

December 28, 2016

Pamela G. Monroe, Administrator
New Hampshire Site Evaluation Committee
21 South Fruit Street, Suite 10
Concord, NH 03301

RE: New Hampshire Site Evaluation Committee Docket No. 2015-06
Joint Application of Northern Pass Transmission, LLC and Public Service
Company of New Hampshire d/b/a Eversource Energy for a Certificate of Site
and Facility for Construction of a New High Voltage Transmission Line in New
Hampshire

Dear Pam:

Enclosed for filing in the above matter are the following:

1. Prefiled Direct Testimony of Dr. David Publicover on behalf of Appalachian Mountain Club; and
2. Prefiled Direct Testimony of Chris Thayer on behalf of Appalachian Mountain Club.

Further pre-filed testimony of the Appalachian Mountain Club will be sent by December 30th.

The Appalachian Mountain Club is part of the NGO Intervenor Group. It is my understanding that neither of the other two members of that Group will be filing pre-filed testimony.

Very truly yours,



William L. Plouffe, Esq.

Enclosures

cc: Susan Arnold
Kenneth Kimball
Larry Garland
Melissa Birchard, Esq.
Distribution List (*as of December 27, 2016*)

**STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE**

DOCKET NO. 2015-06

**JOINT APPLICATION OF NORTHERN PASS TRANSMISSION, LLC AND
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE D/B/A EVERSOURCE
ENERGY FOR A CERTIFICATE OF SITE AND FACILITY**

**PREFILED DIRECT TESTIMONY OF
DR. DAVID PUBLICOVER
ON BEHALF OF APPALACHIAN MOUNTAIN CLUB**

December 30, 2016

Qualifications and Purpose of Testimony

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Q. State your name and current position.

A. My name is David Publicover. I am currently employed as a Senior Staff Scientist and Assistant Director of Research with the Appalachian Mountain Club (AMC), a non-profit conservation and recreation organization with headquarters in Boston, MA. My business address is P.O. Box 298, Gorham, NH 03581. I have been employed by the AMC since 1992. My primary responsibility is to provide scientific information and analyses to AMC in support of our mission in the areas of terrestrial ecology, landscape analysis, land use and conservation planning, sustainable forestry, biological conservation and energy facility siting.

Q. What are your background and qualifications?

A. I have a B.S. in Forestry from the University of New Hampshire (1978), an M.S. in Botany from the University of Vermont (1986), and a D.F. in Forest Ecology from the Yale University School of Forestry and Environmental Studies (1992).

For most of my tenure at AMC I have been involved with issues related to energy facility siting, primarily but not exclusively wind power. I have served as AMC's primary representative or expert witness during interventions in five commercial wind power development applications in New Hampshire and Maine. I was actively involved in the SEC's SB99 pre-rulemaking and rulemaking processes and I served as an alternate member of the Governor's Task Force on Wind power Development in Maine (2007-08).

Q. Have you previously testified before the SEC?

A. Yes, I served as an expert witness for AMC in the matter of the Granite Reliable Windpark (SEC Docket 2008-04).

Q. Are you familiar with the application?

A. Yes. I have reviewed the application and studied the relevant sections and appendices relevant to my testimony (Appendices 32, 34, 35, 36 and 48), as well as the pre-filed testimony of Sarah Barnum and Dennis Magee. I have also reviewed the responses of the Applicant to relevant additional information requests and attended one day of the environmental panel technical sessions.

1 **Q. What is the purpose of your testimony?**

2 **A.** My testimony focuses on the impacts of the proposed new right-of-way corridor in Coos
3 County to rare natural communities, rare plants and habitat fragmentation.

4 **Exemplary Rare Natural Community**

5 **Q. Are there any individual impacts that rise to the level of unreasonable adverse**
6 **effect?**

7 **A.** Yes, the impact to the exemplary¹ occurrence of rare Northern Hardwood Seepage Forest
8 in Dixville rises to this level².

9 The New Hampshire Natural Heritage Bureau has documented only thirteen
10 exemplary occurrences of this natural community type in the state (see table below)³. Of
11 these, twelve are less than 25 acres in size and over half are less than 10 acres.

Town	Size (acres)	EO Rank	Town	Size (acres)	EO Rank
Pittsburg	68.6	A	Lincoln	5.3	AB
Colebrook	22.6	AB	Pittsburg	3.4	B
Lyme	18.1	B	Pittsburg	3.3	B
Pittsburg	15.7	B	Warren	3.1	B
Pittsburg	13.5	B	Pittsburg	2.3	A
Pittsburg	10.3	B	Pittsburg	2.3	B
Benton	6.3	B			

12 The occurrence of this community in Dixville encompasses 61.3 acres as mapped
13 (Application Appendix 35, Table 16), though the application indicates it has not been
14 fully mapped. It is by far one of the two largest documented exemplary occurrences in
15 the state and may potentially be the largest. It contains populations of eight plant species
16 of conservation concern (state watch or indeterminate). Given its size, condition and the
17 presence of these plant species this occurrence must be considered a very significant
18 component of the state's natural biodiversity.

19 The project would have considerable impacts on this community. Permanent
20 clearing of forest vegetation would impact about one-quarter of this occurrence – an area
21 of nearly 15 acres (Application Appendix 35, Table 8b). The portion of the community

¹ The application describes this occurrence as “potential exemplary”. In response to a question at the technical session on September 20, 2016, Lee Carbonneau stated that NHNHB had determined that the occurrence was exemplary. The requested documentation of this determination has not been received from the applicant.

² This occurrence is described in Application Appendix 35, Section 3.11.1.1.

³ Information received upon request to NHNHB in email from Sara Cairns dated 4/29/16.

1 that will be destroyed by the project by itself would constitute one of the largest
2 occurrences of this community in the state. This clearing would also destroy portions of
3 the populations of seven of the eight plant species of concern.

4 The application actually understates the project impacts to this community by
5 ignoring edge effects. The clearing would create a long edge facing to the southwest,
6 which would be subject to direct sunlight during the hottest part of the day. In
7 combination with increased wind penetration this increased solar radiation would lead to
8 enhanced heating and drying of the soil within the uncleared portion of the community,
9 adversely affecting the hydrologic conditions which are a primary determinant of
10 community composition. In addition, the increased sunlight would promote the growth
11 of shrubby understory vegetation that could outcompete the natural understory plants.
12 Rosenberg et al. (1999)⁴ state, “*Evidence from numerous studies indicates that the*
13 *detrimental effects of an edge can extend from 150–300 feet (45–90 m) into the forest*
14 *interior.*” Given the configuration of this community, an additional 20% to 40% of the
15 occurrence will be subject to these detrimental effects.

16 The SEC rules [Site 301.14(e)] state: *In determining whether construction and*
17 *operation of a proposed energy facility will have an unreasonable adverse effect on the*
18 *natural environment...the committee shall consider:*

19 *(1) The significance of the affected... rare natural communities...*

20 **Based on its size and exemplary condition, the affected occurrence of the**
21 **Northern Hardwood Seepage Forest in Dixville is clearly one of the two best**
22 **documented examples of this rare natural community type in the state and must**
23 **be considered highly significant.**

24 *(2) The nature, extent, and duration of the potential effects on the affected... rare natural*
25 *communities...*

26 **The project will destroy one quarter of this rare natural community occurrence**
27 **as well as portions of the populations of seven plant species of concern within the**
28 **community. It would also degrade an additional 20% to 40% of the area of the**

⁴ Rosenberg, K.V. et al. 1999. A land manager’s guide to improving habitat for scarlet tanagers and other forest-interior birds. The Cornell Lab of Ornithology. (This publication was used by the Applicant as the basis for the fragmentation analysis in Application Appendix 36 section 9.4.)

1 **community through edge effects. These effects are permanent and must be**
2 **considered severe.**

3 If a severe impact to a highly significant occurrence of a rare natural community
4 is not considered an unreasonable adverse effect then that term loses all meaning in
5 regard to these natural resources.

6 **Q. Why should the SEC be concerned with this impact?**

7 **A.** The natural environment is the foundation for every aspect of human existence – our life
8 support system. While some resources (minerals and fossil fuels) are finite and
9 exhaustible, the natural environment is self-sustaining and renewable if we are careful
10 stewards of it.

11 Biological diversity at multiple levels (genetic, species and
12 community/ecosystem) is the key to the resilience and sustainability of natural systems.
13 It provides multiple options for ecosystems to adjust to changing conditions – as the
14 world changes, some components become more common and others less common. (A
15 common analogy is to a stock portfolio – a diverse mix of investments is better able to
16 weather changes in economic conditions.) When biodiversity is diminished we constrain
17 the future to a narrower range of options to respond to changes in environmental
18 conditions. The importance of conserving biodiversity is recognized in numerous public
19 laws, rules and policies, including the SEC’s own rules.

20 Biological diversity includes species and communities that are common and
21 widespread, and others that are less common. These rarer components are generally
22 found in locations that are unusual or extreme compared to more common conditions –
23 wetter, dryer, more fertile or infertile, more acidic or alkaline. Rare natural communities
24 found in these uncommon environments contain a disproportionate share of native
25 species, not only trees and other plants but a wide range of lesser organisms about which
26 we know very little (such as insects, fungi and bacteria). These lesser organisms are
27 critical, as they carry out the chemistry of life – in the words of E.O. Wilson, they “hold
28 the world steady”.

29 As stated by the Natural Heritage Program⁵:

⁵ Sperduto, D.D. and W.F. Nichols. 2004. *Natural Communities of New Hampshire*. The New Hampshire Natural Heritage Bureau and the Nature Conservancy, Concord, NH.

1 *Modern demands for resources and land have increased the pressure on natural ecosystems, and*
2 *society has become increasingly concerned about preserving biodiversity not only for human*
3 *benefits (current and future) but for the maintenance of ecosystems for their own sake. Natural*
4 *communities can be thought of as the natural arenas where populations of different species*
5 *interact, respond to selective pressures, and continue to evolve. If these natural contexts can be*
6 *maintained, it will benefit all other forms of life; if they cannot, the species they contain may be in*
7 *jeopardy.*

8 Large exemplary occurrences of rare natural communities are particularly
9 important, as they are the most likely to contain the full complement of species native to
10 those particular conditions, and better able to maintain the natural processes that support
11 those species. If we permit the destruction of that which is rare and exemplary, we will
12 eventually be left only with that which is common and degraded, diminishing not only
13 our own ecological, cultural and economic environment but also the world that we pass
14 along to future generations.

15 **Q. Do you feel the Applicant has taken best practical measures to avoid, minimize or**
16 **mitigate this adverse effect?**

17 **A.** No I do not.

18 The Applicant has failed to select an alternate route that would avoid this impact.
19 (This is discussed in greater detail later in this testimony.)

20 The Applicant describes their attempt to minimize the impact to this community
21 in Application Appendix 35, page 100. They state that shifting the corridor to the north
22 would result in greater impact to this community, but do not indicate why they could not
23 shift far enough to avoid the community entirely. They also state that shifting to the
24 south would result in greater visual impact, though based on the mapped boundaries of
25 the community a shift of only a few hundred feet would be required would be required to
26 avoid it.

27 We are left with the Applicant's conclusion that in this vast undeveloped portion
28 of the state the only feasible route is directly through a 60-acre rare and exemplary
29 natural community occurrence. There is insufficient evidence in the application to justify
30 this conclusion.

31 Application Appendix 32 Table 9 indicates that the proposed mitigation for the
32 impact to this community occurrence would be "Compensatory Preservation and/or ARM

1 Fund/Management contribution.” When queried about this mitigation at the September
2 20, 2016 technical session, Lee Carbonneau indicated that Mitigation Parcel B was being
3 considered for mitigation for this impact. The Natural Resource Compensatory
4 Mitigation Plan⁶ indicates that this natural community is present and encompasses about
5 25 acres. No specific ranking of the quality of the occurrence is given, but it is clear from
6 the following information that this is a lower-quality occurrence: 1) During the technical
7 session Ms. Carbonneau stated that the occurrence was “not exemplary”; 2) The only
8 photo of the occurrence describes it as “young”; and 3) the occurrence will be severely
9 impacted by the project. A map included with the Mitigation Baseline Documentation
10 Report for Site B shows that the project will bisect much of this elongated community
11 occurrence. A significant portion of the remaining area will be degraded by edge effects.

12 It is clear that the protection of a smaller, lower-quality occurrence of this rare
13 natural community that will be severely impacted by the project is inadequate mitigation
14 for the destruction and degradation of one of the state’s largest exemplary occurrences of
15 this community.

16 We therefore conclude that there is insufficient information in the application to
17 justify that best practical measures have been taken to avoid, minimize and mitigate the
18 impact to this rare natural community occurrence.

19 **Cumulative Impacts to Rare Plants and Natural Communities**

20 **Q. Do you believe that the cumulative impacts of the new northern corridor to rare
21 plants and natural communities constitute an unreasonable adverse effect?**

22 **A.** Yes I do.

23 Including the Northern Hardwood Seepage Forest described above, the proposed
24 right-of-way would impact one exemplary rare natural community, three potential
25 exemplary rare natural communities, thirty-three occurrences of four other rare (S3)
26 natural communities⁷, and twenty separate populations of nine rare plant species.
27 Cumulatively these impacts exceed those of the rest of the project by a considerable
28 margin. The entire Project Area south of the new corridor would impact no rare natural
29 communities and fifteen separate populations of seven rare plant species (fourteen of

⁶ Submitted by the Applicant on 12/15/16 in response to NH DES Wetlands Bureau data requests.

⁷ Twenty one of these occurrences are of Lowland Spruce-Fir Forest.

1 which are in the Concord area). In contrast to the rare plants in the proposed right of way
2 (which are adapted to closed forest conditions and would be adversely impact by clearing
3 of the new corridor), the rare plants in the southern part of the Project Area are growing
4 in the existing corridor and are adapted to open and/or disturbed conditions.⁸

5 The natural communities and rare plants impacted by the new corridor vary
6 widely in their size, quality and significance, and the impacts of the project on these
7 different occurrences of biodiversity range from minor to severe. With the exception of
8 the exemplary Northern Hardwood Seepage Forest, none of these impacts are likely to be
9 considered unreasonable adverse effects when considered individually. However,
10 cumulatively they constitute a significant impact on the region's biodiversity. Despite
11 the fact that many of these natural community occurrences have been impacted by timber
12 harvesting, if conserved or managed carefully they have the potential to eventually return
13 to a more natural, higher-quality condition.

14 The SEC should find that this cumulative impact on the natural environment
15 constitutes an unreasonable adverse effect, in particular because it is *avoidable*. The
16 Applicant has not taken best practical measures to avoid, minimize or mitigate for this
17 impact by choosing a route that has lesser impact. (This is discussed in greater detail
18 later in this testimony.)

19 Forest Fragmentation

20 **Q. Do you believe that the fragmentation impact of the new northern corridor**
21 **constitutes an unreasonable adverse effect?**

22 **A.** Yes I do.

23 The SEC rules [Site 301.14(e)] state that in considering the effect on the natural
24 environment, the committee shall consider "*The nature, extent, and duration of the*
25 *potential fragmentation or other alteration of terrestrial or aquatic significant habitat*
26 *resources or migration corridors.*" However, the fragmentation analysis presented in
27 Application Appendix 36 section 9.4 is incomplete, inconclusive and inadequate for
28 assessing fragmentation impact of the proposed new right-of-way. Its flaws include:

⁸ Information in this paragraph was derived from Application Appendix 35, Section 3.

1 • The application cites Rosenberg et al. (1999)⁹ as the basis for the analysis, using
2 scarlet tanager as a proxy for forest-nesting birds requiring interior forest habitat, with
3 41 acres as the minimum patch size needed in forest blocks that are 70% forested.
4 However, Rosenberg et al. (1999) state, “*In the Northern Forest region, tanagers are*
5 *predicted to occur in virtually any size forest patch within landscape blocks that are*
6 *more than 70% forested; that is, the birds do not show area sensitivity in extensively*
7 *forested landscapes.*” Every “moving window” lying completely within the analysis
8 area is at least 70% forested and the great majority are in excess of 85% forested¹⁰; at
9 this level of forest cover scarlet tanagers are not area sensitive and make a poor proxy
10 for assessing fragmentation impacts in this heavily forested landscape.

11 However, in a companion publication, Rosenberg et al. (2003)¹¹ found that
12 certain thrushes associated with interior forest (wood and hermit thrush) were
13 sensitive to fragmentation even at high levels of forest cover. Wood thrush is a
14 Species of Greatest Conservation Need both in New Hampshire and regionally in the
15 northeastern United States due to significant population declines (NHFG 2015,
16 Appendix A¹²), and “habitat conversion and fragmentation from tower and turbine
17 development” is listed as a threat to this species in the Wildlife Action Plan.
18 Rosenberg et al. (2003) found that this species had a minimum patch size requirement
19 of 69 acres in areas with 90% forest cover and 201 acres in areas with 70% forest
20 cover. Because of the high level of concern and greater sensitivity to fragmentation
21 in heavily forested landscapes, this specie would have been a superior candidate for
22 the fragmentation analysis but was not considered.

23 • The assessment states that there is an 11% increase in forest edge within the 4-mile-
24 wide corridor defined as the assessment area. However, this figure is entirely
25 dependent on the size of the landscape in which it is considered. If the increase in
26 edge is considered at the same scale as the forest block analysis (that is, within the
27 area encompassed by the “moving windows”) the increase in edge is over 15%¹³.

⁹ Rosenberg, *op. cit.*

¹⁰ Northern Pass discovery document NPT_DIS040400.

¹¹ Rosenberg, K.V. et al. 1999. A land manager’s guide to improving habitat for forest thrushes. The Cornell Lab of Ornithology.

¹² NHFG. 2015. New Hampshire Wildlife Action Plan. NH Fish and Game Department, Concord, NH.

¹³ Based on GIS data provided by the Applicant in response to NGO data request #34.

- 1 • The analysis fails to directly evaluate one of the primary impacts of fragmentation –
2 the decline in interior forest habitat (the habitat that is used by species such as scarlet
3 tanager and wood thrush). This decline will be larger than the direct loss of habitat
4 from corridor clearing due to the impact of edge effects. As noted earlier, Rosenberg
5 et al. (1999) states that these effects can extend from 150 to 300 feet into the forest
6 from the edge. Thus one mile of 120-foot-wide new corridor will directly clear about
7 14.5 acres of forest but result in an additional loss of about 36 to 72 acres of interior
8 forest (assuming 150’ and 300’ of edge effect respectively)¹⁴.

9 The loss of interior forest due to edge effects is significantly greater than the
10 direct loss of forest from corridor clearing. Along the undeveloped and heavily
11 forested major portion of the new corridor¹⁵, direct clearing results in a reduction of
12 forest cover from 90.4% to 89.1% (a reduction of 1.5%). With an edge effect of 150’
13 potential interior forest is reduced from 77.8% to 74.5% of the area (a reduction of
14 4.1%). With an edge effect of 300’ potential interior forest is reduced from 67.0% to
15 62.5% of the area (a reduction of 6.8%)¹⁶.

16 The reduction of interior forest due to edge effects is one of the major impacts
17 of fragmentation. As noted in the USDOE Draft Environmental Impact Statement in
18 its analysis of impacts to wildlife of the proposed Alternative 2 (Section 4.2.11.2)¹⁷,
19 “*Habitat loss and/or modification of existing habitats in the study area during*
20 *construction would also have adverse impacts on wildlife resources. Forest interior*
21 *dwelling species would experience long-term adverse effects based on habitat loss*
22 *and fragmentation... the removal of more than 300 acres (121 ha) of forest interior*
23 *habitats would have a long-term adverse effect on forest-dwelling species such as the*
24 *American marten... The removal of forestlands would result in adverse impacts to*
25 *forest interior species through the loss of interior forestlands and habitat*

¹⁴ This assumes that all forest adjacent to the corridor is mature and unfragmented, which will not be the case due to timber harvesting. I have ignored the effect of timber harvesting and treated all forest as at least “potential” interior forest.

¹⁵ This is the 28-mile section from Transition Station 4 in Stewartstown to the existing corridor in Dummer. The area analyzed is the total area of “moving windows” #6 to #35 – a buffer of about 1.1 miles around the new corridor or about 40,000 acres.

¹⁶ Based on GIS data provided by the Applicant in response to NGO data request #34.

¹⁷ This analysis also applies to other alternatives that include overhead transmission lines in a new corridor (Alternatives 5a, 5b 5c in the DEIS and the new Proposed Alternative 7 in the supplement to the DEIS).

1 *fragmentation.*” In contrast, for those alternatives that do not involve the construction
2 of the new northern corridor¹⁸, the DEIS states, “*Impacts to habitat fragmentation,*
3 *forest interior species, and edge habitats would be minimal*”.

- 4 • The analysis fails to consider the fragmenting impact of the new corridor on high-
5 value habitat identified in the New Hampshire Wildlife Action Plan. Based on 2010
6 Wildlife Action Plan data¹⁹, which the Applicant used in their analysis, the corridor
7 would bisect two large areas identified in the Wildlife Action Plan as Tier 1 (highest
8 ranked in the state), including the largest area in the state identified as Tier 1 Matrix
9 Forest.²⁰

10 In the end any quantitative assessment of fragmentation will be inconclusive.
11 While it can indicate the extent of additional fragmentation that will take place from
12 construction of the new corridor (as measured by reduction in total and interior forest,
13 increase in edge and changes in forest block size), an assessment of the severity of this
14 impact will remain a judgment call. As correctly noted by the Applicant (Application
15 Appendix 36, Section 9.4.5), “*While edges cause detrimental effects to forest-nesting*
16 *species (Section 9.4.1), there is no objective definition of what constitutes ‘a lot’ of edge,*
17 *or what amount of edge causes a tipping point in overall habitat quality.*”

18 The Applicant contends that the impacts are not unreasonable because they are
19 small relative to the larger landscape in which the corridor is contained. However, any
20 impact can be rendered insignificant if it is considered at a large enough scale.

21 Fragmentation is a continuous process – forested areas become more and more
22 degraded as additional land is converted out of forest. Each individual impact, every
23 additional road or clearing, may be insignificant when considered individually, but
24 cumulatively they alter and degrade the habitat value of the forest. Fragmentation is
25 death by a thousand cuts, and there is little question that the new corridor would be a very

¹⁸ Alternatives 4a, 4b, 4c, 6a and 6b.

¹⁹ Based on the New Hampshire Fish and Game shapefile dataset WAP10_TIERS (New Hampshire Wildlife Action Plan 2010: Wildlife Habitat Ranked by Ecological Condition). Metadata on this layer was provided by the Applicant in response to NGO data request #34.

²⁰ In the revised 2015 Wildlife Action Plan data, more of the undeveloped forest in Coos County is now classified as Tier 2 (Highest Ranked in the Biological Region) and Tier 3 (Supporting Landscape) rather than Tier 1 (Highest Ranked in the State). However, the proposed corridor still traverses several areas of highest ranked habitat (Tiers 1 and 2). Use of the 2015 data would not change the conclusions in this testimony.

1 significant cut. It would be the largest fragmenting feature in the greatest extent of
2 undeveloped forest in New Hampshire outside of the White Mountain National Forest.

3 The SEC should find that the fragmenting impact of the new corridor constitutes
4 an unreasonable adverse effect both because of the magnitude of this impact and because
5 it is *avoidable*. The applicant has failed to take adequate and sufficient measures to
6 avoid, minimize and mitigate this impact by not selecting an alternate route that has
7 lesser impact. (This is discussed in more detail below.)

8 **Q. Do you believe the Applicant has taken best practical measures to avoid, minimize
9 and mitigate the impacts on the natural environment of the proposed new right-of-
10 way that have been described in this testimony?**

11 **A.** No I do not.

12 The definition in SEC's rules (Site 102.12) states "*Best practical measures means*
13 *available, effective, and economically feasible on-site or off-site methods or technologies*
14 *used during siting, design, construction, and operation of an energy facility that*
15 *effectively avoid, minimize, or mitigate relevant impacts.*" The rules [Site 301.14(e)] also
16 state that in considering the effect on the natural environment, the committee shall
17 consider "*The effectiveness of the measures proposed by the applicant to avoid, minimize,*
18 *or mitigate unreasonable adverse effects on aesthetics, and the extent to which such*
19 *measures represent best practical measures.*"

20 The Applicant has consistently contended that full burial (for example, along the
21 NH Route 3 corridor from Pittsburg to Northumberland) is not possible. For example, in
22 his prefiled testimony James A. Munz states (page 3), "*underground construction of the*
23 *entire Project would disrupt this balance and render the Project economically*
24 *infeasible.*" In their July 8, 2016 response to NH DES Wetlands Bureau data request #1,
25 the Applicant states, "*Adding the hundreds of millions of dollars of additional cost to*
26 *require burial of 40 more miles of the line is not practicable.*"

27 However, we note that two other major electrical transmission lines proposed for
28 the region (the permitted New England Clean Power Link [www.necplink.com] and the
29 Champlain Hudson Express [www.chpexpress.com]) would be fully buried along
30 existing roadways and under waterways. These projects have generated little
31 controversy. In addition, burial along the Route 3 corridor was considered a "reasonable"

1 alternative that was analyzed in the US Department of Energy Draft Environmental
2 Impact Statement. We thus conclude that burial along existing corridors is “available,
3 effective and economically feasible”, and that this approach should be considered the
4 standard as to “which such measures represent best practical measures”.

5 Our conclusion is consistent with the statement of the Department of
6 Environmental Services in their May 16, 2016 progress report (Wetlands Bureau data
7 request #1) that “this portion of the project does not avoid and minimize wetland impacts
8 to the greatest extent practical.” The DES requested revised plans that utilize the NH
9 Route 3 corridor from Pittsburg to Northumberland.

10 The applicant’s inability or unwillingness to secure a route and to design and
11 propose a project utilizing this lower impact approach because it is too expensive under
12 their business model does not provide adequate justification for permitting these
13 significant adverse impacts.

14 Summary of Testimony

15 **Q. Please summarize your testimony**

16 **A.** The following are the major points of my testimony:

- 17 • The proposed new northern right-of-way would have a significant adverse effect on
18 an exemplary occurrence of the rare Northern Hardwood Seepage Forest Natural
19 Community. This occurrence is one of only two in the state documented by the NH
20 Natural Heritage Bureau that is larger than 60 acres; the next largest is only 23 acres.
21 Given its size, condition and the presence of eight rare plant species this occurrence
22 must be considered a very significant component of the state’s natural biodiversity.
23 The project would destroy one-quarter of this community occurrence through corridor
24 clearing and degrade an additional 20% to 40% of the occurrence through edge
25 effects.
- 26 • Cumulatively the proposed new northern right-of-way would impact one exemplary
27 rare natural community occurrences, three potentially exemplary rare natural
28 community occurrences, thirty-three occurrences of four other rare (S3) natural
29 communities and twenty separate populations of nine rare plant species.
30 Cumulatively these impacts exceed those of the rest of the project by a considerable
31 margin.

- 1 • The proposed new northern right-of-way would be the largest fragmenting feature in
2 the greatest expanse of undeveloped forest in New Hampshire outside of the White
3 Mountain National Forest. It would eliminate extensive areas of existing and
4 potential interior forest habitat and adversely affect species utilizing this habitat.
- 5 • The Applicant has failed to take best practical measures to avoid, minimize and
6 mitigate these impacts. In particular, the applicant has failed to utilize an alternate
7 route that would avoid these impacts in their entirety. Other projects in the region
8 demonstrate that burial along existing corridors is an “available, effective and
9 economically feasible” measure.
- 10 • For these reasons, the Committee should find that the project as proposed creates an
11 unreasonable adverse effect on the natural environment.

12 **Q. Does this conclude your testimony?**

13 **A.** Yes.