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**THE STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE**

Docket No. 2015-06

**Re: 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 to Construct a New High Voltage
Transmission Line and Related Facilities in New Hampshire**

**POST-HEARING MEMORANDUM OF
NON-GOVERNMENTAL ORGANIZATION (“NGO”) INTERVENORS**

**AMMONOOSUC CONSERVATION TRUST
APPALACHIAN MOUNTAIN CLUB AND
CONSERVATION LAW FOUNDATION**

January 12, 2018

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SUMMARY OF ARGUMENT

The project proposed by Northern Pass Transmission LLC and Public Service Company of New Hampshire d/b/a Eversource Energy (jointly, “Applicants”) would change the character, landscapes, and environment of New Hampshire forever and bring few if any benefits to the state. A petition for certification must demonstrate by a preponderance of the evidence¹ that the proposed project would not have unreasonable adverse effects or unduly interfere with the orderly development of the region, and is in the public interest.² To the contrary, the Project as proposed fails each of these tests.

The 192-mile project proposed in this proceeding would traverse the entire state of New Hampshire, imposing adverse impacts on a scale that New Hampshire has never seen before from a single energy project. Credible evidence adduced by Counsel for the Public, Society for the Protection of New Hampshire Forests (SPNHF), Appalachian Mountain Club (AMC) and numerous other Intervenors, as well as thousands of New Hampshire residents and others via written comments and oral testimony, establishes that the Applicants have both grossly undercounted and undervalued the scenic resources that will be affected by the Project and grossly understated the Project’s impacts on aesthetics, communities, and the environment.

The Applicants attempt to downplay the massive scale of impacts throughout the length of the state, and instead of addressing or mitigating those impacts, they offer a red herring – they claim that the state will reap benefits in terms of capacity market price reductions and greenhouse gas emissions reductions. As this memorandum demonstrates, together with the memoranda and exhibits of Counsel for the Public and the New England Power Generators

¹ Site 202.19. *See also* 102.37.

² NH RSA 162-H:16; Site 301.14-16.

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Association (NEPGA), these so-called benefits do not exist and should not be accorded value by the Committee as a counter-weight to the heavy adverse burden of this project.

In petitioning their case for the so-called “Northern Pass” project, the Applicants have failed to meet their burden of demonstrating that construction and operation of the Project will not have an unreasonable adverse effect on the natural environment. The Project would seriously degrade two exemplary rare natural community occurrences and create severe forest fragmentation by construction of 32 miles of new powerline right-of-way through some of New Hampshire’s most extensive unfragmented forest. The Project will diminish the state’s native biodiversity and permanently reduce the extent of interior forest habitat in the North Country, and have a severe and long-lasting unreasonable adverse effect on the state’s natural environment.

The Applicants have failed to meet their burden of demonstrating that the Project will not unduly interfere with the orderly development of the region. The regional capacity market and greenhouse gas impacts alleged by the Applicants have been disproven and fail to establish benefits to employment or the economy. On the contrary, if completed the project would likely have negative impacts on the orderly development of the region by displacing or deferring the development of local clean energy resources. In addition, the proposed decommissioning plan fails to comply with Site 301.08(d)(2)b.

And the Applicants have overwhelmingly failed to meet their burden of demonstrating that the Project is in the public interest with regard, *inter alia*, to the welfare of the population, air and water quality, or the overall economic growth of the state. By offering no more than an unsubstantiated red herring—the false promise of capacity market price benefits and greenhouse gas reductions that are not documented and will never materialize—the Applicants hope to tempt

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the state to make a bad deal. Ultimately, the cumulative negative effects of the Project lead to the conclusion that the Project is not in the public interest.

The Committee should reject this bad deal for New Hampshire.

ARGUMENT

- I. The Applicants have failed to demonstrate that the Project will not have an unreasonable adverse effect on aesthetics. To the contrary, a preponderance of the evidence in the Record proves that the Project will have a profound and long-lasting adverse effect on aesthetics.**

The Applicants rely upon the work of Terrance J. DeWan & Associates (TDA) to support its case that the Project will not have an unreasonable adverse effect on aesthetics. More specifically, they rely on the Visual Impact Assessment (VIA) performed by TDA together with the written and oral testimony of TDA personnel. Although the VIA, which consumes almost a thousand pages of the Record, and the written testimony, which consumes hundreds of pages, appears on the surface to be objective, well organized and methodical, TDA's conclusions in fact suffer from misinterpretation and/or misapplication of the SEC rules, questionable deviations from generally accepted professional standards³, and obvious errors. The VIA fails to provide what the Rules require - a serious assessment of how the typical viewer of New Hampshire's scenic beauty will respond to landscape alterations caused by the Project.

A. The three fundamental deficiencies in the Applicants' Visual Impact Assessment.

There are three fundamental deficiencies in TDA's VIA that reverberate throughout its testimony and, ultimately, make it impossible for the SEC to find that the Applicants have met their burden of proof on aesthetics.

³ Site 301.05(a) Effects on Aesthetics – “Each application shall include a visual impact assessment of the proposed energy facility prepared in a manner consistent with generally accepted professional standards...”

1. ***First deficiency: TDA failed to undertake the work necessary to assess the reasonable person’s perception of the intrinsic beauty of the landscape and the expectations of the typical viewer of New Hampshire’s scenery in accordance with SEC Rules.***

Under the SEC Rules, “scenic quality” is the fundamental concept behind judging effects on aesthetics. “Scenic quality” is defined as:⁴

. . . a reasonable person’s perception of the intrinsic beauty of landforms, water features, or vegetation in the landscape, as well as any visible human additions or alterations to the landscape.

The Rules reinforce the “reasonable person’s” perception concept when they require the Applicant’s VIA to include an evaluation of the Project’s visual impact on identified scenic resources by considering, among other things, “the expectations of the *typical viewer*”⁵ (emphasis added). If an area is known for its scenic landscape and advertised as having such then the typical viewer is likely to have certain expectations around their visual experience.⁶

There are three broad categories of “typical viewers” that would be impacted by the proposed Project: (i) property owners who could see the proposed Project directly from their property, (ii) individuals residing in the “area of potential visual impact”⁷ (“APVI”) who in their travels would frequently see the proposed Project, and (iii) transient visitors. The Project’s visual experience on these different populations of “typical viewers” should not be analyzed with a one size fits all approach as TDA did. For example, the “frequency, duration, and future use and enjoyment”⁸ of a tourist driving by or under the Project on an affected designated scenic

⁴ Site 102.44.

⁵ Site 301.05(b)(6)(a).

⁶ NGO Ex. 102: Pre-filed Testimony of Chris Thayer, p. 7, ll. 11-12.

⁷ Site 102.10 “Area of potential visual impact” means a geographic area from which a proposed facility would be visible, and would result in potential visual impacts, subject to the areal limitations specified in Site 301.05(b)(4).

⁸ Site 301.05(b)(6)(b).

highway or fishing on a pond for a few days can be quite different than for a person living in the area who may interact with the Project on an almost daily basis.

TDA's failure in this area manifested itself in multiple ways:

(i) Inexperienced team conducting scoring process: The TDA opinion was formulated through a scoring exercise conducted by TDA staff Terrance DeWan, Jessica Kimball and David Truesdell. The qualifications of the TDA evaluators to make judgments about the New Hampshire landscape are suspect. Terrance DeWan, who conducted the Applicants' VIA, is not a licensed landscape architect^{9,10} in New Hampshire and has limited experience performing VIAs in New Hampshire; his experience consists of two smaller projects (a short power line near Portsmouth and a wood chip power plant)¹¹ that are not comparable to this Project in either scale or impacts. Neither Ms. Kimball nor Mr. Truesdell had any experience in conducting VIAs prior to this Project^{12,13} and were hired and then trained on the job for this Project. Further, Mr. Truesdell was hired after much of the field work in 2014 was completed and spent only two to four days in the field out of the several weeks of field work by TDA, and he never visited at least 50% of the views that he scored¹⁴ but instead relied on photographs – a practice which Mr. DeWan said his firm avoids.¹⁵ (Even Mr. DeWan scored photosimulations, created by a prior visual consulting firm working on this Project, from sites which TDA never visited, e.g. Signal Mountain.¹⁶) Despite this lack of experience with the New Hampshire landscape, TDA made

⁹ See NH RSA 310-A:145: "No person shall practice landscape architecture in this state, except as permitted in RSA 310-A:160, without a landscape architect's license issued under this subdivision."

¹⁰ Tr. 9/12/17, AM: p. 121.

¹¹ Tr. 9/11/17, PM: p. 120.

¹² Tr. 9/11/17, PM: p. 122.

¹³ Tr. 9/11/17, PM: pp. 124, 125.

¹⁴ Tr. 9/11/17, PM: pp. 117-118, 129.

¹⁵ Tr. 9/11/17, PM: pp. 129-130.

¹⁶ Tr. 9/11/17, AM: pp. 55-56.

little to no effort to seek out input from outside individuals, agencies or organizations as described below.

Although the VIA gives the appearance of a scoring system that balanced multiple informed opinions, Mr. DeWan conceded that this was not an exercise among equals within his firm;¹⁷ the elaborate “team” quantitative scoring formulation presented in the VIA aside, the final assessment was his opinion. In contrast, two other professionally trained and experienced firms reviewing TDA’s VIA, and who also conducted field work and photosimulations on the proposed Project’s effects on aesthetics (T.J. Boyle for Council for the Public, and Dodson & Flinker, Inc. for SPNHF/AMC), utilized professional teams that had extensive experience in conducting VIAs including with energy projects,¹⁸ and they came to quite different conclusions.

(ii) Failure to ascertain a reasonable person’s perception: TDA’s VIA reaches conclusions about “scenic quality” along the Project’s route and the effect the Project will have on that quality without ever assessing the reactions or expectations of the typical viewer. There are various professionally accepted ways in which TDA could have ascertained a “reasonable person’s perception” of the intrinsic beauty of the New Hampshire landscape that would be affected by the Project:

- Conduct intercept surveys – TDA regularly employs these in conducting VIA’s for Maine wind power projects.
- Hold public meetings to hear the opinions of residents and visitors about what places are aesthetically special to them.
- Meet with state park personnel, tourism personnel and government agencies to learn what their views are on places of aesthetic importance.

¹⁷ Tr. 9/11/17, PM: pp. 133-134.

¹⁸ See CFP Ex. 138: Pre-filed Testimony of Buscher, Palmer and Owens (T.J. Boyle), respective resumes starting at p. 16; SPNF Ex. 62: Pre-filed Testimony of Harry Dodson, resume starting at p. 16.

- Meet with county and municipal officials to hear which places are aesthetically important to their constituents.

The very VIA manuals that TDA cites as the basis for its methodology, e.g., U.S. Bureau of Land Management¹⁹ and U.S. Forest Service,²⁰ recommend these methods. Even Mr. DeWan himself, in a manual which he developed for the Maine State Planning Office, recommends involving the public when assessing aesthetic impacts of development.²¹ Yet TDA did none of these things, and more telling, the Applicant even refused TDA's suggestion of an intercept study.²² TDA's lack of effort and acquiescence in this regard stands in sharp contrast to the work done by Counsel for the Public's consultant, T.J. Boyle, which conducted public listening sessions.²³ Furthermore, TDA failed to acknowledge or account for the many thousands of public written and oral comments on record with the SEC in which they denounced the Project's impacts on identified New Hampshire's scenic values and their importance.

(iii) Assessment of scenic quality: TDA assessed "scenic quality" by stopping at viewpoints (many times likely for the first time and relatively briefly), taking photos and notes and analyzing these in their office.²⁴ Many of these sites were being visited for the first time. Absent was input from any municipal, state or federal bodies, New Hampshire tourism business experts,²⁵ the public, or other knowledgeable parties. In the final analysis, scenic quality became the opinion of one person, Terrance DeWan.²⁶

¹⁹ NGO Ex. 118: Bureau of Land Management Handbook 8410, public surveys.

²⁰ NGO Ex. 116: USFS Landscape Aesthetics – A Handbook (Number 701) for Scenery Management, pp. 3-4 Content and Form (Constituents).

²¹ NGO Ex. 115: DeWan, T. 2008. Maine Scenic Assessment Handbook, p. 46 – Public Interest.

²² Tr. 9/11/2017 AM: p. 80.

²³ CFP Ex. 138: Pre-filed Testimony of Buscher, Palmer and Owens (T.J. Boyle) at CFP Ex. 4: Boyle, "Review of the Northern Pass Transmission Line Visual Impact Assessment," Section 4.2.3, pp. 87-88.

²⁴ Tr. 9/11/17, PM: p. 129.

²⁵ Les Otten of the Balsam's development company did testify on behalf of the Applicant in return for \$5 million in loan; the loan had no other "restrictions, documentation or payback funding requirement" other than his filing testimony in favor of the project. Tr. 10/6/2017 AM: pp. 20-27.

²⁶ TDA claims to have surveyed published materials, including trail guides, as a source of information on the scenic importance of places along the Project route. (The list of titles is relegated to an appendix.) However, the TDA VIA

(iv) Visual impact: After ranking the “scenic quality” as seen from key observation points, TDA’s VIA goes on to assess the “visual impact”²⁷ of the Project by superimposing the Project’s elements on photos of the scenery and producing photosimulations.²⁸ These impact assessments suffer from the same deficiencies as the scenic quality ranking exercise. Again, ultimately a subjective judgment on the Project’s visual impact was made by one person – Mr. DeWan.

(v) No confirmation with the affected public: No attempt was made by TDA to discern the public’s reaction to the photosimulations through use of intercept studies, public meetings, or other methods. Instead, the bar for what is impactful in terms of effects on scenic values was set by the Applicants’ consultant,²⁹ whose opinion differed strongly from the opinions of the impacted public. Over 3,000 individual comments along with multi-signatory petitions were entered into the public record during public hearings held by the SEC or filed with the SEC. These comments were overwhelmingly (>15:1) against the proposed Project. Aesthetic impacts were a leading objection. The commenting public, a reasonable representation for the “typical viewer”, was not inexperienced with the Project, having been exposed to various Project photosimulations since 2011 and had most likely seen tall transmission structures before. Therefore, these opinions were well informed and had substantive merit.³⁰

nowhere cites to any specific language from those materials to support its work. In fact, in many cases those materials do not contain a ranking assessment of scenery, rather explain where viewpoints are located.

²⁷ “Visual impact” is “the degree of change in scenic quality resulting from the construction of a proposed facility.” Site 102.56.

²⁸Site 102.35. “Photosimulations” means computer enhanced images generated using professionally accepted software that illustrate the visible effects anticipated from a proposed facility.

²⁹Mr. DeWan testified that his firm had, as of the time of his testimony, been paid at least \$1 million for their work. He also testified that TDA, who has represented the vast majority of wind power developers in Maine, is on record as finding no unreasonable adverse effect on scenery for all energy developers he represented, even when 300 -400 foot tall wind turbines would be located on mountain ridges within 1 to 3 miles of the Appalachian National Scenic Trail where his opinion was rejected by the Maine state permitting agency. (Tr. 9/11/17, PM: pp. 164-167).

³⁰ Notably, Mr. DeWan, in his work for the Maine State Planning Office, identifies transmission towers as a “discordant use” in the landscape. See NGO Ex. 113: DeWan, T. 2008. Maine Scenic Assessment Handbook, p. 37.- Discordant Use.

In contradiction to his own published manual on the value of public input, Mr. DeWan considered public input received on this Project biased and not of sufficient value to be of use in his analysis, and it was ignored.³¹ This, notwithstanding that the SEC Rules solicit such public input by requiring that pre-application information sessions be conducted by the Applicants in each county where the Project will be located; that post application sessions be held by the Applicants in each county; that SEC-sponsored information sessions be held in each county; and that oral and written public comment be received and made part of the Record.

2. *Second deficiency: TDA failed to follow the SEC Rules, rewrote SEC definitions, made analysis errors, and grossly undercounted the scenic resources which potentially would be impacted by the Project.*

The SEC rules are highly prescriptive with respect to the application submission requirements for aesthetics. These rules, adopted in December 2015, were developed following a long deliberative process by the SEC involving diverse stakeholders. Despite being a member of the stakeholder committee on aesthetics³², Mr. DeWan misinterpreted, misapplied and disagreed with the rules when producing his VIA. TDA's work fails Site 301.05 which prescribes the required contents of the Applicants VIA due to seven methodological errors.

(i) Failure to identify scenic resources using a bare ground viewshed: The rules unambiguously requires that the VIA include a description and map of all areas of the Project that “*would be visible from any scenic resources, based on both bare ground conditions using topographic screening only and with consideration of screening by vegetation or other factors*”³³ (emphasis added). The rules also require the VIA to include “An identification of all scenic

³¹ Tr. 9/11/17, PM: pp. 138-143.

³² NGO Ex. 138: NH OEP SB 99 Pre-rulemaking Process Aesthetics Workgroup Report July 2014, pp. 2-3, and p. 12, (Appendix A. Group Members SB-99 Aesthetics Workgroup Members).

³³ Site 301.05(b)(1).

resources within the area of *potential* visual impact and a description of those scenic resources from which the proposed facility would be visible”³⁴ (emphasis added). Reading these two provisions together, the Rules require an inventory of all scenic resources within a 10-mile radius of the Project based upon both bare ground conditions and conditions considering existing vegetative screening.

TDA’s VIA, as originally submitted and as twice amended, did *not* identify all scenic resources within a 10-mile radius of the Project that would potentially be affected by the Project. In its October 14, 2015 VIA, TDA identified 525 scenic resources within a limited 3-mile radius of the Project. It then eliminated 325 of these scenic resources from further consideration because they would not be visible from the project based on topographic *and* vegetative screening.³⁵ This error persisted in its 2016 updated VIA³⁶ which used a 5-mile radius vegetative screening only condition. In its April 2017 supplemental testimony,³⁷ TDA purported to present a bare earth viewshed map using a 10-mile radius, but again failed to identify and assess scenic resources that would be potentially visible in a bare earth scenario.³⁸

TDA at great length incorrectly argues that the Rules do not require either a bare earth viewshed analysis³⁹ or the identification of scenic resources that are blocked by vegetative screening (which TDA never identified). Such an interpretation by TDA renders meaningless the language in Site 301.5(b)(1) that speaks specifically to bare ground conditions *and* vegetative screening conditions. Further, the requirement for the identification of “all scenic resources

³⁴ Site 301.05(b)(5).

³⁵ App. Ex. 1: Application Volume 15, Appendix 17, p. M-2.

³⁶ App. Ex. 2: Application Up-date re: New Rules 2/26/2016, Attachments 6 -7.

³⁷ App. Ex. 93: Project Visual Impact Assessment – Supplemental Report (April 17, 2017) at pp. 87-90.

³⁸ For context, 723,265 acres are potentially visible over the long-term tenure of this project under bare earth conditions within the 10-mile APE compared to 26,800 acres under current vegetative screening conditions, resulting in numerous scenic resources being unaccounted for in TDA’s scenic resource identification process. NGO Ex. 104: Supplemental Pre-filed Testimony of Kenneth Kimball and Larry Garland, p. 4.

³⁹ App. Ex. 92: Supplemental Pre-Filed Testimony of DeWan and Kimball, pp. 5-7, 9-10, and others.

within the area of potential visual impact” implies the Rules’ understanding that vegetation, e.g., forest cover, is dynamic, and although views of the Project from a scenic resource may be obscured by vegetation today, that may change in the future over the tenure of a project due to timber harvesting, natural disturbance, land conversion, or other factors. AMC testimony illustrated how vegetative screening is a shifting mosaic in the state’s landscape over time,⁴⁰ and included a real world, Project-related example where TDA’s vegetative screening viewshed analysis had already been rendered outdated due to recent forest harvesting activities. (Nathan Pond, an identified scenic resource, was formerly screened by forest cover but now has a bare earth view of the proposed Project^{41,42}).

Furthermore, contrary to the claim of the Applicants that previous energy project applications submitted to the SEC subsequent to the adoption of revised rules in December 2015 had not submitted bare earth viewsheds and associated scenic resource identification, the Record proves otherwise, including for an Eversource Project.^{43,44} Finally, generally accepted manuals for conducting VIAs recommend bare earth analysis for long-tenure projects.⁴⁵

(ii) Elimination of scenic resources based on cultural values: In its October 14, 2015 VIA, TDA further eliminated 130 of the remaining 200 sites from analyses because under TDA’s methodology they were ranked as having ‘low’ cultural value. There is no basis in the SEC

⁴⁰ NGO Ex. 103: Pre-filed Testimony of Kenneth Kimball and Larry Garland (purpose of bare ground conditions analysis, p. 13).

⁴¹ Tr. 9/11/17, PM: pp. 172-175.

⁴² NGO Ex. 123: App. Ex. 124 (Agency Correspondence), link 216 (with NGO landmark identifications of Nathan Pond).

⁴³ NGO Ex. 133 Visual Assessment for the Antrim Wind Project, Sept. 2015, Exhibit 2. Viewshed Map – Topography Only with Scenic Resources.

⁴⁴ NGO Ex. 134: Visual Impact Assessment, Merrimack Valley Reliability Project, Towns of Pelham, Windham, Hudson, and Londonderry, NH (May 2015), Appendix AB. Fig 7a Topographic Viewshed Analysis, and Table A Potential Scenic Resources.

⁴⁵ NGO Ex. 117: The USFS Landscape Aesthetics – A Handbook for Scenery Management, pp. 4-5. Vegetative screening.

Rules, or related generally accepted professional standards for assessing aesthetics, that supports TDA's use of cultural values as a first step filter to eliminate scenic resources from further visual impacts analysis. Furthermore, in order to receive a 'high' or 'medium' cultural value score from TDA, the resource was for the most part only identified if it had been located in a readily accessible digital data base. It therefore eliminated, among other features, many town and village centers, snowmobile and ATV trails, municipal scenic roads and municipal parks, and all rivers and streams not designated in the New Hampshire Rivers Management and Protection Program (such as the Androscoggin River).⁴⁶ His rating method and errors are especially egregious since Mr. DeWan testified that he lacked expertise in evaluating cultural resources, that he never consulted with any state officials with expertise on cultural values, and that any coordination with Cheryl Widell, the Applicants' consultant on cultural resources, was minimal.⁴⁷

TDA's cultural value ranking of all scenic resources was biased, in that it disproportionally ranked 65 % of the SEC-defined identified scenic resources as having 'low' cultural value, and only 11% as 'high'.⁴⁸ Such 'low' rankings are in striking contrast to how New Hampshire's state agencies and the tourist industry advertise the state's scenic resources, and are inconsistent with how other professionals have ranked them. The VIA for another Eversource energy project⁴⁹ before the SEC, conducted by a different visual consultant, gave cultural ranking values of 'medium' or 'high' to many of the same groupings of scenic resources

⁴⁶ App. Ex. 1: Application Volume 15, Appendix 17, p. M-8.

⁴⁷ Tr. 9/11/17, PM: p. 126.

⁴⁸ Tr. 11/20/17, AM: p. 20.

⁴⁹ NGO Ex. 135: Visual Assessment for the Seacoast Reliability Project (April 2016) Section 2 Methodology, p. 16, Scenic Value criterion, compared to analogous DeWan and Kimball's cultural value ranking at their VIA, p. M-8, methodology 5.2.1 Cultural Value.

that TDA ranked as having 'low' cultural value. Also, T.J. Boyle and Dodson & Flinker⁵⁰ considered many of the same scenic resources ranked by TDA as having 'low' cultural value, and instead ranked them as having 'medium' or 'high' cultural value. TDA's incongruously low cultural rankings, made without expert input and in disagreement with his professional peers, inappropriately eliminates many scenic resources from further consideration and presents the appearance of bias toward reaching a conclusion of no unreasonable adverse effect on aesthetics.

(iii) Misreading and/or misapplication of the definition of "scenic resources": As noted above in the discussion of cultural values, TDA took it upon itself to fabricate and apply exclusionary criteria not found in the Rules. Eliminating municipal recreational areas, some scenic drives and some sites of historic significance are but three examples. The Rules have a clear definition of what must be inventoried as part of a VIA.⁵¹ We acknowledge that some of the sites which fall under these broad definitions may not be visible from the Project due to vegetative screening today, or may be too far from the Project to be significantly impacted by it, but that does not justify simply eliminating them from the inventory process prescribed by the Rules.

In contrast, T.J. Boyle issued a report dated December 30, 2016⁵² and updated April 17, 2017⁵³ which followed the rules' prescribed procedure for inventorying scenic resources. Using the correct definition of "scenic resources," the T.J. Boyle report identified scenic resources within a 10-mile radius of the Project using both bare ground and vegetative screening scenarios. The T.J. Boyle results identified thousands more scenic resources for initial analysis than did the

⁵⁰ SPNF Ex. 62: Amended Pre-filed Testimony of Harry Dodson (Visual Impact Assessment, Northern Pass Transmission Project), p. 9.

⁵¹ Site 102.45. "Scenic resources" means resources to which the public has a legal right of access that are:(a) – (e).

⁵² CFP Ex. 138: Buscher, Palmer and Owens (TJ Boyle) Pre-filed Testimony dated (12/30/2016) at CFP Ex. 4: Boyle, "Review of the Northern Pass Transmission Line Visual Impact Assessment."

⁵³ CFP Ex. 139: Supplemental Pre-filed Direct Testimony of Buscher, Palmer and Owens (T.J. Boyle).

TDA VIA. Similarly, Kimball and Garland analyzed the completeness of TDA's identification of scenic resources, which was incorrectly limited to a 3-mile corridor width and only considered a vegetated screening scenario. Kimball and Garland identified 50 scenic resources that TDA had missed. In many cases this resulted from TDA's overreliance on easily available web-based data sets and their lack of familiarity with or understanding of the limitations of the databases they were using. For example, TDA failed to identify lakes, rivers and streams (qualifying scenic resources under the SEC Rules) due to reliance on the NH DES "Official list of Public Waterbodies."⁵⁴ But this NH DES list clearly states strong caveats: (i) it is incomplete, and (ii) its primary purpose is to identify water bodies covered under the jurisdiction of New Hampshire's Shoreland Water Quality Protection Act. For streams and rivers this "official state list" only identifies those of 4th order or higher size, or legislatively designated rivers under the State's Rivers Management Program.⁵⁵ Consequently, TDA failed to include many mid-sized and smaller rivers and streams.

Furthermore, relative to roads, TDA claimed only statutorily designated scenic roads were to be considered "scenic resources."⁵⁶ However, the rules⁵⁷ reference "drives and rides that possess a scenic quality" under the definition of scenic resources. Subsection (c) in the rules differs from subsection (a),⁵⁸ by referencing roads other than just those being statutorily designated. TDA's VIA analysis therefore omitted all other drives and rides on roads that possess a scenic quality, even though they qualify as scenic resources under subsection (c).

⁵⁴ App. Ex. 92: Supplemental Pre-filed Testimony of Terrance DeWan and Jessica Kimball, p.14.

⁵⁵ Tr. 11/20/17, AM: pp. 23-24; NGO Ex. 136: NH DES Official List of Public Waters, July 29, 2016, Fourth Order and Higher Rivers.

⁵⁶ Tr. 8/31/17, PM: pp. 73-76, 85-87.

⁵⁷ Site 102.45(c).

⁵⁸ Site 102.45(a)-(c).

This gross underidentification by TDA of scenic resources both fails to meet the standard set forth in the rules and contributes to their greatly underestimating the overall impact of the Project on aesthetics.

(iv) Eliminating scenic resources on the basis that the public did not have “a legal right of access”: There are at least three categories where this criterion was misapplied.

1) *Conservation easements*. TDA’s reliance on the National Conservation Easement Database (“NCED”)⁵⁹ exhibited their unfamiliarity with this data set, an unfamiliarity that further resulted in false assumptions and overexclusion of scenic resources. The NCED, a non-governmental and voluntary data base, is an incomplete and inappropriate source for determining public access on conservation easements. Its limitations include: (i) the NCED metadata lists public access as “unknown” on 60% of conservation easements in New Hampshire; (ii) the NECD does not include agricultural easements, though agricultural easements in New Hampshire commonly permit, at least seasonally, public access for recreational purposes such as hiking, hunting, snowmobiling, corn mazes, as well as viewing of scenic landscapes and wildlife (e.g. Goldstar Sod Farm which has a designated snowmobile trail on it⁶⁰); and (iii) the NCED does not recognize that on many wetland reserve easements, public access is indeed permitted, though this use is subordinate to the reason why the land is preserved. In contrast the NH GRANIT system, which TDA did not use for this purpose, is much more up-to-date and comprehensive (only 29% of conservation easements have unknown public access information).⁶¹

⁵⁹ App. Ex. 92: Supplemental Pre-filed Testimony of Terrance DeWan and Jessica Kimball, p.14.

⁶⁰ Tr. 11/20/17, AM: p. 181.

⁶¹ Tr. 11/20/17, AM: pp. 21-23, 186-190.

2) *Historic sites known for architectural characteristics which are viewed from the exterior and which do not require public entry inside the property.* The SEC rules consider historic sites that possess a scenic quality to be scenic resources, provided that the public has legal right of access.⁶² Regarding historic sites, the rules are silent on whether legal public access is a narrow definition implying physical access into the structure of a private residence, or if it includes visual access from publicly accessible viewpoints such as a public road or sidewalk. One of the purposes and intents of officially identifying privately owned historic buildings is due to their exterior visual exterior appearance, not physical entrance by the public into or preservation of the building's interior. Therefore, it is reasonable under the Rules to regard such privately owned historic resources as having public access if they have visual accessibility from a public way, and not to require legal public entry into the interior of the building. In fact, Mr. DeWan in the Scenic Assessment Handbook he wrote for the State of Maine also concurred that public access was inclusive if the scenic resource is visible from public viewpoints.⁶³ In summary, TDA in their VIA again applied a reductive strategy to eliminate for consideration and evaluation many historic resources, i.e. those that are privately owned and to which physical entry into the building by the public may be limited.

Furthermore, TDA's underidentification of historic sites, as with Ms. Widell's, resulted because they limited their search to those eligible for or listed on the National Register of Historic Places⁶⁴ under the Federal Section 106 process. But the definition of "historic sites" under Site 102.23,⁶⁵ though it includes those listed on the National Register, is much broader.

⁶² Site 102.45(e).

⁶³ NGO Ex. 114: DeWan, T. Maine Scenic Handbook, p. 45 – Visual Accessibility.

⁶⁴ Tr. 8/31/2017, PM: pp. 108-109.

⁶⁵ Site 102.23 "Historic sites" means historic property as defined in RSA 227-C:1, VI, namely "any building, structure, object, district, area or site that is significant in the history, architecture, archeology or culture of this state, its communities, or the nation." The term includes any prehistoric or historic district, site, building, structure, object

And the affected project area (“APE”) for historic sites under Site 301.06 is much more limited than the APVI, within which “historic sites” as included under Site 301.05 must be considered. In addition, TDA did not identify or analyze cultural landscapes.⁶⁶

3) *Privately owned scenic resources for which a fee is charged.* TDA also eliminated from further consideration all privately owned scenic resources if they charge a fee, including tourist destinations such as campgrounds. TDA’s premise is that fees prevent the public from having a legal right of access. Scenic resources defined under Site 102.45(c) specifically include “tourism destinations that possess a scenic quality”, and this definition makes no attempt to differentiate between publicly and privately owned destinations, or to exclude the latter due to fees. Further, TDA’s premise that fees at privately owned scenic resources create a condition equivalent to a lack of legal public access is contradictory, since many publicly owned scenic resources, such as state parks and campgrounds, charge a fee and TDA included them.

TDA’s faulty logic, if accepted by the SEC, would preclude assessing the aesthetic impacts of any energy project on such well known scenic tourist destinations as the Mount Washington Auto Road or Cog Railway because they are privately owned and therefore not considered publicly accessible because they charge a fee. Yet these tourist destinations are largely dependent upon and sought out by the public based on the aesthetic quality of their viewsheds. TDA’s faulty “fee filter” for privately owned scenic resources further eliminated many qualifying scenic resources from analysis and consideration.

(v) Erroneous vegetative screening model: There were obvious errors in the vegetative screening model that resulted in 54,887 acres within the 10-mile APVI (36,978 acres within

included in, or eligible for inclusion in the, the national Register of Historic Places maintained by the Secretary of Interior,” pursuant to 36 C.F.R. &800.16(1)(1).

⁶⁶ At the closure of the Record on December 22, 2017, the Applicant had not submitted a complete record or witnesses on cultural landscapes, qualifying “historic sites” to be reviewed under both Site 301.05 and Site 301.06.

three miles of the corridor) being incorrectly classified as not visible due to unjustifiable average vegetation heights for certain land cover types. As pointed out by Kimball and Garland⁶⁷ and others, it is nonsensical that land cover types including water, row crops, and bedrock be assigned vegetation heights that screen visibility. Though later partially corrected by TDA, this further added to the underestimation of scenic resources and associated visual impacts.

(vi) Fundamental math errors: The calculation of TDA's matrix scores contained erroneous math.⁶⁸ In cases where there were only two instead of three scorers, the summation of the two scores was divided by a denominator of three instead of two. This very basic math error, particularly with small sample sizes, further contributed to TDA's overall lower visual impact assessment scores.

(vii) Selection of photosimulations and key observation points (KOP) contrary to SEC Rules: Site 301.05(b)(7) specifies "Photosimulations from representative *key observation points*, from other scenic resources for which the *potential visual impacts are characterized as 'high'* pursuant to (6) above..." and Site 102.25 defines "key observation point" as "a viewpoint that receives regular public use and from which the proposed facility would be *prominently visible*" (emphases added). However, in TDA's VIA methodology (confirmed by Mr. DeWan in the Discovery Sessions), TDA selected their KOPs for photosimulations based on "where the largest number of transmission structures or the maximum extent of the proposed transmission corridor would potentially be visible..." and where the "greatest amount of public use is expected."⁶⁹ These alternate definitions used by TDA likely led to an incorrect selection of KOPs. The viewpoints from which "the largest number transmission structures would potentially be visible"

⁶⁷ NGO Ex. 103: Pre-filed Direct Testimony of Kenneth Kimball and Larry Garland, pp. 11-12.

⁶⁸ Tr. 9/11/17, AM: pp. 21-23.

⁶⁹ App. Ex. 1: Application Volume XV, Appendix 1, p. M-10.

could include ones where the Project is viewed at some distance (and from which the potential impacts are characterized as ‘low’) but exclude viewpoints where few structures are visible at close proximity (and for which potential impacts are characterized as ‘high’). In addition, selection of KOPs receiving “the greatest amount of public use” is likely to be more limiting than those receiving “regular public use”.

It is well accepted in the visual assessment handbooks that the “immediate foreground” zone (within 300 feet of the viewpoint) is where transmission structures would be most prominently visible. As quantified in the pre-filed testimony of CFP expert witness Patricia O’Donnell, the Project would involve two ponds crossings, eight crossings of state designated rivers, 133 crossings of rivers and streams, 41 crossings of designated scenic national, state and local roads, and 294 crossings of other roads for which the Project would be seen in the immediate foreground zone⁷⁰ and thus would be prominently visible. Yet TDA, applying their own definitions instead of those of the SEC rules, conducted only one out of their 58 photosimulations from viewpoints for which the Project lay in the immediate foreground zone.⁷¹ With this one exception, Mr. DeWan dismisses as KOPs these close viewpoints from which the project would be “prominently visible” (many of which likely receive “regular public use”) because the encounter would take place but “briefly”⁷² (a criterion that is not part of the SEC definition of KOP).

It is further noteworthy that both Dodson & Flinker and T.J. Boyle, as part of their review of TDA’s work, produced and rated for visual impacts photosimulations from many of the same scenic resources that were studied by TDA. Their photosimulations demonstrated that in many

⁷⁰ CFP Ex. 141: Pre-filed Testimony of Patricia O’Donnell, p. 2.

⁷¹ NGO Ex. 103: Pre-filed Testimony of Kenneth Kimball and Larry Garland, p. 14.

⁷² Tr. 9/11/17, PM: p. 49.

cases TDA had used viewpoints where the proposed transmission structures and transition station were not most “visibly prominent” from viewpoints receiving regular public use, but rather from viewpoints where the transmission structures in the photosimulations were mostly shielded by vegetation or existing structures,⁷³ which contradicts the SEC Rules. And T.J. Boyle’s and Dodson’s rating of the visual impacts from the photosimulations were in many cases not ‘low’ (as determined by TDA), but rather ‘medium’ or ‘high.’ Though TDA claimed their photosimulations represented “typical” views, in reality many did not represent the full impact of the Project because they used perspectives that screened the Project element(s) most prominently visible, and they mostly avoided perspectives that showed Project elements in close proximity to the viewer, such as at road and river crossings.

In summary, TDAs Visual Impact Assessment did not conform to the requirements set forth in the SEC rules for conducting a VIA, had methodological and mathematical errors, used an inappropriately reductive screening strategy that improperly eliminated many qualifying scenic resources from consideration (e.g. ‘low’ cultural value rankings applied to SEC-defined scenic resources), and ignored and contradicted the extensive public comment record. These are all strong evidence that TDA’s VIA methodology failed to meet the burden of proof and that it had a strong bias toward a preordained conclusion of no “unreasonable adverse effect on aesthetics.”⁷⁴

⁷³ NGO Ex. 104: Supplemental Pre-filed Testimony of Kenneth Kimball and Larry Garland, pp. 3-4.

⁷⁴ Mr. DeWan’s CV exhibits a history of serving energy development clients where he has never concluded that an undue adverse impact would occur, though overruled in several Maine cases – Redington and Black Knubble Wind Farms (Tr. 9/11/2017, PM: pp. 164-167).

3. *Third deficiency: TDA's suggested standard for "unreasonable adverse effect" on aesthetics has no basis in logic or law.*

Although TDA's pre-filed testimony concluded that an "unreasonable adverse effect" on aesthetics will not occur, Mr. DeWan skirted the question when directly asked during cross-examination as to what his criteria were that would result in an "unreasonable adverse effect" on aesthetics.⁷⁵ But his articulation of what he believes constitutes an "unreasonable adverse effect" on aesthetics can be found on pages 24-25 of the DeWan and Kimball pre-filed testimony, which he never refuted in the record:

There is no basis to conclude that people will not continue to drive the scenic byways, visit the parks, swim at the beaches, canoe and kayak the rivers, fish in the lakes, and hike the trails – in a manner that they have for decades – due to the presence of the Project. Human development, including large-scale buildings and other structures, is a fact of life in our organized society. People come to New Hampshire to enjoy its intrinsic scenic qualities, and there is nothing that will be atypical about the type of visual impact the Project will have. Consequently, based on the totality of our analysis, it is our opinion that Northern Pass will not have an unreasonable adverse effect on aesthetics.

Certainly, if the visual effect of the Project is so severe that people will not come back to visit a park, canoe a river, hike a trail, etc., that would be an "unreasonable adverse effect." But that is not and cannot be the standard for the SEC to apply when evaluating impacts. If the standard is set as low as TDA proposes, then New Hampshire's iconic scenery would become totally degraded over time. The proper evaluative criterion is whether there will be a diminishment of the viewer's experience of scenic resources to an unreasonable degree.

Embedded in this passage from TDA's testimony are two other fallacies. The first is that the Rules regarding protection of scenic values relate only to visitors to the scenic resources, be they from out of state or from other parts of New Hampshire. TDA apparently has forgotten about the residents fortunate enough to live in this cultural landscape – many of whom have

⁷⁵ Tr. 9/11/2017, PM: pp. 52-53, 159-160.

testified before the SEC in this docket. For example, a person may live in a picturesque village such as Deerfield or on a hillside with views of the undeveloped ridges of the North Country. The view may in fact be the reason they chose to live where they live, be it part or full-time. That person's daily visual experience of their landscape will be degraded by the Project, yet TDA's apparent logic is that the adverse effect is not unreasonable unless the resident sells his or her property and moves away.

The second fallacy is that since "human development" – large buildings, power lines, etc. – are already part of New Hampshire's landscape and are a "fact of life in our organized society" then the addition of this Project to New Hampshire's landscape will not be seen by visitors who "come to New Hampshire" as atypical. If this were indeed the criteria the SEC should accept, then there would be no energy project that the SEC should deny. The appropriate question before the SEC is not whether human development already has a large visual footprint on the landscape - it certainly does - but when and where does a proposed new development become unreasonably adverse. This is the reason why aesthetic analyses are conducted, and why we recognize, protect and preserve important remaining scenic landscapes.

Large transmission structures may be a fact of life in a heavily developed and industrialized landscape such as northeastern New Jersey around Newark, but they certainly are not in New Hampshire's rural areas or the undeveloped forests of the North Country. Such a degradation of these increasingly rare scenic landscapes is to ignore the State's future heritage. The scarring of New Hampshire's culturally and economically valuable rural and undeveloped landscapes with 1,829 new or taller discordant transmission structures, six large transition stations, and 32 miles of new ROW cannot be justified as simply being "a fact of life" as purported by TDA.

- B. Applying the Committee’s “consideration” criteria to the facts in the Record supports a conclusion that the Applicants failed to demonstrate by a preponderance of the evidence that the Project will not have an “unreasonable adverse effect on aesthetics.” In fact, the Record supports a conclusion that the Project will have such an effect.**

The SEC rules do not define the term “unreasonable adverse effect.” Instead, Site 301.14(a) provides that, when making that determination with respect to aesthetics, the SEC “shall consider” seven different aspects of the Project. The following examines each of those aspects in light of the evidence in the Record.

1. The existing character of the area of potential visual impact.

This 192-mile linear development passes through almost every type of landscape in New Hampshire, excluding the seacoast. The rules do not provide a definition of “existing character.” While it may be tempting simply to use generic terms such as “rural,” “urban,” “suburban,” etc., this would not be precise enough for the evaluative task before the Committee. However, if we look at the definitions in the rules and the VIA requirements of Site 301.05 (effects on aesthetics) we can interpret the intent behind the term “existing character” as used here.

The geographic limit for evaluation of the Project is found at Site 102.10 which defines the “area of potential visual impact” (“APVI”) as “a geographic area from which a proposed facility would be visible, and would result in potential visual impacts, subject to the areal limitations specified in Site 301.05(b)(4).” For this Project that area is legally defined as a 10-mile radius from the 192-mile, linear Project infrastructure.⁷⁶ And Site 102.44 defines “scenic quality” to mean “a reasonable person’s perception of the intrinsic beauty of landforms, water

⁷⁶ In the urbanized cluster Concord area the radius is 2-miles per Site 301.05(b)(4)c.

features, or vegetation in the landscape, as well as any visible human additions or alterations to the landscape”.⁷⁷

The “existing character” and the relevant “scenic quality” of New Hampshire’s landscape subject to potential visual impact from the proposed Project is well understood, heralded by countless real estate and tourism brochures created and promoted by both the state government and New Hampshire’s real estate and tourism industry.⁷⁸ For example, the New Hampshire Division of Travel and Tourism Development (“NHDTTD”) initiated a third-party study in 2002 of the state’s tourism image.⁷⁹ That study’s goals were to gain a better understanding of the destination features (existing character/scenic quality) most important to tourism visitors and what activities or features motivate them to travel here. Unlike the Applicants’ exhibits in this docket, the 2002 study methodology used extensive, unbiased surveys and focus groups with potential and current visitors. Results yielded strong opportunities for differentiating New Hampshire in marketing when it came to offering “superior access to outstanding scenery and year-round outdoor activities and recreation.” Study respondents ranked New Hampshire as #1 among New England states in: fall foliage, scenery/natural beauty, access to mountains, lakes and rivers, quaint towns and villages, parks and forests, and outdoor sports activities.

Under Site 301.14(a)(1) the Committee is directed to consider those areas that would *potentially* be changed in scenic quality by virtue of the Project’s visibility⁸⁰. Thus, it is reasonable to interpret the term “existing character” as the existing scenic quality as defined by the landscape features within the APVI, which here is a radius of 10 miles.

⁷⁷ Site 102.26 defines “landscape” as “the characteristic, visible features of an area including landforms, water forms, vegetation, historic and cultural features and all other objects and aspects of natural and human origin.”

⁷⁸ NGO Ex. 102.: Pre-filed Testimony of Chris Thayer, pp. 11-12

⁷⁹*Id.*, Attachment Exhibit B.

⁸⁰ The rules require VIA’s to use both bare ground and vegetated screening scenarios with respect to the content of VIAs. Potential visibility of the Project should be considered under both scenarios.

The “existing character” of the APVI should be understood as encompassing the full suite of scenic resources, both individually and as whole landscape(s), in order to determine whether the proposed facility “fits”, and the extent to which it changes the “existing character”. The existing character of the APVI changes regionally from north to south. The existing character of the North Country, with its very high scenic quality and minimal human development, is especially rare and valuable in the state, while the existing character of the state’s rural areas is perhaps the most iconic characteristic of the state’s landscape. This massive project would be in stark contrast to and totally discordant with the existing character of most of the corridor.

2. *The significance of affected scenic resources and their distance from the proposed facility.*

The significance of the scenic resources within the APVI is underscored by the public and private resources invested in protecting them, the state government and tourist industry’s advertising of them, previous focus group studies (e.g. the aforementioned 2002 study), and the many thousands of comments filed in this and the US DOE permitting processes that opposed this Project’s degradation of them. These scenic resources are the fabric of the state’s natural and cultural landscape and are a major draw for both residents and visitors to the state. As noted previously, TDA has undercounted and undervalued the “scenic resources” within the APVI in sharp contrast to the testimony of T.J. Boyle, Harry Dodson, and others, and the cultural ranking approach taken by the visual consultant in the recent Merrimack Reliability Project.

We accept that viewing distance can attenuate visual impact. If the Project is viewed from a scenic resource 8 miles distant, the impact is likely to be much less than if viewed from 2 miles away. However, the degree of difference depends on more than just distance. For example, silhouetting of transmission towers on a ridgeline will be an important factor, as will reflectivity of towers and conductors, as will the newly cut ROW. There must be a substantive

assessment of the effects of distance that accounts for these variables. There is minimal such assessment in TDA's work, and furthermore they apply a blanket assumption that all project impacts on scenic resources beyond 5-miles will be negligible, whereby he did not do any actual visual assessment of those affected scenic resources. In contrast, T.J. Boyle and Mr. Dodson did assess such factors as distance, ridgeline exposure, and their interrelationship on a scenic resource by scenic resource basis, and came to conclusions on the Project's impacts to aesthetics quite different than those of TDA.

This consideration is an important screening step for the Committee. Not all of the identified scenic resources in the APVI are going to be significant enough to warrant concern, and some scenic resources of moderate significance will be so distant from the Project that its effects on the resource will not be of concern. But given the flaws in and incompleteness of TDA's analysis, the Committee cannot make an informed judgment about the significance of those resources. However, the Record clearly supports the conclusion that the APVI contains many affected scenic resources (both individual features and broad landscapes) that should be considered highly significant.

3. *The extent, nature, and duration of public uses of affected scenic resources.*

The criteria of "extent, nature, and duration" are interrelated and must take into consideration that they will differ between different user groups, be they full or part-time residents or visitors. TDA misses this interrelationship, and in fact scores these scenic resources as though all public users of the affected scenic resources represent a homogenous group, albeit broken out by recreational activities.⁸¹

⁸¹ App. Ex. 1: Application Volume 15, Appendix 17, p. M-15 (Nature of Activity Form).

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TDA assessed the “extent of public use” by “briefly looking around” during his site visit at each of his identified scenic resource, and then in the office ranked it ‘high’ to ‘low’ relative to his guesstimate on user numbers and relative ease of accessibility. TDA made no effort or outreach to confirm his extent of public use estimate based on at times a single visit, did not differentiate by season, or seek any input from any state agency or other external entity to confirm his opinion. Yet such usage numbers, or at least reasonable proxies, exist. The State has relatively extensive traffic use numbers, based on periodically collected Average Daily Traffic volume counts on roads statutorily designated as scenic or “scenic rides and drives that possess a scenic quality” within the APVI, and State Park personnel both have knowledge of and some data on user numbers. TDA’s methodology is at best only speculative, does not meet generally accepted professional standards, and fails to meet the Applicants’ reasonable burden of proof test. Furthermore, ranking estimates of public usage numbers is not fully illustrative – scenic resources are experienced by different segments of the public for different reasons and in different ways.

The extent of use as measured by access must also take into consideration the scenic resource itself and its location. The North Country is distant from major population centers, and therefore its scenic resources will typically see less use than those in the southern part of the state. For example, comparing Hampton Beach or Bear Brook State Park with their high use numbers due to their proximity to Boston, Portsmouth, Manchester, Concord, etc., with Coleman State Park in Stewartstown is not an “apples to apples” comparison. In addition, the ease of public access will also vary by resource type - a designated highway scenic overlook’s access should not be compared with a multi-hour hike needed to access one of the North Country’s

more remote, scenic mountain summits such as Percy Peak in the Nash Stream State Forest. But that is exactly what TDA's VIA does.

TDA's evaluative scoring on "duration of use" defies common sense. To score 'high' in the TDA scoring matrix, a user must spend at least four hours at the scenic resource viewpoint.⁸² For example, a remote mountain peak with a trail may have spectacular views when the hiker reaches the summit viewpoint. TDA's methodology requires a hiker to spend at least four hours at the summit to rate 'high' for duration of use. This completely ignores real life behavior. As another example, TDA's standard requires a similar four-hour viewing for the person(s) who stop at a designated scenic overlook to achieve a 'high' rating. In fact, there are few if any designated scenic byways in New Hampshire that take four hours in total to drive. Such scoring ignores reality. Few if any visitors to the Franconia Notch Parkway would spend four hours viewing what was formerly one of the most sought out, iconic scenic resources in New Hampshire - the Old Man of the Mountain.

Conversely, TDA assumes that a drive-by exposure to the Project's transmission structures (such as by a person out for a scenic drive or a bicyclist), has minimal negative visual impact on a viewer because the exposure time frame can be measured in seconds to minutes, even if it happens repetitively as it could for residents living near the Project. Such logic defies why short-term visual interactions with discordant features like billboards have been outlawed in many states. By TDA's standards, if a Walmart were built in the middle of Franconia Notch State Park, bicyclists on the Franconia bikeway or travelers on the Franconia Notch Parkway would not be offended by a short-duration view of this highly discordant feature, but would accept it as a "fact of life."

⁸² App. Ex. 1: Application Volume 15, Appendix 17, p. M-15 (Duration of View Form).

TDA further waters down visual impacts in its scoring system by assuming that when viewers spend considerable time at a scenic resource that has multiple values (e.g. fishing on Coleman Lake), then viewing the landscape is subordinate and therefore less strongly impacted.⁸³ It is hard to conceive what scenic resources under this methodology would suffer undue adverse effect on aesthetics by any Project, using TDA's standards.

Many of the identified affected scenic resources are used or viewed daily in by numerous residents and tourists alike. Considering the thousands of scenic resources impacted along the full route of this Project, along with available average daily traffic counts alone, the negative aesthetic interactions would be experienced by thousands of people daily along much of the aboveground portion of the corridor. Given the proposed lifespan of this Project, the "extent and duration" of the visual impact of this Project on the public would last for multiple decades to centuries. Further, it is self-evident that the undercounting and undervaluing of scenic resources by TDA makes it impossible for the Committee to fully consider the impacts of the Project under this criterion.

4. The scope and scale of the change in the landscape visible from affected scenic resources.

The scope and scale of this energy project is unprecedented in New Hampshire. The only comparable (but still smaller) energy project with this scope of aesthetic impacts would be the existing National Grid-Hydro Quebec line (commonly known as the Phase II line). As proposed, the Project traverses 192 miles from the Canadian border to the Massachusetts border, including 132 miles of overhead line requiring 32 miles of newly cleared corridor. The Project would introduce 1,829 new or enlarged steel monopole and lattice towers up to 165 feet tall, which is

⁸³ *Id.*

taller than the State Capital building. Existing towers (with an average height of no more than 65 feet and predominantly made of wood) will be replaced with much larger towers extending well above tree height, along with the removal of some screening vegetation. The project also includes six large transition stations, several visible from identified scenic resources. Based on the TDA vegetatively screened viewshed maps and data provided during discovery, 26,799 acres would have visibility of the Project, in addition to another 54,887 acres that TDA initially missed due to analytical errors.⁸⁴ And based on bare ground viewshed conditions, up to 723,265 acres within the Project's 10-mile APVI (over 10% of the state) could potentially have views of the Project during its long lifetime.

The number of scenic resources impacted by the Project is in the thousands. Just in the immediate foreground (0 – 300 feet), are two pond crossings, eight crossings of state designated river, 133 crossings of rivers and streams, 41 crossings of designated national, state, and local scenic roads, and 294 crossings of other roads. Clearly the scope and scale of potential change in New Hampshire's landscape because of this Project is immense.

5. The evaluation of the overall daytime and nighttime visual impacts of the facility as described in the visual impact assessment submitted by the Applicants and other relevant evidence submitted pursuant to Site 202.24.

Many components of TJD's Visual Impact Analysis are inaccurate and/or incomplete, as we and others have described (see above), therefore providing inadequate basis for the conclusions derived from TDA's evaluation of visual impacts. As previously described in detail, TDA missed or inappropriately dismissed numerous affected scenic resources, and their rating scheme seriously undervalued both the value of and impact to many others. TDA ranked 65% of his identified scenic resources as having 'low' cultural value and removed them from further

⁸⁴ NGO Ex. 103: Pre-filed Testimony of Kenneth Kimball and Larry Garland, pp. 11-12.

analysis. And TDA did not find a single scenic resource at which the public's use and enjoyment would be impacted at either a 'medium' or 'high' level,'⁸⁵ which clearly fails the straight face test. Such TDA scorings culminated in their biased final summary of visual impacts for the entire length of the corridor, i.e. they concluded that no scenic resource that they identified were rated as experiencing a 'high' overall visual impact, and only 18% were even rated as having a 'medium' visual impact.⁸⁶ In stark contrast, and unexplained by TDA, aesthetic impacts to scenic resources have been a primary public concern about this Project, and is a key driver behind the unparalleled contentiousness of this SEC permitting process.

As discussed previously, TDA's articulation of what constitutes an unreasonable adverse effect on aesthetics, which boils down to "people are accustomed to large industrial intrusions on the landscape, it is a fact of life, and such intrusions reach the undue adverse effect level when people will leave or not come back" has no basis in the Rules and undermines the credibility of TDA's evaluation of overall visual impacts. Furthermore, as pointed out by Harry Dodson in his report,⁸⁷ TDA's methodology "breaks the visual landscape down so finely that all aesthetic effects average out to, almost a moderate impact," it "misses the forest for the trees." Both TDA and the Applicants' cultural resources consultant used an overall averaging approach to an extreme (the "denominator problem") when making their conclusions regarding the severity of the Project's impacts. So, for example, if Project towers are prominent from one vantage point on a scenic village square, the impact is not 'high' because the viewer need only look elsewhere or move to other vantage points on the square from which the towers are not visible.⁸⁸

⁸⁵ Tr. 9/11/2017, AM: p. 91.

⁸⁶ App. Ex. 1: Application Volume 15, Appendix 17, Appendix B-1.

⁸⁷ SPNF Ex. 62: Amended Pre-filed Testimony of Harry Dodson at "Visual Impact Assessment, Northern Pass Transmission Project," p. 5.

⁸⁸ Tr. 9/11/2017, PM: p. 181; Tr. 9/12/2017, AM: pp. 137-142.

6. *The extent to which the proposed facility would be a dominant and prominent feature within a natural or cultural landscape of high scenic quality or as viewed from scenic resources of high value or sensitivity.*

There are few if any infrastructure projects ever built in the State to date that match the dominance and prominence on the landscape of the Project as proposed, including I-93 which has a much lower vertical profile and shorter linear distance. The scale of what is proposed for this Project, the number and height of the structures, and the 192-mile length of the Project with 32 miles of new ROW, exceeds that of the largest existing transmission project in New Hampshire. The highly experienced visual expert on landscapes Harry Dodson summarized it very succinctly in his report relative to the four state-designated tourism regions:⁸⁹

The towers themselves are highly inconsistent with the character of the intact forests, scenic open rural landscapes and historic village centers in which they are located...The Great North Woods will be severely impacted by a new transmission line corridor cutting through a sparsely populated and aesthetically intact rural landscape. In the White Mountains, new towers and wider cleared corridors will dwarf existing transmission lines, impacting views of mountains and hill summits. In the lakes region rolling woodlands, farmlands, rivers, and residential areas will be impacted by the proposed project. And in the Merrimack Valley, the suburbs of Concord, Deerfield's historic village center, as well as rural lands to the southeast will be irrevocably changed as a result of the new and relocated transmission towers and expanded corridor.

Furthermore, as pointed out in the pre-filed testimony of Chris Thayer, all New Hampshire tourism brochures purposefully avoid depicting large transmission towers for good reason.⁹⁰ The North Country's tourism branding groups and regional planning agencies set goals to preserve the unique cultural landscape of this region from discordant, visual intrusions such as proposed here. As noted by Mr. Thayer,⁹¹

Tourism involves much more than marketing. It also involves making destinations more appealing...To that end protecting scenic views and vistas, installing underground utility

⁸⁹ SPNF Ex. 62: Amended Pre-filed Testimony of Harry Dodson at "Visual Impact Assessment, Northern Pass Transmission Project," p. 89.

⁹⁰ NGO Ex. 102: Pre-filed Testimony of Chris Thayer, pp. 11-12.

⁹¹ *Id.*, p. 12 and Appendix D.

wires, and screening unsightly intrusions on scenic viewsheds or historic settings is important.

Finally, the Record is incomplete with respect to cultural landscapes, which have been determined to be qualifying “historic sites” under both aesthetic and historic site rules and definitions. Mr. DeWan never identified or reviewed the aesthetic impacts on specific cultural landscapes. At the official closure of the Record on December 22, 2017, the Applicant had neither submitted a complete record relative to potential effects on cultural landscapes still under review by NH DHR, nor witness(es) to substantiate the exhibits filed at virtually the last minute. And DHR’s ongoing appraisal of reports prepared by the Public Archaeology Laboratory findings in its December 21, 2017 letter to SEC expresses disagreement “...with a number of the applicant’s own effect assessments for historic districts.”⁹² And under cross-examination Ms. Widell (the aboveground cultural expert for the Applicant) was positing conclusions before she had ever even seen this cultural landscape work submitted. At a minimum, this docket’s record is insufficient for the SEC to base a finding under either Site 301.14(a) or (b).

7. *The effectiveness of the measures proposed by the Applicant to avoid, minimize, or mitigate unreasonable adverse effects on aesthetics, and the extent to which such measures represent best practical measures.*

Avoidance of adverse effects is always the first measure that should be considered in the design phase of a major project. Here, avoidance of adverse aesthetic effects means locating the power line and transition and substations where they will have the least aesthetic impact and/or burying the power line. Testimony by Mr. DeWan⁹³ confirmed that the Applicants never involved its aesthetics consultant in decisions concerning the route of the Project (including the

⁹² Applicant’s Cultural Landscape (App. Ex. 211; APP811222-APP82762) and NH DHR’s Letter of December 21, 2017 (Richard Boisvert to Pamela Monroe – App Ex. 112c; APP88940-APP88965) were entered into the record immediately before the official closing of this docket’s hearing, without adequate time for review by intervenors, and without available experts for cross-examination by either intervenors or the SEC.

⁹³ Tr. 9/11/2017, PM; pp. 113-116.

decision to bury 60 miles through the White Mountain National Forest). Instead, Mr. DeWan was presented with the route and charged with determining whether the Project as proposed would have an unreasonable adverse effect on aesthetics.

Burial of HVDC lines is both technologically feasible and economically viable if a route is selected that is conducive to this avoidance approach.⁹⁴ However, as early as 2010 when the Applicants approached AMC and other organizations, they claimed that burial was impossible,⁹⁵ though they appeared receptive to tweaks in the above ground alignment. When it became apparent that the White Mountain National Forest was unlikely to issue a Special Use Permit for the lengthy aboveground portion on their lands, and that land along the Applicants' initial route in the North Country could not be purchased from certain landowners, burial, though not well planned, suddenly became technically and economically feasible, with the Applicants proposing burial on state roads through the WMNF region and for two short sections in the North Country. The latter lie in part on town and private roads, which will require permission other than from NH DOT – permission that has not yet been requested by the Applicants or received from the towns or landowners. As noted earlier, Hydro-Quebec recently reversed itself on burial of a portion of the Canadian part of this Project and has agreed to bury the project around the protected Hereford Forest in Quebec to put an end to a major controversy. If the Project partners had taken this avoidance approach from the start, focusing on trying to use complete or near complete burial for the Project, appropriate alternative route selection could have likely made burial much more economical. Instead, the Applicants have spent immense amounts of money to date to force a mixed above/below ground “porpoising” of the Project through the northern half of the route, with six (instead of potentially just two) costly transition stations. Early selection of

⁹⁴ NGO Ex. 103: Pre-filed Testimony of Kenneth Kimball and Larry Garland, p. 20.

⁹⁵ Tr. 11/20/2017, AM: pp. 174-175.

an appropriate route for complete burial would have reduced wetland and environmental study costs, and resulted in a much speedier, less contentious certification process. The fact that those dollars have now been expended should not absolve the Applicants for taking the wrong path early on.

With regard to minimizing impacts, Mr. Dewan has perfunctorily listed a number of generic concepts to minimize project impacts, as has Ms. Widell, with very limited success (e.g. converting twelve lattice towers to monopoles which will have very minor effect on reducing overall impacts). However, in his supplemental pre-filed testimony, Mr. DeWan defers to Mr. Bowes on minimization and mitigation,⁹⁶ and Mr. Bowes in his Supplemental Pre-filed testimony then proceeds to outline why most of these efforts are “not practical.”⁹⁷ With the exclusion of changing some lattice towers to a monopole configuration (which at the proposed sizes even monopoles are a major, discordant feature on the landscape), and the shifting of a few of them, minimization of the Project’s aesthetic impacts by the Applicants are minimal at best. Furthermore, as pointed out by T.J. Boyle in their review of TDA’s VIA, and as agreed to by TDA,⁹⁸ the proposed jumbled mix of pole structure types within the ROW creates further undesirable visual incongruity as compared to a more uniform structure type.

In lieu of an avoidance, minimization or mitigation (AMM) plan for impacts on above ground historic resources that possess a scenic quality, the Applicants proposed that the SEC should rely on the Section 106 process’s Programmatic Agreement (“PA”) amongst the federal agency (U.S. Department of Energy), the Applicants, New Hampshire State Historic Preservation Officer, Vermont Historic Preservation Officer, and the Advisory Council on

⁹⁶ App. Ex. 92: Supplemental Pre-filed Testimony of DeWan and Kimball, pp. 25-26.

⁹⁷ App. Ex. 90: Supplemental Pre-filed Testimony of Kenneth Bowes, pp. 3-12.

⁹⁸ Tr. 9/11/2017, PM: pp. 37-38.

Historic Preservation for Issuing A Presidential Permit for the Northern Pass Transmission Line Projects International Border Crossing to satisfy the criteria of Site 301.14(b).⁹⁹ The PA is but a plan to promise to create a plan that is limited to federal Section 106 parameters, resulting in no clarity for review purposes as to what is or is not expected for actual avoidance, minimization, or mitigation. If used solely as the AMM plan for these resources, it applies a federal standard that is not synonymous with and circumvents parts of SEC laws and rules.

No actual mitigation for aesthetic impacts is included in the Applicants' Forward NH Plan or other materials. In many cases, what is proposed has minimal nexus with the Project's aesthetic impacts. Creating training programs for the next generation of linemen because of the aging out of current workers is more about paying oneself to do what one needs to do anyway. The National Fish and Wildlife Foundation's Partners for New Hampshire's Fish and Wildlife grant program, established with Eversource funds, is unrelated to aesthetic impacts and those grants to date have no direct nexus with actual project impacts. Taken as whole, the \$200 million Forward NH Plan is a meager expenditure over the life of this Project, and it does little or nothing to mitigate the aesthetic impacts of the Project.

II. The Applicants have failed to demonstrate that the Project will not have an unreasonable adverse effect on the natural environment. To the contrary, a preponderance of the evidence in the Record proves that the Project will have a severe and long-lasting adverse effect on certain exemplary rare natural communities and will result in significant forest fragmentation.

The Applicants rely upon the work of Normandeau Associates to support its case that the Project will not have an unreasonable adverse effect on the natural environment. More specifically, they rely on Application Appendix 35 (Rare, Threatened and Endangered Plants and

⁹⁹ Tr. 8/31/2017, AM: pp. 161-163.

Exemplary Natural Communities) and Application Appendix 36 (Wildlife Report and Impact Assessment) together with the written and oral testimony of Normandeau personnel. However, the Applicants have failed to meet their burden of proof. The natural resource assessments suffer from major errors of omission and analysis, particularly in their assessment of impacts to exemplary rare natural communities and forest fragmentation. These errors render their conclusions unsupportable, and for the following reasons, as well as reasons set forth in the briefing of the Society for the Protection of New Hampshire Forests and City of Concord, the facts in the Record support a finding of unreasonable adverse effect on the natural environment.

A. Fundamental deficiencies in the Applicants' natural resource assessments.

1. The Applicants have failed to map the full extent of a significant exemplary rare natural community occurrence that would be impacted by the Project.

The Project would impact two exemplary occurrences of the rare (S3) Northern Hardwood Seepage Forest natural community, designated NHSF1 (61 acres)¹⁰⁰ and NHSF4 (14 acres).¹⁰¹ However, the Applicants failed to fully map the extent of the larger of these exemplary occurrences (NHSF1). The Application states, “The full boundaries of this community have not been determined.”¹⁰² The incomplete mapping of this natural community occurrence is indicated by the fact that the map of the occurrence contains many unnatural straight lines as boundaries.¹⁰³

¹⁰⁰ App. Ex. 1: Application Appendix 35 Appendix D, last page (CONFIDENTIAL).

¹⁰¹ App. Ex. 124: Update to Appendix 48, Regulatory Agency Consultation Summary, link 200 (CONFIDENTIAL).

¹⁰² App. Ex. 1: Application Appendix 35 Section 3.11.1.1.

¹⁰³ During cross-examination of the Normandeau environmental panel, in response to the question “Are you confident that that is the full extent of the seepage forest here?”, Dennis Magee answered “Yes.” Tr. 6/16/17, AM: 130. However, this answer is contradicted by the statement in Mr. Magee’s Pre-filed Testimony (p. 8 ll. 28-29) that “*The full boundaries of this area were not determined*”.

The Applicants' failure to fully and accurately delineate the extent of NHSF1 is a serious flaw that renders it impossible to assess the full impact to this significant feature of the natural environment.

2. *The Applicants have failed to address the impact of edge effects that would degrade two exemplary rare community occurrences.*

Edge effects can cause significant changes in forest microclimate, hydrology, composition and structure in the forest adjacent to the edge created by clearing and can extend for up to 300 feet into the uncleared forest.¹⁰⁴ Within these community occurrences these changes will include drying due to light and wind penetration and increased growth of understory trees and shrubs. These changes will have an adverse effect on herbaceous understory plants within the edge zone (including eight state watch or indeterminate species) that are adapted to cool moist conditions under this mature forest. Because the long exposed edge in both occurrences faces to the southwest and thus receives the highest level of solar radiation, these edge effects will be particularly severe. There is also an increased risk of blowdown along the long exposed edge, exacerbated by the wet soils of this community.

However, an assessment of the impact of edge effects from the clearing of the new right-of-way on the uncleared portions of NHSF1 and NHSF4 is completely absent. The Applicants' failure to evaluate (or even consider) the impact of edge effects on these two occurrences and the rare plants within them is a serious flaw. These flaws means that the Project's impacts to these exemplary rare natural community occurrences (which considered only direct clearing) have been significantly underestimated.

¹⁰⁴ NGO Ex. 101: Pre-filed Testimony of David Publicover, p. 3 ll. 4-14.

3. *The Applicants' assessment of forest fragmentation is flawed and based on a misreading of their primary reference.*

The Applicants' assessment of forest fragmentation and its impact on forest interior bird species^{105,106} utilized as their primary source Rosenberg et al. (1999).¹⁰⁷ The methodology involved examining changes in the size of forest blocks within a series of circular 2500-acre "moving windows" along the new right-of-way, and determining how many blocks fell below the minimum size necessary to support scarlet tanagers (as a proxy for all bird species requiring interior forest habitat) due to the clearing of the right-of-way.

In discussing this methodology, the Application states,¹⁰⁸ "Rosenberg et al. (1999) determined that in northern New England, scarlet tanagers are likely to breed in virtually any forest block 41 acres or larger within landscape blocks (defined as an area 2500 acres in size) that are more than 70% forested." This is an incorrect interpretation of the reference. The relevant statement from Rosenberg et al. (1999) is, "In the Northern Forest region, tanagers are predicted to occur in virtually any size forest patch within landscape blocks that are more than 70% forested; that is, the birds do not show area sensitivity in extensively forested landscapes."¹⁰⁹

Every "moving window" lying completely within the Applicants' analysis area around the new right-of-way is at least 70% forested and the great majority are in excess of 85% forested.¹¹⁰ Based on a correct reading of Rosenberg et al. (1999), at this level of forest cover

¹⁰⁵ App. Ex. 1: Application Appendix 36 Section 9.4.

¹⁰⁶ "Interior forest habitat" refers to relatively mature closed-canopy forest that is removed from the influence of openings and edges.

¹⁰⁷ NGO Ex. 106: 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.

¹⁰⁸ App. Ex. 1: Application Appendix 36 Section 9.4.2.

¹⁰⁹ See NGO Ex. 106 - Rosenberg et al. (1999).

¹¹⁰ NGO Ex. 110: Northern Pass discovery document NPT_DIS040400.

tanagers are unaffected by changes in forest block size. If the Rosenberg model had been correctly applied, the Applicants' analysis would have been unable to detect any adverse effect on tanagers from the new right-of-way from changes in forest block size. However, clearly there is an adverse effect from both direct clearing of habitat (which the Applicants measured) and the loss of interior forest habitat from edge effects (which they did not; see next section).

4. *The Applicants' assessment of forest fragmentation from the new right-of-way fails to account for the loss of interior forest habitat from edge effects.*

While the Applicants do quantify the increase in forest edge created by clearing the new right-of-way, they fail to extend this to a quantification of the loss of interior forest habitat due to this increase in edge. The area impacted by edge effects can significantly exceed the area affected by direct clearing.¹¹¹ One mile of 120-foot-wide new corridor will directly clear about 14.5 acres of forest but result in an additional loss of up to 72 acres of interior forest (300' on either side of the corridor). However, a quantification of this loss of interior forest habitat due to edge effects is absent from the Application.

The Applicants' misreading of their primary reference for forest fragmentation and their failure to quantify the loss of interior forest habitat due to edge effects are serious flaws, and mean that the fragmenting impact of the Project (in particular, the loss of interior forest habitat) has been significantly underestimated.

¹¹¹ NGO Ex. 101: Pre-filed Testimony of David Publicover, p. 9 ll. 3 -15.

B. The Applicants have failed to provide sufficient justification for why the Project's impacts on the natural environment should not be considered unreasonable adverse effects.

1. Exemplary rare natural communities.

Nowhere in the record do the Applicants explicitly state that the Project's impacts to the two-exemplary rare natural community occurrences (NHSF1 and NHSF4) are not unreasonable. Rather, the Applicants' primary argument as to why these impacts should not be considered unreasonable is that this natural community type is "common" in northern New Hampshire. This argument is made in multiple places in the record:

- Northern hardwood seepage forest is another community type that is common in the northern part of the state but is considered rare in general in New Hampshire.¹¹²
- Northern hardwood seepage forest communities are common in northern New Hampshire (NHNHB 2015), but are ranked as S3 (vulnerable) in the state.¹¹³
- The potentially exemplary natural community types that will be impacted are fairly common in the general area.¹¹⁴
- This community type is common throughout northern NH and occurs in many more than 13 locations.¹¹⁵
- And the Northern Hardwood Seepage Forest is actually fairly common in the North Country.¹¹⁶

The Applicants' sole basis for their contention that this community type is "common" is the NHNHB publication cited in the second bullet above. This is a general interest photo guide to natural communities. However, a more technical NHNHB guide to natural communities uses the phrase "more abundant."¹¹⁷ Whatever the terminology, these phrases are solely intended to

¹¹² App. Ex. 1: Application Appendix 35, p. 37.

¹¹³ App. Ex. 1: Application Appendix 35, p. 100.

¹¹⁴ App. Ex. 24: Pre-filed Testimony of Dennis Magee, p. 8 ll. 26-27.

¹¹⁵ App. Ex. 100: Supplemental Pre-filed Testimony of Dennis Magee, p. 6 ll. 10-11.

¹¹⁶ Cross-examination of Normandeu environmental panel. Tr. 6/16/17, AM Confidential Session: p. 145 (Carbonneau).

¹¹⁷ Cross-examination of David Publicover (Tr. 11/7/17, PM: 101).

indicate the relative rarity of this community type in the North Country as compared to other parts of the state. Alpine communities are “common” in the Presidential Range but remain extremely rare on a statewide basis.

The Applicants’ position boils down to “There are lots of occurrences of this community, so the destruction of two of them is not significant.” We grant that other occurrences of this community are present in the North Country. However, the Applicants consistently blur the distinction between all occurrences (most of which are small and degraded by logging or other human activity) and exemplary occurrences (especially large ones). Of the 37 separate rare natural community occurrences that would be impacted by the Project¹¹⁸ only two were determined to be exemplary. It is likely that this pattern is consistent across the broader region. The Applicants have presented no evidence to counter the fact that large exemplary occurrences of this community type are quite rare and thus worthy of protection.

2. *Forest fragmentation.*

The Applicants’ primary argument that the fragmentation caused by the new right-of-way is not unreasonable is that the right-of-way is located in a large forested region that has been heavily impacted by timber harvesting. This argument is made in multiple places in the record:

- Clearing forest and creating open or shrubby habitats will result in a minor loss of habitat for forest-nesting species, but compared to the total amount of forest habitat that will remain available in the surrounding landscape, this impact is not significant.¹¹⁹
- The amount of forest habitat converted by the ROW is minor, however, as compared to the total amount of forest habitat available in the study area and northern Coos County as a whole.¹²⁰

¹¹⁸ App. Ex. 1: Application Appendix 35, Tables 8 and 10.

¹¹⁹ App. Ex. 1: Application p. 73; App. Ex. 23: Pre-filed Testimony of Sarah Barnum, p. 9 ll. 5-7.

¹²⁰ App. Ex. 1: Application Appendix 36 Section 9.4.5.

- Adding the new ROW will increase the edge by approximately another 64 miles, (11%)... However, the increase in total edge is small in relative terms¹²¹...
- In the new ROW, the amount of habitat being converted from working forest to shrub cover is small, compared to the amount of forest that is available in the surrounding landscapes. The wildlife species observed or likely to occur in the Project area are adapted to the mosaic forest age-classes currently present in the surrounding landscape due to historic and on-going logging...¹²²

The Applicants' argument boils down to "There's lots of forest in northern New Hampshire that has been heavily harvested, so the impacts of the Project are insignificant."

However, there are three serious flaws with this argument:

First, any impact can be rendered insignificant if considered within a large enough context. At the scale of the entire state, the impacts from an interstate highway are insignificant.

Second, the Applicants consistently blur the distinction between the temporary fragmentation caused by timber harvesting and the permanent impacts of the Project. Harvested forests grow back, and the timber management practices of the current landowners will not necessarily continue over the long term.¹²³ In contrast, the fragmentation caused by the Project is essentially permanent.

Third, the Applicants consistently minimize the value of the forest through which the new right-of-way would pass. The Project would be by the largest permanently fragmenting feature in two of the largest undeveloped forest blocks in the state. This fact *increases*, not decreases, the severity of this permanent impact.

¹²¹ App. Ex. 1: Application Appendix 36 Section 9.4.5.

¹²² App. Ex. 23: Pre-filed Testimony of Sarah Barnum, p. 12 ll. 7-11.

¹²³ See Cross-examination of David Publicover (Tr. 11/7/17, PM: pp. 62-63).

- C. **Applying the Committee’s “consideration” criteria to the facts in the Record supports a conclusion that the Applicants failed to demonstrate by a preponderance of the evidence that the Project will not have an “unreasonable adverse effect on the natural environment.” In fact, the Record supports a conclusion that the Project will have such an effect.**

In determining whether construction and operation of the Project will have an unreasonable adverse effect on the exemplary rare natural communities, the Committee shall consider¹²⁴:

1. The significance of the affected...rare natural communities...

The exemplary rare natural community occurrences that would be impacted by the project (NHSF1 and NHSF4) are two of only 15 exemplary occurrences of this community type documented by the NH Natural Heritage Bureau.¹²⁵ They are the second and sixth largest of the 15 documented exemplary occurrences (and NHSF1 could well be the largest if it were completely mapped). While this natural community is more common in the North Country than other parts of the state, large exemplary occurrences are likely to be very uncommon.¹²⁶ Given these facts, NHSF1 and NHSF4 must be considered highly significant features of the natural environment.

2. The nature, extent, and duration of the potential effects on the affected... rare natural communities...

The project would destroy through clearing nearly 25% of each occurrence¹²⁷ and subject much of the uncleared portion of these occurrences to serious edge effects – in the case of

¹²⁴ Site 301.14(e).

¹²⁵ NGO Ex. 105: Email and spreadsheet from NHHNB re exemplary occurrences of Northern Hardwood Seepage Forest. NHSF1 and NHSF4 have subsequently been added to this list.

¹²⁶ Cross-examination of David Publicover (Tr. 11/7/17, PM: pp. 102-104).

¹²⁷ App. Ex. 1: Application Appendix 35, Section 3.2.1.1; App. Ex. 124 (Agency Consultation), link 200.

NHSF1 up to an additional 40% of the occurrence.¹²⁸ These impacts are permanent and should be considered severe.

If severe and permanent impacts to two significant exemplary occurrences of a rare natural community are not considered an unreasonable adverse effect, then that term loses all meaning in regard to these natural resources.

3. ***The nature, extent, and duration of the potential fragmentation or other alteration of terrestrial or aquatic significant habitat resources or migration corridors.***

The new right-of-way would permanently clear about 485 acres of forest.¹²⁹ A significantly greater amount of forest adjacent to the corridor (likely exceeding 1,500 acres) would be subject to edge effects that would reduce the suitability of this forest for birds and other species requiring interior forest.¹³⁰ The USDOE Final Environmental Impact Statement states:¹³¹

Habitat loss and/or modification of existing habitats in the study area during construction would also have adverse impacts on wildlife resources. Forest interior dwelling species would experience long-term adverse effects based on habitat loss and fragmentation...the removal of approximately 463 acres (187 ha) of forest lands to create the new transmission corridor, which include portions of forest interior habitats, would have a long-term adverse effect on forest-dwelling species such as the American *marten*... *The* removal of forestlands would result in adverse impacts to forest interior species through the loss of interior forestlands and habitat fragmentation.

The Project would be the largest and most extensive fragmenting feature through two of the largest undeveloped forest blocks in New Hampshire. Unlike the effects of timber harvesting, the Project's impacts would be permanent and should be considered severe.

¹²⁸ NGO Ex. 101: Pre-filed Testimony of David Publicover, p. 3 l. 26 to p. 4 l. 1.

¹²⁹ App. Ex. 1: Application Appendix 36 Section 11.5.2.

¹³⁰ NGO Ex. 101: Pre-filed Testimony of David Publicover, p. 9 ll. 1-15.

¹³¹ App. Ex. 205: USDOE Final Environmental Impact Statement, Section 4.2.11.2.

4. *The effectiveness of measures undertaken or planned to avoid, minimize, or mitigate potential adverse effects on terrestrial or aquatic significant habitat resources...*

Exemplary rare natural communities. The Applicants' measures to avoid, minimize or mitigate the Project's impacts to exemplary rare natural communities are inadequate:

The Applicants have failed to propose a practical alternative route that would avoid impacting these exemplary rare community occurrences (see below).

The proposed Avoidance and Minimization Measures for exemplary natural communities¹³² are minimal and ineffective, consisting merely of measures to protect the soil during clearing of the right-of-way. They do nothing to alter or minimize the impacts to these two exemplary community occurrences from clearing a 120-foot-wide corridor through them.

The proposed compensatory mitigation is grossly inadequate. The proposed mitigation for the impacts to these exemplary rare natural communities is Mitigation Parcel B which contains an occurrence of Northern Hardwood Seepage Forest.¹³³ However, as compensation for the destruction and degradation of two exemplary occurrences of this community type the Applicants propose to conserve an occurrence that is not exemplary, and which would be fragmented and severely degraded by the new right-of-way as well as a transition station.

Forest fragmentation. The Applicants' measures to avoid, minimize or mitigate the Project's impacts due to forest fragmentation are inadequate:

The Applicants have failed to propose a practical alternative route that would avoid fragmenting these large areas of undeveloped forest (see below).

¹³² App. Ex. 124: Update to Appendix 48, Regulatory Agency Consultation Summary, Link 212.

¹³³ App. Ex. 1: Application Natural Resource Compensatory Mitigation Plan; App. Ex. 124: Update to Appendix 48, Regulatory Agency Consultation Summary, Link 200.

Any route through this undeveloped forest region would create similar fragmentation impacts and there is little opportunity to minimize this impact. The only mention of minimization related to fragmentation in the record is that “the proposed ROW will create a smooth, rather than convoluted edge, minimizing the amount of edge it creates.”¹³⁴ It is likely that the smooth edges created by the linear route are the result of financial and operational (rather than ecological) reasons, as there would be no reason to create a more convoluted route. It is thus inappropriate to claim this as a minimization measure.

The proposed mitigation is inadequate to compensate for the fragmenting impacts of the new right-of-way. Compensatory land protection in Coos County consists of six scattered parcels, four of which would be bisected by the Project. The total extent of conserved land outside of the right-of-way through these parcels is about 1,500 acres¹³⁵ – less than the amount of forest that would be impacted by clearing and edge effects from the new right-of-way. In addition, this total does not include the extent of conserved land impacted by edge effects from the right-of-way through the proposed conservation parcels, and which is thus unsuited as mitigation for the loss of interior forest habitat.

Failure of overall approach. The Applicants’ approach to avoidance, minimization and mitigation suffers from two serious flaws.

First, the parcels in Coos County proposed for compensatory land conservation were not selected for their mitigation value. The proper approach is to identify the unavoidable impacts for which compensatory land conservation is necessary, and then and only then identify parcels that provide equal or greater value for the resources that are impacted.¹³⁶ The Applicant’s

¹³⁴ App. Ex. 1: Application Appendix 36 Section 9.4.5.

¹³⁵ App. Ex. 1: Application Natural Resource Compensatory Mitigation Plan, Table 1.

¹³⁶ See Cross-examination of David Publicover (Tr. 11/7/17, PM: pp. 58-59).

approach was the reverse of this. The proposed mitigation parcels were already owned by the Applicants as part of the land acquisition process for potential routes. Four of the parcels are traversed by the new right-of-way, while two others were leftovers from an earlier potential route. After the fact, they have attempted to highlight what mitigation value they have, but they were not chosen for that purpose. One of the parcels happens to have a degraded occurrence of Northern Hardwood Seepage Forest which they are putting forward as mitigation, but it was not acquired for that value and is thus inadequate for that purpose.

The Applicants state that they sought to secure other parcels that would address Project-specific impacts but were unsuccessful.¹³⁷ This indicates that they recognize the inadequacy of the potential mitigation parcels that they own. However, they should not be given credit for trying but failing to secure appropriate mitigation.

Second, the Applicants have failed to consider practicable alternative routes that would avoid all of the impacts of the new right-of-way (i.e., burial along Route 3 from Pittsburg to Whitefield). This was considered a practicable alternative worthy of consideration by both the USDOE (the lower-impact “hybrid alternative”¹³⁸) and the EPA.¹³⁹ The Applicants’ primary basis for their contention that this alternative is not practicable is that it is too expensive.¹⁴⁰ However, the fact that the Applicants’ business model does not allow them to utilize a route with significantly lower impacts is not sufficient justification for permitting the Project.

¹³⁷ App. Ex. 1: Application Natural Resource Compensatory Mitigation Plan, p. 3.

¹³⁸ App. Ex. 205: USDOE Final Environmental Impact Statement, Appendix J.

¹³⁹ App. Ex. 224a: EPA letter to USACE of 9/26/17.

¹⁴⁰ App. Ex. 62: Applicant's Response to DES Request for Wetlands Information of 7/12/16; App. Ex. 225: NP letter to USACE of 10/6/16.

III. The Applicants have not established that the project as proposed will not unduly interfere with the orderly development of the region.

A. The Applicants have not substantiated claims of potential capacity market benefits sufficient to promote the orderly development of the region, and orderly development may be harmed by negative impacts on local clean energy development.

1. The Applicants have failed to substantiate any capacity market and greenhouse gas reduction benefits to support a finding of positive impacts on orderly development.

As detailed below, the capacity market and greenhouse gas impacts of Northern Pass are speculative at best, and likely to be illusory. There is in fact no documented commitment by Hydro-Quebec, which controls the generation resources and is not a party to this proceeding, to participate in the ISO-NE capacity market.¹⁴¹ Further, the record reflects no credible evidence that the generation resources transmitted over Northern Pass will have the ability to qualify in the capacity market, or that they will be able to clear.¹⁴² As discussed in Section IV and detailed in particular in the testimony of Brattle Group witnesses Samuel Newell and Jürgen Weiss on behalf of Counsel for the Public, Witness Julia Frayer's projections as to the ability of the resources to qualify and clear hinge on a web of key assumptions, some or all of which may prove false.¹⁴³ These include unsupported assumptions that the resources will have sufficient winter-time capacity to qualify, and that the region's Internal Market Monitor will not include the costs of new hydroelectric plant construction in the pricing of the resources.¹⁴⁴ Please refer to Section IV below for further discussion on these subjects.

¹⁴¹ Tr. 10/26/17, PM: p. 44.

¹⁴² See Section IV for more detailed discussion.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

Even looking beyond the Applicants' failure to provide credible evidence that the resources would quality and clear, the fact remains that Northern Pass's participation the market would likely result in zero or very small economic benefits, as demonstrated in Section IV.

When Ms. Frayer began advocating for Northern Pass in 2011,¹⁴⁵ there was no close parallel to the Massachusetts 83D Request For Proposals ("RFP") clean energy procurement process that is presently underway.¹⁴⁶ Now that there is such a process, there are dozens of competitors vying for the same clean energy procurement contracts.¹⁴⁷ As Ms. Frayer concedes, any project similar to Northern Pass will have similar impacts if it participates in the capacity market.¹⁴⁸ If Northern Pass is selected over another project or projects in the procurement process, it will have the effect of simply displacing other projects, with no net capacity market impacts.¹⁴⁹ In short, Northern Pass has lost what might have been its claim to fame in 2011, and is little more than redundant in the current competitive environment for clean energy.¹⁵⁰ It therefore should not be credited with special capacity market impacts that would not otherwise inure to the state of New Hampshire.

This is particularly the case where there is no assurance, binding or otherwise, from Hydro-Quebec that it will attempt to qualify the resources in the ISO-NE capacity market, much less a guarantee that the resources would successfully participate. Under these conditions, New Hampshire has no special reassurance of capacity market benefits from Northern Pass – *the state has been given no more promise from Hydro-Quebec and Northern Pass than it has from any other proposed project in the region.*

¹⁴⁵ See Tr. 6/9/17, PM: p. 20; 6/13/17, AM: p. 93 (Ms. Frayer acknowledges beginning to promote Northern Pass in 2011).

¹⁴⁶ See CFP Ex. 276 (Mass. 83D RFP documents).

¹⁴⁷ See Tr. 10/26/17, PM: p. 16.

¹⁴⁸ Tr. 6/14/17, AM: pp. 6-7.

¹⁴⁹ See, e.g., Tr. 6/13/17, AM: p. 102 and more detailed discussion under the public interest section below.

¹⁵⁰ *Id.*

The same logic applies to any potential greenhouse gas impacts of the project. Northern Pass is a competitor with many other projects that may have similar or better greenhouse gas attributes.¹⁵¹ There is no evidence in the record that Northern Pass commits to a certain level of reductions, or that it will succeed in delivering any such reductions.¹⁵² This project should not be credited with special greenhouse gas reduction benefits that would not otherwise inure to the state of New Hampshire based on the faulty speculation of the Applicants' witness.

For further discussion of both the regional capacity market and greenhouse gas impacts of the project, please refer to Section IV of this memorandum, and the testimony of Messrs. Newell and Weiss on behalf of Counsel for the Public in this proceeding.

2. *Because the project may displace other clean, local renewables, there may be a negative impact on the orderly development of the local economy.*

As discussed in Section IV below, the project is likely to displace or defer the development of new renewables in the region.¹⁵³ It is already competing in the Massachusetts 83D RFP with Class I renewables such as solar and wind that are or would be located within the region.¹⁵⁴ The deferral or displacement of in-region renewables may implicate the deferral or displacement of local renewables in New Hampshire, and if so could adversely affect the local economy. This outcome would be adverse to orderly development.

¹⁵¹ See, e.g., CFP Ex. 143 at CFP005824, p. xii.

¹⁵² See discussion of greenhouse gas reductions later in this memorandum.

¹⁵³ See Section IV below, citing, e.g., CFP Ex. 143 at p. 42.

¹⁵⁴ See CFP Ex. 143 at CFP005824, p. xii.

B. The Applicants' decommissioning plan fails to meet the requirements of Site 301.08(d)(2)b, as required to establish that the project will not unduly interfere with the orderly development of the region under Site 301.15.

The Applicants have submitted an incomplete decommissioning plan to meet the requirement of Site 301.08 (c)(2)b relative to “all energy facilities.” Absent is the required “provision of financial assurance” in the form of:

- An irrevocable standby letter of credit,
- Performance bond,
- Surety bond, or
- Unconditional payment guaranty executed by a parent company of the facility owner maintaining at all times investment grade credit rating.

In lieu of any of the above provisions of financial assurance as required by the Rules, the Applicants submitted its Transmission Service Agreement (“TSA”) between NPT and Hydro Renewable Energy (“HRE”), a Federal Energy Regulatory Commission requirement.¹⁵⁵ The TSA is a requirement for a different federal process and is not an equivalent or acceptable provision of financial assurance as required by the Rules. It is only a plan on how to create a funding plan five years before planned decommissioning is to take place by charging the ratepayer at that future time – a “trust me to fund it in the future” agreement.

The Applicants knew the TSA does not meet the rules criteria, evidenced by the fact that they requested a waiver from the rules.¹⁵⁶ To date the SEC has not issued a waiver on this outstanding issue.

¹⁵⁵ The TSA is summarized in the pre-filed testimony of Michael J. Ausere (App. Ex. 7) and Volume II of the Application (App. Ex. 1). *See also* Appendix 11, NPT’s Petition to Commerce Business as a Public Utility, which includes the Transmission Service Agreement (“TSA”) between NPT and Hydro Renewable Energy “HRE”.

¹⁵⁶ On Feb. 26, 2016 the Applicant requested from the SEC a waiver on Site 301.08(c)(c)(2) for the funding component of the Application decommissioning requirement, requesting that the TSA be its surrogate. The TSA is between NPT and Hydro Renewable Energy (“HRE”).

The risk to New Hampshire's rate and tax payers as well as its landscape are large. Decommissioning costs are estimated at \$99,935,719, minus the salvage value of \$2,972,577.¹⁵⁷ If the Applicants were to cease existence five years or more in advance of the TSA being finalized and fully funded by future ratepayer charges to recover decommissioning costs, the New Hampshire public could be on the hook to decommission the facility or be faced with having this industrial derelict remain on the state's landscape.

Though decommissioning of major long-distance transmission lines from a foreign country has not been the norm, the long-term viability of a transmission project designed to bring HVDC power from a foreign country is also not a given. Disruptive technologies are now making new grid-scale electric power generation sources, underground transmission, and storage viable and economically competitive in time frames shorter than the tenure of this Project's projected business plan, exemplified by the variety of competitive bids in the ongoing Massachusetts Clean Energy 83D RFP. In the foreseeable future Quebec and Canada may demand more of its own power for internal use, particularly in the winter. And HVDC transmission lines, such as the one proposed in this docket, are highly specialized for long distance point to point electric transmission, with minimal "on and off ramp" opportunities that require very expensive converter stations.

Clearly the New Hampshire legislature knew and meant what it said when it determined that all energy facilities must have appropriate decommissioning plans and meet specified funding requirements. The purpose of the Rule's decommissioning funding requirements is to provide such solid financial assurance. The TSA is no such funding guarantee, and neither Eversource nor Hydro-Quebec, the partners of Northern Pass, have provided a funding guarantee

¹⁵⁷ The Applicant is also required to submit a facility decommissioning plan cost estimate, which was finally submitted in July 22, 2016. App. Ex. 90: Supplemental Pre-filed Testimony of Kenneth Bowes, pp. 11-13.

as defined by the Rules. Furthermore, it is questionable that the State of New Hampshire has standing to sue the Province of Quebec, a recognized foreign sovereign power and the owner of Hydro-Quebec, for any breach of the federal TSA agreement.

In summary, the Application clearly fails to meet the requirements of the Rules at Site 301.08(d)(2)b, and puts future New Hampshire taxpayers, ratepayers, and the state's landscape at risk in a case of Northern Pass bankruptcy or other unanticipated circumstance prior to the decommissioning plan's actual funding. Because the decommissioning plan is noncompliant and lacks adequate assurances, under Site 301.15, the Commission must find that the project will have an undue adverse impact on the orderly development of the region.

IV. The Applicants have not established that the project is in the public interest.

A. The Applicants assert potential capacity market impacts that are not credible and do not support findings of benefit to the welfare of the state or the overall state economy.

1. The capacity market benefits claimed by the Applicants are so speculative and illusory.

The Applicants' claim that the proposed project will be a panacea for regional electricity markets is wishful thinking upon which a "public interest" finding cannot be soundly grounded. The Application asserts that the project will "suppress wholesale energy prices leading to estimated annual savings greater than \$80 million for New Hampshire,"¹⁵⁸ for a total of 11 years—but we already know this to be untrue. Market trends since the Application was filed already forced the Applicants to slash these projections by one quarter.¹⁵⁹ The uncertainty that infects the Applicants' claim of wholesale market benefits is so substantial that reliance on such

¹⁵⁸ Application at ES-4. *See also id.* at 86.

¹⁵⁹ App. Ex. 81 at p. 6.

projections for a “public interest” finding, despite the many impacts of the proposed project, would be an unwise and potentially embarrassing and harmful gamble for the state. This is particularly the case because the record shows that the regional policy landscape has already given rise to other energy projects that could serve the same asserted functions without negative New Hampshire impacts.¹⁶⁰

The uncertainties that infect the Applicant’s projections of capacity market benefits include, but are not limited to, a) whether the project would qualify in the capacity market; b) whether the project would clear in the capacity market; c) whether the project will duplicate other similar projects; d) the extent to which Northern Pass displaces other generation resources; e) a decreasing Net Installed Capacity Requirement, and generally low pricing trends; and f) other major variables such as changing market rules.

- a) The Applicants have provided no evidence to support the claim that the project will qualify in the capacity market, apart from the flawed speculation of Julia Frayer.**

Despite hinging their claim of New Hampshire benefits on regional capacity market impacts, the Applicants have failed to provide concrete evidence to support the claim that the project could meet the initial hurdle to compete in those markets – qualification of resources. As the Applicant concedes, the so-called “capacity market benefits” of the proposed project account for around 90% of their forecasted wholesale electricity market benefits—the vast majority.¹⁶¹ But there can be no capacity market benefits if the resources do not qualify to participate. For Canadian resources to qualify for ISO-NE’s capacity market, Hydro-Quebec would have to demonstrate that it has rights to a specific resource or pool of capacity that has enough surplus,

¹⁶⁰ See discussion of Massachusetts 83D RFP below.

¹⁶¹ See, e.g., App. Ex. 102, London Economics Rebuttal Report, at 7.

beyond what is needed to serve native demand and other obligations, to be reliably available for export throughout the year, including in winter.¹⁶² However, the Application contains no documentation of surplus capacity.¹⁶³ And because Hydro-Quebec was neither a party nor a participant in the proceeding, there is no other direct evidence in the record.

As for the Applicants' electricity markets witness, Julia Frayer of the consulting firm London Economics has cobbled together a dubiously-grounded argument based on limited and scattered public data in support of Northern Pass's claims rather than using any documentation provided directly by Hydro-Quebec, as one would normally expect.¹⁶⁴ The data that Ms. Frayer collected through public sources include scattered items "[s]uch as annual reports, strategic plans, and HQD [Hydro-Quebec Distribution] supply procurement plans."¹⁶⁵ Her analysis includes capacity that is under construction and not yet available, but critically omits to factor the costs of any new construction into the capacity market pricing scenario for Hydro-Quebec's resources.¹⁶⁶

To be clear, there is no real dispute as to whether the project could qualify if summertime capacity were the only issue, as Quebec has plentiful surplus capacity in the summer.¹⁶⁷ What Northern Pass needs to show, and has failed to demonstrate in this proceeding, is that Hydro-Quebec's resources are sufficiently plentiful to provide adequate surplus capacity in the winter as well, despite high demand in Quebec and other existing obligations.¹⁶⁸

¹⁶² CFP Ex. 145 at pp. 8-9.

¹⁶³ *See id.* at 9 ("The Applicants have not yet presented evidence in this proceeding about whether or how they will demonstrate to ISO-NE that they have sufficient excess capacity to meet the qualification criteria.").

¹⁶⁴ *See App. Ex. 102* at p. 29.

¹⁶⁵ *Id.* and n. 38.

¹⁶⁶ *Id.* at 29-30.

¹⁶⁷ CFP Ex. 145 at p. 9.

¹⁶⁸ *See id.*

Evidence introduced by Counsel for the Public’s experts at the Brattle Group—including Hydro-Quebec’s own public statements that it is presently short on winter resources to meet current peak demand—has called into question whether Hydro-Quebec has sufficient winter capacity using existing resources.¹⁶⁹ Winter demand is high in Quebec and currently Hydro-Quebec must purchase additional capacity to supplement its own resources during winter peak periods.¹⁷⁰ While Hydro-Quebec can build new resources to create such surplus – and indeed, new resources are under construction¹⁷¹—if the construction of new generation resources is needed to qualify in the ISO-NE capacity market, then the cost of those resources may be factored into capacity market pricing, as described in the next section—which would call into question the project’s ability to *clear* in the market, which is the second bar the project would have to meet in order to participate in the capacity market. In short, the project appears to be in a Catch-22, no-win situation. Either it risks failing to qualify for the capacity market, or it risks failing to clear. This may be why Northern Pass and Hydro-Quebec have declined to proffer documentation – because any documentation they could provide might undermine their claims either as to qualification or as to clearing. Instead, the Applicants’ simply rely on Ms. Frayer’s efforts to advocate for Northern Pass using scraps of information that she has collected.

¹⁶⁹ *Id.*

¹⁷⁰ *E.g.* CFP Ex. 145 at p. 9; *id.* at 11-12 (citing, among other things, Hydro-Quebec’s Strategic Plan, which discloses that it is short of capacity from its own resources during winter peak periods). Meeting this goal by displacement of resources in Canada would presumably be politically unpalatable to a Canadian audience, and in any event it would defeat the so-called goal of providing incremental “clean energy.”

¹⁷¹ *See, e.g.*, App. Ex. 102, p. 30.

- b) **There is no certainty that the project would clear in the capacity market, both because the clearing price for capacity is on a downward trend, and because the Internal Market Monitor may pierce the veil of Northern Pass's preferred pricing to set the project's actual bidding price at a level exceeding the clearing price.**

The Applicants' witness, Julia Frayer, arrives at the generous conclusion that the project would clear in the capacity market, but even she acknowledges that this outcome is far from guaranteed. The main reasons why this is not at all certain are 1) prices in the capacity market have been dropping,¹⁷² and in order to submit a successful bid using resources transmitted over Northern Pass, Hydro-Quebec would have to submit a bid competitive with those low prices, and 2) under the Minimum Offer Price Rule, the Internal Market Monitor has an obligation to independently scrutinize the basis for Hydro-Quebec's proposed pricing and determine whether it should be increased to more accurately reflect the costs of the resource,¹⁷³ which in this case may well include the high costs of constructing new generation in order to meet the year-long surplus capacity requirements necessary to compete in the capacity market.¹⁷⁴

Describing her effort to analyze the potential that the resources Northern Pass transmits would not clear in the capacity market, Ms. Frayer says she “estimate[d] the risk associated with MOPR determination for an FCA offer by HQP.”¹⁷⁵ In language that is intended to be more readily understood, this means that Ms. Frayer agreed that it was necessary to assess the risk that Northern Pass would provide zero capacity market benefits because the capacity price of its resources would be set so high by the Internal Market Monitor that it would be uncompetitive—and therefore could never “clear” (i.e., become a successful bidder) in the capacity market auctions.

¹⁷² CFP Ex. 145 at CFP006001, p. 2.

¹⁷³ CFP Ex. 143 at CFP005830-31, pp. 4-5; CFP Ex. 145 at CFP006012, p. 13.

¹⁷⁴ CFP Ex. 145 at CFP006012-13, pp. 13-14.

¹⁷⁵ App. Ex. 102, p. 31.

Ms. Frayer’s testimony ultimately concludes that the capacity will be priced low enough to successfully bid in regional capacity auctions, but her conclusion is fatally undermined by the following conclusory qualification that she is careful to provide: “On the cost side, LEI relied on the fact that HQP would not build new generation assets in order to provide energy to sell over Northern Pass.”¹⁷⁶ While Ms. Frayer says she relied on this as a “fact,” this so-called fact is no more than a transparently self-serving claim made by the Applicants. Ms. Frayer offers no credible reason or evidence why the Internal Market Monitor would accept this “fact.” As the record reflects, no matter what Hydro-Quebec claims, the Internal Market Monitor has the authority – and the responsibility – to pierce the veil of claims in order to ensure the appropriate inclusion of all relevant costs.¹⁷⁷ The Internal Market Monitor, unlike Ms. Frayer, does not have the leisure to make conclusory determinations as to the cost of a resource based on what they are told by the company—they are obligated to scrutinize the underlying costs of a project in order to ensure that it is not being underpriced.¹⁷⁸

The evidence indicates that Hydro-Quebec is building new generation for the purpose of new exports. Hydro-Quebec has already stated that currently, absent new generation, it lacks sufficient surplus resources in the winter.¹⁷⁹ In addition, Hydro-Quebec spokeswoman Lynn St-Laurent has stated publicly that Hydro-Quebec is building new generation for the express purpose of exporting to New England pursuant to energy solicitations including the Massachusetts RFP.¹⁸⁰ And Hydro-Quebec’s Strategic Plan states that to fill its current capacity

¹⁷⁶ App. Ex. 102 at p. 31.

¹⁷⁷ CFP Ex. 143 at CFP005830-31, pp. 4-5; CFP Ex. 145 at CFP006012, p. 13.

¹⁷⁸ CFP Ex. 143 at pp. 4-5.

¹⁷⁹ CFP Ex. 145 at CFP006010, p. 11 (citing Hydro-Quebec’s 2016 Strategic Plan).

¹⁸⁰ NGO Ex. 35 (“Hydro-Quebec has built 4,500 megawatts of new hydropower in response to several legislative mandates to decarbonize and diversify the power sector in Massachusetts and throughout the Northeast. Another 600 megawatts is currently under construction and will be available by 2020. Because of the long lead times associated with the design and construction of hydropower infrastructure projects, HQ has made ongoing investments in advance of today’s market opportunity.”).

deficit *and to create additional opportunities for export*, Hydro-Quebec will add 640 MW of generating capacity at its La Romaine hydro plant, while also making additional investments to transmission lines and existing facilities, and may decide to add other resources not yet identified.¹⁸¹

Because new large hydro-electric generation resources are costly, the inclusion of their cost in pricing would have a major impact and likely preclude participation in the ISO-NE capacity market. The Brattle Group finds that “[i]f Hydro-Quebec has to build new dams to have enough to export, which seems consistent with their statements..., the costs of doing so will add \$44/kW-mo of capital costs, making the overall cost too high to compete in the capacity market.”¹⁸²

In contrast to Ms. Frayer’s conclusory assumption that new generation costs will not be a factor in pricing, these and other actual facts are exactly the types of considerations that the Internal Market Monitor is likely to evaluate in making a pricing determination under the Minimum Offer Price Rule.¹⁸³ In light of these statements and other evidence that Hydro-Quebec is constructing generation for the purpose of competing in current New England energy solicitations,¹⁸⁴ the Brattle Group concludes that there is a substantial possibility that the price would be set at a non-competitive level given current market conditions—far higher than Northern Pass’s claimed pricing.¹⁸⁵ As Brattle indicates, if this happens the resources will be precluded from successfully participating in the capacity market.¹⁸⁶ It would be foolhardy for New Hampshire to base the siting of this outsized transmission line in our communities on the

¹⁸¹ CFP Ex. 145 at CFP006010, p. 11.

¹⁸² CFP Ex. 145 at CFP006012, p. 13 (citation omitted).

¹⁸³ *See, e.g.*, CFP. Ex. 145 at CFP006016-17, pp. 17-18.

¹⁸⁴ *See, e.g.*, CFP Ex. 145 at 11.

¹⁸⁵ CFP Ex. 145 at pp. 12-19.

¹⁸⁶ *Id.*

Applicants' claims of positive capacity market impacts, when higher pricing of Hydro-Quebec's capacity could mean that Northern Pass will have zero capacity market impacts and consequently greater costs than benefits to New Hampshire.

- c) **In a regional landscape with multiple similar competing energy projects, Northern Pass has no claim to particular economic impacts, is unnecessary and redundant, and would likely result in less local clean energy.**

States across New England are pursuing clean energy acquisitions in order to lower greenhouse gas emissions and reduce the region's dependence on natural gas, including the initiative known as the Massachusetts 83D RFP (Request for Proposals).¹⁸⁷ Northern Pass has submitted a bid in response to the Massachusetts 83D RFP,¹⁸⁸ and is one among dozens of competitors in that process.¹⁸⁹ The fact that there are dozens of competitors offering similar energy – and potentially capacity – for a single RFP not only means that Northern Pass is far from unique, but also that if constructed Northern Pass will not have a unique market impact.¹⁹⁰ Samuel Newell of the Brattle Group thus posed rhetorically on the stand, “[D]o you need Northern Pass to get that incremental hydro, or might somebody just build a competing project instead?”¹⁹¹

The Massachusetts 83D RFP, together with other clean energy procurement initiatives, suggests that non-gas resources will be procured and introduced into regional markets, irrespective of Northern Pass. The bottom line for New Hampshire is whether our communities

¹⁸⁷ CFP Ex. 143 at CFP005866, p. 40. *See also, e.g.*, CFP Ex. 145 at CFP006043, p. 43; CFP Ex. 276.

¹⁸⁸ CFP Ex. 273.

¹⁸⁹ *See, e.g.*, Tr. 10/26/17, PM: p. 16. There is also uncertainty as to whether Northern Pass will be constructed if it is not selected in the Massachusetts 83D RFP. CFP Ex. 145 at CFP005998, p. v.

¹⁹⁰ *See, e.g.*, CFP Ex. 143 at CFP005866-67, pp. 40-41.

¹⁹¹ Tr. 10/27/17, AM: p. 32.

and landscapes will bear the substantial burden of a project that is far from unique and far from necessary.

Although the Applicants' witness fails to project a scenario where any other resources could serve a similar electricity market function to the one she proposes that Northern Pass will serve, this false outlook is impossibly favorable to Northern Pass. The evidence—including the Massachusetts 83D RFP—demonstrates that other projects are very likely to be displaced by, deferred by, or otherwise duplicative of Northern Pass.¹⁹² And if more than one project moves forward, any purported capacity market benefit attributable to Northern Pass will be undermined or eliminated.¹⁹³

As the Brattle Group explains, given two or three or more similar energy projects, the asserted “benefits” of Northern Pass will essentially disappear.¹⁹⁴ Brattle demonstrates this through a modeling exercise called “Scenario 4.”¹⁹⁵

In Scenario 4, we consider the possibility that NPT does not expand the amount of clean energy in New England, but rather that in the absence of NPT other similar clean energy resources would come online. Since several New England states are determined (and have laws on the books) to procure clean energy, NPT can be seen as one of several options to meet existing obligations... This scenario allows us to consider the possibility that granting NPT a permit may only shift the delivery of future clean energy from some combination of regional renewable generation and hydro imports delivered over another line to the same amount of clean energy being delivered over this line through New Hampshire, and to ask what the relative electricity market-related benefits to New Hampshire would be in such a case.

This projection is a common-sense, obvious possibility that any reasonable analyst would evaluate. Julia Frayer, however, fails to include it in her projections.¹⁹⁶ Under questioning, Ms.

¹⁹² See, e.g., CFP Ex. 143 at CFP005866-70, pp. 40-44.

¹⁹³ See Tr. 6/13/17 AM: p. 102 (cross-examination of Frayer, where the witness concedes that at some point there will be diminishing returns due to multiple projects); CFP Ex. 143 at CFP005868, p. 42.

¹⁹⁴ See CFP Ex. 143 at CFP005841-42, pp. 15-16.

¹⁹⁵ CFP Ex. 142 at CFP005769-70, pp. 4-5.

¹⁹⁶ See, e.g., Tr. 6/9/17, AM: p. 18.

Frayer tellingly conceded that it is likely that multiple projects will be completed pursuant to state mandates including those in Massachusetts,¹⁹⁷ that any such project could have similar market impacts,¹⁹⁸ and that if more than one such resource gains entry to the capacity market, incremental benefits (i.e., unique benefits) are likely to shrink.¹⁹⁹

With respect to its Scenario 4, the Brattle Group concludes, “In this case, NPT should not be considered to provide electricity benefits that would not otherwise occur; the only impacts would be those associated with a project being built in the proposed NPT corridor through New Hampshire as opposed to elsewhere (and any other special terms NPT may offer).”²⁰⁰ Because Northern Pass cannot substantiate a claim that it will “provide electricity benefits that would not otherwise occur,” it cannot be deemed economically beneficial to New Hampshire or in the public interest.

Apart from incremental hydroelectricity from large dams in Canada, Northern Pass is also competing with local renewable energy, such as wind and solar.²⁰¹ If Northern Pass is constructed and succeeds in participating in the ISO-NE capacity market, it may push out, defer, or reduce the development of local renewables in the region, including New Hampshire resources.²⁰² This is further evidence against any finding of New Hampshire economic benefits, and could result in negative economic impacts for the state.

¹⁹⁷ Tr. 6/13/17, AM: p. 100.

¹⁹⁸ Tr. 6/9/17, AM: pp. 17-18.

¹⁹⁹ See Tr. 6/13/17, AM: p. 102.

²⁰⁰ CFP Ex. 145 at p. v.

²⁰¹ See, e.g., CFP Ex. 143 at CFP005868, pp. 42-43.

²⁰² *Id.*

- d) **Northern Pass is likely to displace existing capacity resources, diminishing any potential capacity market price reductions that could otherwise take place if it were assumed to qualify and clear in the market.**

Even if Northern Pass resources were to qualify and clear in the capacity market, any potential reductions to market prices would be far lower than claimed by the Applicants, in part because they would cause retirements of existing capacity resources currently in the market. The second of Brattle Group's four hypothetical projections, Scenario 2, envisions a scenario where the resources transmitted over Northern Pass are able to qualify and clear in the ISO-NE capacity market.²⁰³ The Brattle Group establishes that in that situation, existing capacity market resources of a substantial total size would likely be induced to retire.²⁰⁴ As a result of these retirements, any potential capacity market price reductions associated with the introduction of new hydroelectric resources would be substantially diminished.²⁰⁵ This is a matter of supply and demand – capacity prices tend to go up when retirements take place because it reduces the overall supply of capacity.²⁰⁶

Ms. Frayer acknowledges that her initial testimony in this proceeding failed to accurately predict market behavior, including her failure to foresee the recently announced retirements of major generating plants Pilgrim Nuclear Power and the Bridgeport 3 coal facility.²⁰⁷ She further concedes that her present predictions of market response may also err due to imperfect information and a lack of certainty.²⁰⁸ The projections of the Brattle Group, as well as the testimony NEPGA,²⁰⁹ more seriously address the uncertainty surrounding potential retirements.

²⁰³ CFP Ex. 143 at pp. 33-35.

²⁰⁴ *See, e.g., id.*

²⁰⁵ *See, e.g., id.*

²⁰⁶ *See id.*

²⁰⁷ Tr. 6/8/17, PM: pp. 31-32.

²⁰⁸ *See* Tr. 6/8/17, PM: pp. 31-37.

²⁰⁹ NEPGA Ex. 1.

In contrast, Ms. Frayer's projections rely wholly on a single shot in the dark without seriously considering the range of likely responses from market actors, including retirements.²¹⁰

In short, even under generous assumptions, including assuming that the Northern Pass resources will not be duplicative of other resources, and will qualify and clear in the capacity market, the claimed capacity market impacts advanced by the Applicants strain credibility and are unlikely to materialize.

e) Northern Pass's capacity market claims are further undermined by market trends that have produced already-low capacity prices, including a decreasing net installed capacity requirement.

The region's total capacity need, or Net Installed Capacity Requirement (NICR), together with peak demand, is another market variable that exacerbates uncertainty and lowers the potential payoff of a project like this one. A diminishing NICR and lower peak demand have already brought down prices in the capacity market more than expected.²¹¹ A decreasing NICR was not correctly predicted by Applicants' witness Julia Frayer or by ISO-NE, for that matter.²¹² In general, the more the NICR declines, the lower capacity market prices drop, because the NICR represents demand, and capacity represents supply. When demand gets lower, supply prices get lower. Thus, a lower NICR means lower capacity market prices.²¹³

Electricity resources that are located behind-the-meter, such as rooftop solar installations and energy efficiency, are the main reason that the NICR (or demand for generation capacity) has been dropping more than predicted.²¹⁴ They also contribute to a lower peak demand.²¹⁵ The

²¹⁰ See, e.g., App. Exs. 28, 81, 82.

²¹¹ See, e.g., Tr. 10/26/17, AM: pp. 79-80, 95-99 (NEPGA cross-examination of Brattle); Tr. 11.17.17 AM: pp. 139-140 (Fowler direct); CFP Ex. 143 at CFP005822, p. x ("Demand has decreased and additional capacity has entered the market, depressing expected capacity prices even without NPT.").

²¹² Tr.10/26/17, AM: pp. 79-80 (NEPGA cross-examination of Brattle).

²¹³ Tr.10/26/17, AM: pp. 98-99.

²¹⁴ Tr.10/26/17, AM: pp. 91-92.

²¹⁵ JT MUNI Ex. 2 (2017 CELT Report).

result is that massive new projects like Northern Pass are less useful to control prices than they may have been in the past.²¹⁶

A critical issue before the Committee is whether authorizing the construction of this extraordinarily high-impact, outsized project can be justified based on a speculative argument that it could lower capacity prices, when capacity prices are already dropping due to other, lower-impact investments across the region.

The potential payoff for such a risk would be relatively low. As the Brattle Group points out, the scope of any potential electricity market benefits under the current market scenario is limited.²¹⁷

The outcome of [Forward Capacity Auction] 11 reveals that there is more low-cost supply available than we had thought, including from existing generators that proved more willing to remain in the market as prices fell. If this willingness to endure low prices continues, capacity prices will remain low as long as surplus supply conditions prevail. As such, NPT's potential to further depress prices is limited in the short-term, but it may help maintain such low prices longer, through the mid-to-late 2020s, when prices would otherwise rise (absent NPT) with load growth and generator retirements.

Betting the house on a small kitty would be an unwise gamble. In the current diminishing-peak, low-price, lower-NICR wholesale markets scenario, it would be contrary to the public interest of the state to make this gamble.

f) Other major uncertainties infect the Applicants' assertions of capacity market benefits.

Testimony offered by the Brattle Group and NEPGA detail numerous other variables that will or may affect how Northern Pass would impact the capacity markets if it were to proceed.²¹⁸

One of these additional major variables is changes to the regional electricity market rules, such

²¹⁶ See, e.g., *id.* (demonstrating that behind-the-meter resources reduce prices).

²¹⁷ CFP Ex. 144 at p. 22, Bates CFP006021.

²¹⁸ We adopt by cross-reference the arguments made on these subjects in the oral and written testimonies of the Brattle Group and Mr. William Fowler in this proceeding.

as changes that might be necessary due to the Integrating Markets and Public Policy process at ISO-NE that has yet to reach a final conclusion or set of conclusions as to a future capacity market overhaul.²¹⁹ Ultimately, the record provides no basis for a determination of any public benefit deriving from the capacity markets.

2. *The Applicants' witness Julia Frayer advocates flawed projections that cannot be relied on to support a finding of public interest.*

a) *Ms. Frayer selects the most generous key assumptions and excludes key variables like the potential for other similar projects.*

Julia Frayer makes largely unquestioned assumptions that accomplish two major goals for her client: first, she finds that there will be non-zero capacity market savings from Northern Pass, and second, she projects capacity market savings on the generous side of a very wide scope of possible outcomes.

The Brattle Group highlights in particular the following four broad assumptions adopted by Ms. Frayer:²²⁰

- 1) that 1,000 MW of Hydro-Quebec capacity transmitted via Northern Pass will qualify in ISO-NE's capacity market;
- 2) that the Internal Market Monitor will allow these resources to offer their capacity at a price sufficiently low to clear in the capacity market, rather than requiring Hydro-Quebec to internalize additional generation and transmission costs that result in a price too high to clear in the prevailing low-price landscape;
- 3) that the supply curve is vertical over the range of prices projected in its analysis, and that entry by Northern Pass's resources into the market would not displace any existing capacity already in the market; and
- 4) that Northern Pass will not displace any competing clean energy projects that would otherwise bring new incremental Canadian hydroelectricity or renewable energy and capacity to New England.

²¹⁹ See, e.g., Tr. 10/27/17, AM at pp. 65-66.

²²⁰ See CFP Ex. 142 at p. 3; Ex. 143 at p. 7. The list in the text that appears in the text that follows is paraphrasing rather than quotation.

If either of the first two of these assumptions is false, the capacity market price impacts of Northern Pass would be zero.²²¹ It would also be zero if the fourth is false so that Northern Pass displaces one or more new clean energy projects,²²² and zero or some other substantially diminished figure if number three is false and Northern Pass is a causal agent in the retirement or displacement of existing capacity market resources.²²³

The Brattle Group's ultimate findings are that any one of these scenarios could come to pass, depending on variables they identify including non-public information in the possession of Hydro-Quebec, decisions made confidentially by the Internal Market Monitor, hard-to-predict market dynamics including retirement decisions, and the results of state energy procurement solicitations.²²⁴ Given the high level of uncertainty, the Brattle witnesses offer a range of potential capacity market impacts.²²⁵ Accordingly, Messrs. Newell and Weiss estimate that the range of bill impacts for New Hampshire consumers would be on average \$0 to \$21 per year over 13 years, with zero or near-zero bill impacts the likely outcome under multiple potential outcomes.²²⁶ Brattle Group also models in detail four specific potential scenarios, with the first being most similar to the single scenario that Julia Frayer models, by following the majority of her assumptions. In light of the progress of the Massachusetts 83D RFP, the Brattle Group finds that their Scenario 4, which entails competing clean energy projects that may exclude or diminish one another, is now increasingly likely.²²⁷

²²¹ CFP Ex. 143 at p. 15. Brattle Group describes both of these potential situations under a scenario it refers to as Scenario 3: "This scenario reflects the possibility that Hydro-Quebec imports via NPT may not qualify as a reliable capacity resources and/or may not clear the capacity market for the reasons noted above." *Id.*

²²² CFP Ex. 145 at p. v.

²²³ CFP Ex. 145 at p. 33.

²²⁴ *See id.* at 15.

²²⁵ CFP Ex. 145 at CFP006042-45, pp. 43-46.

²²⁶ CFP Ex. 143 at CFP005833-37 (pp.7-11); CFP Ex. 142 at CFP005989-90; CFP Ex. 145 at CFP006039-42, pp. 40-43.

²²⁷ CFP Ex. 145 at CFP006043, p. 44.

In contrast, Ms. Frayer fails to predict *any scenario* in which there are competing similar projects. During questioning, Ms. Frayer conceded that although she did not predict any scenario where multiple similar projects enter the capacity market, in fact she agrees there is a good chance there will be multiple similar projects that compete in this way, particularly in light of the Massachusetts 83D RFP.²²⁸ She further concedes that a similar project would have a similar market impact.²²⁹ And she offers no reasonable basis for failing to model a scenario where there are multiple projects, despite her expectation that there will be.

Another key variable for which Ms. Frayer has selected a grossly generous assumption is the projected clearing price. In its Supplemental Report, the Brattle Group estimates that if LEI had made one single change, by using an expected clearing price equal to the Net Cost of New Entry (“Net CONE”) in the years when new capacity is needed, the capacity market benefits that Ms. Frayer estimates for Northern Pass would have been about half as large.²³⁰

Ms. Frayer acknowledged under questioning that she could have modeled various scenarios that were less favorable to Northern Pass than the one she selected, but declined to do so.²³¹ Her projections must therefore be considered at best a “best case scenario” that fails to rigorously consider the range of potential outcomes.

b) Ms. Frayer’s projections have already been proven false and uncertain.

Ms. Frayer’s projections have been demonstrated to be uncertain and inaccurate over the course of time in this proceeding. Between the first and second reports Ms. Frayer submitted in this proceeding, the wholesale market “benefits” she projected for the project were slashed by

²²⁸ Tr. 6/13/17, AM: p. 100.

²²⁹ Tr. 6/14/17, AM: pp. 6-7.

²³⁰ CFP Ex. 145 at CFP006006, p. 7.

²³¹ Tr. 6/8/17, PM: pp. 25-26.

25% due to events she failed to predict.²³² In her initial Base Case forecasts in 2015, Ms. Frayer forecasted capacity prices [REDACTED] higher than the actual prices in Forward Capacity Auctions 10 and 11, respectively.²³³ Inaccuracy of 75% in a projection from October 2015 to an event in February 2017 is very substantial, particularly given that this proceeding deals with projections over a far longer timeframe than that. Ms. Frayer's forecast did not predict the retirement of the Pilgrim Nuclear Station, the retirement of the Bridgeport Harbor 3 coal plant, or the entry of 1,459 MW of new gas-fired combined-cycle generation.²³⁴ And, as described by the Brattle Group:²³⁵

[London Economics's] new forecast differs substantially from its initial forecast, with significantly lower prices, elimination of energy efficiency (in spite of ISO-NE's increased [energy efficiency] forecast), retirement of 534 MW coal-fired steam in New Hampshire plans in 2021 instead of 907 MW gas-fired steam plants in Massachusetts, and the eventual entry of new simple-cycle instead of efficient combined-cycle gas generation, at offer prices that are [REDACTED]

Additional errors and uncertainties that undermine the credibility of Ms. Frayer's projections are identified in the Supplemental Report of Brattle Group.²³⁶

It is hard to overstate the significance of the errors identified here, in combination with the very substantial uncertainties identified above. Individually and collectively, these errors substantiate the danger in relying on these types of projections alone when determining the "value" of a project. This level of uncertainty fails to rise to the level of a substantiated public benefit.

²³² App. Ex. 82 at p. 5.

²³³ CFP Ex. 145 at CFP006003, p. 4 (citing Oct. 16, 2015 LEI report).

²³⁴ *Id.*

²³⁵ *Id.*

²³⁶ CFP Ex. 145 at pp. 2-8.

- c) **Despite being proven false repeatedly, Ms. Frayer downplays the uncertainty in her projections and attempts to eliminate uncertainties that do not benefit Northern Pass.**

It is not easy to accurately predict electricity market outcomes. This fact has been proven repeatedly throughout this proceeding. In acknowledging that the projections in their updated report differ substantially from their initial ones, the Brattle Group witnesses explain: “The fact that such dramatic changes can occur in such a short time between our prior report and this supplemental report demonstrates the inherent uncertainty in predicting capacity market prices and capacity price impacts.”²³⁷ Similarly, in his testimony on behalf of Northern Pass, Mr. Bowes describes the uncertainty faced by the project, stating, “[t]he wholesale energy price expected when NPT enters service will be about 50% of that which prevailed when HQ made its initial investment decision.”²³⁸ Mr. Bowes concludes that Hydro-Quebec will “face a more significant risk of loss” if the project hinges on capacity market revenues, which can be dynamic.²³⁹ Likewise, Ms. Frayer states that in advising her clients, she routinely acknowledges the significant risks associated with attempting to read the electricity markets crystal ball.²⁴⁰ And in confidential communications with her client [REDACTED]

[REDACTED]

[REDACTED]

Nonetheless, in this proceeding Ms. Frayer has fecklessly downplayed and manipulated uncertainties. As discussed above, Ms. Frayer fails to project any scenario in which other similar projects vie with Northern Pass. When asked why she omitted to do so despite her concession on

²³⁷ CFP Ex. 145 at p. 32, CFP006031.

²³⁸ App. Ex. 10 at 2:13.

²³⁹ *Id.* at 3.

²⁴⁰ Tr. 6/13/17, AM: p. 110.

²⁴¹ Tr. 6/13/17, AM: p. 116 (confidential session) (referencing CONFIDENTIAL NGO Ex. 33).

the stand that she believes there will be multiple such projects, Ms. Frayer dismisses such details as too “speculative” to merit consideration.²⁴² At the same time that Ms. Frayer admits she does not know what the Internal Market Monitor has done in the past, she insists that she is “extremely confident” as to how the Internal Market Monitor will treat the Northern Pass resources.²⁴³ When asked if lower prices in the capacity market would hit the delist threshold for multiple generators, she insists that “doesn’t mean that they will delist,” because such generators technically could still decline to delist.²⁴⁴ When asked about the risks of relying on the capacity market, she refuses to admit there are substantial risks and instead suggests that any risk is “numerically” outweighed by the opportunities.²⁴⁵

The Brattle Group correctly observes that Ms. Frayer partakes in “false precision.”²⁴⁶

LEI does not examine uncertainties about any major aspect of the analysis: not regarding NPT’s ability to qualify and clear in the capacity market, and not regarding the market’s response and price formation resulting from NPT. For example, LEI did not consider the possibility that the plants they now predict will retire may instead decide to stay online absent NPT, and that only NPT’s price impact would push them into retirement—thus offsetting much of the price impact LEI projected for NPT.

A persistent dismissal of major uncertainties as non-variables is a defining flaw in Ms. Frayer’s testimony, and reveals her advocacy stance. Ms. Frayer has been advocating for Northern Pass since 2011, when she made arguments before the New Hampshire legislature on behalf of Northern Pass, published op-eds favorable to Northern Pass in the *Union Leader* and *Keene Sentinel*, and advocated for Northern Pass on the radio.²⁴⁷ After seven years of

²⁴² Tr. 6/13/17, AM: p. 101.

²⁴³ Tr. 6/13/17, PM: pp. 52-57.

²⁴⁴ Tr. 6/13/17, PM: pp. 40-41.

²⁴⁵ Tr. 6/13/17, AM: p. 109.

²⁴⁶ CFP Ex. 145, p. 7.

²⁴⁷ Tr. 6/9/17, PM: p. 20; 6/13/17, AM: p. 93.

advocating for Northern Pass, Ms. Frayer's treatment of uncertainties related to the project is unreliable and biased.

3. *The negative impacts in New Hampshire are too outsized to be overcome by any capacity pricing impacts that could be feasible under a reasonable scenario, even a scenario that made generous assumptions.*
 - a) **Even under generous assumptions, any temporary rate impacts within the state of New Hampshire would be limited and could not support a public interest finding.**

The Brattle Group posits a likely range of \$0 to \$.28 benefit per kWh on average per New Hampshire household per year from 2020-2032,²⁴⁸ with zero being the most likely figure under a scenario where one or more similar projects are introduced in response to state clean energy policies (Brattle's Scenario 4), and a very small, single-digit figure most likely in the event Northern Pass does not clear in the capacity market (Brattle's Scenario 3).²⁴⁹ This is an average of \$0 to \$21 over 13 years for the average New Hampshire household.²⁵⁰ To assume anything in the double digits, however, would be optimistic. As Messrs. Newell and Weiss explain, "[t]o count on anything at the higher end of the range would require ascribing a minimal probability to Scenarios 3 and 4 (where NPT does not qualify and clear and where NPT displaces a similar competing project, respectively) and assuming market conditions that place NPT's impact at the higher end."²⁵¹ Even if we were to assume a double-digit bill benefit at the very top of that range, such a level of temporary rate reduction could not justify the permanent and substantial adverse impacts that this project will have on the state, as detailed elsewhere in this memorandum, in the memoranda of the Forest Society and Counsel for the Public, and

²⁴⁸ CFP Ex. 144 at CFP005989, p. 2

²⁴⁹ CFP Ex.142 at CFP005771, p. 6; *see also* discussion *infra*.

²⁵⁰ CFP Ex. 144 at p. 2.

²⁵¹ *Id.* at CFP005990, p. 3.

throughout the administrative record. Costs to the state, in terms of environmental, community, and other harms, should be valued higher, and those costs do not cease after a 13-year time window. Zero to \$21 is not a persuasive range of economic benefit to the state.

B. The Applicants have failed to demonstrate greenhouse gas reductions.

- 1. By failing to establish what hydroelectric resources will be used, the Applicant has failed to prove that the generation resources transmitted over Northern Pass would be incremental over existing Hydro-Quebec resources.*

Nowhere does the Application document whether incremental new hydroelectric resources will be transmitted over Northern Pass, therefore the Applicants have failed to substantiate a claim of incremental new GHG reductions. As discussed above, there are conflicting assertions as to what hydroelectric resources will be transmitted over Northern Pass. Julia Frayer claims in this proceeding that no new generation resources will be required, while Hydro-Quebec has made statements to the press suggesting that it is constructing new hydroelectric generation to be transmitted over Northern Pass for the purposes of New England clean energy solicitations like the Massachusetts 83D RFP.²⁵² Without clarity as to whether the generation transmitted will be incremental, it is impossible to assess GHG reductions.²⁵³ No public interest finding is possible due to lack of substantiation.

- 2. The record does not establish what United States emissions will be displaced.*

The Applicants have not provided concrete evidence as to what emissions will be displaced in the United States, undermining their claims of potential environmental (i.e. air quality) benefit, as well as any economic benefit associated with claimed GHG reductions. It is

²⁵² See discussion above.

²⁵³ Tr. 10/26/17, PM: p. 49.

possible that Hydro-Quebec will not increase its hydroelectric generation to serve New England, but instead will divert power that would otherwise serve New York or other markets.²⁵⁴ That displaced generation in other markets could then be replaced with fossil fuel-fired generation, resulting in less or no net GHG reductions impacts.²⁵⁵ As the Brattle Group testimony shows, it is impossible to ascertain from the record “whether [NPT] would result in incremental greenhouse gas emission reductions or [if] there would just be clean energy being shifted from one market to another.”²⁵⁶ Hydro-Quebec is not a party to this proceeding and has not offered record evidence on this subject.

3. *If it moves forward, Northern Pass is likely to displace other GHG-reducing energy resources that would otherwise be procured, further undermining the Applicants’ claims of incremental GHG benefit.*

As discussed above, New England states including Massachusetts and Connecticut have adopted policies to procure and/or develop additional clean energy resources, including through direct solicitations such as the Massachusetts 83D RFP. The objective of the Massachusetts 83D RFP is to assist Massachusetts in meeting GHG-reduction targets imposed by law. As provided in the RFP, “The fundamental purpose of the RFP is to satisfy the policy directives encompassed within Section 83D [of Chapter 169 of the Acts of 2008] and to assist the Commonwealth with meeting its Global Warming Solution Act (“GWSA”) goals.”²⁵⁷ To this end, according to the solicitation,²⁵⁸

[The Massachusetts electric distribution utilities], in coordination with the Massachusetts Department of Energy Resources (“DOER”), are collectively seeking proposals for incremental Clean Energy Generation and associated environmental attributes and/or RECS under cost-effective long-term contracts, which may include required associated transmission costs... In

²⁵⁴ CFP Ex. 143 at CFP005824, p. xii; Tr. 10/26/17, PM: pp. 47-49.

²⁵⁵ *See id.*

²⁵⁶ Tr. 10/26/17, PM: p. 5.

²⁵⁷ CFP Ex. 276 at p. 2.

²⁵⁸ CFP Ex. 276 at p. 1.

this Request for Proposals (“RFP”), the Distribution Companies are soliciting proposals for Clean Energy Generation for an annual amount of electricity equal to approximately 9,450,000 MWh...

Northern Pass is a competitor for a procurement contract under the Massachusetts 83D RFP bid initiative, as are a long list of other proposed projects including but not limited to TDI Clean Power Link and Granite State Power Link.²⁵⁹

In this regional policy landscape, and specifically in the context of the Massachusetts 83D RFP, if Northern Pass is developed, it will almost certainly displace or potentially defer another similar energy resource.²⁶⁰ The redundancy in GHG emissions impacts is similar to the redundancy in potential capacity market impacts addressed in earlier sections of this memorandum. If we assume that the Massachusetts 83D RFP process is carried through to completion, and if we further assume that Northern Pass is selected, then the project would simply displace another proposed resource with similar, or potentially greater, GHG reduction impacts.²⁶¹ Although New Hampshire decision-makers lack control over other state initiatives, for purposes of this proceeding, the Committee can reasonably assume that those state initiatives will be at least moderately successful at achieving specified goals, including emissions reductions. Therefore Northern Pass’s claims of incremental GHG reduction benefits should be accorded no weight.

4. *Northern Pass may displace or push out renewable energy resources in the United States with a cleaner profile than Hydro-Quebec’s resources and greater potential to reduce GHG emissions.*

Northern Pass is competing in the Massachusetts 83D RFP—as well as more generally in the regional markets—with other resources such as wind and solar that are likely to have greater

²⁵⁹ See, e.g., CFP Ex. 143 at p. 41; CFP Ex. 145 at p. 45.

²⁶⁰ See discussion above; CFP Ex. 143 at CFP005824, p. xii.

²⁶¹ See CFP Ex. 143 at CFP005824, p. xii.

GHG-reductions impacts than hydro-electric power.²⁶² If Northern Pass is developed and pushes out those types of projects, Northern Pass will ultimately have a negative impact on GHG reductions, in terms of net overall reductions.²⁶³ As the Brattle Group concludes, “Conceivably, GHG emissions could even increase if NPT displaced alternative clean energy with emissions rates below the hydro emissions rates assumed by LEI or NPT, such as Class I renewables solar PV and wind.”²⁶⁴ In addition, it is logical that it would be easier to substantiate and verify the GHG reductions impacts of new regional Class I renewables like solar PV, wind, and/or energy storage, whereas it is impossible for the Committee to substantiate or verify the claims made by the Applicants’ in this proceeding, particularly without Hydro-Quebec as a party.

5. *Potential negative greenhouse gas impacts at the source of generation and potential leakage in Canada eliminate or reduce any claimed emissions impacts.*

The Applicants’ witness Julia Frayer of London Economics makes various claims about Northern Pass’s GHG impacts, including assertions as to the level of GHG emissions in Canada.²⁶⁵ However, Ms. Frayer is a markets analyst who lacks the expertise to offer any meaningful or rigorous analysis of greenhouse gas impacts.²⁶⁶ Ms. Frayer admits that she lacks the training or capacity to develop independent scientific opinions on GHG reductions associated with the generation source and its local impacts.²⁶⁷ The GHG impacts of hydroelectricity are in fact far from certain, and in some cases can be quite substantial.²⁶⁸ In particular, Ms. Frayer admits that she is not capable of offering any expert opinions regarding the extent to which Hydro-Quebec’s resources may produce a particularly pernicious form of GHG emissions called

²⁶² See CFP Ex. 276; see also, CFP Ex. 143 at CFP005824, p. xii.

²⁶³ See CFP Ex. 143 at CFP005824, p. xii.

²⁶⁴ CFP Ex. 143 at CFP005824, p. xii.

²⁶⁵ See, e.g., App. Exs. 28, 81, 82.

²⁶⁶ App. Ex. 28 Attachment A (Frayer curriculum vitae); Tr. 6/13/17, AM: pp. 80-88.

²⁶⁷ Tr. 6/13/17, AM: pp. 80-88.

²⁶⁸ See NGO Ex. 18.

“ebullitive emissions” (bubbling gases) that are now known to be associated with large hydroelectric reservoirs and can contribute dramatically to their harmful emissions.²⁶⁹ This uncertainty contributes to the unreliability of the Applicants’ assertions of GHG benefits.

In addition, just as there is no evidence that Hydro-Quebec will transmit incremental hydro-electric generation resources over Northern Pass, there is no evidence to exclude the possibility that Hydro-Quebec will substitute dirtier resources to meet its needs in Canada if it assumes an obligation to export more hydro-electric resources to New England. This shifting of resources from the Canadian market to the United States market would not result in a net GHG benefit.²⁷⁰ On the contrary, the consequence would be emissions “leakage” that would undermine claims of climate or air quality benefits.²⁷¹ As Mr. Newell explained, “In order for their emissions analysis to make sense from a global perspective, you’d have to believe that there’s incremental clean energy. That is, it’s not just diversion.”²⁷² To believe that, the Committee would need evidence that is lacking from the record.

6. *Any environmental attributes will not inure to the state of New Hampshire.*

Finally, New Hampshire would not be the beneficiary of any GHG-reduction attributes associated with Northern Pass, and would have no claim to any other environmental attributes that could attach to resources transmitted over Northern Pass.²⁷³ New Hampshire lacks a binding climate law akin to the Global Warming Solutions Act in Massachusetts or in Connecticut, but the state does have a Renewable Portfolio Standard as well as a GHG emissions reductions goal, it participates in the Regional Greenhouse Gas Initiative, and it generally values and promotes

²⁶⁹ Tr. 6/13/17, AM: pp. 84-88. *See also* NGO Ex. 18 (defining and discussing ebullitive emissions).

²⁷⁰ *See* Tr. 10/26/17, PM: p. 28.

²⁷¹ *See* Tr. 10/26/17, PM: p. 47 (defining leakage).

²⁷² Tr. 10/26/17, PM: 4p. 8.

²⁷³ *See* CFP Ex. 276 at p. 1.

the development of GHG-reducing clean energy.²⁷⁴ However, any direct benefits associated with the environmental attributes of the Northern Pass project would not inure to New Hampshire, but rather to Massachusetts, if Northern Pass is a successful bidder under the Massachusetts 83D RFP and development is completed.²⁷⁵ If Northern Pass is not selected under the Massachusetts 83D bid process but proceeds under a different state-based opportunity, such as a Connecticut clean energy RFP, then the environmental attributes similarly would accrue to the state whose clean energy goal is being met through the purchase of resources transmitted via Northern Pass.²⁷⁶

C. As a whole, the adverse effects of the proposed project outweigh any benefits to New Hampshire, and the project is not in the public interest.

The Applicants' petition should be denied because the Application fails to show that the project as proposed is in the public interest. Under RSA 162-H:16, the Committee shall not issue a certificate absent a finding that the project as proposed is in the public interest.²⁷⁷ In making this determination, the Committee considers a broad range of criteria.²⁷⁸ As established by this memorandum, as well as by the memoranda of other parties that address other project impacts, the adverse impacts of the project are undue as to each of the public interest criteria.

If the Applicants attempt to claim capacity market impacts and greenhouse gas emissions reductions as factors weighing in favor of the project, such claims must fail. First, the Applicants have failed to establish by a preponderance of the evidence that the project would result in capacity market benefits or greenhouse gas reductions. Second, adverse impacts on the

²⁷⁴ See CFP Ex. 143 at p. xiii.

²⁷⁵ See *id.*

²⁷⁶ See CFP Ex. 143 at CFP005825, p. xiii.

²⁷⁷ RSA 162-H:16(e).

²⁷⁸ Site 301.16(a)-(j).

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public interest are too substantial. The project as proposed extends through nearly the full length of the state, with impacts so outsized that a project with such a magnitude of overall adverse impacts arguably has never before been considered by the Committee. Under the public interest test, the outsized and grave nature of these adverse impacts, including impacts on aesthetics, the environment, and the economy—most of which would be permanent—substantially overshadow and outweigh any ostensible temporary capacity market and greenhouse gas impacts the Applicants have asserted in this proceeding. For these reasons, the Applicants' claims of public benefit fail.

CONCLUSION

The Project proposes to use old-fashioned aboveground electric transmission technology for over 69% of the proposed 192-mile Project. This 20th-century approach is outdated and will have a profound and long-lasting adverse impact on economically and culturally important scenic resources and landscapes across the entire length of New Hampshire, creating an unreasonable adverse effect on aesthetics. It will also, among other things, destroy and degrade two significant exemplary occurrences of the rare Northern Hardwood Seepage Forest and create severe and long-lasting forest fragmentation in some of the state's most extensive undeveloped forest, and thus creates an unreasonable adverse effect on the natural environment.

The Project will unduly interfere with the orderly development of the region. Alleged benefits to potential future regional energy markets are not substantiated and the Project may in fact negatively impact clean energy development within the state. As for decommissioning reassurances, the Applicants have failed to provide appropriate and necessary commitments to avoid long-term impacts on orderly development. The Application fails to meet the funding requirements for a decommissioning plan set forth in Site 301.08(d)(2)b, which are intended to protect future ratepayers and taxpayers as well as New Hampshire's landscape.

Finally, the Project is not in the public interest of New Hampshire. The Applicants claim that the Project may bring capacity market pricing benefits and greenhouse gas reductions, but they promise neither for obvious reasons—because they cannot guarantee them. In fact, these alleged “benefits” have already been proven to be false claims. The Northern Pass project is not likely to reduce electricity rates in New Hampshire any further than is likely to occur without the Project. As for greenhouse gas reductions, they are not likely to be any greater if Northern Pass is not completed, in light of the current energy landscape including ongoing state clean energy

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procurement initiatives. In fact, the completion of Northern Pass could result in greenhouse gas increases by excluding cleaner, local energy resources. Moreover, the state would not be the direct beneficiary of any environmental attributes associated with Northern Pass.

For all of these reasons, the Ammonoosuc Conservation Trust, Appalachian Mountain Club, and Conservation Law Foundation respectfully request that the Site Evaluation Committee deny the petition for certificate of site and facility in Docket No. 2015-06.

Respectfully submitted,

By: 

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing has on this 12th day of January, 2018 been sent by email to the service list in Docket No. 2015-06.



Melissa E. Birchard