas, West Virginia,

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<sup>177</sup> *Id.* at 225.

<sup>178</sup> *Id.* at 226-27.

<sup>179</sup> Veasey, Tr. at 230.

<sup>180</sup> *Id.* at 231.

<sup>181</sup> *Id.* at 233.

<sup>182</sup> E. McClung, Tr. at 236.

<sup>183</sup> *Id.* at 236-37.

<sup>184</sup> *Id.* at 237.

<sup>185</sup> *Id.* at 240.

<sup>186</sup> *Id.* at 241.

<sup>187</sup> Caldwell, Tr. at 242.

<sup>188</sup> *Id.* at 243.

<sup>189</sup> *Id.* at 244-45.

and from two hundred feet away, experienced the vibrations, rumble, clicking and swishing.<sup>190</sup> Ms. Caldwell calculated that the project results in taxpayers paying approximately \$150,000 in interest per year per home supplied with power.<sup>191</sup> Finally, Ms. Caldwell stated “[o]ver 1400 voters out of 1700 registered voters, plus some out-of-county landowners, voted their opposition to this with petitions to the Board of Supervisors.”<sup>192</sup> Ms. Caldwell asked that the Commission listen to the people of Highland County.<sup>193</sup>

**Shawna Bratton**, of Staunton, Virginia, testified that the Application in this proceeding is inadequate to address the environmental impacts and the potential for economic damage by the proposed project.<sup>194</sup> Ms. Bratton maintained that the site’s habitat of spruce trees and open bald ridges is rare and is home to many unique species that do not exist in other areas of the state.<sup>195</sup> Ms. Bratton contended that studies conducted on behalf of Highland Wind were flawed as to the limited study period.<sup>196</sup> Ms. Bratton expressed concern over the possibility that Highland Wind would be required to tunnel through the Laurel Fork tributary.<sup>197</sup> In addition, Ms. Bratton observed that Highland Wind has failed to address the removal and disposal of turbines that become inoperable or damaged beyond repair.<sup>198</sup> Finally, Mr. Bratton asked that plans be made for soil removed in the process of setting the bases of the turbines.<sup>199</sup>

**Jonathan Miles**, of Harrisonburg, Virginia, stated that as a professor of integrated science and technology at James Madison University, he was well informed with respect to energy technologies.<sup>200</sup> Professor Miles supported the project and testified that the project “will magnify the impact of Senator Wagner’s energy policy, and will solidify the message that Virginia can indeed lead the way toward energy independence and a broader, cleaner, more secure, and more cost-effective energy portfolio.”<sup>201</sup> Professor Miles predicted that in five to ten years wind power may be less expensive than power generated from fossil fuels.<sup>202</sup> Professor Miles pointed out that last year nearly 12,000 megawatts of wind power was installed worldwide, a 43 percent increase over the previous year and reflects that wind power is the most cost-effective alternative energy source on a large scale.<sup>203</sup>

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<sup>190</sup> *Id.* at 245.

<sup>191</sup> *Id.* at 247.

<sup>192</sup> *Id.* at 248.

<sup>193</sup> *Id.*

<sup>194</sup> Shawna Bratton, Tr. at 250-51.

<sup>195</sup> *Id.* at 252.

<sup>196</sup> *Id.* at 253.

<sup>197</sup> *Id.* at 257.

<sup>198</sup> *Id.* at 258.

<sup>199</sup> *Id.* at 259.

<sup>200</sup> Miles, Tr. at 280.

<sup>201</sup> *Id.* at 283.

<sup>202</sup> *Id.* at 284-85.

<sup>203</sup> *Id.* at 291.

**Stuart L. Hall**, of Millboro, Virginia, spoke in favor of the project.<sup>204</sup> Mr. Hall testified that he struggles to pay the property taxes on his 600 acres.<sup>205</sup> Mr. Hall asserted that Mr. McBride should have the right to do what he needs to do to raise revenues to pay his taxes.<sup>206</sup>

**Ann Swain**, of Bolar, Virginia, opposed the project.<sup>207</sup> Ms. Swain testified that as a psychotherapist, she has learned that humans have an innate capacity to recognize the peacefulness that comes from a natural place.<sup>208</sup> Ms. Swain stated that “[t]here are many places where the natural harmony of the land no longer exists that would be great sites for wind towers . . . .”<sup>209</sup>

**Robert W. Maupin**, of Louisa, Virginia, stated that he planned to retire to Highland County in November 2006.<sup>210</sup> Mr. Maupin opposed the project and stated that the area should be protected from industrialization.<sup>211</sup>

**Chuck Neely**, of Ashland, Virginia, appeared in opposition to the project.<sup>212</sup> Mr. Neely testified that the county’s mission statement is about preserving Highland’s pristine beauty, unique way of life, and rural charm.<sup>213</sup> Mr. Neely testified that construction of the wind turbines will reduce property values and hurt development of the tourism industry.<sup>214</sup> Mr. Neely expressed concern regarding the eventual decommissioning of the turbines.<sup>215</sup>

**Linda Holman**, of Monterey, Virginia, testified that she and her husband own Cherry Hill Bed and Breakfast and the Gallery of Mountain Secrets, a gallery of art and fine crafts.<sup>216</sup> Ms. Holman maintained that both of her businesses depend on tourism and the unspoiled natural beauty of Highland County.<sup>217</sup> Ms. Holman expressed concern about the negative impact on her businesses if the industrial wind project is approved.<sup>218</sup>

**Sandy Bratton**, of Warm Springs, Virginia, opposed the project.<sup>219</sup> Ms. Bratton stated that her family owns 985 acres on a ridge that looks directly onto the proposed project sites.<sup>220</sup>

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<sup>204</sup> Hall, Tr. at 315.

<sup>205</sup> *Id.* at 316.

<sup>206</sup> *Id.*

<sup>207</sup> Swain, Tr. at 318.

<sup>208</sup> *Id.* at 319.

<sup>209</sup> *Id.* at 320.

<sup>210</sup> Maupin, Tr. at 322.

<sup>211</sup> *Id.*

<sup>212</sup> Neely, Tr. at 324.

<sup>213</sup> *Id.*

<sup>214</sup> *Id.* at 325.

<sup>215</sup> *Id.* at 327.

<sup>216</sup> Holman, Tr. at 329.

<sup>217</sup> *Id.* at 329-30.

<sup>218</sup> *Id.* at 330.

<sup>219</sup> Sandy Bratton, Tr. at 332.

Ms. Bratton contended that the people of Highland County oppose construction of the wind turbines, as she helped collect 1,246 signatures in opposition in a county with a population of less than 2,500.<sup>221</sup> Ms. Bratton expressed concern for wildlife, especially for the avian population.<sup>222</sup> Ms. Bratton testified that she has observed high-elevation nesters on her property during the summer and believes these birds use the ridgetops during migration.<sup>223</sup> Ms. Bratton asked that the property rights of adjoining and nearby landowners be considered and not be superseded by the McBride family.<sup>224</sup>

**Debora Ellington**, of Blue Grass, Virginia, disagreed with the statement in the Application that no Bald Eagles nest or winter in Highland County.<sup>225</sup> Ms. Ellington stated that she has observed Bald Eagles, as recently as February 7, 2006, at treetop height with nesting materials.<sup>226</sup> Based on her service on the Highland County Chamber of Commerce and as owner of Ginseng Mountain Farm, Store, and Lodging, Ms. Ellington testified that the construction of wind turbines will hurt tourism and businesses that rely on tourism.<sup>227</sup>

**Frances Davenport**, of Monterey, Virginia, opposed the proposed project.<sup>228</sup> Francese Davenport expressed concern for the ability of Highland County's volunteer fire department to fight any fires that may occur in the turbines.<sup>229</sup> In addition, Frances Davenport asked that the Commission examine the grounding of the turbines to protect against lightning strikes.<sup>230</sup>

**Larry M. Bandy**, of Hightown, Virginia, stated that he is a Civil War reenactor and he addressed the impact of the proposed project on Camp Allegheny.<sup>231</sup> Mr. Bandy testified that the focal point of Camp Allegheny, the gun emplacements, sit on a hill from which "you can see over the trees back toward the project."<sup>232</sup> Mr. Bandy contended that "[i]f the turbines can be seen from Camp Allegheny, they will destroy the special effect of this historic site, possibly the most pristine Civil War site in the East."<sup>233</sup>

**Clarissa M. Elliott**, of Monterey, Virginia, strongly opposed the construction of wind turbines on any ridge in Highland County.<sup>234</sup> Ms. Elliott raised concern regarding light pollution

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<sup>220</sup> *Id.* at 333.

<sup>221</sup> *Id.* at 335.

<sup>222</sup> *Id.*

<sup>223</sup> *Id.* at 335-36.

<sup>224</sup> *Id.* at 336.

<sup>225</sup> Ellington, Tr. at 341.

<sup>226</sup> *Id.*

<sup>227</sup> *Id.* at 342-45.

<sup>228</sup> Davenport, Tr. at 348.

<sup>229</sup> *Id.* at 348.

<sup>230</sup> *Id.* at 349.

<sup>231</sup> Bandy, Tr. at 352.

<sup>232</sup> *Id.*

<sup>233</sup> *Id.*

<sup>234</sup> Clarissa Elliot, Tr. at 353.



and the need to do more bird studies.<sup>235</sup> Ms. Elliott pointed out that Highland Wind conducted studies only in the fall, but it has been her experience that more birds are seen in the spring.<sup>236</sup> Ms. Elliot questioned whether the drilling or blasting to set the concrete foot of the wind turbines would have a negative impact on her water supply. Finally, Ms. Elliott raised a concern regarding the decommissioning of lines that may be erected by taking land through eminent domain.

**Judy Skeen**, of Monterey, Virginia, spoke on behalf of the “wild, beautiful world here and the bio-diversity of creatures and plants that inhabit Highland County.”<sup>237</sup> Ms. Skeen asserted that giant industrial structures are incompatible with the wildlife of Highland County.<sup>238</sup> Ms. Skeen supported the testimony of Ms. Ellington regarding the presence of eagles in Highland County, and added her own observations.<sup>239</sup> Ms. Skeen testified that she grows a great deal of her own food without the use of insecticides.<sup>240</sup> Ms. Skeen expressed concern for the many insect-feeding birds and bats that cannot recognize the dangers of wind turbines placed on their ancient flyways.<sup>241</sup> Ms. Skeen called for a delay in certification until studies on habitat impact and studies on migratory flyways are conducted by DGIF and the U.S. Fish and Wildlife Service.<sup>242</sup>

**E. W. Elliott**, of Monterey, Virginia, testified that he will have a perfect view of all of the proposed wind turbines and that he is one hundred percent opposed.<sup>243</sup>

**Diane Klein**, of Head Waters, Virginia, was appalled by the prospect of wind turbines in Highland County.<sup>244</sup> Based on her experience with the Highland Historical Society, Ms. Klein testified that most county residents and visitors oppose the proposed project.<sup>245</sup> Ms. Klein contended that the wind turbines offer too small of a gain in the move toward energy independence to justify “their destructive presence in this beautiful area.”<sup>246</sup>

**Nancy F. Witschey**, of Blue Grass, Virginia, testified that the Application for the proposed facility is contrary to the public interest.<sup>247</sup> In this regard, Ms. Witschey contended the proposed facility would: (i) downgrade the quality of life for adjoining landowners; (ii) encourage the construction of other wind projects; (iii) require the construction of new

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<sup>235</sup> *Id.* at 354.

<sup>236</sup> *Id.* at 355.

<sup>237</sup> Skeen, at 359.

<sup>238</sup> *Id.* at 360.

<sup>239</sup> *Id.* at 361.

<sup>240</sup> *Id.*

<sup>241</sup> *Id.* at 362.

<sup>242</sup> *Id.*

<sup>243</sup> E. W. Elliott, Tr. at 364.

<sup>244</sup> Klein, Tr. at 366.

<sup>245</sup> *Id.* at 367.

<sup>246</sup> *Id.*

<sup>247</sup> Witschey, Tr. at 369-70.

transmission lines; (iv) reduce property values; (v) damage wildlife, streams, and land; and (vi) mar the Commonwealth's ridgelines.<sup>248</sup> Ms. Witschey proposed that several conditions be added if the project is approved: (i) provide generous compensation to damaged neighbors; (ii) protect natural resources, such as Laurel Fork; (iii) protect Camp Allegheny; (iv) conduct studies and minimize the impact on wildlife; (v) set precedents for future wind turbine sites; and (vi) require eventual restoration of the land to its original state.<sup>249</sup>

**Laurie Berman**, of Hightown, Virginia, testified that she lives on top of Allegheny Mountain at 4,000 feet, near the Highland Wind's property, and wanted everyone to grasp that this area is special.<sup>250</sup> Ms. Berman stated that she understood the arguments regarding our energy dependencies, but recommended mandates on individuals and industry to reduce energy consumption.<sup>251</sup> Ms. Berman argued that it was crucial to our existence to keep our wild areas wild.<sup>252</sup> Ms. Berman maintained that Highland County is not responsible for global warming and emissions.<sup>253</sup> Indeed, Ms. Berman contended that the proposed project is too small to solve much of the global warming problem.<sup>254</sup>

Ms. Berman pointed out that Mr. McBride had other money-making schemes that have caused controversy, including a shooting range and clear cutting.<sup>255</sup> Ms. Berman testified that while Highland Wind may rightly assert that the proposed project site is not a pristine area, the surrounding lands, "both private and public, are in spectacular condition."<sup>256</sup>

Ms. Berman expressed concern regarding the use of this area as a flight training zone for fighter jets.<sup>257</sup> In addition, Ms. Berman questioned whether the proposed wind turbines would have an adverse effect on the National Radio Astronomy Observatory in Green Bank.<sup>258</sup>

**Lucile Miller**, of Charlottesville, Virginia, stated that she owns 650 acres in the Laurel Fork watershed within view of the proposed wind turbines.<sup>259</sup> Ms. Miller testified that in the early 2000's she wrote her master's thesis on the Laurel Fork Stream.<sup>260</sup> Ms. Miller supported the testimony of Dan Foster regarding the potential impact of the project on Laurel Fork. Ms.

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<sup>248</sup> *Id.* at 370-71.

<sup>249</sup> *Id.* at 372-73.

<sup>250</sup> Berman, Tr. at 377.

<sup>251</sup> *Id.* at 378-79.

<sup>252</sup> *Id.* at 379.

<sup>253</sup> *Id.* at 381.

<sup>254</sup> *Id.* at 382.

<sup>255</sup> *Id.* at 383-84.

<sup>256</sup> *Id.* at 384-85.

<sup>257</sup> *Id.* at 387.

<sup>258</sup> *Id.* at 388.

<sup>259</sup> Miller, Tr. at 391.

<sup>260</sup> *Id.*

Miller expressed concern regarding possible sedimentation from tunneling under streams, road building and extensive excavation.<sup>261</sup>

**Chris Scott**, of McDowell, Virginia, vehemently opposed “proliferation of 400-foot industrial wind turbines in Highland County.”<sup>262</sup> Mr. Scott argued that the residents of Highland County will “get the short end of the stick and someone else gets the power . . . .”<sup>263</sup> Mr. Scott raised concerns regarding bird, bat, and squirrel kills, and questioned the economic impact of the wind turbines on county revenues and tourism.<sup>264</sup>

**David Glendinning**, of Halterman Hollow, Virginia, testified that he and his wife were drawn to Highland County by “the natural beauty and the scenic simplicity of life in the hallows and on the mountains.”<sup>265</sup> Mr. Glendinning stated that he considered installing his own wind turbine, but declined because he believed it would sit idle most of the summer and thought winter maintenance would be a grim prospect.<sup>266</sup> Mr. Glendinning objected to the loss of personal property rights and that so many neighbors, near and far, can be affected adversely by the decision of an individual.<sup>267</sup> In addition, Mr. Glendinning contended that there were many unknowns regarding the project.<sup>268</sup> For example, Mr. Glendinning maintained that property values may be affected unevenly, depending on proximity and viewsheds.<sup>269</sup>

As a hunter, Mr. Glendinning expressed concern regarding noise and vibration.<sup>270</sup> Mr. Glendinning asserted that the low-grade vibration and noise from wind turbines would run deer, turkey and bear off contiguous property.<sup>271</sup> Mr. Glendinning questioned whether revenues from wind turbines would save any family farms.<sup>272</sup> Furthermore, Mr. Glendinning contended that the scale of a 400-foot wind turbine would be “too damn big” if placed on ridge tops, about 1,000 to 1,200 feet above the valley floors.<sup>273</sup> Finally, Mr. Glendinning maintained that our real energy focus should be on nuclear power.<sup>274</sup>

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<sup>261</sup> *Id.* at 394.

<sup>262</sup> Scott, Tr. at 401.

<sup>263</sup> *Id.* at 403.

<sup>264</sup> *Id.* at 403-04.

<sup>265</sup> Glendinning, Tr. at 409.

<sup>266</sup> *Id.* at 410.

<sup>267</sup> *Id.* at 411.

<sup>268</sup> *Id.* at 412.

<sup>269</sup> *Id.* at 413.

<sup>270</sup> *Id.* at 415.

<sup>271</sup> *Id.* at 417.

<sup>272</sup> *Id.* at 419.

<sup>273</sup> *Id.* at 420-21.

<sup>274</sup> *Id.* at 426-27.

**Somers Stephenson**, of Blue Grass Valley, contended that the taxpayers of the Commonwealth are being asked to spend billions of their tax dollars on wind turbines with practically no research on whether wind power turns out to be viable.<sup>275</sup>

**Steven L. Fullerton**, of Monterey, Virginia, questioned the net economic benefit of the project to the County.<sup>276</sup> Mr. Fullerton concurred with all of the witnesses that raised issues regarding viewshed, environment, and negative impact.<sup>277</sup> Mr. Fullerton testified that based on his seventeen years of public accounting experience, Highland County has been managed well and can be classified as neither rich nor poor.<sup>278</sup> Mr. Fullerton opposed approval of the project.<sup>279</sup>

**Carolyn Aldredge**, of Monterey, Virginia, opposed construction of windmills in Highland County.<sup>280</sup> Ms. Aldredge observed that most of the comments sent to the Commission in favor of the project were from people that did not live or own property in Highland County, while most of the comments opposed to the project were from Highland County.<sup>281</sup>

**Elizabeth McCoy**, of Monterey, Virginia, endorsed all of the points of view expressed by opponents of the project, especially Laurie Berman.<sup>282</sup> Ms. McCoy stated that she felt “like Chief Seattle pleading that the sacred burial grounds of his ancestors not be desecrated.”<sup>283</sup> Ms. McCoy contended that the neighboring Bear Mountain School, a veritable laboratory of natural sciences, such as botany, ornithology, and astronomy, will “be totally destroyed by this discordant intrusion.”<sup>284</sup> Ms. McCoy argued that the proposed project would severely impact the restaurants, bed and breakfasts, shops and galleries that depend on the tourist trade.<sup>285</sup>

**Betty Mitchell**, of Blue Grass, Virginia, testified that she is the executive director of the Highland Center, a community and business incubator located in Monterey.<sup>286</sup> Ms. Mitchell contended that economic and community development, to be successful, needs to take part in a broader community context.<sup>287</sup> Ms. Mitchell provided a profile of Highland County as having an annual county government budget of \$6.4 million, with roughly \$4.0 million going to the school system.<sup>288</sup> The county has a population of 2,500, with 300 students in grades K through 12.<sup>289</sup>

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<sup>275</sup> Stephenson, Tr. at 428-29.

<sup>276</sup> Fullerton, Tr. at 432.

<sup>277</sup> *Id.*

<sup>278</sup> *Id.* at 433-34.

<sup>279</sup> *Id.* at 435.

<sup>280</sup> Aldredge, Tr. at 436.

<sup>281</sup> *Id.* at 436-37.

<sup>282</sup> McCoy, Tr. at 439.

<sup>283</sup> *Id.*

<sup>284</sup> *Id.* at 440.

<sup>285</sup> *Id.* at 441.

<sup>286</sup> Mitchell, Tr. at 442-43.

<sup>287</sup> *Id.* at 443.

<sup>288</sup> *Id.* at 444.

There are no stoplights in Highland County.<sup>290</sup> The County's two leading industries are agriculture and tourism; the largest employer is the school system.<sup>291</sup> Other community services and organizations include: the rescue squad, the fire department, the medical center, Valley Program for Aging Services, Hospice, Cancer Society, Highland County Arts Council, Monterey Garden Club, Fiber Guild of the Allegheny Highlands, Chamber of Commerce, the Highland Center, the Sheep and Wool Association, the Cattleman's Association, the Highland Historical Society, a public library, a small children's library, the Highland Education Foundation, the Highland-Bath Birding Club, and the SPCA.<sup>292</sup> Ms. Mitchell questioned the wisdom of moving forward quickly.<sup>293</sup> Furthermore, Ms. Mitchell argued that Highland Wind failed to discuss any lost opportunity cost for lost tourism or reduced property values.<sup>294</sup>

**Tom Brody**, of Hightown, Virginia, testified that he owns Bear Mountain Farm and Wilderness Retreat, an eco-tourism-based business, with his wife, Patricia Reum, on Allegheny Mountain within two miles and in direct view of the proposed wind turbines.<sup>295</sup> Mr. Brody stated that Bear Mountain has been visited by people from all over the United States and by foreign visitors from Denmark and India.<sup>296</sup> Mr. Brody maintained that his guests are attracted by the quiet solitude, spectacular views, the dark Milky Way nighttime skies and the unique educational/recreational experience.<sup>297</sup> Mr. Brody testified that his guests include bird and wildlife watchers, and amateur and professional astronomers.<sup>298</sup>

Mr. Brody contended that wind technology in the uplands of this region stands little chance of displacing fossil generation given our increasing rate of demand.<sup>299</sup> Mr. Brody described the wind at 4,400 feet as inconsistent or intermittent, and stated that the sub-arctic weather of the mountain will be hard on machinery.<sup>300</sup> In addition, Mr. Brody challenged the economic benefit to Highland County during the construction of the project and claimed that most of those benefits will go to persons and businesses outside Highland County.<sup>301</sup> Mr. Brody asserted that the project will reduce property values, especially those closest to the wind turbines.<sup>302</sup> Mr. Brody testified that the wind turbines "can create a negative impact on one's quality of life, even to the point of creating illness."<sup>303</sup> Mr. Brody requested that the SCC

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<sup>289</sup> *Id.* at 444-45.

<sup>290</sup> *Id.* at 445.

<sup>291</sup> *Id.*

<sup>292</sup> *Id.* at 446-48.

<sup>293</sup> *Id.* at 448-49.

<sup>294</sup> *Id.* at 451.

<sup>295</sup> Brody, Tr. at 459.

<sup>296</sup> *Id.* at 461-62.

<sup>297</sup> *Id.* at 462.

<sup>298</sup> *Id.* at 462-464.

<sup>299</sup> *Id.* at 470.

<sup>300</sup> *Id.* at 471-72.

<sup>301</sup> *Id.* at 474-76.

<sup>302</sup> *Id.* at 476-77.

<sup>303</sup> *Id.* at 478-79.

conduct acoustical field research to assess the potential noise issues that the proposed project may have on properties within a five-mile radius.<sup>304</sup>

Mr. Brody testified that his business, Bear Mountain Farm and Wilderness Retreat, “may be severely jeopardized by this project.”<sup>305</sup> Mr. Brody maintained that the project would have irreversible consequences to ecotourism.<sup>306</sup> In summary, Mr. Brody argued that “Western Virginia’s mountain ridges are not the place for industrial wind energy developments.”<sup>307</sup>

**Roscoe Moyers**, of Bartow, West Virginia, favored wind power over the construction of large coal power plants such as Mount Storm.<sup>308</sup> Mr. Moyers contended that Highland County needed another source of revenue other than real estate taxes.<sup>309</sup> Mr. Moyers pointed out that the battlefield has been timbered, creating more damage and more of an eyesore than a turbine sitting on a ridge.<sup>310</sup> Mr. Moyers stated that he owned land adjoining Mr. McBride on the south, and was interested in adding wind turbines on his ridge top.<sup>311</sup> Finally, Mr. Moyers maintained that based on the wind project in Tucker County, West Virginia, he did not believe the proposed project would hurt tourism or property values.<sup>312</sup>

**Elana Brody**, of Hightown, Virginia, testified that as a seventeen-year-old Highland County citizen, she has been taught many valuable lessons by the land.<sup>313</sup> Ms. Brody described the view from the field at 4,400 feet above her dad’s house and business, Bear Mountain Retreat, as breathtaking.<sup>314</sup> Ms. Brody argued that wind energy on a large scale will not reduce our dependence on foreign oil, solve our air pollution problems, or reduce emission levels of greenhouse gases.<sup>315</sup>

**David C. Smith**, of McDowell, Virginia, remembered the importance of energy to our country in World War II.<sup>316</sup> Mr. Smith maintained that negative local news coverage has led to opposition to the proposed project.<sup>317</sup> Mr. Smith stated that he had kids that do not live in Highland County, but own approximately 1500 acres.<sup>318</sup> Mr. Smith expressed concern for the

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<sup>304</sup> *Id.* at 481.

<sup>305</sup> *Id.* at 484.

<sup>306</sup> *Id.* at 485.

<sup>307</sup> *Id.*

<sup>308</sup> Moyers, Tr. at 492.

<sup>309</sup> *Id.* at 492-93.

<sup>310</sup> *Id.* at 494.

<sup>311</sup> *Id.* at 495.

<sup>312</sup> *Id.*

<sup>313</sup> Elana Brody, Tr. at 498.

<sup>314</sup> *Id.* at 499.

<sup>315</sup> *Id.* at 500.

<sup>316</sup> David Smith, Tr. at 502.

<sup>317</sup> *Id.* at 503.

<sup>318</sup> *Id.* at 503-04.

increases in tax assessments on the land in Highland County.<sup>319</sup> Mr. Smith testified that he could not understand why people oppose wind energy when “we have men and women, some of our children, fighting overseas, losing their life over energy.”<sup>320</sup>

**Lorraine White**, of Monterey, Virginia, testified that she has served five one-year terms as president of the Highland County Chamber of Commerce and has observed a sharp drop in relocation package requests since the decision by the Supervisors to promote the wind project, from 261 and 339 relocation packages in 2003 and 2004, respectively, to only 50 for 2005.<sup>321</sup> Ms. White argued that wind projects will not provide enough money to reduce property taxes.<sup>322</sup>

**John Vinson**, of Monterey, Virginia, contended that industrial wind power will seriously impair the Highland County’s leading asset, its natural beauty.<sup>323</sup> Mr. Vinson testified that industrial wind development in Highland County, even on a massive scale, would make an insignificant contribution to the energy needs of the Commonwealth and would destroy a very unique and special place.<sup>324</sup>

**James White**, of Monterey, Virginia, described finding a dead screech owl and the process required to secure a federal permit to have the bird mounted for educational purposes.<sup>325</sup> Mr. White observed wind turbine sites in Pennsylvania and Michigan and how those sites soon became covered with turbines.<sup>326</sup> Mr. White testified he is a trustee of the Shenandoah Valley Battlefields Foundation and a Civil War enthusiast that is very concerned about Camp Allegheny.<sup>327</sup> Mr. White stated: “[o]ne of the most pristine battlefields in the Civil War, standing under monstrous white sentinels, would really take away from the experience of the visitor-student . . . that wants to really know what it felt like to be there.”<sup>328</sup>

**Carolyn Pohowsky**, of Hightown, Virginia, stated that she has worked for the Highland County Chamber of Commerce since September 1997, and has been its executive director since January, 1, 1998.<sup>329</sup> Ms. Pohowsky testified that lack of job opportunities has reduced the population of Highland County.<sup>330</sup> Ms. Pohowsky maintained that due to 9/11 and the efforts of the Chamber of Commerce, interest in Highland County has grown.<sup>331</sup> Ms. Pohowsky reported the dramatic rise in requests for relocation packages that occurred between 2001 (25 requests

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<sup>319</sup> *Id.* at 504-05.

<sup>320</sup> *Id.* at 507.

<sup>321</sup> Lorraine White, Tr. at 512.

<sup>322</sup> *Id.* at 513.

<sup>323</sup> Vinson, Tr. at 517.

<sup>324</sup> *Id.* at 517-18.

<sup>325</sup> James White, Tr. at 519-20.

<sup>326</sup> *Id.* at 520-21.

<sup>327</sup> *Id.* at 523-24.

<sup>328</sup> *Id.* at 525.

<sup>329</sup> Pohowsky, Tr. at 529.

<sup>330</sup> *Id.* at 530.

<sup>331</sup> *Id.* at 530-31.

during October through December 2001) and 2004 (339 requests), and the drop in requests subsequent to the county's approval of the proposed project (50 requests for 2005, and 16 requests through the beginning of March for 2006).<sup>332</sup> Ms. Pohowsky provided growth statistics for business related to tourism, including the growth in bed and breakfasts from two in 1989, to fifteen, currently.<sup>333</sup> Ms. Pohowsky pointed out that in 1994 the Highland County Chamber of Commerce was awarded \$32,000 from the Commonwealth to develop the Staunton-to-Parkersburg Turnpike (Route 250) as a tourist destination.<sup>334</sup> Ms. Pohowsky testified that additional grants have been received, including \$35,000 in 1997, and over \$90,000, mostly federal funds in 1998.<sup>335</sup> Ms. Pohowsky contended that the Staunton-to-Parkersburg Turnpike project is now nearing completion, but could end at the center of a wind turbine site.<sup>336</sup> Ms. Pohowsky asserted that the revenues from the wind projects will not offset a downward-spiraling tourism industry.<sup>337</sup>

**Sara S. Bell**, of Monterey, Virginia, testified that she and her husband moved to Highland County in 1982 because of its remoteness, rural character, and the beauty of the mountains.<sup>338</sup> Ms. Bell endorsed recommendations for additional studies.<sup>339</sup> Ms. Bell contended that legislation has been introduced in West Virginia to place a moratorium on wind facilities until the Public Service Commission promulgates a more effective approval process.<sup>340</sup> Ms. Bell raised concern regarding watershed issues related to Laurel Fork.<sup>341</sup> Ms. Bell asserted that energy produced by the project will be symbolic, as no coal-fired generating facility has ever been decommissioned because its generation was replaced by wind energy.<sup>342</sup> In summary, Ms. Bell contended that "Highland County will reap very few benefits and sacrifice much."<sup>343</sup>

**John Walters**, of Blue Grass, Virginia, opposed development of wind turbines in Highland County.<sup>344</sup> Mr. Walters provided the following quote from President Lyndon Johnson:

If future generations are to remember us with gratitude, rather than contempt, we must leave more than the miracles of technology, we must leave them a glimpse of a world as it was in the beginning, not just after we got through with it.<sup>345</sup>

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<sup>332</sup> *Id.* at 531-32.

<sup>333</sup> *Id.* at 533.

<sup>334</sup> *Id.*

<sup>335</sup> *Id.* at 533-34.

<sup>336</sup> *Id.* at 535.

<sup>337</sup> *Id.* at 536.

<sup>338</sup> Bell, Tr. at 538.

<sup>339</sup> *Id.* at 539.

<sup>340</sup> *Id.* at 541-42.

<sup>341</sup> *Id.* at 543.

<sup>342</sup> *Id.* at 543-44.

<sup>343</sup> *Id.* at 545.

<sup>344</sup> Walters, Tr. at 546.

<sup>345</sup> *Id.* at 546-47.



Mr. Walters argued that the primary issue in this case is whether a community has the right to determine and then to live in a place that is a glimpse of the world as it was in the beginning, without the miracles of technology imposed upon us.<sup>346</sup>

**Charlotte Stephenson**, of Monterey, Virginia, opposed the proposed wind project.<sup>347</sup> Ms. Stephenson maintained that her real estate brokerage business will suffer and that the project will reduce property values.<sup>348</sup>

**Thomas R. Richardson** offered comments on the testimony of several witnesses and quoted from a letter by Thomas Farrell, president and chief operating officer of Dominion Resources, which appeared in the September 11, 2005, Richmond Times-Dispatch, pointing out the large environmental footprint required by wind energy.<sup>349</sup> Mr. Richardson testified that he has been active in promoting Highland County through his real estate brokerage and by serving on various county boards and committees including: the board for the County Chamber of Commerce; the Highland County Investigative Committee; the Advisory Committee for the first Highland County Comprehensive Plan; the Monterey Lions Club representative to the current Comprehensive Planning Committee; the local chapter of the American Red Cross; and Pocahontas Communication Cooperative Corporation.<sup>350</sup> Mr. Richardson argued that people, like himself, that oppose the project are not NIMBYs (*i.e.*, not in my back yard) or CAVE (*i.e.*, citizens against virtually everything) people, but are citizens concerned about the future of a community that generations have spent working to improve.<sup>351</sup> Mr. Richardson contended that the Application in this case is incomplete and should be denied.<sup>352</sup>

**Samuel K. Ellington, Jr.**, of Blue Grass, Virginia, asserted that if the door is opened to building windmills on pristine ridges, then it will be opened for every place in the Commonwealth.<sup>353</sup> Mr. Ellington contended that speakers in favor of wind power that claimed to be farmers, like David Smith, were not farmers, but merely rented their land.<sup>354</sup> Mr. Ellington testified that most tax money collected by Highland County goes to its schools.<sup>355</sup> Mr. Ellington pointed out that changing the composite index in Richmond would have a much larger impact than introducing wind projects.<sup>356</sup> Mr. Ellington stated that he has farmed in Highland County

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<sup>346</sup> *Id.* at 547-48.

<sup>347</sup> Stephenson, Tr. at 549.

<sup>348</sup> *Id.* at 550.

<sup>349</sup> Richardson, Tr. at 551-56.

<sup>350</sup> *Id.* at 556-57.

<sup>351</sup> *Id.* at 558-59.

<sup>352</sup> *Id.* at 560.

<sup>353</sup> Samuel Ellington, Tr. at 565.

<sup>354</sup> *Id.* at 566.

<sup>355</sup> *Id.* at 567.

<sup>356</sup> *Id.*

for approximately twenty-five years, but if the project is approved, he would be forced to leave.<sup>357</sup>

**Ken Schaal**, of Ashland, Virginia, testified that he and his wife own fifteen acres in Highland County.<sup>358</sup> Mr. Schaal opposed the project.<sup>359</sup> Mr. Schaal stated that he has been a solar contractor since 1976, and before the scale of the project was known, favored the development of wind energy.<sup>360</sup> Mr. Schaal raised concerns regarding what may happen if the additional truck traffic necessary to build this and other projects causes Route 250 to give way.<sup>361</sup> Mr. Schaal recognized the importance of global warming, but contended that the project has become a diversion.<sup>362</sup> Mr. Schaal asked that VDOT be consulted on potential road impacts.<sup>363</sup> In addition, Mr. Schaal recommended that the economic benefits and costs be analyzed.

**Valerie Hilliard**, of Monterey, Virginia, stated that the majority of the citizens of Highland County do not want or need this facility and would find it detrimental to their way of life.<sup>364</sup> Ms. Hilliard maintained that when County officials changed the zoning height ordinance and ignored the County Comprehensive Plan it was a “travesty of the democratic process.”<sup>365</sup> Ms. Hilliard objected to referring to the project as a “farm.”<sup>366</sup> As Ms. Hilliard asserted: “Farms are for growing food. We can’t eat a 400-foot tall wind turbine.”<sup>367</sup>

**Richard R. Shamrock**, of Monterey, Virginia, testified that he has purchased additional property, and is glad that property assessments are increasing because property values are increasing.<sup>368</sup> Mr. Shamrock described watching two adult eagles teach their fledglings how to dive in a meadow adjoining his property.<sup>369</sup> Mr. Shamrock asserted that we need more studies to determine if the industrial wind turbines will have an impact on wildlife.<sup>370</sup> Finally, Mr. Shamrock maintained that the local newspaper, The Recorder, reflected the anti-wind sentiment of the community.<sup>371</sup>

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<sup>357</sup> *Id.* at 568.

<sup>358</sup> Schaal, Tr. at 569.

<sup>359</sup> *Id.*

<sup>360</sup> *Id.* at 570.

<sup>361</sup> *Id.* at 571-72.

<sup>362</sup> *Id.* at 573.

<sup>363</sup> *Id.* at 574.

<sup>364</sup> Hilliard, Tr. at 577.

<sup>365</sup> *Id.* at 577-78.

<sup>366</sup> *Id.* at 578.

<sup>367</sup> *Id.*

<sup>368</sup> Shamrock, Tr. at 581.

<sup>369</sup> *Id.* at 581-82.

<sup>370</sup> *Id.* at 582.

<sup>371</sup> *Id.* at 582-83.

## DEQ Report

On June 30, 2006, DEQ filed its report prepared in accordance with the Memorandum of Agreement Regarding Coordination of Reviews of the Environmental Impacts of Proposed Electric Generating Plants dated August 14, 2002, in which DEQ coordinated a review of the proposed wind project by a number of state, federal, and local agencies.<sup>372</sup> The state and local agencies participating in DEQ's analysis include: DEQ, DGIF, Department of Conservation and Recreation ("DCR") Department of Agriculture and Consumer Services ("DACS"), Department of Health, Department of Aviation, Department of Forestry, Department of Transportation, Marine Resources Commission, Department of Historic Resources ("DHR"), Department of Mines, Minerals and Energy, Central Shenandoah Planning District Commission, and Highland County.<sup>373</sup>

The DEQ report listed six permits or approvals that may be required by the project, including:

1. **Water Quality and Wetlands** – The project may require a Virginia Water Protection . . . permit from DEQ's Valley Regional Office . . . .
2. **Air Quality Permits** – If open burning of construction or other wastes is contemplated, an open burning permit from DEQ's Valley Regional Office may be required. In addition, fuel-burning equipment used in the project may require permitting.
3. **Erosion and Sediment Control Plan; Stormwater Management** – Land disturbance must be carried out in accordance with the Erosion and Sediment Control Law and Regulations and the Virginia Stormwater Management Act.
4. **Solid and Hazardous Waste Management** – Any soil that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations.
5. **Protected Species Legislation** – The Federal Endangered Species Act and Virginia protected species legislation may apply if there is any taking of protected species.

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<sup>372</sup> Exhibit No. 29.

<sup>373</sup> Exhibit No. 29, Attached Comments dated June 30, 2006, at 1.

6. **Local Permits and Requirements** – A Conditional Use Permit (with twenty conditions, including submission of a detailed site plan) has been issued pursuant to the Highland County Zoning Ordinance for Electric Generation and Substations.<sup>374</sup>

The DEQ Report offered the following recommendations for consideration by the Commission as conditions of any certificate of public convenience and necessity:

1. **Submit Final Site Plan to Reviewing Agencies** – Provide a detailed site plan with project location maps showing the location of towers and all other components of the project including but not limited to the location of the three stream crossings, location of wetlands along the three stream channels, and location where the drilling beneath the stream channels will occur.
2. **Conduct Viewshed Analyses** – Develop, conduct, and report the results of a viewshed analysis, based on coordination with DHR and DCR.
3. **Assess Cumulative Impacts** – The environmental impact analysis should consider the cumulative impacts of constructing the Highland Wind project within the Allegheny Mountain physiographic region. The cumulative impacts analysis should consider that there are already 88 wind turbines operating, 457 permitted, and 480 industrial wind turbines proposed or planned at 34 facilities within the Allegheny Highlands of Virginia, West Virginia, Maryland, and Pennsylvania.
4. **Develop Appropriate Sampling Methodology** – Prior to starting studies, coordinate with the appropriate review agencies, including but not limited to DEQ, DHR, DCR, DGIF, and the [U.S. Fish and Wildlife Service] to develop the appropriate sampling methodology, reporting procedures, and mitigation required to comply with applicable regulations.
5. **Conduct Pre-construction Surveys/Studies** to include a radar survey during the spring, mist net surveys for bats (May-September), and a fall-winter-spring survey of raptors at the project site.

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<sup>374</sup> *Id.* at 2-3. (Internal citations omitted.)

6. **Perform Pre-construction Habitat Assessment for Protected Species** – Conduct an inventory of suitable habitat, natural heritage resources, and protected species in the study area (by a qualified biologist), as recommended by DGIF and by DCR-DNH.
7. **Develop Mitigation Plan** – Develop a mitigation plan, utilizing the results of the studies, (e.g., wildlife, watershed, and socioeconomic studies) to determine turbine placement and mitigation of impacts, based on consultation with natural resources agencies.
8. **Conduct Archaeological and Architectural Surveys if necessary** – Coordinate with DHR for guidance regarding the potential need for archaeological and architectural surveys, recommended studies and field surveys to evaluate the project’s impacts to historic resources.
9. **Avoid Direct and Indirect Impacts to Wetlands** – Wetland and stream impacts should be avoided and minimized to the maximum extent practicable.
10. **Protect Natural Resources During Construction** – Protect water quality, habitat, and aquatic resources from construction impacts by adopting recommendations from the DEQ, DGIF, and DCR.
11. **Protected Species** – Work closely with DGIF and [U.S. Fish and Wildlife Service] to ensure that threatened and endangered species are adequately protected.
12. **Consider Impacts of Highland Wind Project on Ecotourism** – Ecotourism impacts should be considered as part of an overall socioeconomic analysis of this project. This analysis should be conducted through consultations with the Highland County Chamber of Commerce, Virginia Tourism Corporation, and operators of ecotourism companies/facilities, such as Bear Mountain Farm and Wilderness Retreat . . . .
13. **Conduct Post-construction Sampling/Monitoring** – Conduct (a minimum of) 3-years of post-construction sampling/monitoring using same methods as those used during pre-construction monitoring, but include carcass searches for birds and bats. The post-construction

monitoring should include adjustments for scavenger removal and searcher efficiency to more accurately reflect mortality rates.

14. **Coordinate Transportation Safety Issues** – Coordinate closely with the Virginia Department of Transportation to evaluate and ensure that transportation issues are adequately addressed.<sup>375</sup>

DEQ noted “several reviewing agencies reported that the information is not sufficient to complete their review.”<sup>376</sup>

On July 21, 2006, DEQ supplemented its report and stated that the DEQ Valley Regional Office concluded that no Virginia Water Protection Permit is required by the project.<sup>377</sup>

### **Applicant’s Supplemental Testimony**

On August 4, 2006, Highland Wind filed the supplemental testimony of Dr. D. Scott Reynolds and Dr. Edwin D. Michael.<sup>378</sup>

**Dr. D. Scott Reynolds** responded to DGIF’s pre- and post-construction monitoring recommendations.<sup>379</sup> As to pre-construction monitoring for bats, Dr. D. Scott Reynolds contended that such research has not been predictive of post-construction collision mortality.<sup>380</sup> Dr. D. Scott Reynolds opposed the use of mist nets in any pre-construction studies, as contained in DEQ Report Recommendation No. 5, as such studies sample a very small area of the proposed site and sample an area well below the bottom of the turbine rotors.<sup>381</sup> Dr. D. Scott Reynolds also opposed the use of radar studies, which fail to distinguish between insects, birds, or bats.<sup>382</sup> Dr. D. Scott Reynolds preferred acoustic monitoring for pre-construction monitoring, but disagreed with DGIF’s suggestion to use sonograms.<sup>383</sup>

In addition to pre-construction studies having no correlation with post-construction bat mortality, Dr. D. Scott Reynolds argued that the proximity to bat hibernacula of Indiana and Virginia Big-Eared Bats is not a reliable predictor of bat mortality in these species.<sup>384</sup>

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<sup>375</sup> *Id.* at 3-8. (Internal citations omitted.)

<sup>376</sup> *Id.* at 3.

<sup>377</sup> Exhibit No. 29, Attached Comments dated July 21, 2006, at 1.

<sup>378</sup> The Applicant also filed the testimony of Dr. Colin J. High, which was not offered into evidence.

<sup>379</sup> Exhibit No. 50, at 1.

<sup>380</sup> *Id.*

<sup>381</sup> *Id.* at 2.

<sup>382</sup> *Id.*

<sup>383</sup> *Id.* at 3.

<sup>384</sup> *Id.* at 4-5.

Dr. D. Scott Reynolds recommended intensive post-construction monitoring to obtain the following objectives:

1. document the post-construction mortality of the project to resident and migratory bats;
2. analyze the temporal, spatial, and species-level variation in mortality across the project site;
3. analyze potential predictive factors such as wind speed, wind direction, or temperature on bat migratory activity and mortality; and
4. use these data to develop an effective plan for adaptive management to reduce or eliminate future effects, if necessary.<sup>385</sup>

**Dr. Edwin D. Michael** clarified his opinion that the Northern Flying Squirrel does not exist on the 217-acre project site and opined that suitable habitat does not exist for Rock Voles and Water Shrews on the 217-acre project site, including the three stream crossings.<sup>386</sup> Dr. Michael contended that he sampled the entire 217-acre project site for Northern Flying Squirrels, except along the existing transmission line because no wind turbine will be located along the existing transmission line.<sup>387</sup> Dr. Michael revisited the site in July and confirmed that habitat along the existing transmission line is not suitable for the Northern Flying Squirrel.<sup>388</sup> Dr. Michael testified that he visited the proposed project site with Mr. Richard Reynolds of DGIF and that Mr. Reynolds concurred there is no suitable habitat on the project site or within the transmission line for Water Shrews and Rock Voles.<sup>389</sup>

On August 9, 2006, Highland Wind filed the supplemental testimony of Dr. Paul Kerlinger.

**Dr. Paul Kerlinger** sponsored a Breeding Bird Survey and responded to DGIF's recommendations for a spring radar study and a fall/winter/spring survey of raptors.<sup>390</sup> Dr. Kerlinger stated that the purpose of the Breeding Bird Survey was to determine whether there were any Virginia endangered or threatened species at the proposed project site.<sup>391</sup> Dr. Kerlinger testified that the conclusions of his Breeding Bird Survey were that no federal or Virginia

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<sup>385</sup> *Id.* at 5.

<sup>386</sup> Exhibit No. 25, at 1.

<sup>387</sup> *Id.*

<sup>388</sup> *Id.*

<sup>389</sup> *Id.* at 1-2.

<sup>390</sup> Exhibit No. 23, at 1.

<sup>391</sup> *Id.*

endangered or threatened species was found to nest within the project site and that biologically significant collision fatalities of nesting birds at the proposed project site are not likely.<sup>392</sup>

Dr. Kerlinger maintained that there was no need for a spring radar study as the number of night migrating birds killed at wind power facilities is not large or biologically significant and radar studies have never been documented to be accurate predictors of risk.<sup>393</sup> Dr. Kerlinger asserted that the purpose of the fall radar study conducted at the proposed site was to counter the hypothesis that night migrating birds follow ridge lines in Appalachia and that they fly over ridges at very low altitudes.<sup>394</sup>

Dr. Kerlinger argued there was no reason to conduct a winter raptor survey.<sup>395</sup> Dr. Kerlinger pointed out that high raptor mortality has occurred only at Altamont Pass, California, and “not a single Bald Eagle has been killed by a wind turbine to date.”<sup>396</sup>

Finally, Dr. Kerlinger provided responses to critiques of his Phase I Avian Risk Assessment contained in letters from DGIF to DEQ dated February 24, 2006, and May 24, 2006.<sup>397</sup>

### **Highland Citizens’ Direct Testimony**

On September 1, 2006, Highland Citizens filed the direct testimony of Dr. Michael R. Gannon, professor of biology at Pennsylvania State University Altoona College; Charles Simmons; Dr. John F. Pagels, professor of biology and director of the graduate program in biology at Virginia Commonwealth University; Thomas A. Hewson, Jr., principal at Energy Ventures Analysis; and John L. Rowlett, co-owner and director of Field Guides, Inc.

**Dr. Michael R. Gannon** reviewed several studies submitted by the Applicant, including: (i) An Overview of the Current State of Knowledge of Bats with Specific Reference to Potential Impacts of Wind Power (“*Knowledge of Bats Study*”); (ii) A Radar and Visual Study of Nocturnal Bird and Bat Migration at the Proposed Highland New Wind Development Project, Virginia, Fall, 2005 (“*Fall Radar Study*”); and (iii) Study Proposal for Bat Migratory and Summer Foraging Survey Highland New Wind Power Project (“*Bat Study Proposal*”).<sup>398</sup> Dr. Gannon found the studies flawed, unable to pass peer review, and falling well short of accepted scientific standards in their methodology and reporting.<sup>399</sup> Dr. Gannon criticized the reports for failing to use the report prepared by the Virginia Highlands Grotto of the National Speleological Society titled, “The Potential Impacts of Wind Power Facilities on Rare and Endangered Bats at

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<sup>392</sup> *Id.*

<sup>393</sup> *Id.* at 2.

<sup>394</sup> *Id.*

<sup>395</sup> *Id.*

<sup>396</sup> *Id.*

<sup>397</sup> *Id.* at 3, Attached Exhibit C.

<sup>398</sup> Exhibit No. 43, at 1.

<sup>399</sup> *Id.* at 2.



the Proposed Highland New Wind Project Site” (“Grotto Report”).<sup>400</sup> Based on the Grotto Report, Dr. Gannon concluded “that bat kills will result from the construction and operation of the turbines and that those kills will likely include endangered bat species.”<sup>401</sup>

Specifically, Dr. Gannon asserted that the conclusion that should have been drawn from the *Knowledge of Bats Study* is that there is insufficient information to make any determination regarding this project and its impact on bats.<sup>402</sup> As to the *Fall Radar Study*, Dr. Gannon questioned the techniques employed and argued that the results are helpful only in demonstrating the vast number of nocturnal activities that occur over the proposed site.<sup>403</sup> For the *Bat Study Proposal*, Dr. Gannon contended that it was difficult to determine what was being done in the study and whether such work would be useful in evaluating the proposed site.<sup>404</sup> Dr. Gannon found the Anabat monitoring system to be limited and questionable as to recording clear identifiable calls.<sup>405</sup>

Dr. Gannon supported the DCR recommendation for two years of pre-construction monitoring and for the use of mist net surveys for bats conducted from May through September of each year.<sup>406</sup> Dr. Gannon advised that DCR’s recommendation to use a sampling effort similar to that being used at the Negro Mountain site in Pennsylvania was a step in the right direction, but falls short of the required comprehensive multi-year pre-construction study.<sup>407</sup> Dr. Gannon stressed the need for comprehensive multi-year pre-construction studies that utilize a variety of techniques, and for similarly comprehensive multi-year post-construction studies to establish a means of determining the possible impact of wind development on bats.<sup>408</sup>

Dr. Gannon disagreed with the conclusion of Dr. D. Scott Reynolds regarding the need for pre-construction studies and contended that such a conclusion is based on the lack of studies.<sup>409</sup> As Dr. Gannon stated:

Because no studies are being permitted, no evidence of endangered bat mortality exists. Since no evidence of bat mortality exists, they are unaffected by wind energy. Therefore wind energy has no negative impact on endangered bats.<sup>410</sup>

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<sup>400</sup> *Id.*

<sup>401</sup> *Id.*

<sup>402</sup> *Id.* at 3, Attachment B.

<sup>403</sup> *Id.* at 3, Attachment C.

<sup>404</sup> *Id.* at 3, Attachment D.

<sup>405</sup> *Id.*

<sup>406</sup> *Id.* at 4.

<sup>407</sup> *Id.* at 5.

<sup>408</sup> *Id.* at 6-7.

<sup>409</sup> *Id.* at 7.

<sup>410</sup> *Id.*

Dr. Gannon testified that he participated in the pre-construction survey for bats at the Meyersdale Pennsylvania site.<sup>411</sup> Dr. Gannon reported that the post-construction survey was terminated after only six weeks by the wind developer after the data showed an extremely high bat mortality due to wind turbines.<sup>412</sup>

Dr. Gannon disagreed with Dr. D. Scott Reynolds' assessment of ultrasonic bat detection and the accuracy of identifying bats based on bat call libraries.<sup>413</sup>

As for the testimony by Dr. D. Scott Reynolds that close proximity of hibernacula of endangered species is not a reliable predictor of mortality of these species, Dr. Gannon argued that endangered species are endangered because they are very rare and documenting such deaths requires a greater effort than any study has done to date.<sup>414</sup> Dr. Gannon countered that no data exist to suggest that endangered species are more adept at avoiding wind turbines than are any other species of bat.<sup>415</sup> Dr. Gannon also pointed out that the accuracy of bat mortality studies has been documented at 35% to 65% and the Indiana Bat is extremely difficult to differentiate from the more common Little Brown Bat, requiring DNA testing in a Pennsylvania study.<sup>416</sup>

Dr. Gannon agreed with the U.S. Fish and Wildlife position that wind development should not take place in areas where documented endangered species occur and should not be placed near known bat Hibernacula, breeding or maternity colonies, migration corridors, or in flight paths between bat colonies and feeding areas.<sup>417</sup> Dr. Gannon stressed the ecological and economic importance of bats and classified them an “ecological keystone species.”<sup>418</sup> Dr. Gannon stated that he is a supporter of renewable energy and of wind power, but concluded: “[i]f wind energy destroys a valuable resource by killing thousands of bats year after year, it is not the safe, clean, green technology that we are being lead to believe it is.”<sup>419</sup>

**Charles Simmons** offered four conclusions regarding the proposed project:

- There will be no increase in energy available to the Virginia consumer or no reduction in emissions in Virginia if this project were to be built since the energy will be sold to parties outside the Commonwealth.
- While there will be a reduction in emissions on a regional or national basis, any reasonable estimate of the amount

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<sup>411</sup> *Id.* at 8.

<sup>412</sup> *Id.*

<sup>413</sup> *Id.* at 9.

<sup>414</sup> *Id.*

<sup>415</sup> *Id.* at 10.

<sup>416</sup> *Id.*

<sup>417</sup> *Id.* at 11.

<sup>418</sup> *Id.* at 12-13.

<sup>419</sup> *Id.* at 13.

and location of any such reduction would require a much more rigorous study than presented in this case.

- Wind generation is at a very low level during the summer peak load period and will have minimal effect on capacity requirements.
- There are unavoidable environmental impacts in regard to wildlife as well as visual impacts that would result from this project.<sup>420</sup>

Mr. Simmons testified that generation is dispatched generally by assigning the next increment of production to the generating unit within the control system with the lowest delivered cost.<sup>421</sup> Based on his analysis of generation costs, Mr. Simmons concluded that the major impact of wind generation would be to reduce the operation of gas fired plants.<sup>422</sup> Based on a review of wind speed data, Mr. Simmons observed that wind generation is generally at its lowest level during the critical summer peak season.<sup>423</sup>

Mr. Simmons disagreed with the Applicant and maintained the project would have no impact on advancing competition in Virginia.<sup>424</sup> Mr. Simmons noted that states such as New Jersey, Maryland, and Pennsylvania have compliance schedules for renewable resources, which include substantial economic penalties that increase the wholesale price of wind energy well above current retail prices charged by Virginia utilities.<sup>425</sup>

Mr. Simmons provided two maps to indicate the areas from which the wind turbines would be visible in daylight hours and at night.<sup>426</sup>

**Dr. John F. Pagels** testified that he has trapped Northern Flying Squirrels on the proposed site.<sup>427</sup> Dr. Pagels stated that between April 1986 and May 1996, he captured thirteen Northern Flying Squirrels using only five nest boxes.<sup>428</sup> Dr. Pagels criticized the sampling effort made by Dr. Michael as insufficient and noted other studies that required many more nights and traps to capture a Northern Flying Squirrel in areas known to have such populations.<sup>429</sup> Dr. Pagels maintained that habitat for the Northern Flying Squirrel is present at the proposed site.<sup>430</sup>

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<sup>420</sup> Exhibit No. 47, at 2-3.

<sup>421</sup> *Id.* at 4.

<sup>422</sup> *Id.* at 7-8.

<sup>423</sup> *Id.* at 8-9.

<sup>424</sup> *Id.* at 11.

<sup>425</sup> *Id.*

<sup>426</sup> *Id.* Attachments 2 and 3.

<sup>427</sup> Exhibit No. 30, at 2.

<sup>428</sup> *Id.*

<sup>429</sup> *Id.* at 3.

<sup>430</sup> *Id.* at 4.

Dr. Pagels acknowledged that the proposed turbines will be built on open pasture/hay fields, but expressed concern for the impact that construction and operation of the turbines may have on Northern Flying Squirrels that may occur in suitable forested habitat that bounds the cleared area.<sup>431</sup>

**Thomas A. Hewson, Jr.** reviewed the claimed avoided emissions benefits of the proposed project and concluded that there will be no avoided emissions benefits.<sup>432</sup> Mr. Hewson testified that the method for determining avoided emissions compares air emissions with and without the project.<sup>433</sup> Mr. Hewson argued that the proposed facility will not compete against fossil fuel generation, but will compete against other qualifying renewable power sources.<sup>434</sup> In addition, Mr. Hewson maintained that any emissions that may be displaced by renewable programs will not be permanently avoided as the owners of such generation will sell or transfer any unused emission credits.<sup>435</sup>

**Dr. John R. Rowlett** testified that he is an ornithologist, has been in the ecotourism business for the past thirty years, and has conducted birding tours throughout North and South America.<sup>436</sup> Dr. Rowlett stated that one of his favorite tours, a tour that he has led once or twice a year for the past fifteen years is the “Virginias’ Warblers” tour, which is devoted primarily to Highland County, Virginia, and Pocahontas County, West Virginia.<sup>437</sup> Dr. Rowlett confirmed that his tour visits Bear Mountain Farm and Wilderness Retreat as well as Laurel Fork and Blue Grass Valley.<sup>438</sup>

Dr. Rowlett expressed concern for the Golden-winged warbler, which has been observed nesting at Bear Mountain Farm within view of the proposed turbine site.<sup>439</sup> Dr. Rowlett noted that the Golden-winged warbler is currently being considered for federally endangered status and could easily become extinct in the next fifteen years.<sup>440</sup>

Based on his professional knowledge and experience and based on his personal observations, Dr. Rowlett opined that the proposed wind turbines will have a significant negative impact upon large birds of prey, some resident grassland species, neotropical migrants, and bats.<sup>441</sup>

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<sup>431</sup> *Id.* at 5.

<sup>432</sup> Exhibit No. 32, at 2.

<sup>433</sup> *Id.*

<sup>434</sup> *Id.* at 4.

<sup>435</sup> *Id.* at 8.

<sup>436</sup> Exhibit No. 12, at 1-2.

<sup>437</sup> *Id.* at 2.

<sup>438</sup> *Id.*

<sup>439</sup> *Id.*

<sup>440</sup> *Id.*

<sup>441</sup> *Id.* at 3-4.

Dr. Rowlett contended that the studies submitted by the Applicant are insufficient and inadequate to make an informed decision regarding the impact of the proposed project on birds.<sup>442</sup> In addition, Dr. Rowlett disagreed with Highland Wind witness Kerlinger concerning the nesting of Bald Eagles in Highland County and their use of the proposed project site.<sup>443</sup> Dr. Rowlett pointed out the Highland County is identified as an Important Bird Area by BirdLife International, DGIF, the National Audubon Society, The Center for Conservation Biology, the Virginia Audubon Council, and the Virginia Society of Ornithology.<sup>444</sup> Dr. Rowlett maintained that bird studies in such areas “should be carried out thoroughly, collaboratively, and over a period of at least several years before potentially threatening development is sanctioned.”<sup>445</sup> Dr. Rowlett disagreed with Dr. Kerlinger’s assessment that the mortality level at the project site will not be biologically significant.<sup>446</sup> Dr. Rowlett opined that “what little site-specific information we do have suggests an opposite conclusion.”<sup>447</sup>

Based on his own observations during birding trips to Highland County, Dr. Rowlett confirmed DCR’s report of several natural heritage resources within two miles of the project area, including avian species such as the Alder Flycatcher, Purple Finch, Northern Waterthrush, Yellow-Bellied Sapsucker, Golden-Crowned Kinglet, Red Crossbill, Northern Saw-Whet Owl, Red-Breasted Nuthatch, and Blackburnian Warbler.<sup>448</sup> Dr. Rowlett supported DCR’s recommendation for additional studies, including a pre-construction monitoring of two years.<sup>449</sup> Dr. Rowlett also endorsed DGIF’s proposals to compile and analyze data collected at other sites in the Allegheny Mountains, study the potential impacts of the turbines on nocturnal migrants, expand the nocturnal bird and bat migration study and conduct a fall-winter-spring survey of raptors at the site.<sup>450</sup> Dr. Rowlett added that these studies need to be developed and monitored by someone other than the developer and its consultants.<sup>451</sup>

Dr. Rowlett predicted that the proposed project will have “a significant negative impact on ecotourism in Highland County.”<sup>452</sup> Dr. Rowlett testified that he will not continue to lead birding tours to Highland County if the project is constructed.<sup>453</sup> “Who wants to bird in a wind farm?”<sup>454</sup>

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<sup>442</sup> *Id.* at 4.

<sup>443</sup> *Id.* at 5.

<sup>444</sup> *Id.*

<sup>445</sup> *Id.*

<sup>446</sup> *Id.* at 6.

<sup>447</sup> *Id.*

<sup>448</sup> *Id.* at 6-7.

<sup>449</sup> *Id.* at 7.

<sup>450</sup> *Id.*

<sup>451</sup> *Id.*

<sup>452</sup> *Id.* at 8.

<sup>453</sup> *Id.*

<sup>454</sup> *Id.*

On September 8, 2006, Highland Citizens filed the testimony of Dr. Robert C. Whitmore, professor of wildlife ecology at West Virginia University.

**Dr. Robert C. Whitmore** offered several criticisms and observed errors for the June 2006 Breeding Bird Survey for the Highland New Wind Project, Highland County Virginia sponsored by Applicant witness Kerlinger.<sup>455</sup> Dr. Whitmore maintained that the report could not be used in making a regulatory decision.<sup>456</sup> Dr. Whitmore supplemented criticisms lodged by DGIF regarding the Phase I Avian Risk Assessment by Dr. Kerlinger.<sup>457</sup> Specifically, Dr. Whitmore: (i) questioned the duration of the site visits; (ii) asserted the authors failed to document contentions regarding the populations of special-concern land birds and the threat they face from global warming; (iii) faulted the report for making an apples-to-oranges type comparison by relying on data collected from western and mid-western facilities; and (iv) argued that the absence of data does not indicate lack of effect.<sup>458</sup>

Dr. Whitmore agreed with DGIF recommendations for pre-construction monitoring, including fall-winter-spring raptor studies.<sup>459</sup>

Dr. Whitmore viewed the radar study as a “snapshot in time” with targets defined to be one or more birds or bats flying closely together and thus cannot be used to measure abundance.<sup>460</sup> Dr. Whitmore expressed concern that during periods of inclement weather, migratory birds may be placed at increased collision risk due to compression of their flight elevations.<sup>461</sup>

Overall, Dr. Whitmore testified that it was unclear whether the proposed project will create a risk to bird populations without multi-year, site specific study.<sup>462</sup>

### **Nature Conservancy’s Direct Testimony**

On September 1, 2006, the Nature Conservancy filed the direct testimony of Merlin D. Tuttle, founder and president of Bat Conservation International; Dr. Mitchell Byrd, research professor of Biology at the Center for Conservation Biology at William and Mary; Dr. Richard Sherwin, assistant professor and vertebrate ecologist of the Department of Biology of Christopher Newport University; Dr. Sarah Mabey, assistant professor, Department of Biology, Sweet Briar College; and Richard J. Reynolds, wildlife diversity biologist with DGIF.

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<sup>455</sup> Exhibit No. 48, at 2-4.

<sup>456</sup> *Id.* at 4.

<sup>457</sup> *Id.* at 4-5.

<sup>458</sup> *Id.* at 5-6.

<sup>459</sup> *Id.* at 6.

<sup>460</sup> *Id.* at 7.

<sup>461</sup> *Id.*

<sup>462</sup> *Id.* at 7-8.

**Merlin D. Tuttle** offered comments on the radar study and the report on the overview of the current state of knowledge of bats presented by the Applicant.<sup>463</sup> Mr. Tuttle maintained that the radar study was focused on birds, and likely underestimated the number of bats based on the timing of the study and the interpretation of anything flying in a straight line as a bird rather than a migrating bat.<sup>464</sup> Mr. Tuttle testified that bats may be attracted to the low frequency sound emitted by turbines and thus are particularly vulnerable to wind turbines.<sup>465</sup>

Mr. Tuttle looked to limited studies conducted at Mountaineer, West Virginia, and at Meyersdale, Pennsylvania, and predicted that bat mortality rates at the proposed facility may reach fifty bats per turbine per year.<sup>466</sup>

Mr. Tuttle stated that the overview of knowledge of bats falls short of indicating actual risk and may be based upon a faulty conclusion that no major bat caves exist nearby.<sup>467</sup> Mr. Tuttle termed as speculative, the report's conclusion that the proposed project is unlikely to have an adverse effect on any population of endangered species.<sup>468</sup> Mr. Tuttle stressed that the information on bats and wind facilities is very limited and it is difficult to predict which species will be attracted to the turbines.<sup>469</sup> Furthermore, Mr. Tuttle maintained that we have far too little data to draw conclusions regarding risks to endangered species posed by the proposed project.<sup>470</sup> Nonetheless, Mr. Tuttle pointed out that the proposed site is well within the migratory range for both the Virginia Big-Eared and Indiana Bats.<sup>471</sup>

Mr. Tuttle testified that all three of the similar sites along eastern ridge tops that have sampled for bat mortality have had alarmingly high kill rates.<sup>472</sup> For example, Mr. Tuttle reported that a six-week study at the West Virginia site had an estimated mortality of 38 bats per turbine.<sup>473</sup> Because the radar study for the Highland site showed substantially higher passage rates, Mr. Tuttle opined that "it is not likely that the kill rate for bats will be any lower" and that building this facility "is taking a very high risk."<sup>474</sup>

Mr. Tuttle asserted that bat fatality rates could be reduced substantially by feathering turbines during low wind periods.<sup>475</sup> Mr. Tuttle recommended that protecting or restoring key caves for species such as the Indiana Bat may serve as effective mitigation.<sup>476</sup>

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<sup>463</sup> Exhibit No. 13, at 3.

<sup>464</sup> *Id.* at 3-4.

<sup>465</sup> *Id.* at 4.

<sup>466</sup> *Id.* at 5.

<sup>467</sup> *Id.*

<sup>468</sup> *Id.* at 6.

<sup>469</sup> *Id.* at 6-7.

<sup>470</sup> *Id.* at 7.

<sup>471</sup> *Id.* at 8.

<sup>472</sup> *Id.*

<sup>473</sup> *Id.*

<sup>474</sup> *Id.*

<sup>475</sup> *Id.* at 10.

Mr. Tuttle testified that additional pre-construction monitoring for bats would not change the indications that this is going to be a problem site.<sup>477</sup> Mr. Tuttle did not support recommendations for mist net surveys and observed that no studies yet exist to compare pre-construction activity with post-siting mortality.<sup>478</sup> However, Mr. Tuttle stated “[e]xtensive post construction monitoring is imperative.”<sup>479</sup> Mr. Tuttle recommended at least three years of post-construction monitoring with daily carcass searches at a statistically meaningful proportion of the turbines at any one site.<sup>480</sup>

**Dr. Mitchell Byrd** testified that based on his own observations, the number of individual migratory birds is highly variable from day to day and week to week.<sup>481</sup> Thus, Dr. Byrd questioned whether the Applicant’s studies reflect the true picture of migration.<sup>482</sup>

Dr. Byrd expressed concern for Bald Eagles, and noted that he personally observed a pair of Bald Eagles in courtship flight over the project site.<sup>483</sup> Dr. Byrd maintained that his observation means that the birds are present and the possibility of mortality cannot be ruled out.<sup>484</sup> In addition, Dr. Byrd testified that Highland County has long had a wintering population of Golden Eagles and that adults and juveniles have recently been seen near the proposed site during the summer.<sup>485</sup> Dr. Byrd offered an example of a wind project off the coast of Norway that has had a serious negative impact on white-tailed eagles.<sup>486</sup>

Dr. Byrd strongly recommended three years of post-construction mortality studies, structured to determine which species are being killed, when they are being killed, and at what rate they are being killed.<sup>487</sup> Dr. Byrd further recommended that such studies be conducted by scientists not associated with the wind energy industry or its consultants.<sup>488</sup>

**Dr. Richard Sherwin** reviewed the acoustic surveys conducted by the Applicant and questioned whether the multiple receivers make it possible to determine the number of bats from the number of recorded calls.<sup>489</sup> As Dr. Sherwin stated, it is impossible to distinguish one bat

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<sup>476</sup> *Id.*

<sup>477</sup> *Id.*

<sup>478</sup> *Id.* at 11.

<sup>479</sup> *Id.*

<sup>480</sup> *Id.* at 12.

<sup>481</sup> Exhibit No. 26, at 4.

<sup>482</sup> *Id.*

<sup>483</sup> *Id.*

<sup>484</sup> *Id.*

<sup>485</sup> *Id.* at 5.

<sup>486</sup> *Id.*

<sup>487</sup> *Id.* at 6.

<sup>488</sup> *Id.*

<sup>489</sup> Exhibit No. 20, at 2-3.



producing 100 calls, from 100 individual bats producing one call.<sup>490</sup> In addition, Dr. Sherwin expressed concern regarding the relatively short temporal period of the study design, and that it does not appear to be based upon recently published bat migration information.<sup>491</sup> Dr. Sherwin testified that other technologies, such as long range infrared cameras, would provide more robust data on bat behavior and local densities.<sup>492</sup> Nonetheless, Dr. Sherwin contended that pre-construction studies cannot predict post-construction mortality.<sup>493</sup> Dr. Sherwin advised: “[i]nstead of spending money on surveys that will not allow us to draw any meaningful conclusions, we should direct our resources to testing approaches which would reduce mortality at existing facilities.”<sup>494</sup>

**Dr. Sarah Mabey** observed that the methodology used to conduct the radar study supplied by the Applicant was meticulous and the conclusions of the researchers are supported by the data.<sup>495</sup> Dr. Mabey stated that the Breeding Bird survey used standard methodology, which Dr. Mabey found to be reliable for determining the presence or absence of most species, but a poor estimator of species density.<sup>496</sup> Dr. Mabey testified none of the empirical work presented by Highland Wind answers the question of how much risk the proposed project would pose to migrating birds.<sup>497</sup>

Dr. Mabey maintained that there is a challenge to measuring “significant impact” of migration mortality, which can be a consequence of direct events, such as accidents, or indirect effects, such as competition for seasonally scarce food, or a combination of direct and indirect events, such as weather.<sup>498</sup> Dr. Mabey was skeptical of whether the Applicant has provided enough information to allow a full assessment of risk, “because there have been no studies directly and empirically linking migrant passage rates with turbine-related mortality.”<sup>499</sup> Dr. Mabey contended that wind energy should be reviewed on a long-term, large scale basis, rather than on a project-specific basis.<sup>500</sup> Dr. Mabey advocated the creation of cumulative impact models for use by the Commission.

**Richard J. Reynolds** testified that Highland Wind has failed to provide DGIF with sufficient information for DGIF to determine the likely environmental impacts of the proposed wind turbines.<sup>501</sup> Based on data available from other wind turbines in the East, the location of nearby bat hibernacula, and the radar study, which showed the highest passage rates of nocturnal

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<sup>490</sup> *Id.* at 3.

<sup>491</sup> *Id.* at 4.

<sup>492</sup> *Id.*

<sup>493</sup> *Id.* at 5.

<sup>494</sup> *Id.*

<sup>495</sup> Exhibit No. 16, at 3.

<sup>496</sup> *Id.*

<sup>497</sup> *Id.* at 4.

<sup>498</sup> *Id.* at 5-6.

<sup>499</sup> *Id.* at 7.

<sup>500</sup> *Id.*

<sup>501</sup> Exhibit No. 27, at 2.

migrants of any other eastern site, Mr. Reynolds predicted that the proposed turbines will have a significant adverse impact on bat populations.<sup>502</sup> Mr. Reynolds maintained that the acoustic study being done by the Applicant will provide useful information, though the small sample size will be of limited value.<sup>503</sup> Mr. Reynolds included the endangered Virginia Big-Eared Bats and the endangered Indiana Bat as part of the bat population put at risk by the proposed project.<sup>504</sup> In addition, Mr. Reynolds expressed concern for migratory birds, with some species likely to be impacted more than others.<sup>505</sup>

Mr. Reynolds testified that DGIF has recommended an average annual mortality rate of 3.5 birds per turbine for birds and 1.8 bats per turbine as acceptable.<sup>506</sup> Mr. Reynolds recommended the designation of mandatory mitigation strategies if mortality rates exceed these limits.<sup>507</sup> Moreover, Mr. Reynolds contended that the presence of Golden and Bald Eagles at or near the proposed site support the need for additional studies of the presence of raptors.<sup>508</sup> Mr. Reynolds supported a study of the cumulative impact of birds, bats, and other wildlife as a requirement for each application for construction of a wind facility.<sup>509</sup>

If this project is approved, Mr. Reynolds recommended a carefully structured post-construction survey of bird and bat mortality for at least three years, with the reports made to the Commission and made available to the public.<sup>510</sup> Furthermore, Mr. Reynolds advised immediate implementation of effective mitigation strategies if reports reveal that the mortality rates for birds and bats “are seriously damaging a species.”<sup>511</sup>

### **Staff’s Direct Testimony**

On October 2, 2006, Staff filed the direct testimony of Gregory L. Abbott, principal utilities analyst in the Commission’s Division of Energy Regulation; Lawrence T. Oliver, assistant director of the Commission’s Division of Economics and Finance; and Mark K. Carsley, principal research analyst in the Commission’s Division of Economics and Finance.

**Gregory L. Abbott** reported that Allegheny Power conducted a PJM Generator Interconnection Feasibility Study and concluded that Highland Wind’s proposed interconnection will not adversely impact the reliability of the transmission system.<sup>512</sup> Mr. Abbott noted that Highland Wind will bear any additional costs resulting from the interconnection and will be

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<sup>502</sup> *Id.* at 3.

<sup>503</sup> *Id.* at 4.

<sup>504</sup> *Id.* at 4-5.

<sup>505</sup> *Id.* at 5.

<sup>506</sup> *Id.*

<sup>507</sup> *Id.* at 5-6.

<sup>508</sup> *Id.* at 6.

<sup>509</sup> *Id.* at 6-7.

<sup>510</sup> *Id.* at 7-8.

<sup>511</sup> *Id.* at 8.

<sup>512</sup> Exhibit No. 38, at 3.

responsible for the up-front and ongoing costs associated with the interconnection.<sup>513</sup> Mr. Abbott found that it appears that the proposed project, “will not negatively impact reliability in the region.”<sup>514</sup>

Mr. Abbott listed the conditions imposed by the Highland County in granting the conditional use permit as follows:

- Height (limit of 400 feet)
- Number of Turbines (limited to the number required to generate 39 MW not to exceed 22 turbines)
- KV lines (any new KV lines required will be underground)
- Setbacks (each turbine will be set back, from the nearest property line, a distance equal to 400% of the turbine’s height or 1,600 feet for a 400 foot tall turbine)
- Lighting (no lighting allowed except to meet the minimum requirements of the Federal Aviation Administration)
- Color
- Fencing
- Screening
- Signs
- Access (any areas disturbed by any expansion of access roads during installation will be restored and re-vegetated)
- Operations
- Erosion and Sediment Control
- Site Plan
- Federal and State Approvals
- Permit and Restrictions Run With the Land
- Nonoperation and Abandonment/Removal (any turbine that is not operated for a period of twelve consecutive months is considered abandoned and must be removed within nine months of receiving notice from the County. If all turbines are abandoned, then all turbines, substation and accessory buildings must be removed. All foundations are to be removed to a depth of two feet below grade and covered with soil.)
- Bond ([Highland Wind] required to submit to the County a performance bond conditioned upon the repair and removal obligations of [Highland Wind] under the permit)
- Duration
- Compliance With Laws
- Compliance Access<sup>515</sup>

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<sup>513</sup> *Id.*

<sup>514</sup> *Id.*

Mr. Abbott reviewed the team of experts assembled by Highland Wind and concluded that the Applicant is capable of developing the facility.<sup>516</sup> Mr. Abbott testified that the economic viability of the project turns on future wholesale prices for its output as well as the deliverability of the project's output to those markets.<sup>517</sup> Mr. Abbott noted that Highland Wind will be able to sell renewable energy credits and may take advantage of federal production tax credits.<sup>518</sup> Mr. Abbott concluded that aside from environmental issues, the Highland Wind project generally meets the criteria of § 56-580 D of the Virginia Code.<sup>519</sup> Mr. Abbott recommended approval of the Applicant's request for a certificate of public convenience and necessity, conditioned upon the Commission's final disposition of the environmental issues raised in this case.<sup>520</sup>

**Lawrence T. Oliver** addressed whether the Applicant possessed the financial resources to construct the proposed facility.<sup>521</sup> Mr. Oliver reported that the Applicant was organized as a Virginia limited liability company on October 8, 2002, and is a wholly owned subsidiary of Red Oak Ranch, L.L.C., managed by Henry T. McBride, Jr.<sup>522</sup> Mr. Oliver pointed out that Highland Wind anticipates selling all of the output from the proposed project to utilities in northeastern states with renewable energy portfolio requirements.<sup>523</sup>

Based on an analysis of the proposed facility's estimated cash flows, Mr. Oliver concluded that the project appears to be financially viable and should be able to attract debt and equity investors.<sup>524</sup> Mr. Oliver recommended approval of the proposed facility, subject to a two-year sunset provision.<sup>525</sup>

**Mark K. Carsley** reviewed the potential economic development benefits within the Commonwealth to be derived from the construction and operation of the proposed facility.<sup>526</sup> Mr. Carsley reported that the Applicant stated it is probable that road and other civil work, foundation labor, some portion of the electrical work, and other more labor intensive work will be performed by local and regional companies.<sup>527</sup> The Applicant estimated construction labor costs for the project to range from \$4 million to \$10 million.<sup>528</sup> Highland Wind expected the

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<sup>515</sup> *Id.* at 5-6; Attachment A.

<sup>516</sup> *Id.* at 6-7.

<sup>517</sup> *Id.* at 8.

<sup>518</sup> *Id.*

<sup>519</sup> *Id.* at 10.

<sup>520</sup> *Id.*

<sup>521</sup> Exhibit No. 39, at 1; Exhibit No. 40P, at 1.

<sup>522</sup> *Id.* at 2; *Id.* at 2.

<sup>523</sup> *Id.*; *Id.*

<sup>524</sup> *Id.* at 3; *Id.* at 3.

<sup>525</sup> *Id.* at 3-4; *Id.* at 3-4.

<sup>526</sup> Exhibit No. 41, at 1; Exhibit No. 42P, at 1.

<sup>527</sup> *Id.* at 3; *Id.* at 3.

<sup>528</sup> *Id.*; *Id.*

economic impact of construction wages to be regional and not in Highland County.<sup>529</sup> The Applicant estimated the purchases of construction services and materials in the range of \$3 million and local expenditures during operation to be approximately \$20,000 annually.<sup>530</sup> Highland Wind anticipated the proposed project will have a minimal impact on tourism.<sup>531</sup> Highland Wind projected that it did not expect to pay state or federal income taxes for at least ten years due to depreciation and production tax credits.<sup>532</sup>

Mr. Carsley agreed with Highland Wind that the primary positive economic impact of the proposed facility will be the additional real property taxes paid to Highland County.<sup>533</sup> Depending on what Highland County does with the additional tax revenue, Mr. Carsley calculated the total economic output of goods and services for the region would increase between 1.29 and 1.67 times the property taxes paid to Highland County.<sup>534</sup> Mr. Carsley acknowledged that he did not consider any offsetting benefits, such as a decline in property values for those properties in the vicinity of the proposed project.<sup>535</sup>

### **Applicant's Rebuttal Testimony**

On October 12, 2006, Highland Wind filed rebuttal testimony for the following witnesses: Dr. Edwin Michael; Dr. Colin High; Dr. D. Scott Reynolds; and Dr. Paul Kerlinger. The rebuttal testimonies of these witnesses are summarized below.

**Dr. Edwin Michael** responded to concerns regarding the disturbance of the Northern Flying Squirrel and the habitat of other endangered species raised by DGIF by pointing out that on July 25, 2006, he made a site visit with Mr. Richard Reynolds from DGIF. At the conclusion of the site visit, Mr. Reynolds agreed: (i) that the proposed project would have no direct effect on Northern Flying Squirrels or their habitat; (ii) Dr. Michael's trappings and habitat survey conducted in 2005 adequately sampled all 217 acres of the proposed project site; and (iii) no suitable habitat for the rock vole or water shrew will be disturbed by the project.<sup>536</sup> Dr. Michael testified that Mr. Reynolds failed to note the July 25 site visit in his prepared testimony and made statements that contradict statements he made during his site visit.<sup>537</sup>

**Dr. Colin High** sponsored a report titled "Avoided Air Emissions at the Proposed Highland County Wind Project, Virginia" ("Avoided Emissions Report"), based on 2005 data.<sup>538</sup>

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<sup>529</sup> *Id.* at 4; *Id.* at 4.

<sup>530</sup> *Id.*; *Id.*

<sup>531</sup> *Id.* at 4-5; *Id.* at 4-5.

<sup>532</sup> *Id.* at 5; *Id.* at 5.

<sup>533</sup> *Id.*; *Id.*

<sup>534</sup> *Id.* at 10; *Id.* at 10.

<sup>535</sup> *Id.* at 11; *Id.* at 11.

<sup>536</sup> Exhibit No. 31, at 2-3.

<sup>537</sup> *Id.* at 4-5.

<sup>538</sup> Exhibit No. 55, at 1, Attached Exhibit C.

Dr. High estimated that the average annual avoided emissions due to the proposed project would be as follows:<sup>539</sup>

	Lbs/MWh			tons		
	NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>
Annual	3.2	8.2	2052.6	199	423	106,953
Ozone Season	1.7	8.1	2015.9	19	99	24,738

In addition to avoidance of NO<sub>x</sub>, SO<sub>2</sub>, and CO<sub>2</sub>, Dr. High maintained that the proposed project will lead to avoided emissions of fine particulate matter, mercury, volatile organic compounds, carbon monoxide, and other toxic air pollutants.<sup>540</sup>

In response to testimony by Highland Citizens witness Simmons that because the energy produced by the proposed project will be sold to parties outside of Virginia, there will be no reduction in Virginia emissions, Dr. High contended that his study indicates that the associated emission reductions will occur primarily in the Virginia power market.<sup>541</sup> Dr. High noted that the use of renewable energy certificates decouples the environmental attributes from the electric power.<sup>542</sup> In addition, Dr. High responded to Mr. Simmons’ statement that “[w]hile there will be a reduction on a regional or national basis any reasonable estimate of the amount and location of any reduction would require a much more rigorous study . . . .”<sup>543</sup> Dr. High argued that the methodology used in the Avoided Emissions Report has been accepted by the EPA, Maryland, and New Jersey, and provides a reasonable basis for estimating avoided emissions.<sup>544</sup>

Dr. High disagreed with Highland Citizens witness Hewson’s conclusion that there are no avoided emissions benefits because the proposed project must compete against other qualifying renewable projects.<sup>545</sup> Dr. High contended that Mr. Hewson’s conclusion is based on an “incorrect assumption that all renewable energy projects have no incremental emissions.”<sup>546</sup> Dr. High pointed to several studies that show there are important emission benefits from renewable energy.<sup>547</sup> Furthermore, Dr. High testified that Mr. Hewson is wrong to conclude that there is a finite renewable demand based on fixed set-asides.<sup>548</sup> Finally, Dr. High asserted “that although the cap and trade rules may affect the magnitude of creditable emissions in compliance plans there are still quantifiable air emissions from cap and traded emissions.”<sup>549</sup>

<sup>539</sup> *Id.* at 2, Attached Exhibit C at 6.

<sup>540</sup> *Id.* at 2.

<sup>541</sup> *Id.*

<sup>542</sup> *Id.* at 3.

<sup>543</sup> *Id.*

<sup>544</sup> *Id.*

<sup>545</sup> *Id.*

<sup>546</sup> *Id.*

<sup>547</sup> *Id.*

<sup>548</sup> *Id.* at 4.

<sup>549</sup> *Id.*

**Dr. D. Scott Reynolds** disagreed with Nature Conservancy witness Tuttle that it is possible that bats are attracted to wind turbines.<sup>550</sup> Dr. D. Scott Reynolds defended the accuracy of studies performed at the Mountaineer wind site and asserted that differences in key biogeographic features mean that Mountaineer is not necessarily predictive of bat mortality at the Highland New Wind site.<sup>551</sup>

Dr. D. Scott Reynolds defended his conclusion that it is unlikely the proposed project will have an adverse effect on any population or endangered species or limit their conservation and recovery.<sup>552</sup> Dr. D. Scott Reynolds argued that despite the proximity of known hibernacula of endangered bats to Mountaineer, no endangered species of bats has been documented at Mountaineer.<sup>553</sup> Dr. D. Scott Reynolds testified that migratory tree bats and more common house-roosting bats have accounted for most bat mortality at wind projects.<sup>554</sup> Dr. D. Scott Reynolds maintained that we cannot assume, as advocated by Dr. Tuttle, that all wind energy facilities built on ridge top sites in the east have or will produce unsustainable mortality.<sup>555</sup> Dr. D. Scott Reynolds stated that Dr. Tuttle's recommendation to avoid known bat hibernation, breeding and maternity/nursing colonies, migration corridors, and flight paths between colonies and feeding areas would eliminate practically the entire United States as a suitable place for a wind farm.<sup>556</sup>

Dr. D. Scott Reynolds disagreed with Dr. Tuttle's testimony that twenty-six miles is well within the range of the Virginia Big-Eared Bat.<sup>557</sup> Dr. D. Scott Reynolds contended that data collected in West Virginia and Kentucky "suggest that the typical migratory distance is below ten miles."<sup>558</sup>

Dr. D. Scott Reynolds responded to testimony of Nature Conservancy witness Sherwin concerning the proposed acoustic monitoring study.<sup>559</sup> Dr. D. Scott Reynolds argued that the study consists of over 220 days of data, which is a sufficient duration, and that the acoustic monitoring study is the preferred assessment tool being used by the Bats and Wind Energy Cooperative.<sup>560</sup>

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<sup>550</sup> Exhibit No. 51, at 1.

<sup>551</sup> *Id.* at 2.

<sup>552</sup> *Id.* at 3.

<sup>553</sup> *Id.*

<sup>554</sup> *Id.*

<sup>555</sup> *Id.*

<sup>556</sup> *Id.* at 4.

<sup>557</sup> *Id.*

<sup>558</sup> *Id.*

<sup>559</sup> *Id.* at 5.

<sup>560</sup> *Id.* at 5-6.

Dr. D. Scott Reynolds commented on the testimony of Nature Conservancy witness Reynolds' criticisms of the acoustic study.<sup>561</sup> Dr. D. Scott Reynolds accused Mr. Reynolds of failing to understand that most of the variation in bat activity is temporal, not spatial, which makes the duration of a study more important than the total sample sites in determining bat activity.<sup>562</sup> Furthermore, Dr. D. Scott Reynolds disagreed with Mr. Reynolds' unfavorable comparison of the Highland acoustic study to a New York acoustic study.<sup>563</sup> Dr. D. Scott Reynolds contended that his study had a higher percentage of its sample at rotor height and acknowledged that there were significantly more resources available for the New York study.<sup>564</sup>

Dr. D. Scott Reynolds disagreed with Mr. Reynolds' conclusion that the proposed site poses a risk of significant mortality to all species of bats using the site.<sup>565</sup> Dr. D. Scott Reynolds maintained that Mr. Reynolds was inaccurate in stating that the typical migratory range of the Virginia Big-Eared bat extended from twenty to forty miles.<sup>566</sup> Dr. D. Scott Reynolds repeated that data from West Virginia and Kentucky suggest a typical migratory distance below ten miles.<sup>567</sup> Dr. D. Scott Reynolds agreed with Mr. Reynolds that Indiana Bats are known to migrate up to 200 miles, but contended that migratory distances typically are well below fifty miles.<sup>568</sup> Dr. D. Scott Reynolds asserted that the proposed site also lacks riparian features that dominate the habitat requirements of Indiana Bats.<sup>569</sup>

As to Mr. Reynolds' testimony that an annual mortality rate of not more than 1.8 bats per turbine would be acceptable, Dr. D. Scott Reynolds stated that 1.8 bats per turbine per year is below the national average, well below the average mortality rate in the Eastern United States, and fails to differentiate between endangered species and common species.<sup>570</sup>

Dr. D. Scott Reynolds objected to Mr. Reynolds' recommendation that each applicant for a wind turbine project be required to conduct a cumulative impact analysis. He argued this would be impractical and cost prohibitive and more appropriate for DGIF or the regional U.S. Fish and Wildlife Services.<sup>571</sup>

Dr. D. Scott Reynolds responded to Highland Citizens witness Gannon's assertion that the studies performed at the site pertaining to bats would not pass peer review and fall short of accepted scientific standards, by stating that the methodology used has been endorsed by the Bats and Wind Energy Cooperative and is the standard pre-construction protocol in several

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<sup>561</sup> *Id.* at 6.

<sup>562</sup> *Id.* at 7.

<sup>563</sup> *Id.*

<sup>564</sup> *Id.* at 8.

<sup>565</sup> *Id.*

<sup>566</sup> *Id.*

<sup>567</sup> *Id.*

<sup>568</sup> *Id.* at 9.

<sup>569</sup> *Id.*

<sup>570</sup> *Id.*

<sup>571</sup> *Id.* at 10.



states.<sup>572</sup> Dr. D. Scott Reynolds answered Dr. Gannon’s criticism regarding his failure to include information from the Grotto Report by pointing out that his Overview on bats was prepared before the Grotto Report was released.<sup>573</sup> Dr. D. Scott Reynolds stated that the additional bat hibernacula discussed in the Grotto Report are small and unconfirmed by regional bat biologists, DGIF, or the West Virginia Department of Natural Resources.<sup>574</sup>

Dr. D. Scott Reynolds disagreed with Dr. Gannon that endangered bat species will likely be killed at the proposed project site.<sup>575</sup> Dr. D. Scott Reynolds also disagreed with Dr. Gannon’s recommendation for two years of mist netting.<sup>576</sup> Dr. D. Scott Reynolds asserted that because the proposed site is an open agricultural field, it would be virtually impossible to mist net effectively.<sup>577</sup>

**Dr. Paul Kerlinger** responded to the testimony of Nature Conservancy witness Byrd concerning the acceptable level of bird mortality and contended that the question should be whether any bird mortality that occurs rises to the level of biologically significant mortality, which is a number of fatalities that would lead to a decline in the population of the species.<sup>578</sup> Dr. Kerlinger acknowledged the possible presence of Bald Eagles at the proposed project sites, but contended that the absence of fatalities at other sites where Bald Eagles are present and the strong, sustained growth of Bald Eagles in Virginia “strongly suggests that the species will not likely be impacted in a significant fashion by the Highland Project.”<sup>579</sup> As to Golden Eagles, Dr. Kerlinger concluded “[t]here is no reason to believe that such a conspicuous species nests in Highland County.”<sup>580</sup>

In response to the testimony of Nature Conservancy witness Mabey, Dr. Kerlinger provided additional tables with radar passage rate data from several sites in New York, Vermont, Maine, West Virginia, Louisiana, Georgia, and South Carolina with similar or higher passage rates.<sup>581</sup> Dr. Kerlinger noted that Dr. Mabey agrees that the proposed site is not likely to have a biologically significant impact on night migrants, but stated that she remained concerned that there may be regional impacts from wind power development.<sup>582</sup> Dr. Kerlinger faulted Dr. Mabey’s conclusion as being unsupported and contended that the low fatality rate of night migrants is spread over a wide range of species, many of which have nesting ranges that encompass vast areas of Canada, New England, and the northern Midwest.<sup>583</sup> Thus, Dr.

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<sup>572</sup> *Id.* at 12.

<sup>573</sup> *Id.* at 12-13.

<sup>574</sup> *Id.* at 13.

<sup>575</sup> *Id.*

<sup>576</sup> *Id.* at 14.

<sup>577</sup> *Id.*

<sup>578</sup> Exhibit No. 57, at 2.

<sup>579</sup> *Id.* at 4.

<sup>580</sup> *Id.* at 5.

<sup>581</sup> *Id.* at 6-8.

<sup>582</sup> *Id.* at 10.

<sup>583</sup> *Id.* at 10-11.

Kerlinger concluded “that it is highly unlikely that populations of single species will be impacted significantly.”<sup>584</sup>

Dr. Kerlinger attacked the testimony of Nature Conservancy witness Reynolds regarding passage rates and the possibility of a significant kill rate for migratory birds as being inconsistent with the testimony of Dr. Mabey, lacking in foundation, and failing to specify which species may be impacted.<sup>585</sup> Dr. Kerlinger took exception to Mr. Reynolds’ recommended mortality limit of 2.1 birds per turbine per year and calculated that if the fatality rate at Highland Wind is found to be five birds per turbine per year, the fatality rate for a single species would be on the order of 0.17 to 0.25 birds per turbine per year.<sup>586</sup> Finally, Dr. Kerlinger criticized Mr. Reynolds for failing to provide specificity or authority for his observation regarding Golden Eagles in the vicinity of the proposed project.<sup>587</sup>

Dr. Kerlinger disagreed with Highland Citizens witness Rowlett’s concern for the Golden-Winged Warbler based on information that this species has not been found to nest on the proposed site and based on reports of mortality from other wind farms.<sup>588</sup> Dr. Kerlinger testified that contrary to Dr. Rowlett’s assertions, the Golden Eagle is not listed as endangered, threatened, or a species of special concern.<sup>589</sup> Dr. Kerlinger did not share the concern expressed by Dr. Rowlett for multiple species of birds as Dr. Kerlinger noted that none of the species are endangered or threatened, and one is legally hunted.<sup>590</sup> Furthermore, Dr. Kerlinger asserted Dr. Rowlett’s testimony that Highland County is an important bird area is incorrect; only a small percentage of Highland County is within an important bird area.<sup>591</sup> Dr. Kerlinger disagreed that wind turbines will hurt ecotourism in Highland County by listing several popular birding sites with wind turbines and communication towers visible.<sup>592</sup>

Dr. Kerlinger responded to the testimony of Highland Citizens witness Whitmore and provided details regarding the methodology used to complete the Breeding Bird Survey.<sup>593</sup> Dr. Kerlinger followed Dr. Whitmore’s advice and reviewed the Virginia Breeding Bird Atlas.<sup>594</sup> Dr. Kerlinger reported that this review did not change his assessment.<sup>595</sup>

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<sup>584</sup> *Id.* at 11.

<sup>585</sup> *Id.* at 12.

<sup>586</sup> *Id.* at 13.

<sup>587</sup> *Id.*

<sup>588</sup> *Id.* at 15.

<sup>589</sup> *Id.* at 16.

<sup>590</sup> *Id.* at 17.

<sup>591</sup> *Id.* at 18.

<sup>592</sup> *Id.* at 18-19.

<sup>593</sup> *Id.* at 19-21.

<sup>594</sup> *Id.* at 24.

<sup>595</sup> *Id.*

## Richmond Hearings – Public Witnesses

During the evidentiary hearings held in the Commission’s courtroom in Richmond, twenty-four public witnesses appeared. A summary of their testimony, in the order they appeared, is provided below.

**Senator Frank Wagner**, of Virginia Beach, Virginia, provided the legislative intent behind the Virginia Energy Plan as enacted by Senate Bill 262.<sup>596</sup> In addition, Senator Wagner testified he observed that in Europe, wind turbines, tourism, and wildlife all coexisted.<sup>597</sup> Senator Wagner stated that the premise of Senate Bill 262 was to look within the borders of the Commonwealth to seek a more reliable system of energy.<sup>598</sup> Senator Wagner quoted an article in the October 16<sup>th</sup> *Wall Street Journal* that demand for electric energy is increasing three times faster than supply.<sup>599</sup> Though Senator Wagner considered the proposed wind project in this case to be an insignificant addition to overall generating capacity in the Commonwealth, Senator Wagner maintained that the project is “very, very important” as it represents “our first step towards a renewable clean form of energy that produces no greenhouse gases . . . .”<sup>600</sup> Senator Wagner was struck by the fact that wind turbine technology is taking hold in many other states, and that Virginia seems to be lagging.<sup>601</sup>

Senator Wagner asserted that under the Virginia Energy Plan, siting remains a local land use issue.<sup>602</sup> Senator Wagner agreed that the Virginia Code requires environmental issues to be reviewed in this case, but observed that any energy project, regardless of the type of generation, will have some impact on the environment.<sup>603</sup> Senator Wagner contended that in weighing and balancing environmental factors, significant weight should be given to “a renewable energy . . . that produces no carbon back into the environment.”<sup>604</sup> Senator Wagner endorsed this project as a “step that moves us in the right direction.”<sup>605</sup>

**Robert S. Munson**, of the Department of Conservation and Recreation (“DCR”) Planning and Recreation Resources Division, stated that in reviewing this project, the Planning and Recreation Resources Division questioned the height and location of the turbines and whether or not they would be a visual intrusion.<sup>606</sup> Mr. Munson recommended that Highland Wind use the U.S. Forest Service Landscape Aesthetic Scenery Management Process to

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<sup>596</sup> Senator Wagner, Tr. at 688-89.

<sup>597</sup> *Id.* at 690.

<sup>598</sup> *Id.*

<sup>599</sup> *Id.* at 691.

<sup>600</sup> *Id.* at 692-93.

<sup>601</sup> *Id.* at 693.

<sup>602</sup> *Id.* at 694-95.

<sup>603</sup> *Id.* at 695-96.

<sup>604</sup> *Id.* at 696.

<sup>605</sup> *Id.* at 697.

<sup>606</sup> Munson, Tr. at 704-05.

determine the best location for the turbine field on their property.<sup>607</sup> On cross-examination, Mr. Munson confirmed that the portion of Route 250 that crosses the proposed turbine site has not been designated a Scenic Byway.<sup>608</sup>

**Steven Roble**, of DCR's Division of Natural Heritage, testified in support of the recommendations of DGIF including pre- and post-construction monitoring for bats, especially carcass studies of fatalities below the turbines.<sup>609</sup> As for the Division of Natural Heritage's written comments regarding Laurel Fork, Mr. Roble stated that based on further inspections, those comments are no longer applicable, provided there is directional drilling of the facility below the creek and a setback of at least fifty feet from the stream for all work.<sup>610</sup>

**Richard J. Reynolds**, presented public testimony on behalf of DGIF and stated that absent accountable mitigation measures, DGIF believes this project presents an unacceptable risk to wildlife.<sup>611</sup> Specifically, Mr. Reynolds raised concerns regarding bats and birds due to the proximity to caves that support large numbers of bats, the high passage rates identified by Highland Wind, the significant bat fatality rates at other Allegheny wind farms, and the documented use of ridge tops by eagles.<sup>612</sup> In addition, Mr. Reynolds voiced concerns for the cumulative impacts of wind development in the Alleghenies.<sup>613</sup> Because of these concerns, Mr. Reynolds recommended that the following conditions be imposed on the project: (i) limit bird and bat fatalities to 2.3 birds and 2.1 bats per turbine per year; (ii) conduct daily fatality searches for the first three years; (iii) use sampling and monitoring protocols approved by the Commission, DGIF, and the U.S. Fish and Wildlife Service; (iv) report results to these agencies and to the public; (v) continue fatality searches at some scale and interval for the life of the project; and (vi) identify opportunities for adaptive management, such as cut-in speed, or shutting down turbines during times of peak migration.<sup>614</sup>

**Dr. Dudley F. Rochester**, of Charlottesville, Virginia, stated that he is a retired pulmonary physician and a volunteer with the American Lung Association of Virginia.<sup>615</sup> Dr. Rochester testified that fine particulate matter impacts respiratory illness in children, infant mortality, heart disease, stroke, and other respiratory illnesses.<sup>616</sup> In addition, Dr. Rochester maintained that the risk of dying from all causes that are not traumatic is increased substantially by exposure to air pollution.<sup>617</sup> Dr. Rochester put the risk of mortality from air pollution at

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<sup>607</sup> *Id.* at 706.

<sup>608</sup> *Id.* at 710-11.

<sup>609</sup> Roble, Tr. at 714.

<sup>610</sup> *Id.* at 714-15.

<sup>611</sup> Richard J. Reynolds, Tr. at 723.

<sup>612</sup> *Id.* at 723-24.

<sup>613</sup> *Id.* at 724.

<sup>614</sup> *Id.* at 724-26.

<sup>615</sup> Dr. Rochester, Tr. at 781-82.

<sup>616</sup> *Id.* at 782.

<sup>617</sup> *Id.*

approximately forty percent of that related to tobacco use.<sup>618</sup> Dr. Rochester asserted that a thirty-three percent fall in outdoor air pollution might well be associated with a one-third fall in respiratory illnesses in children, a reduction in overall death rates, and savings approaching \$1.6 billion per year for the Commonwealth.<sup>619</sup>

**Patricia Reum**, Monterey, Virginia, stated that she works and resides at Bear Mountain Farm and Wilderness Retreat.<sup>620</sup> Ms. Reum affirmed that from April 2006, to November 2006, Bear Mountain Farm hosted 320 lodging guests, an increase of ten percent over 2005.<sup>621</sup> Ms. Reum pointed out that Bear Mountain Farm is home to the Golden-Winged Warbler and Red Crossbill, which draw many birders as they are considered “life birds” for many visitors.<sup>622</sup> Ms. Reum testified that during 2006, Bear Mountain Farm became a hawk migration count site for the Hawk Migration Association of North America.<sup>623</sup> Ms. Reum reported that bird surveys in the Laurel Fork watershed were conducted during May 14-16, 2006, and October 21-22, 2006.<sup>624</sup> During the spring survey ninety species were observed, with migratory species accounting for eighteen of the top twenty species by tally.<sup>625</sup> During the fall survey sixty-nine species were observed.<sup>626</sup> In addition, Ms. Reum confirmed the finding of two Bald Eagle nests in Highland County.<sup>627</sup>

**Jim Morse**, of Blue Grass, Virginia, contended that the Endangered Species Act cannot be balanced with anything, as the species are in desperate need.<sup>628</sup> Mr. Morse pointed out that on October 19<sup>th</sup> *The Recorder* reported that the U.S. Fish and Wildlife Service warned the Liberty Gap applicants that they needed a take permit.<sup>629</sup> Mr. Morse maintained that if it is shown that an endangered species will be killed by the proposed project in this case, the Endangered Species Act should be addressed by the Commission.<sup>630</sup>

**Gail Price**, of Franklin, West Virginia, testified that she is a tourism professional and understands that tourism in Highland County is based on the unspoiled nature of the landscape.<sup>631</sup> In contrast, Ms. Price stated that tourism in Tucker County, West Virginia, which

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<sup>618</sup> *Id.* at 783.

<sup>619</sup> *Id.* at 785-86.

<sup>620</sup> Reum, Tr. at 815.

<sup>621</sup> *Id.* at 817.

<sup>622</sup> *Id.* at 819-21.

<sup>623</sup> *Id.* at 821-25.

<sup>624</sup> *Id.* at 828.

<sup>625</sup> *Id.* at 829.

<sup>626</sup> *Id.* at 830.

<sup>627</sup> *Id.* at 832.

<sup>628</sup> Morse, Tr. at 840.

<sup>629</sup> *Id.* at 841.

<sup>630</sup> *Id.* at 842-43.

<sup>631</sup> Price, Tr. at 843-48.

has a wind farm, is based on skiing and is unaffected by wind turbines.<sup>632</sup> Ms. Price asked that Highland County be permitted to retain its unspoiled nature.<sup>633</sup>

**Sandy Spencer**, of Warsaw, Virginia, represented the Virginia Society for Ornithology.<sup>634</sup> Ms. Spencer testified that in considering mortality rates, bird and wildlife mortality rates caused by wind power are additive, cumulative, and represent a loss of reproductive potential.<sup>635</sup> Ms. Spencer asked that the Commission not permit any projects until risk analyses that are used for the site selection scoring process are made available for peer and public review and evaluation.<sup>636</sup>

**Al Warfield**, of Richmond, Virginia, president of the Richmond Audubon Society, testified that the Allegheny Mountains constitute one of the most important pathways for migratory birds.<sup>637</sup> Mr. Warfield referred to a video called *Rough Wind, The Impact of Industrial Windmill Facilities on Birds and Other Wildlife*, presented by the Allegheny Plateau Audubon of Pennsylvania.<sup>638</sup> Mr. Warfield maintained that the video warned against the permanent loss of bird and bat species and called for the development of alternatives to wind energy.<sup>639</sup> Mr. Warfield asserted that raptors, birds, and bats protect crops and forests.<sup>640</sup> Mr. Warfield recommended denial of certificates for wind facilities located in areas known to be important to birds and bats.<sup>641</sup>

**Catherine Gilliam**, of Rockbridge County, Virginia, spoke on behalf of the National Parks Conservation Association (“NPCA”).<sup>642</sup> Ms. Gilliam urged the Commission to require an analysis of the impact of the project on Camp Allegheny.<sup>643</sup> Ms. Gilliam testified that the NPCA supports increased development of wind energy, but believes that wind development should not be located on sites that would harm parks or nationally significant sites, such as Camp Allegheny.<sup>644</sup>

**Kevin Lynch**, city councilor, Charlottesville, Virginia, testified that the City of Charlottesville is very interested in becoming a wind power customer.<sup>645</sup> Mr. Lynch contended that it is essential for the economy and health of Virginia to look for ways to generate electricity

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<sup>632</sup> *Id.* at 851

<sup>633</sup> *Id.* at 856.

<sup>634</sup> Spencer, Tr. at 857.

<sup>635</sup> *Id.* at 858-59.

<sup>636</sup> *Id.* at 859-60.

<sup>637</sup> Warfield, Tr. at 862.

<sup>638</sup> *Id.* at 863.

<sup>639</sup> *Id.* at 867.

<sup>640</sup> *Id.* at 868.

<sup>641</sup> *Id.*

<sup>642</sup> Gilliam, Tr. at 875.

<sup>643</sup> *Id.* at 876.

<sup>644</sup> *Id.* at 878.

<sup>645</sup> Lynch, Tr. at 882-84.

without burning fossil fuels.<sup>646</sup> Mr. Lynch pointed out that General Electric manufactures turbine components in Salem, Virginia.<sup>647</sup>

**Elizabeth S. Merritt**, deputy general counsel of the National Trust for Historic Preservation, expressed the grave concerns of the National Trust regarding the proposed project's adverse visual effect on Camp Allegheny.<sup>648</sup> Ms. Merritt pointed out that the Virginia Department of Historic Resources has expressed concerns regarding the adverse visual impacts of the proposed project on the Camp Allegheny Battlefield.<sup>649</sup> Ms. Merritt maintained that Camp Allegheny "is a time capsule that's been remarkably undisturbed by development over the last century and a half . . . and its siting should be protected for future generations."<sup>650</sup> Ms. Merritt requested a detailed viewshed analysis and comprehensive site plan to enable the evaluation of the adverse visual effects and the development of alternatives to avoid or mitigate any adverse visual effects.<sup>651</sup>

**Eugenia Anderson-Ellis**, of Richmond, Virginia, president of Scenic Virginia, stated that in 2004, Scenic Virginia awarded a citation to Highland County because of concern for its viewshed due to this project.<sup>652</sup> Ms. Anderson-Ellis referred to the advantages of satellite communications over cell towers to make the point that we should wait until technology develops without egregious side effects.<sup>653</sup>

**Sandy Hevener**, of Blue Grass, Virginia, presented documentation regarding eagle nests in Highland County and year-round resident eagles in Highland County.<sup>654</sup> Ms. Hevener provided a photograph taken on April 30, 2006, of an eagle on a nest in Highland County.<sup>655</sup> In addition, Ms. Hevener collected reports of 678 sightings of eagles in Highland County over a nine-month period.<sup>656</sup> Ms. Hevener documented Golden Eagles every month from January through October. Indeed, Ms. Hevener described watching Golden Eagles do their courtship dance.<sup>657</sup> Ms. Hevener responded to testimony that not a single Bald Eagle has been killed by a wind turbine by pointing out that such testimony ignores Altamont Pass, California, which has an average of fifty eagles killed per year.<sup>658</sup>

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<sup>646</sup> *Id.* at 884.

<sup>647</sup> *Id.* at 887.

<sup>648</sup> Merritt, Tr. at 893.

<sup>649</sup> *Id.* at 895.

<sup>650</sup> *Id.* at 897.

<sup>651</sup> *Id.* at 897-98.

<sup>652</sup> Anderson-Ellis, Tr. at 901.

<sup>653</sup> *Id.* at 903.

<sup>654</sup> Sandy Hevener, Tr. at 907-08.

<sup>655</sup> *Id.* at 908; Exhibit No. 17.

<sup>656</sup> Hevener, Tr. at 909.

<sup>657</sup> *Id.* at 913-14.

<sup>658</sup> *Id.* at 914-15.

**David C. Smith**, of McDowell, Virginia, appeared in support of the proposed project.<sup>659</sup> Mr. Smith argued that the project was needed because it offered an alternative to foreign oil, additional tax revenues to Highland County, and a means for large landowners to generate additional income from their land.<sup>660</sup> Mr. Smith contended Highland County's duly elected Board of Supervisors has approved the project and should not be forced to continue spending taxpayer funds on this application.<sup>661</sup>

**John R. Sweet**, of Mustoe, Virginia, stated that he also owns a large tract of land, but opposes the project based on its negative impact on the viewshed.<sup>662</sup> Mr. Sweet presented simulations of the impact of the proposed wind turbines from six different points, including Camp Allegheny.<sup>663</sup>

**Rick Lambert**, of Monterey, Virginia, offered comments on Dr. D. Scott Reynolds' overview of the current state of knowledge of bats.<sup>664</sup> Specifically, Mr. Lambert contended that Dr. Reynolds made errant references to a study conducted by William J. McShea and Heather Lessig titled, *Migration of Female Indiana Bats (Myotis sodalist) from Winter Hibernacula to Summer Maternity Roosts ("McShea Study")*.<sup>665</sup> In addition, Mr. Lambert maintained that the *McShea Study* indicates that the endangered Indiana Bat in Highland County, Virginia, is primarily a non-riparian species.<sup>666</sup> Mr. Lambert agreed with comments by the U. S. Fish and Wildlife Service that a "take permit" under the Endangered Species Act should be obtained by Highland Wind for this project.<sup>667</sup>

**Thomas R. Richardson**, of Monterey, Virginia, observed that on the surface, wind energy sounds pretty good, but closer study shows that it has serious consequences to wildlife, particularly birds and bats.<sup>668</sup> Mr. Richardson referred to an article from Scotland, which reported on the abandoning of a wind farm proposal to safeguard Golden Eagles.<sup>669</sup> Mr. Richardson contended that many European countries are pulling their subsidies from wind energy as they are finding it to be inefficient and costly.<sup>670</sup>

**Elana Brody**, of Hightown, Virginia, now eighteen, appeared as a representative of the generation that must find permanent solutions to our environmental and energy crises.<sup>671</sup> Ms.

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<sup>659</sup> Smith, Tr. at 922.

<sup>660</sup> *Id.* at 922-24.

<sup>661</sup> *Id.* at 924-25.

<sup>662</sup> Sweet, Tr. at 928.

<sup>663</sup> *Id.* at 929; Exhibit No. 18.

<sup>664</sup> Lambert, Tr. at 942.

<sup>665</sup> *Id.* at 942-43.

<sup>666</sup> *Id.* at 943.

<sup>667</sup> *Id.* at 952.

<sup>668</sup> Richardson, Tr. at 955-56.

<sup>669</sup> *Id.* at 956-57.

<sup>670</sup> *Id.* at 957.

<sup>671</sup> Elana Brody, Tr. at 959-60.



Brody argued that wind energy is not the permanent solution and that there is no need to go ahead with this project as other Virginia projects will be proposed.<sup>672</sup> Ms. Brody further argued, “Highland, and all of its splendor, . . . [is] magical, and timeless . . . unlike wind turbines, which will . . . be outated.”<sup>673</sup>

**Donald M. Giecek**, of Maidens, Virginia, testified that he has been employed for over ten years in the land conservation field and is currently employed by the Chesapeake Climate Action Network.<sup>674</sup> Mr. Giecek described a collaborative effort, which began in 2003, by wind energy advocates and other environmental interests to establish a landscape classification system. The objective of the system is to provide an environmental database to facilitate macro siting decisions for utility-scale wind energy development so that sites with significant natural resource values are avoided.<sup>675</sup> Mr. Giecek contended that environmentalists must acknowledge that we use energy and must stop fighting every energy source.<sup>676</sup> Mr. Giecek outlined some of the “staggering realities” of global warming including its negative impact on the Shenandoah Salamander, the Spruce Moss Fur Spider, and a ninety percent loss of habitat for Brook Trout in Appalachia.<sup>677</sup>

**Lucile S. Miller**, of Charlottesville, Virginia, raised concerns that bat kills may be underreported, as only twelve of more than 200 turbine facilities in the United States have been examined for bat kills and six of those attempted to estimate total bat mortality.<sup>678</sup> Ms. Miller testified that the benefits to humans provided by bats include: (i) reduced need for chemical pesticides; (ii) guano, whose bacteria is used in detergents, cleaning oil spills, detoxifying industrial wastes in waterways, gasohol, and antibiotics; and (iii) contributions to medical research and the development of sonar type devices.<sup>679</sup> Ms. Miller presented pictures and descriptions of several local bat species, including the Red Bat, the Hoary Bat, the Silver Bat, the Big Brown Bat, the Little Brown Bat, the Eastern Pipistrelle, the Indiana Bat, and the Virginia Big-Eared Bat.<sup>680</sup> Ms. Miller argued that the well-being of humans “is inextricably linked to birds and bats . . . where they are not doing so well, neither are we.”<sup>681</sup>

**Suzanne Simmons** of Blue Grass, Virginia, voiced her opposition to wind power development in Highland County.<sup>682</sup> Ms. Simmons described Highland County as a county without billboards, heavy industrial development, and fast food.<sup>683</sup> Based on her experience in

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<sup>672</sup> *Id.* at 960-61.

<sup>673</sup> *Id.* at 963.

<sup>674</sup> Giecek, Tr. at 969.

<sup>675</sup> *Id.* at 970-74.

<sup>676</sup> *Id.* at 977.

<sup>677</sup> *Id.* at 977-78.

<sup>678</sup> Miller, Tr. at 988.

<sup>679</sup> *Id.* at 989-91.

<sup>680</sup> *Id.* at 991-94; Exhibit No. 19.

<sup>681</sup> *Id.* at 995.

<sup>682</sup> Suzanne Simmons, Tr. at 1321.

<sup>683</sup> *Id.*

emergency management and harkening to manmade disasters such as the great dust bowl, Ms. Simmons cautioned that a successful ecosystem is based on the sum of its parts and if you remove enough parts “[e]ventually you are in the minus realm.”<sup>684</sup> Ms. Simmons expressed concern for birds and the effect the four hundred-foot turbines will have on them.<sup>685</sup> Nonetheless, Ms. Simmons stated that her number one reason for opposing the proposed turbines was because of the uniqueness of Highland County and the ecosystem where the turbines will be built.<sup>686</sup> Ms. Simmons further argued that the costs to construct and the loss of county tourism outweigh any benefits that will ever be received.<sup>687</sup>

Ms. Simmons testified that she lived for four years on Allegheny Mountain in a one-hundred-year-old farmhouse without electricity.<sup>688</sup> Ms. Simmons stated:

I lived there and read the changing of the seasons in the flocks of songbirds that travel through twice a year, flocks of songbirds that covered the open ridge-top meadows, landing where the snow had melted for a much needed rest, or settling down in the treetops to ride out a southern storm, hundreds and thousands of songbirds, Red-Breasted Grosbeaks, Bluebirds, Cardinals. . . . I want to ask, was the scientific researcher there, by chance, on the day or the hours that they passed through last year?<sup>689</sup>

Ms. Simmons suggested putting the wind turbines near ski resorts or on ridges with lit towers.<sup>690</sup>

**John Simmons**, of Blue Grass, Virginia, agreed with Suzanne Simmons, and contended that no one in Highland County is going to save a cent on electricity.<sup>691</sup> Mr. Simmons testified that approval of this project will make it difficult to prevent “the next one and the next one and the next one.”<sup>692</sup>

## DISCUSSION

The Applicant seeks approval of its proposed wind turbine project pursuant to §§ 56-46.1 and 56-580 D of the Virginia Code. Section 56-46.1 A provides:

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<sup>684</sup> *Id.* at 1322-23.

<sup>685</sup> *Id.* at 1323.

<sup>686</sup> *Id.* at 1324.

<sup>687</sup> *Id.*

<sup>688</sup> *Id.* at 1325.

<sup>689</sup> *Id.* at 1325-26.

<sup>690</sup> *Id.* at 1326-27.

<sup>691</sup> John Simmons, Tr. at 1331.

<sup>692</sup> *Id.* at 1332.

Whenever the Commission is required to approve the construction of any electrical utility facility, it shall give consideration to the effect of that facility on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact. In order to avoid duplication of governmental activities, any valid permit or approval required for an electric generating plant and associated facilities issued or granted by a federal, state or local governmental entity charged by law with responsibility for issuing permits or approvals regulating environmental impact and mitigation of adverse environmental impact or for other specific public interest issues such as building codes, transportation plans, and public safety, whether such permit or approval is granted prior to or after the Commission's decision, shall be deemed to satisfy the requirements of this section with respect to all matters that (i) are governed by the permit or approval or (ii) are within the authority of, and were considered by, the governmental entity in issuing such permit or approval, and the Commission shall impose no additional conditions with respect to such matters. . . . In every proceeding under this subsection, the Commission shall receive and give consideration to all reports that relate to the proposed facility by state agencies concerned with environmental protection . . . . Additionally, the Commission (i) shall consider the effect of the proposed facility on economic development within the Commonwealth and (ii) shall consider any improvements in service reliability that may result from the construction of such facility.

Section 56-580 D states:

The Commission shall permit the construction and operation of electrical generating facilities upon a finding that such generating facility and associated facilities (i) will have no material adverse effect upon reliability of electric service provided by any regulated public utility and (ii) are not otherwise contrary to the public interest. In review of a petition for a certificate to construct and operate a generating facility described in this subsection, the Commission shall give consideration to the effect of the facility and associated facilities on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact as provided in § 56-46.1. In order to avoid duplication of governmental activities, any valid permit or approval required for an electric generating plant and associated facilities issued or granted by a federal, state or local governmental entity charged by law with responsibility for issuing permits or approvals regulating environmental impact and mitigation of

adverse environmental impact or for other specific public interest issues such as building codes, transportation plans, and public safety, whether such permit or approval is prior to or after the Commission's decision, shall be deemed to satisfy the requirements of this section with respect to all matters that (i) are governed by the permit or approval or (ii) are within the authority of, and were considered by, the governmental entity in issuing such permit or approval, and the Commission shall impose no additional conditions with respect to such matters. . . .

Furthermore, § 56-596 A, expands the Commission's analysis under 56-580 D to "take into consideration, . . . the goals of advancement of competition and economic development in the Commonwealth."

Under these sections, before issuing a permit, the Commission must find that the proposed facility: (i) will have no material adverse effect upon the reliability of electric service provided by any regulated public utility and (ii) is not otherwise contrary to the public interest. The Commission must consider the effect of the proposed facility on the goals of advancement of competition and economic development within the Commonwealth; and consider any improvements in service reliability that may result from the construction of such facility. In addition, the Commission must give consideration to the effect of the proposed facility on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact. Finally, the Commission's review is limited, as the statutes exclude matters encompassed by any other governmental permits or approvals, and excludes all matters within the authority of, and considered by, the governmental entity in issuing a permit or approval.

In this case, the most limiting factor on the Commission's review is the conditional use permit granted by Highland County pursuant to its zoning ordinance and comprehensive plan. During the hearing, counsel for Highland County explained that Highland County considered property values, tourism, viewshed, height restrictions, setbacks, lighting, color of structures, fencing, security measures, erosion and sediment control, signage, access roads, and decommissioning.<sup>693</sup> Counsel for Highland County emphasized that Highland County did not consider or make environmental determinations or consider the public interest of the Commonwealth.<sup>694</sup>

A number of public witnesses raised issues relating to the impact of the proposed wind turbines on the quality of life in Highland County. Rather than have this Commission make such decisions from Richmond, the General Assembly, in amending §§ 56-46.1 A and 56-580 D to avoid duplication of governmental review, has placed issues touching upon the quality of life in Highland County in the hands of a locally-elected board of supervisors, and limited review by this Commission. This case demonstrates the importance of an informed electorate. Voters

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<sup>693</sup> Dowd, Tr. at 678-83.

<sup>694</sup> *Id.* at 682.

should know board of supervisor candidates' positions on industrial wind development in Virginia counties with high ridge lines.

Thus, the discussion will be organized to address the impact of the proposed facility on: (i) the reliability of electric service; (ii) the goals of competition and economic development within the Commonwealth; (iii) public interest; and (iv) environmental issues.

### **Reliability of Electric Service**

Staff witness Abbott conducted an investigation on the impact of the proposed facility on the reliability of electric service and found that the proposed project “will not negatively impact reliability in the region.”<sup>695</sup> None of the parties presented any evidence to the contrary. Indeed, on brief, the Nature Conservancy acknowledged that “[t]here is nothing in the record in this case to suggest that the construction and operation of the Highland facility will have any adverse effect on the reliability of electric service provided by another utility.”<sup>696</sup> Consequently, based upon Staff’s analysis, I find that the proposed facility will have no material adverse effect upon the reliability of electric service provided by any regulated public utility.

### **Competition and Economic Development**

In regard to competition, Highland Wind witness Paulson testified that the proposed project would enhance electric competition by adding another independent power producer, which “only expands the available competitive generation resources available in the regional marketplace[,] . . . thereby creating price pressure and reducing the ultimate cost to customers.”<sup>697</sup> On the other hand, Highland Citizens witness Simmons contended that there would be no advancement of electric competition in Virginia because the energy generated by the proposed project would be sold in states such as New Jersey, Maryland, and Pennsylvania that have established compliance schedules for renewable resources with substantial economic penalties.<sup>698</sup>

Thus, Mr. Paulson focused on indirect competitive benefits realized in the “regional marketplace” while Mr. Simmons focused on direct competitive benefits or sales in Virginia. The reality of PJM, the participation of Virginia electric companies in PJM, and the likely reliance of potential competitors in Virginia on PJM, supports Mr. Paulson’s view that adding another independent power producer advances electric competition in Virginia. While no one has suggested that the proposed project will have a significantly measurable impact on the advancement of competition in the Commonwealth, I agree with Mr. Paulson and Highland Wind that the proposed project advances competition in the Commonwealth.

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<sup>695</sup> Exhibit No. 38, at 3.

<sup>696</sup> Nature Conservancy Brief at 7.

<sup>697</sup> Exhibit No. 21, at 10.

<sup>698</sup> Exhibit No. 47, at 11.

In regard to economic development within the Commonwealth, Staff witness Carsley's analysis of the potential economic benefits associated with the proposed project was unchallenged, in that no witnesses offered an alternative analysis, calculations, or adjustments to Mr. Carsley's calculations. Mr. Carsley concluded that the primary positive economic development benefit to the Commonwealth of the proposed facility is the additional real property tax revenue to be collected by Highland County. In addition, Mr. Carsley pointed to positive economic development benefits from annual operating expenditures, one or two employees, and construction of the proposed facility.

Many of the public witnesses and Highland Citizens raised the issue of ecotourism in Highland County. As discussed above, tourism in Highland County was considered in Highland County's review in conjunction with its conditional use permit and is therefore excluded from consideration by the Commission. Nonetheless, Mr. Carsley's analysis included consideration of a possible impact on tourism in Highland County.<sup>699</sup>

Based on the analysis and testimony of Mr. Carsley, I find the proposed project will have a positive economic development benefit to the Commonwealth.

### **Public Interest**

Much of the record concerning public interest was intertwined with testimony addressing the environmental aspects of the proposed project. For discussion purposes, this section will address the public interest without regard to environmental issues. Environmental issues are discussed separately in the environmental section below.

On brief, Staff stated its belief that the record does not necessarily support a finding that the proposed wind facility is in the public interest, only that it is not contrary to the public interest.<sup>700</sup>

During the hearing, Senator Wagner presented testimony on the importance of the proposed project as a first step towards a renewable clean form of energy that produces no greenhouse gases. Senator Wagner's comments are in keeping with the Virginia Energy Plan.<sup>701</sup> For example, among other things, § 67-101 of the Virginia Energy Plan recognizes that the following objectives will advance the health, welfare, and safety of the residents of the Commonwealth:

7. Increasing Virginia's reliance on sources of energy that, compared to traditional energy resources, are less polluting of the Commonwealth's air and waters;

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<sup>699</sup> Exhibit No. 41, at 4-5.

<sup>700</sup> Staff Brief at 3-4.

<sup>701</sup> Codified as Title 67 of the Virginia Code.

8. Researching the efficacy, cost, and benefits of reducing, avoiding, or sequestering the emissions of greenhouse gases produced in connection with the generation of energy;

9. Removing impediments to the use of abundant low-cost energy resources located within and outside the Commonwealth and ensuring the economic viability of the producers, especially those in the Commonwealth, of such resources; . . .

11. Recognizing the need to foster those economically developable alternative sources of energy that can be provided at market prices as vital components of a diversified portfolio of energy resources; . . . .

Section 67-102 A of the Virginia Energy Plan establishes that it is the policy of the Commonwealth to:

1. Support research and development of, and promote the use of, renewable energy sources;

2. Ensure that the combination of energy supplies and energy-saving systems are sufficient to support the demands of economic growth; . . . [and]

6. Promote the generation of electricity through technologies that do not contribute to greenhouse gases and global warming; . . . .

Finally, § 67-102 C of the Virginia Energy Plan directs:

All agencies and political subdivisions of the Commonwealth, in taking discretionary action with regard to energy issues, shall recognize the elements of the Commonwealth Energy Policy and where appropriate, shall act in a manner consistent therewith.

In summary, the Virginia Energy Plan established a public policy in favor of alternative energy projects that do not contribute to greenhouse gases and global warming. This policy must be considered by this Commission in evaluating whether the proposed project is in the public interest. With such consideration, and without consideration of environmental issues, I find that the proposed facility easily meets the statutory requirement of being not otherwise contrary to the public interest.

## Environmental Issues

By statute, the Commission is required to consider the effect of the proposed facility on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact.<sup>702</sup> In this case, in considering the effect of the proposed facility on the environment, the Commission is presented with both positive and negative environmental impacts. The discussion of environmental issues will begin by examining avoided emissions which is the primary environmental benefit of wind turbines. Then, the risks to bats, birds, and other endangered species will be examined. Finally, recommended conditions will be considered.

### Avoided Emissions

All of the parties appear to recognize that the production of electricity by way of burning fossil fuels contributes to global warming. Moreover, all of the parties tend to agree that electricity generated by wind turbines avoids the production of greenhouse gases that contribute to global warming. Nonetheless, there was considerable debate regarding the actual impact of the proposed project on greenhouse gas emissions. Highland Wind witness High sponsored a calculation of the average annual avoided air emissions due to the proposed project of 199 tons of NO<sub>x</sub>, 423 tons of SO<sub>2</sub>, and 106,953 tons of CO<sub>2</sub>.<sup>703</sup> Dr. High based his calculation on 2005 data from thirty fossil fuel generating facilities located primarily in Virginia and West Virginia.<sup>704</sup> Dr. High derived his avoided air emissions by using the generation weighted average emissions from these thirty generating facilities for each hour of 2005, and matched that against actual wind data.<sup>705</sup>

In contrast, Highland Citizens argue that the proposed project will not reduce greenhouse gas emissions in the Commonwealth.<sup>706</sup> Highland Citizens witness Hewson testified that the proposed project will not compete against fossil fuel generation, but will compete against other qualifying renewable power sources.<sup>707</sup> Highland Citizens witness Simmons acknowledged that there would be a reduction in emissions on a regional or national basis, but concluded there would be no reduction in emissions in Virginia since the energy produced by the project will be sold to parties outside the Commonwealth.<sup>708</sup>

Mr. Simmons criticized Dr. High's calculations for failing to consider principles of economic dispatch, and for failing to consider the entire PJM pool as one control area.<sup>709</sup> I agree with Mr. Simmons' criticisms. Dr. High's use of generation weighted average emissions tends

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<sup>702</sup> See, §§ 56-46.1 A and 56-580 D.

<sup>703</sup> Exhibit No. 55, at 2, Attached Exhibit C at 6.

<sup>704</sup> *Id.* Attached Exhibit C at 5.

<sup>705</sup> High, Tr. at 1696-97.

<sup>706</sup> Highland Citizens Brief at 24-26.

<sup>707</sup> Exhibit No. 32, at 4.

<sup>708</sup> Exhibit No. 47, at 2.

<sup>709</sup> *Id.* at 7-8, 16.



to overstate emission savings. Energy from the proposed project generally would be used to offset the most expensive operating units, which most likely will be natural gas generation, the fossil fuel generation with the least emissions. Moreover, the generating units included in Dr. High's study do not reflect the regional nature of PJM, or relate to which units actually will be affected when energy from the proposed units is sold into PJM. Thus, I find little, if any, value in the calculated emissions presented by Dr. High.

Nor do I agree with the testimony of Mr. Hewson that there will be no emission savings. Mr. Hewson's claim that the proposed project will compete only with other qualifying renewable sources also appears to ignore the reality of how PJM is operated and dispatched. Indeed, Mr. Hewson's no-emission-savings position is contrary to fellow Highland Citizens witness Simmons' acknowledgement that there would be a reduction in emissions on a regional or national basis. On brief, Highland Citizens limit their argument, stating there will be no avoided emissions in the Commonwealth.<sup>710</sup> This too, appears to ignore PJM dispatch and that Virginia is part of PJM. In other words, avoided emissions related to the operation of the proposed project may or may not occur within the Commonwealth; it will depend upon which units will be affected when energy from the proposed units is sold into PJM.

From a global warming perspective, all that matters is that there be avoided emissions. Consequently, I agree generally with Highland Wind that the proposed project is likely to provide benefits from a global warming perspective.

### **Risk to Bats**

The Applicant's *Overview of Bats Report* provided the following assessment:

Data from wind projects throughout the United States suggest that bats and birds collide with wind turbines. A summary of bat mortalities at ten wind projects in eight different states show estimated annual mortality rates between 0.1 – 47.5 bats per turbine . . . . **Serious concern has been raised over the level of bat mortality experienced at several sites in the eastern United States, and existing data suggest eastern wind development sites experience higher rates of bat mortality . . . .**<sup>711</sup>

The *Overview of Bats Report* showed that the highest mortality rate occurred at Mountaineer Wind in West Virginia. In addition, the Applicant's fall radar study, which was unable to distinguish bats from birds, or even flocks from individuals, reported the proposed site to have the highest passage rate in the east for studies utilizing the same technology.<sup>712</sup>

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<sup>710</sup> Highland Citizens Brief at 24.

<sup>711</sup> Exhibit No. 49, Attached Exhibit B at 13.

<sup>712</sup> Exhibit No. 22, Attached Exhibit C at 18.

Dr. D. Scott Reynolds acknowledged the presence of three endangered bat species, the Indiana Bat, the Gray Bat, and the Virginia Big-Eared Bat in the vicinity of the project site.<sup>713</sup> Information supplied in the *Overview of Bats Report* was supplemented by the Grotto Report, which provided six additional caves containing Virginia Big-Eared Bats located within Highland County, including one within four miles of the proposed project site.<sup>714</sup>

Nonetheless, Dr. D. Scott Reynolds cautioned that there was no way to reliably predict bat mortality at the proposed site.<sup>715</sup> On the other hand, Dr. Reynolds and the Applicant based much of their contention that the proposed wind project did not represent a threat to endangered bats upon the fact that no endangered bat has ever been documented to have been killed by a wind turbine.<sup>716</sup> Several witnesses, principally Highland Citizens witness Gannon, presented testimony regarding the limited documentation associated with bat mortality and the difficulty of finding and identifying bats after they have collided with wind turbine blades.<sup>717</sup> These witnesses found the proposed Highland site to present an equal or higher risk to bats. For example, Nature Conservancy witness Tuttle testified that the pre-construction studies indicated the risk is at least as great as any other site in the East.<sup>718</sup> However, even Dr. Tuttle agreed that we cannot predict actual mortality and do not know which site factors contribute to higher mortality.<sup>719</sup>

Based in part on the risk to bats, Richard Reynolds of DGIF testified that “in the absence of accountable mitigation measures, we believe this project presents an unacceptable risk to wildlife.”<sup>720</sup> At least in regard to bats, all parties, including Highland Wind, appear to agree that the risk to bats requires mitigation measures. For example, in his supplemental testimony, D. Scott Reynolds recommended intensive post-construction monitoring designed “to develop an effective plan for adaptive management to reduce or eliminate future effects, if any.”<sup>721</sup> Therefore, I find that the proposed project represents a significant risk to bats that requires mitigation measures that will be discussed below in the section on recommended conditions.

### **Risk to Birds**

Like the risk assessments for bats, the experts were unable to accurately predict the level of mortality for birds resulting from operation of the proposed wind turbines. For example, on brief, the Nature Conservancy maintained: “[a]lthough the risk to birds and raptors does not appear to be as severe [as the risk to bats], the exact dimensions of that risk cannot be accurately

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<sup>713</sup> Exhibit No. 49, at 3.

<sup>714</sup> Exhibit No. 43, Attachment B at 6-7.

<sup>715</sup> D. Scott Reynolds, Tr. At 1551.

<sup>716</sup> *Id.* at 1546, 1552-53; Highland Wind Brief at 23.

<sup>717</sup> Exhibit No. 43, at 9-10; Richard Reynolds, Tr. at 742-44.

<sup>718</sup> Exhibit No. 13, at 8.

<sup>719</sup> *Id.* at 9.

<sup>720</sup> Exhibit No. 14, at 2.

<sup>721</sup> Exhibit No. 50, at 5.

determined on the basis of the facts in the [r]ecord.”<sup>722</sup> Though he expressed major concern that during periods of inclement weather migratory birds may be placed at increased collision risk because their flight elevations are compressed to lower heights, Highland Citizens witness Whitmore testified that “it is unclear whether or not this project will create a risk to bird populations.”<sup>723</sup>

However, based on mortality information related to wind turbines throughout the country, and upon assessments and studies conducted under the supervision of Highland Wind witness Kerlinger, the Applicant argued that it is unlikely there will be significant avian mortality at the proposed facility.<sup>724</sup> The key to the Applicant’s contention is the word “significant.” Dr. Kerlinger stressed that the standard he used in this case was “biologically significant,” which he defined as “a number of fatalities that would lead to a decline in the population of the species.”<sup>725</sup> Dr. Kerlinger recognized this inability to accurately predict actual fatalities by recommending one to three years of post-construction avian fatality searches.<sup>726</sup>

In his initial assessment, Dr. Kerlinger testified that “[a]vailable data indicate that the federally threatened Bald Eagle has not been recorded nesting in Highland County or surrounding areas, . . . [and] the likelihood of Bald Eagles using the Project site or airspace on a regular basis is very low.”<sup>727</sup> Subsequent testimony from public witness Sandy Hevener provided documentation and pictures of eagle nests and year-round resident eagles in Highland County.<sup>728</sup> Richard Reynolds of DGIF, testifying on behalf of the Nature Conservancy reported that several pairs of Bald Eagles are nesting in Highland County and have been observed flying in the vicinity of the project.<sup>729</sup> Mr. Reynolds stated “[w]e also have documented more than 100 Golden Eagle sightings in the vicinity.”<sup>730</sup> Other witnesses testified to seeing eagles at or near the proposed site. For example, Nature Conservancy witness Byrd testified that he personally observed a pair of Bald Eagles in courtship flight over the project site.<sup>731</sup> On rebuttal, Dr. Kerlinger emphasized that no Bald Eagle has been reported killed at wind turbine sites.<sup>732</sup> Dr. Kerlinger asserted that because a Bald Eagle carcass would be large and conspicuous, this suggests no Bald Eagles have been killed by wind turbines.<sup>733</sup>

I agree that the level of risk to birds is less than the risk to bats. While no one contended that the level of bird mortality is likely to be biologically significant, that will depend on how

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<sup>722</sup> Nature Conservancy Brief at 16.

<sup>723</sup> Exhibit No. 48, at 7.

<sup>724</sup> Highland Wind Brief at 20-23.

<sup>725</sup> Exhibit No. 57, at 2.

<sup>726</sup> *Id.* at 21-22; Kerlinger, Tr. at 1740-41.

<sup>727</sup> Exhibit No. 22, at 4.

<sup>728</sup> Sandy Hevener, Tr. at 907-08; Exhibit No. 17.

<sup>729</sup> Exhibit No. 27, at 6.

<sup>730</sup> *Id.*

<sup>731</sup> Exhibit No. 26, at 4.

<sup>732</sup> Exhibit No. 27, at 27-28.

<sup>733</sup> *Id.* at 28.

many and which species of birds are killed. Furthermore, the presence of eagles tends to increase the general level of risk that the proposed wind turbines may have a significant (legal or biological) impact on the avian population. Therefore, I find that the risk to birds warrants post-construction monitoring as will be addressed in the section on recommended conditions.

### **Risk to Other Endangered Species**

During the course of this proceeding, concerns have been raised regarding the endangered Northern Flying Squirrels, Rock Voles, and Water Shrews, with most of the attention focused on Northern Flying Squirrels. Highland Citizens witness Pagels testified that he successfully captured Northern Flying Squirrels on the McBride property.<sup>734</sup> Dr. Pagels acknowledged that if present, Northern Flying Squirrels would be “very disinclined to glide into a turbine.”<sup>735</sup> Instead, Dr. Pagels stated that his main concern was with the loss of habitat.<sup>736</sup> Nonetheless, on cross-examination, Dr. Pagels agreed that suitable habitat did not exist on top of Tamarack Ridge and Red Oak Knob, the proposed sites of the wind turbines.<sup>737</sup>

Highland Wind witness Michael was unable to capture any Northern Flying Squirrels on the proposed 217 acre project site.<sup>738</sup> Dr. Michael opined that it appears there is little that disturbs the Northern Flying Squirrel as it has been found within fifty feet of ski lifts and twenty-five feet of a paved road and parking lot at the Snowshoe ski resort in West Virginia.<sup>739</sup> Dr. Michael further testified that on July 25, 2006, he visited the proposed site with Richard Reynolds of DGIF, and believed at the end of their visit that there was agreement that the proposed project would have no direct effect on Northern Flying Squirrels.<sup>740</sup>

As for the Rock Vole and Water Shrew, Dr. Michael testified that he was unable to find suitable habitat for either and that Mr. Reynolds agreed during their site visit on July 25, 2006.<sup>741</sup>

Based on the record, I find that the proposed project presents little or no risk to the endangered Northern Flying Squirrel, Rock Vole, and Water Shrew.

### **Recommended Conditions**

In response to the DEQ Report, Highland Wind agreed to obtain all of the required permits.<sup>742</sup> Of the fourteen recommendations, two involving viewshed analysis (Recommendation No. 2) and ecotourism (Recommendation No. 13) were topics considered in

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<sup>734</sup> Exhibit No. 30, at 2.

<sup>735</sup> Pagels, Tr. at 1261.

<sup>736</sup> *Id.* at 1263.

<sup>737</sup> *Id.* at 1262.

<sup>738</sup> Exhibit No. 25, at 1-2.

<sup>739</sup> Michael, Tr. at 1157.

<sup>740</sup> Exhibit No. 31, at 2.

<sup>741</sup> *Id.*

<sup>742</sup> Highland Wind Legal Memorandum dated August 4, 2006.

relation to the local conditional use permit granted by Highland County. Consequently, the Commission is prohibited by §§ 56-46.1 A and 56-580 D of the Virginia Code from adding these recommendations as conditions. Of the remaining recommendations, additional discussion is warranted for: (i) assessment of cumulative impacts (Recommendation No. 3); (ii) additional pre-construction studies (Recommendation Nos. 5 and 6); and (iii) post-construction monitoring and mitigation (Recommendation Nos. 7 and 13). These recommendations are discussed below.

## **1. Assessment of Cumulative Impacts**

The DEQ Report noted that there are eighty-eight wind turbines operating, 457 permitted, and 480 wind turbines proposed or planned at thirty-four facilities within the Allegheny Highlands of Virginia, West Virginia, Maryland, and Pennsylvania.<sup>743</sup> Thus, the recommendation:

The impact analysis must consider the cumulative impacts of constructing the Highland Wind project within the Allegheny Mountain physiographic region. The cumulative impacts analysis should consider wind turbines proposed or planned at 34 facilities within the Allegheny Highlands of Virginia, West Virginia, Maryland, and Pennsylvania.<sup>744</sup>

The Applicant argued that requiring a cumulative impact study was neither feasible nor appropriate in terms of this project.<sup>745</sup>

While I agree that cumulative mortality information would be useful, if accurate, given the inability to predict mortality rates at this site based on pre-construction studies, it is difficult to see how such predictions for yet to be constructed facilities in other locations would be meaningful. Moreover, the record in this case shows that studies and reporting from existing facilities may be inconsistent or nonexistent. Therefore, I find that it is impractical to require the Applicant to perform a cumulative impact study at this time.

## **2. Additional Pre-Construction Studies**

As noted by the Nature Conservancy, both the U. S. Fish and Wildlife Service and DGIF have recommended an additional year of pre-construction monitoring.<sup>746</sup> However, several expert witnesses, including Nature Conservancy witnesses Tuttle, Mabey, and Sherwin testified that additional pre-construction studies would fail to provide meaningful information for predicting mortality.<sup>747</sup> I agree with their testimony. As discussed above, bat and bird mortality cannot be accurately predicted based on the pre-construction studies that have been performed, and no one has suggested that with additional studies accurate predictions could be made.

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<sup>743</sup> Exhibit No. 29, Comments at 24.

<sup>744</sup> *Id.*

<sup>745</sup> Highland Wind Brief at 25.

<sup>746</sup> Nature Conservancy Brief at 14-15; Exhibit No. 14.

<sup>747</sup> Exhibit No. 13, at 10; Exhibit No. 16, at 3-4; and Exhibit No. 20, at 5.

Furthermore, given the benefits of wind energy, I agree with the Nature Conservancy that the most serious environmental impacts of the proposed project can be identified and rectified by requiring post-construction monitoring specifically designed to determine the extent and nature of the risk.<sup>748</sup>

### 3. Post-Construction Monitoring and Mitigation

The Applicant, U.S. Fish and Wildlife Service, DGIF, and the Nature Conservancy have proposed conditions related to a post-construction monitoring and mitigation program. In examining the conditions, the recommendation of the Nature Conservancy appears to be consistent with those of the U.S. Fish and Wildlife Service and DGIF, and generally provides for a three-year post-construction study of both bats and birds.<sup>749</sup> Moreover, there appear to be substantial similarities between the recommendations of the Nature Conservancy and Highland Wind. Both cover a three-year period commencing with operation of the wind facility, both have cost ceilings, both provide for DGIF approval of study protocols, both have trigger mechanisms for mitigation which are tied to fatalities, both have quarterly reporting requirements, and both provide for DGIF site access for continued monitoring at the expiration of the three-year plan period.

The remainder of this discussion will focus on the differences between recommendations of the Nature Conservancy and Highland Wind and include: (i) scope of the monitoring plan; (ii) annual cost limit for the monitoring program; (iii) DGIF's role in the monitoring program; (iv) minimum requirements of the monitoring plan; (v) triggering mechanisms; (vi) mitigation measures; and (vii) access to the site after the end of the monitoring plan.

#### (i) scope of the monitoring plan

Contrary to the recommendations of its own expert, Dr. Kerlinger, who recommended one to three years of post-construction avian fatality searches, Highland Wind limits its proposed three-year post-construction monitoring recommendation to bats only.<sup>750</sup> Based on the assessments of risks discussed above, I find that the post-construction monitoring should include both bats and birds.

#### (ii) annual cost limit for the monitoring program

Highland Wind proposes to limit the cost of the monitoring program to \$2,500 per megawatt of installed capacity per year.<sup>751</sup> Multiplying \$2,500 times the projected size of the project, or 39 megawatts, yields a total annual amount not to exceed of \$97,500. The Nature Conservancy recommended a maximum annual cost of \$150,000.<sup>752</sup> Dividing \$150,000 by 39

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<sup>748</sup> See, Nature Conservancy Brief at 17.

<sup>749</sup> Nature Conservancy Brief at 19.

<sup>750</sup> Highland Wind Brief at 30-31, Attached Exhibit A.

<sup>751</sup> *Id.* Attached Exhibit A, ¶ 1.

<sup>752</sup> Nature Conservancy Brief at 20.

megawatts, yields an amount of approximately \$3,846 per megawatt. Considering the difference in proposed scope, I find it reasonable to base the maximum annual cost on the higher figure or \$150,000. Because the actual size of the wind facility is not certain at this point in time, the annual maximum cost of the study should be the lower of \$150,000 or \$4,000 per megawatt of installed capacity.

(iii) DGIF's role in the monitoring program

The Nature Conservancy proposed that prior to beginning operations, Highland Wind should be required to develop a monitoring plan acceptable to the U. S. Fish and Wildlife Service, and DGIF.<sup>753</sup> In contrast, Highland Wind provides DGIF with sole responsibility for approving the study protocols, but limits DGIF's review period to thirty days.<sup>754</sup>

DGIF has participated in this process and has presented testimony. Therefore, I agree with Highland Wind that for purposes of meeting the monitoring and mitigation conditions imposed by this Commission, its monitoring plan need only be submitted to DGIF for approval. As to timing and review periods, the Nature Conservancy focuses on a plan being in place prior to operation. Because monitoring wind projects is new to the Commonwealth, DGIF should be given as much flexibility as possible. On the other hand, I can appreciate the Applicant's need to be in operation as soon as possible. Thus, this Commission should stand ready to resolve any disputes that may arise between DGIF and Highland Wind. Therefore, Highland Wind is required to develop a monitoring plan acceptable to DGIF prior to beginning operations.

(iv) minimum requirements of the monitoring plan

Highland Wind recommended setting minimum requirements for the monitoring program to include three years of spring and fall migrations, quarterly reports to DGIF and the Commission, and reports on species impacted and weather conditions.<sup>755</sup> The Nature Conservancy recommended that at a minimum, the monitoring plan contain the following:

- a provision for daily carcass searches from April through October of each year of a representative subset of turbines by properly trained personnel not employed by or affiliated with anyone with an ownership interest in the facility. The searches shall be designed to locate, identify, and record bird and bat fatalities and, to the extent reasonably possible, to determine the date, time, weather, and wind speed at the time the fatality occurred.
- a provision for periodic searches of the site from November through March by properly trained personnel not employed

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<sup>753</sup> *Id.* at 19.

<sup>754</sup> Highland Wind Brief Attached Exhibit A at ¶ 1.

<sup>755</sup> *Id.* at ¶ 1 a. – c.

by or affiliated with anyone having an ownership interest in the facility for the purpose of locating, identifying, and recording raptor fatalities.

- a provision requiring adjustments to the reported results to account for scavenger removal and searcher efficiency.
- a provision requiring that DGIF and the [U.S. Fish and Wildlife] Service be notified immediately of a fatality or injury involving an endangered or threatened species.
- a provision requiring periodic reports to DGIF, not less frequently than every three months, covering the results of the searches.<sup>756</sup>

While I believe the minimum requirements recommended by the Nature Conservancy better match the findings of risk made above, I find that DGIF and Highland Wind should be given the opportunity to fashion their own monitoring plan. If DGIF and Highland Wind are unable to agree on the study protocol, this Commission should stand ready to resolve any disputes.

(v) triggering mechanisms

Highland Wind proposed triggering mitigation measures “if in two or more 24-hour periods twenty or more bat fatalities are observed at the site . . . .”<sup>757</sup> The proposal from the Nature Conservancy for triggering mitigation measures is “[i]f during any twelve month period beginning with the commencement of operations it is determined that more than 42 birds, or more than 38 bats have been killed by the operation of the wind turbines . . . .”<sup>758</sup>

Similar to the discussion on minimum requirements, DGIF and Highland Wind should be free to develop their own mechanisms triggering mitigation or other actions. However, in this proceeding, DGIF recommended setting acceptable average annual mortality rates to 3.5 birds per turbine and 1.8 bats per turbine.<sup>759</sup> Richard Reynolds of DGIF explained that the acceptable average annual mortality rates represent the reported national average mortality rates for wind turbines.<sup>760</sup> Mr. Reynolds testified that DGIF did not have sufficient information to a specific take limit similar to what it does for game species.<sup>761</sup>

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<sup>756</sup> Nature Conservancy Brief at 19.

<sup>757</sup> Highland Wind Brief Attached Exhibit A at ¶ 2.

<sup>758</sup> Nature Conservancy Brief at 19.

<sup>759</sup> Exhibit No. 27, at 2.

<sup>760</sup> Richard Reynolds, Tr. at 760.

<sup>761</sup> *Id.* at 61.



Based on the record, DGIF's acceptable limits of 3.5 birds and 1.8 bats per turbine are unreasonable mitigation triggers. First, use of a national average does not represent conditions likely to be found at the Highland site. That is, the level of mortality that triggers mitigation measures should have some relationship to the level that would cause a negative impact in Highland County. Second, if possible, the level of mortality that triggers mitigation should be more species specific. Based on this record it appears to make considerable difference whether the species killed is common, or otherwise considered a nuisance, or declining or endangered.

(vi) mitigation measures

Highland Wind agreed that if in two or more 24-hour periods, twenty or more bat fatalities are observed at the site, the Applicant would curtail turbine operations in year two and year three as follows:

- a. The curtailment will occur at the Project during the period July 1 through November 30 for two hours after sunset.
- b. Curtailment will occur when the wind speed falls below 3.5 meters per second.
- c. A record of this curtailment activity will be provided to the [DGIF] each December as long as this condition is in force.<sup>762</sup>

In the Nature Conservancy recommendation, mitigation measures would be determined by agreement between DGIF and Highland Wind.<sup>763</sup>

As above, I find that any mitigation measures should be determined by DGIF and Highland Wind, with the Commission standing ready to decide any disagreements. Any mitigation should be tailored to the specifics of the situation requiring mitigation, and may include limitations on operation under certain prescribed conditions.

(vii) access to the site after the end of the monitoring plan

Highland Wind proposed to give access to the project site for purposes of wildlife monitoring and observations upon forty-eight hour notice by e-mail to the Applicant and the Applicant's counsel.<sup>764</sup> Highland Wind would restrict access to employees or agents of DGIF approved in advance by the Applicant.<sup>765</sup>

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<sup>762</sup> Highland Wind Brief Attached Exhibit A at ¶ 2.

<sup>763</sup> Nature Conservancy Brief at 19.

<sup>764</sup> Highland Wind Brief Attached Exhibit A at ¶ 3.

<sup>765</sup> *Id.*

Under the Nature Conservancy proposal, access would be given to representatives of the U.S. Fish and Wildlife Service and DGIF, and access would be given at reasonable times with reasonable advance notice.<sup>766</sup>

I agree with the broader access language proposed by the Nature Conservancy if it is expanded to include the Commission and any other governmental agency charged with oversight or regulatory responsibility for the project.

## **FINDINGS AND RECOMMENDATIONS**

1. The proposed facility will have no material adverse effect upon the reliability of electric service provided by any regulated public utility;
2. The proposed facility advances the goal of electric competition in the Commonwealth;
3. The proposed facility will have a positive impact on economic development within the Commonwealth;
4. Construction and operation of the proposed facility will not be contrary to the public interest;
5. Any Certificate issued by the Commission in this case should include a sunset provision that calls for the Certificate to expire if construction has not commenced within two years from the date of issuance;
6. Any Certificate issued by the Commission in this case should require Highland Wind to comply with all permitting requirements listed in the DEQ Report; and
7. Any Certificate issued by the Commission in this case should require Highland Wind to comply with the following conditions recommended in the DEQ Report to minimize adverse environmental impact:
  - a. **Submit Final Site Plan to Reviewing Agencies** – Provide a detailed site plan with project location maps showing the location of towers and all other components of the project including but not limited to the location of the three stream crossings, location of wetlands along the three stream channels, and location where the drilling beneath the stream channels will occur;
  - b. **Conduct Archaeological and Architectural Surveys if Necessary** – Coordinate with DHR for guidance regarding the potential need for archaeological and architectural surveys,

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<sup>766</sup> Nature Conservancy Brief at 20.

recommended studies and field surveys to evaluate the project's impacts to historic resources;

c. **Avoid Direct and Indirect Impacts to Wetlands** – Wetland and stream impacts should be avoided and minimized to the maximum extent practicable;

d. **Protect Natural Resources During Construction** – Protect water quality, habitat, and aquatic resources from construction impacts by adopting recommendations from the DEQ, DGIF, and DCR.

e. **Protect Species** – Work closely with DGIF and [U.S. Fish and Wildlife Service] to ensure that threatened and endangered species are adequately protected.

f. **Conduct Post-Construction Monitoring and Mitigation Plan** – Conduct post-construction monitoring and mitigation plan as outlined above.

g. **Coordinate Transportation Safety Issues** – Coordinate closely with the Virginia Department of Transportation to evaluate and ensure that transportation issues are adequately addressed.

In conclusion, based on the evidence received in this case, and for the reasons set forth above, ***I RECOMMEND*** the Commission enter an order that:

1. ***GRANTS*** the Applicant authority and a certificate of public convenience and necessity pursuant to §§ 56-46.1 A and 56-580 D of the Code of Virginia to construct and operate a wind turbine electric generation facility, and its associated facilities in Highland County as described above and based upon the record developed herein;

2. ***PROVIDES*** that the Certificate will sunset if construction has not begun within two years from the date of a Commission final order granting approval of the proposed facility;

3. ***DIRECTS*** Highland Wind to comply with conditions recommended above;

4. ***PROVIDES*** that the Certificate is conditioned on the receipt of all permits necessary to operate the proposed facility, and directs Highland Wind to provide a complete list to the Division of Energy Regulation; and

5. ***DISMISSES*** this case from the docket of active matters.

## COMMENTS

The parties are advised that pursuant to Rule 5 VAC 5-20-120 C of the Commission's Rules of Practice and Procedure, any comments to this Report must be filed with the Clerk of the Commission in writing, in an original and fifteen copies, within twenty-one days from the date hereof. The mailing address to which any such filing must be sent is Document Control Center, P.O. Box 2118, Richmond, Virginia 23218. Any party filing such comments shall attach a certificate to the foot of such document certifying that copies have been mailed or delivered to all counsel of record and any such party not represented by counsel.

Respectfully submitted,

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Alexander F. Skirpan, Jr.  
Hearing Examiner

Document Control Center is requested to mail a copy of the Report to: John W. Flora, Esquire, Keeler Obenshain PC, 90 N. Main St., Suite 201, P.O. Box 1287, Harrisonburg, VA 22803; Anthony J. Gambardella, Esquire, Woods Rogers PLC, Suite 1200, 823 East Main Street, Richmond, VA 23219; Richard D. Gary, Esquire, Hunton & Williams LLP, Riverfront Plaza, East Tower, 951 E. Byrd St., Richmond, VA 23219-4074; David S. Bailey, 16397 Triple Creek Lane, Beaverdam, VA 23015; Wiley F. Mitchell, Jr., Esquire, Wilcox & Savage, P.C., One Commercial Place, Suite 1800, Norfolk, Virginia, 23510; Michel A. King, President, Old Mill Power Company, 103 Shale Pl., Charlottesville, VA 22902; and Melissa Dowd, P.O. Box 309, Monterey, VA 24465.