



**RE: COMMENTS OF THE APPALACHIAN MOUNTAIN CLUB ON THE U.S. DEPARTMENT OF ENERGY'S DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SUPPLEMENT FOR NORTHERN PASS, LLC'S, PRESIDENTIAL PERMIT APPLICATION FOR THE NORTHERN PASS LINE PROJECT [DOE DOCKET NO. PP371]**

**INTRODUCTION**

The Appalachian Mountain Club (AMC) submits the following comments on the U.S. Department of Energy's ("DOE") Draft Environmental Impact Statement (July 2015) and November 2015 Supplement ("DEIS") concerning Northern Pass Transmission, LLC's ("NPT, Applicant") application for a Presidential Permit (the "Application") to construct and operate an electric transmission line that crosses the United States-Canada border. The AMC is an intervener in the above-referenced docket and its standing in this case is described in our motion to intervene of Dec. 15, 2010 and is not repeated here. AMC offers these comments on the DEIS without prejudice to any and all legal rights AMC may have, which are hereby expressly reserved.

**PROCEDURAL ISSUES**

**A. DOE Should Prepare a Comprehensive EIS Addressing Energy Imports from Canada into the Northeastern United States.**

The Applicant's proposed importation of 1,090 megawatts ("MW") of Hydro-Québec-generated electricity is part of a long-term, large-scale strategic plan developed by Hydro-Québec and the Province of Québec<sup>1</sup> to expand hydro-electric generation and increase exports to the United States. This plan is a

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<sup>1</sup> The Province of Québec's ten-year energy strategy (2006-2015) called for increasing generation capacity through new hydroelectric and other projects totaling 4,500 MW and, with this increased capacity, stepping up exports of power to neighboring areas, including New England and New York. *See* Québec Energy Strategy (2006-2015), English summary at 9-10, available at <http://www.mrnf.gouv.qc.ca/english/publications/energy/strategy/energy-strategy-2006-2015-summary.pdf> ("The 4,500 MW added capacity will be sufficient to meet Québec's long-term demand, promote wealth-creating industrial development, and support exports. . . . The Government also intends to ensure that Québec is able to increase its electricity exports, once its own needs have been met. It has mandated Hydro-Québec to begin discussions with potential partners in view of signing electricity export agreements."). Québec has also announced an economic development plan for its northern territory through 2035—"Plan Nord"—that emphasizes new generation projects totaling an additional 3,500 MW, including 3,000 MW of hydroelectric capacity, to support Québec's energy strategy. *See, e.g.*, Plan Nord Working Document (Nov. 2009), available at <http://www.plannord.gouv.qc.ca/english/documents/plan-nord.pdf>. Similarly, a major objective of Hydro-Québec's strategic plan (2009-2013) is increased generation capacity to step up exports to New York and New England. *See* Hydro-Québec Strategic Plan (2009-2013) at 19-27, available at [http://www.hydroquebec.com/publications/en/strategic\\_plan/pdf/plan-strategique-2009-2013.pdf](http://www.hydroquebec.com/publications/en/strategic_plan/pdf/plan-strategique-2009-2013.pdf) ("As a result of recent and ongoing hydroelectric development projects, Hydro-Québec Production expects to have the generating capacity needed to ensure export growth. By 2013, we will have nearly 24 TWh at our disposal. This margin of flexibility will enable us to increase the volume of our exports."); *id.* at 42 ("We will continue our initiatives to increase interconnection capacity with the U.S. Northeast and neighboring Canadian provinces. Furthermore, subject to confirmation of requests for transmission services, we plan to build a 1,200-MW interconnection with New England by 2014. . . . We also plan to upgrade the New York interconnection (Châteauguay substation). With import and export capability, this interconnection plays a major role in energy interchanges between Québec and the United States. We will coordinate the work with the U.S. operators to reduce impacts on service. We are considering other projects to ensure long-term operability and are keeping up our efforts to maintain or increase the exploitable capacity of all our interconnection facilities."). Hydro-Québec also envisions using increased interconnections with the Ontario grid to extend the reach of its exports to western New York and the U.S. Midwest. *See id.* at 26.

business strategy, and therefore does not touch on the question before DOE of whether, and how much, importation of Canadian power is in the best interests of the United States generally, and New England and other Northeastern states in particular. Because this specific proposal could impact the energy future of the region, it is essential that it not be viewed in isolation. This seems especially obvious in light of the fact that DOE recently issued Presidential Permits for the Champlain Hudson Power Express PP-362, Oct 2014 (“CHPE”), which is intended to import from Hydro-Quebec 1,000 MW of electric power into the New York grid via underground and submerged High Voltage Direct Current (“HVDC”) transmission lines, and the New England Clean Power Link for another 1,000 MW into Vermont (DOE FEIS # 0503 issued Oct. 2015). Additional Canadian hydropower has been bid into the recent 3-state (MA-CT-RI) New England Clean Energy RFP (<http://cleanenergyrfp.com/bids/>).

The rationale given for this proposed project is in part to promote electricity diversity<sup>2</sup> due to the rapid transition to dependence on natural gas power generation. Hydro-Quebec currently has an export capacity into New England of approximately 2,275 MW<sup>3</sup> and the DEIS projects that this project would increase it by another 31%<sup>4</sup>. Should the Northern Pass (1,090 MW), the New England Clean Power Link (1,000 MW), and Vermont Green Power Line (400 MW) transmission projects all come to fruition, this would increase the region’s dependency on Hydro-Quebec to over 4,760 MW of capacity. This excludes additional imports from other Canadian provinces. New England-ISO currently has ca. 31,000 MW of capacity<sup>5</sup>, therefore if Hydro-Quebec were to backfill for generation being retired it has the potential to become a dominant source of the New England-ISO generation capacity. In 2015 Canadian hydropower approximated 13% of the region’s net electric energy load and the DEIS estimates that Northern Pass would increase this by 31%. Based on the New England-ISO consumption of 126,874 gigawatt-hours (GWh) in 2015 and an 80% capacity-use factor for all proposed Hydro-Quebec transmission lines, Hydro-Quebec could approach one quarter of the region’s power generation consumed (GWh). The DEIS at Section 2.5.2 suggests ca. 20%, but that calculation needs to be updated as it appears to not include additional Hydro-Quebec generation separately bid into the CT/MA/RI RFP (Vermont Green Power Link), or recently permitted transmission (e.g. NECPL) designed to host Hydro-Quebec generation. And this excludes other Hydro-Quebec exports to the US from its subsidiaries in New Brunswick and Newfoundland/Labrador. In summary a continued transition to Hydro-Quebec generation will shift today’s dependency on natural gas towards a dependency on Hydro-Quebec, a shifting of the electrical diversity problem but not necessarily the solving of it. It would put the region’s grid and markets at risk with this increased reliance on power from a sole source provider, a dependency on a few multi-thousand mile long transmission lines which have historically suffered major disruptions about every decade<sup>6</sup>, and the likelihood that if an energy shortage occurred, Quebec’s internal power needs would trump those of New England given that Hydro-Quebec is owned by the Province of Quebec. And like California hydropower this past drought year, future Canadian hydro power generation during the tenure of the Northern Pass project could become less certain due to climatic changes in temperature and precipitation.

Without considering this project in the context of ongoing, recently permitted, and potential future projects, and without taking a comprehensive look at the energy needs and potential sources to meet those needs in the Northeastern United States, including but not limited to imported hydropower from Quebec, DOE will be permanently mired in a reactionary and piecemeal mode of responding to projects driven by Hydro-Québec’s business plan.

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<sup>2</sup> DEIS Volume 1 at Section 1.4.1.

<sup>3</sup> <http://www.hydroquebec.com/transenergie/en/reseau-bref.html>

<sup>4</sup> DEIS Supplement Section 4.2, Table 4, Alternative 7

<sup>5</sup> <http://www.iso-ne.com/about/key-stats/resource-mix>

<sup>6</sup> 1989 Geomagnetic storm; 1998 ice storm; 2004 hydro tower bombing - [https://en.wikipedia.org/wiki/Hydro-Quebec%27s\\_electricity\\_transmission\\_system#Major\\_disruptions](https://en.wikipedia.org/wiki/Hydro-Quebec%27s_electricity_transmission_system#Major_disruptions)

DOE should stay this proceeding and instead initiate a broad, comprehensive, and programmatic EIS to study the extent of need in the Northeast for Canadian hydro-power, taking into account the nation's and region's energy policies and goals, the most efficient, least impacting means of importing Canadian power to meet any such need, the risks involved, the impact on US- based renewable energy resources, and how such projects could further increase the US trade deficit with Canada (typically \$30+ billion/annum). Such a programmatic EIS would effectively establish a master plan for the region's importation of Canadian power, including whether and how that power fits into the region's broader energy needs, risk assessment, and policies. Such a plan would also ensure we avoid potential duplication of major transmission lines that would unnecessarily impact the Northeast. Project-specific Presidential Permit determinations should follow, not precede, the creation of such a region-wide, comprehensive energy plan. And conversely it would allow for an assessment of how dependent the northeastern grid is or will become on a sole source provider, a concern currently with the region's dependency on natural gas. Without such a plan it is nearly, if not entirely, impossible to assess the cumulative impacts of separate project proposals given the complexity involved in each. A programmatic, geography-based approach is supported by CEQ's National Environmental Policy Act Regulations<sup>7</sup>.

## **B. DOE Should Define the Purpose and Need for Action More Broadly.**

Before the specifics of the Project are even considered, the FEIS must establish the need for a new source of long-distance power supply to the NE-ISO region. NEPA requires a declaration of public need and the taking of a "hard look" at new proposals as well as at a full range of alternatives and strategies that could also satisfy the Project's stated purpose. The DEIS at Section 1.2 narrowly and wrongly describes the purpose and need for the project as follows:

*The purpose of, and need for DOE's action is to decide whether or not to grant a Presidential Permit for the project at the international border crossing proposed in the amended Application.*

Under the Action alternative, DOE would grant the Northern Pass application for a Presidential Permit for the proposed international electric transmission line. Under the No Action alternative, DOE would deny the Northern Pass application for a Presidential Permit for the proposed international electric transmission line.

The DEIS at Appendix B.2.1 *Purpose and Need*, incorrectly argues that it is permitted to apply such a narrow interpretation based on 10 CFR part 250. However, this narrow interpretation violates NEPA's mandate that "an agency cannot define its objectives in unreasonably narrow terms"<sup>8</sup>. A purpose and need

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<sup>7</sup> Forty Most Asked Questions Concerning, 46 Fed. Reg. 18,026, 18,033 (Mar. 23, 1981) ("Forty Questions") ("The preparation of an area-wide or overview EIS may be particularly useful when similar actions, viewed with other reasonably foreseeable or proposed agency actions, share common timing or geography. For example, when a variety of energy projects may be located in a single watershed. . . the overview or area-wide EIS would serve as a valuable and necessary analysis of the affected environment and the potential cumulative impacts of the reasonably foreseeable actions under that program or within that geographical area.")

<sup>8</sup> <http://www.northernpasseis.us/images/uploads/documents/CEQ-40Questions.pdf> "A fourth possibility is that a commentator points out an alternative which is not a variation of the proposal or of any alternative discussed in the draft impact statement, and is a reasonable alternative that warrants serious agency response. In such a case, the agency must issue a supplement to the draft EIS that discusses this new alternative. For example, a commentator on a draft EIS on a nuclear power plant might suggest that a reasonable alternative for meeting the projected need for power would be through peak load management and energy conservation programs. If the permitting agency has failed to consider that approach in the Draft EIS, and the approach cannot be dismissed by the agency as unreasonable, a supplement to the Draft EIS, which discusses that alternative, must be prepared. (If necessary, the same supplement should also discuss substantial changes in the proposed action or significant new circumstances

statement cannot lawfully be premised on the narrow objective of determining whether or not to grant a permit for a particular proposal. Indeed, as written, DOE's purpose and need statement allows for just one alternative to the approval of the Applicant's proposal: denial of the project as proposed.<sup>9</sup>

Such a narrow interpretation defeats the dual role that this DEIS is intended to play, which is to serve as both the DOE Presidential Permit EIS, and the EIS for a US Forest Service Special Use Permit (SUP) from the White Mountain National Forest (WMNF) because the proposed Project would cross WMNF property (see Section 1.1.2). For the issuance of a SUP, "*Special uses must be managed to best serve the public interest, in accordance with the following: a) **Private uses of National Forest System land must not be authorized when such uses can be reasonably accommodated on other lands*** (DEIS at Volume 2: Appendix at F-2, *emphasis added*). The WMNF Forest Supervisor will also use the FEIS to inform the decision in selecting an Alternative. In its revised scoping comments (November 2013), AMC argued that the alternative of crossing the international border in Vermont and using a burial route south under Interstate-91 to Massachusetts and Connecticut be studied as it would totally avoid the WMNF. The DEIS does not address nor explain why this Alternative that would totally avoid the WMNF was never examined, or other reasonable alternatives that the DEIS rejected for analysis based solely on DOE criteria.

The statement of the agency's underlying "purpose and need" in an EIS is critical to identifying the range of reasonable alternatives. Obviously, if the "purpose and need" is defined too broadly, the number of alternatives requiring analysis would be virtually limitless. Conversely, it is inappropriate to define "purpose and need" so narrowly that only a single alternative could be identified for realistic and fair analysis (as is the case in this Application). As recognized in DOE's Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements, (Second Ed., Dec. 2004 at page 5), "*The proposed action is generally only one means of meeting the agency's underlying purpose and need for action.*"

Furthermore, the DEIS posits that once the project crosses the international border it has no jurisdiction or siting authority over all of the other route alternatives examined. At the same time, through its scoping actions and the DEIS, the DOE by default takes the position that it also cannot examine any other international border crossing points than the one proposed by the Applicant. This approach undercuts the requirement cited above to consider other, possibly more reasonable, alternatives to that of the proposed action.

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*or information, as required by Section 1502.9(c)(1) of the Council's regulations.) If the new alternative was not raised by the commentor during scoping, but could have been, commentors may find that they are unpersuasive in their efforts to have their suggested alternative analyzed in detail by the agency. However, if the new alternative is discovered or developed later, and it could not reasonably have been raised during the scoping process, then the agency must address it in a supplemental draft EIS. The agency is, in any case, ultimately responsible for preparing an adequate EIS that considers all alternatives."*

<sup>9</sup> DEIS at Section 1.2, footnote 4 "*In accordance with its authority under EO 12038, DOE is considering whether to issue a Presidential permit for Northern Pass' proposed transmission line crossing of the international border with Canada into the State of New Hampshire. Although DOE has no siting or project alignment authority, DOE's decision to issue a Presidential permit (along with permits and approvals required from other federal and state agencies) would enable the Applicant to construct and operate a transmission line that crosses the U.S. border into New Hampshire. The construction and operation of the transmission line beyond the border crossing is an action "connected" to the border crossing. See 40 CFR 1508.28(a)(1). For that reason, DOE has analyzed the potential environmental impacts of the proposed transmission line from the border crossing to the terminus (i.e., first connection to the electrical grid) in accordance with NEPA and the CEQ regulations."*

The “purpose and need” statement must be defined by the nature of a proposed project and the impacts associated therewith, and it must be framed in such a way as to allow for a reasonable range of alternatives to be identified and analyzed. The Applicant’s stated purpose of the proposed Project is to import into New England 1,090 MW of energy generated in Canada by Hydro-Québec.<sup>10</sup> The need for the Project, as characterized by the Applicant and repeated by DOE in the DEIS, is to meet New England’s need for clean, competitively priced power that will reduce greenhouse gas emissions and reduce price volatility, with an emphasis on the region’s need for clean, low-carbon power. DOE should broaden its “purpose and need” statement, and frame it not only in the terms offered by the Applicant, but such that the full range of reasonable alternatives can be analyzed. Specifically, DOE should adopt a “purpose and need” framework for the EIS based on the purpose of importing energy into New England from Hydro-Québec, an assessment of whether and to what extent the New England region has a need for Hydro-Québec imports to advance the goals of a clean, low-carbon energy future for the region, whether the proposed Project or one or more of the full range of reasonable alternatives can best fulfill any such need, and a full assessment of their environmental impacts.

### **C. The FEIS Must Include a Thorough Analysis and Comparison of All Reasonable Alternatives and Their Impacts.**

The FEIS should provide a detailed description and discussion of potential alternatives and reasonable geographic routes. A documented analysis of sufficient detail should be provided as to why certain Alternatives recommended during scoping were excluded from analysis. The rationale provided in the DEIS (Section 2.4) on why certain recommended alternatives were excluded are cursory, poorly substantiated, and questionably legal. It limits all alternatives studied to a single international border crossing and to alternative corridors only in NH, and yet the project is not intended to provide power to New Hampshire, but rather southern New England. The FEIS should include a proper assessment of the following alternatives:

#### ***i) Energy Conservation and other sources of energy***

The DEIS takes the questionably legal position that “*Other sources of electricity generation are not the subject of this Application for a Presidential Permit, and, therefore are the outside of the scope of this draft FEIS.*” (DEIS at 2-37, Section 2.4.8). This fails to acknowledge that this EIS also needs to meet WMNF SUP needs for alternative analysis, and contradicts the Council of Environmental Quality (CEQ) requirements for an EIS<sup>11</sup>.

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<sup>10</sup> The purpose statement must not include specific project parameters proposed by the Applicant, such as the volume of electricity proposed to be imported; the entry- and end-points of the proposed transmission line; and the proposed transmission route and design. See DOE NEPA Guidance, *supra*, at 5 (“Do not include requirements (e.g., conceptual design specifications) in the statement of purpose and need that unreasonably narrow or bias the range of reasonable alternatives.”).

<sup>11</sup> DOE’s analysis of alternatives to the proposal is “the heart of the environmental impact statement,” and “should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public.” 40 C.F.R. § 1502.14. Council on Environmental Quality (“CEQ”) regulations make clear DOE must “rigorously explore and objectively evaluate all reasonable alternatives. . . . devot[ing] substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.” 40 C.F.R. §§ 1502.14(a)-(b). DOE must consider the “no action” alternative and all reasonable alternatives, including those that are not within DOE’s or the applicant’s capabilities. See 40 C.F.R. § 1502.14(c)-(d); Forty Questions, *supra* (“In determining the scope of alternatives to be considered, the emphasis is on what is ‘reasonable’ rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant” DOE’s alternatives analysis must also include any “appropriate mitigation” that has not yet been proposed. See 40 C.F.R. § 1502.14(f).

**a) Energy Conservation:** The DEIS summarily rejects the analysis of energy conservation as not meeting DOE's narrowly defined "purpose and need" (Vol. 1, Section 2.4.9). This needs to be reversed in the FEIS. Reasonable alternatives to meet the alleged energy need described by the Applicant for "low carbon sources of energy" should include energy conservation and demand side management alternatives. These methods are by far the most "low carbon" conceivable. By reducing energy use, they reduce concerns about energy diversity created by the current reliance on natural gas. Furthermore, since the DEIS was prepared, there have been major changes in the NE-ISO energy market and options. In particular<sup>12</sup>:

- Demand resources (DR) and increasing investment in energy-efficiency (EE) measures, an example of passive DR, is essentially keeping regional energy use flat and slowing the growth of peak demand based on the 10-year EE forecast. Currently several hundred megawatts of active demand response resources which reduce power consumption to relieve grid demand participate in the region's energy market.
- "Smart" technologies--from smart meters to smart refrigerators, and all kinds of new technologies and devices--are enabling consumers to have more control over their electricity use.

On January 25, 2016, the US Supreme Court disagreed with a lower court's decision, and reaffirmed FERC's jurisdiction over demand response. This means that the NE-ISO can complete the full integration of demand response in the wholesale electricity marketplace. Completing this full integration is expected by June 1, 2018.

**b) Power generation alternatives:** Power generation alternatives are a reasonable method to meet the region's energy needs. Again citing NE-ISO's January 2016 report:

- Wind-powered resources—Over 800 megawatts (MW) of wind power have already come on line in New England, with over 4,200 MW from new wind projects proposed as of January 2016.
- Solar photovoltaic (PV) resources—Over 900 MW of PV went live through 2014, and the ISO projects about 2,400 MW of PV by 2024 in their 10-year PV forecast. Most PV is in the form of small-scale systems, such as rooftop residential systems. ISO-New England recently estimated that new rooftop solar installations reduced overall demand in the region by 390 megawatts, the equivalent of 57 percent of the output of Pilgrim Nuclear Power Station, which is slated for retirement. The NH Electric Coop released a study<sup>13</sup> they commissioned showing that net metered solar was not unfairly raising customer rates since it comes on line when demand and electric rates are highest. U.S. rooftops could generate 80 percent more energy from solar panels than previously thought, according to a new analysis from the National Renewable Energy Laboratory<sup>14</sup>. Using a combination of aerial surveys, on-the-ground counting, and supercomputing, researchers found rooftop solar holds the potential to generate 1,432 terawatt-hours of annual energy, up from the estimated 800 terawatt-hours in 2008. The amount of possible installed capacity from rooftop solar photovoltaics also jumped from 664 gigawatts to 1,118 GW. The three-year analysis projected the level of energy that could be generated in theory if PV systems were installed on all suitable U.S. business and residential rooftops.
- For the first time, grid-scale battery storage projects sought interconnection to New England's power system in 2015—almost 100 MW as of January 2016. And advances in small-scale energy storage options, including electric vehicles, are expanding the ability of the region's households

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<sup>12</sup> <http://www.iso-ne.com/about/regional-electricity-outlook/grid-in-transition-opportunities-and-challenges/integration-of-new-technologies>

<sup>13</sup> [http://www.nhec.com/filerepository/nhec\\_above\\_the\\_cap\\_net\\_metering\\_recommendations\\_1.pdf](http://www.nhec.com/filerepository/nhec_above_the_cap_net_metering_recommendations_1.pdf)

<sup>14</sup> <http://www.nrel.gov/docs/fy16osti/65298.pdf>

and businesses to meet their own energy needs. The U.S. energy storage market surged 243% in 2015 and is estimated to hit the 1 gigawatt threshold by 2019.

The record shows that power generation alternatives and energy efficiency are not theoretical but are currently an important part of the ISO-NE network. Distributed generation like solar, and energy efficiency are reasonable alternatives that create at least as many new jobs (with a much higher probability of hiring NH workers), have the least environmental impact, and help reduce the United States' trade deficit. Energy efficiency and distributed generation are prioritized in New Hampshire's 2014 update of the State's 10-Year Energy Strategy<sup>15</sup>, which is not cited or recognized in the DEIS as it should be. Based on Moody's most recent analysis from last month, the NE region's Forward Capacity markets are expected to be depressed due to the above factors. Power generation alternatives (2.13) and energy conservation (2.14) were part of the Scoping Report Alternatives Addendum<sup>16</sup> and should be fully analyzed in the FEIS.

## *ii) Alternative Routes and Sites*

**a) Different international border crossing and route:** The DEIS fails to look at alternative international border crossing locations, focusing only on the single one proposed by the Applicant. Yet the international crossing is what DOE has jurisdiction over when issuing a Presidential Permit. The DEIS examines alternative routes and burial options only in New Hampshire, but at the same time DOE acknowledges it has no role in selecting these alternatives or options. But the route alternatives and burial options change dramatically if an alternative border crossing is considered. For example, a much more direct and shorter route with far less environmental impact or economic cost would be to cross the Canadian border into Vermont rather than New Hampshire, and from there follow a buried route along I-91 south to the intended markets for this power in MA, CT and RI (that the intended market for this power is southern NE even the Applicant has been clear about, and is further supported by the fact that in 2016 the Applicant bid the Northern Pass project into the New England Clean Energy RFP for these three states). In addition, underscoring this route as a logical and reasonable alternative is that I-91 goes directly by the Vermont Yankee nuclear power plant in Vernon, VT, which is now undergoing decommissioning, and its still functional grid switchyard is now without power. The Governor of Vermont in 2014 stated that Vermont stands ready to consider such a concept. Finally, the Applicant itself claims that the need for Northern Pass is in part to fill the gap caused by the Vermont Yankee Nuclear Power Plant going off line.

A variation to this alternative is burial along I-91 in Vermont to I-89 and I-93 in NH to Londonderry, the intended terminus for the currently proposed project. An additional hybrid would be follow this same route, but terminate in Bow, New Hampshire where Merrimack Station (a coal-fired power plant owned by NPT partner Eversource NH) is now for sale due to its non-competitive position in today's market, and is considered likely to be retired (see following section).

**b) Location of the Converter Station and Substations.** The Applicant's selection of Franklin as the location of its proposed DC-AC converter station should not limit DOE's evaluation of other potential sites. Relocation of the converter station from Franklin, NH to another location would facilitate consideration of alternative transmission routes with potentially fewer environmental, cultural, and socio-economic impacts. The FEIS should consider Merrimack Station, the coal fired power plant in Bow, NH which is for sale by Eversource NH and at risk of closure as noted above. Merrimack Station is NH's largest coal-fired power plant, one of New England's top sources of toxic and greenhouse gas pollution,

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<sup>15</sup> <https://www.nh.gov/oep/energy/programs/documents/energy-strategy.pdf>

<sup>16</sup> The Northern Pass transmission line Project Environmental Impact Statement (DOE/EIS-0463) Scoping Report Alternatives Addendum, May 2014)

and one of the most expensive sources of power in the region. Burying the NPT project under I-93 south to Bow would provide a reasonable site for a converter station and likely an open switchyard for moving the power to the grid. The demise of the Merrimack plant due to market pressures is very likely in the near term. Also as discussed above, using a burial route under I-91 in Vermont would provide direct access to the Vermont Yankee Power plant that is currently undergoing decommissioning. This would also provide both a location for a converter station and a major open switchyard for the power.

The FEIS should not accept the Applicant's filing<sup>17</sup> that burial in the Interstate-93 corridor is not feasible because it believes such is the case, and therefore that all Alternatives with burial in the I-93 corridor as a component should be discarded. The Applicant provides no actual evidence that such a clear-cut legal prohibition exists, nor has it provided evidence that (a) the Franconia Notch I-93 Settlement prohibits such an option (nor has it contacted any of the three signatories to that Agreement of which AMC is one); or (b) that NPT has officially requested such a use of the I-93 corridor from the NH Department of Transportation and been explicitly denied the use of the I-93 corridor.

**c. Use of the New England Clean Power Link (NECPL) Transmission Project.** The FEIS should compare the relative merits of using the NECPL transmission project versus this project as they are both proposed to meet the same need, are designed to transport the same amount of Hydro-Quebec Power, but have substantively different environmental impacts. NECPL has completed its FEIS for a Presidential Permit and received its State of Vermont permits.

In summary, the EIS must evaluate the **full range of alternatives** that would fulfill the purpose and need for the Project which includes "... meet[ing] New England's need for clean, competitively priced power that will reduce greenhouse gas emissions and reduce price volatility." The FEIS must evaluate competing proposals and/or technologies; efficiency and conservation initiatives; changing development/construction trends; changing economic/energy consumption trends; and more than a single international border crossing. A combination of alternative designs, technologies, and strategies should be fully reviewed in the FEIS. Because one strategy on its own may not be feasible to meet this purpose and need should not necessarily preclude it from consideration. A strategy not practical on its own, but done thoughtfully in combination with other strategies, may be entirely reasonable and feasible. And it is not sufficient for DOE to rely solely on the Applicant's representation that an alternative is uneconomic or impractical, without technical or expert analysis to support such an assertion.

To clarify, the above recommendations for alternatives analysis in the FEIS should not be construed to imply that they are a sufficient substitute for the proposed Programmatic and Comprehensive EIS discussed above.

#### ***D. Rationales for Selection and Rejection of Alternatives to be Studied in the EIS***

AMC argues that if DOE excludes certain alternatives from detailed consideration, DOE is obligated to independently justify and document its decision with respect to each excluded alternative with expert analysis and appropriate rationales using an independent assessment of costs, technical issues, and other constraints. This Project has not been ruled grid essential by ISO-NE, is privately funded, and is structured to maximize very significant profits for the Project sponsors. The DEIS's shorthand exclusion of reasonable alternatives undermines the importance of the NEPA process in protecting the public interest. The FEIS must not reject reasonable alternatives proposed during scoping, and again herein, without ample evidence or explanation.

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<sup>17</sup> [http://www.northernpass.us/assets/permits-and-approvals/Northern%20Pass%20Comment%20to%20DOE\\_%2001.11.2016.pdf](http://www.northernpass.us/assets/permits-and-approvals/Northern%20Pass%20Comment%20to%20DOE_%2001.11.2016.pdf)



## **E. EIS Must Include a Rigorous Assessment of the Impacts of the Proposed Project and Alternatives.**

NEPA requires a comprehensive assessment of the environmental impacts of the proposed Northern Pass project, and all reasonable alternatives, including those discussed above. The EIS must also provide a “full and fair discussion” of these impacts that will provide the “scientific and analytic basis” for meaningful and technically sound comparisons of alternatives. (40 C.F.R. § 1502.16.), including direct, indirect, and cumulative impacts, whether they be local, regional, or international. The DEIS fails to meet these requirements as follows:

### ***i) Environmental Impacts of Generation and Transmission in Canada***

To claim and justify that the NPT power is “clean, low carbon,” it is essential to look across the international border and consider the source of this power. If the Applicant and DEIS are to invoke the benefits of this “clean, low carbon” power as a rationale for permitting the proposed Project, it is only appropriate that this claim for the Project also be subject to a comprehensive, fair, and balanced review of all of the environmental impacts of the Project as a whole.

The Applicant<sup>18</sup>, and by default the DEIS, takes the position that the project will provide “clean, low carbon” electricity generated in Canada for US markets. However, all hydro power is not the same. “Renewable” hydro power is generally defined as power from free-running rivers such as that from Niagara Falls and the St. Lawrence River. Such is not the case for most of Hydro-Quebec’s hydropower, which relies on massive flooding of forestlands and huge diversions of river systems.

The impacts of Hydro-Quebec hydroelectric generation and transmission projects on the natural environment and on cultural resources in Canada are dramatic in scale and a subject of tremendous controversy. For perspective, Hydro-Quebec’s reservoir flooding equivalent for the generation of 1090 MW based on HQ’s overall cumulative reservoir areal flooding and power output equates to the flooding of about 280 square miles of mostly boreal forest land and soils, about 60% of the surface area of Lake Champlain, VT. This is a very significant impact. The impacts include but are not limited to:

- Damming of rivers, converting them from free flowing ecosystems to huge impoundments that flood thousands and thousands of acres of terrestrial habitat;
- Creating impoundments with extensive drawdown regimes that can be subject to hypolimnetic oxygen depletion;
- Flooding of existing high-quality wetlands and the creation of low quality new wetlands due to markedly fluctuating reservoir water levels, and loss or diminishment of riverine wetlands due to altered downstream river flows;
- Hugely altering downstream flow regimes that disadvantage or eliminate many instream and riparian aquatic organisms;
- Extensive blocking of connectivity for aquatic organisms;
- Accelerating the methylation of mercury and its bioaccumulation in the food chain;
- Extensive inter-basin water transfers;
- Disrupting and altering freshwater flows into the ocean that could impact sea ice conditions and seasonal salinity;
- Disrupting the functioning of river deltas where impacted rivers reach the ocean;
- Increasing emissions of greenhouse gases from soils inundated by the reservoirs;
- Loss of terrestrial ecosystems at a landscape level scale from reservoir inundation;

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<sup>18</sup> Northern Pass Application at page 18.

- Disrupting and degrading terrestrial ecosystems due to the vast network of transmission lines required to transport electric power generated in far northern Québec to the United States border.

It is clear from the previously-referenced Canadian strategy documents<sup>19</sup> that the present and future impacts of generation and transmission in Canada, including continued and increased utilization of existing facilities, and the development of new facilities, are “reasonably foreseeable” impacts of developing the Northern Pass project. Future impacts include those in Canada from continued expansion of transmission and generation capacity, as well yet more transmission lines within the United States. Given that the DEIS accepts the Applicant’s claims about the “clean, low carbon” nature of this power as an argument for the Project, the FEIS is obligated to consider these additional impacts in its cumulative temporal and spatial impact analyses.

Although the generation facilities that will supply the power, and some of the transmission facilities that will connect those facilities to the United States, are in Canada, under NEPA the DOE must describe and consider in the FEIS for international transmission lines requiring Presidential Permits the environmental and other impacts in Canada itself<sup>20</sup>. DOE’s statements to date that it intends to exclude impacts in Canada from its environmental review are erroneous as a matter of law and must be reconsidered and reversed in the FEIS to ensure compliance with NEPA.

## **ii) Greenhouse Gas Emissions**

The FEIS must assess the Project’s net effect on greenhouse gas emissions, including the direct emissions caused by generating facilities utilizing the Project, and the indirect changes in emissions from other facilities and in energy usage in New England. Greenhouse gas emissions from the reservoirs used to generate the hydroelectric power for this Project are not insignificant. For equal electric energy outputs, Hydro-Québec’s Eastmain 1 data suggest that, in addition to any indirect emissions from facility construction, newly flooded boreal reservoirs may emit CO<sub>2</sub> at a rate close to 32 to 63% that of a natural gas plant<sup>21</sup>. Increased export of hydroelectricity by Hydro Québec to the United States can also be a contributor to increased generation from fossil fuel-fired sources in other regions in Canada. A detailed assessment is required under NEPA because electricity generation is one of the most significant sources of greenhouse gas emissions in the region, and the project has critically important implications for electric systems in New England and Canada, as outlined above.

## **iii) Energy Resources**

The FEIS must address the project’s impacts on energy resources, use, markets, reliability, and prices. In particular, DOE must analyze the effects of the Project and all reasonable alternatives on the specific issues discussed below. NPT’s contention in the Application that the power is merely “excess” capacity

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<sup>19</sup> See Hydro-Québec Strategic Plan (2009-2013), *supra*. “As a result of recent and ongoing hydroelectric development projects, Hydro-Québec Production expects to have the generating capacity needed to ensure export growth”; Québec Energy Strategy (2006-2015), *supra* (“The 4,500 MW added capacity will be sufficient to meet Québec’s long-term demand, promote wealth-creating industrial development, and support exports. . . . The Government also intends to ensure that Québec is able to increase its electricity exports, once its own needs have been met.”). See also NPT Transmission Service Agreement Filing, FERC Docket No. ER11-2377 (Dec. 15, 2010), at Attachment G, p. 28 (Charles River Associates, LMP and Congestion Impacts of Northern Pass Project) “In reality, the additional transmission capacity provided by the NPT Line could lead to additional development of resources to support exports from Québec, leading to higher total exports in the case with NPT in service.”

<sup>20</sup> Based on legal and policy considerations, CEQ has determined that agencies **must** include analysis of reasonably foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the United States.

<https://ceq.doe.gov/nepa/regs/transguide.html>

<sup>21</sup> <http://www.clf.org/wp-content/uploads/2012/02/Hydropower-GHG-Emissions-Feb.-14-2012.pdf>

(see, e.g., Application at page 4) is at odds not only with the Hydro-Quebec's strategic plans, but also with its own analysis.

**(a) Renewable Energy Resources in New Hampshire and the Northeastern United States.**

Major new imports of low-priced electric power from Canada will have profound effects on the development and maintenance of domestic energy resources, including new renewable sources such as solar, wind, efficient low-emitting biomass, and small-scale hydroelectric facilities. These impacts must be considered in the FEIS. Federal and state public policies, including federal and state tax incentives and renewable portfolio requirements, promote support for and development of these resources. DOE must also take into account the potential for legislative changes that might qualify large-scale hydroelectric power for renewable portfolio incentives. This is not speculative since it has already been achieved in Connecticut and is an ongoing debate in other New England states (promulgated by the Applicant and its surrogates). The potential effects of such changes on the market for renewable energy credits and the financing of existing and proposed renewable projects in the region would be significant, since they are contrary to the spirit and purpose of current renewable portfolio requirements, which are intended to spur investment in new renewable resources and the modernization of existing facilities in New England.

***(b) Impacts on Demand Management, Demand Response, Energy Efficiency, and Conservation.***

The FEIS must evaluate the effects of the Project on existing and potential non-generation resources, including demand management, demand response, energy efficiency investments, and conservation efforts. It should address this issue in detail by examining how adding substantial new capacity into the New England electric grid may diminish the economic incentive for these non-generation resources to continue to grow. These approaches are the least environmentally impacting available, and discouraging them by flooding the market with additional power has serious ramifications.

**F. Forward NH Plan**

CEQ rules require the use of best practical measures to *avoid, minimize, or mitigate* project impacts. Northern Pass has about one-third of the *avoid* correct with its revision to its Application for 60 miles of burial. In addition, the Applicant has promoted its 'Forward NH Plan' as the panacea to provide direct benefits to New Hampshire. But it is not a mitigation fund designed to deal with Project impacts, nor does it demonstrate such linkages. It is primarily a slush fund to enable Northern Pass to direct funding to where it most needs to bolster support or meet its internal needs. While the training of young linemen is noble, it's important to remember that with energy deregulation utilities cut their linemen training programs and they are now reaping the fruits of that short sightedness and experiencing a lineman shortage, since many are aging out of the workforce. In addition, much of the 'Forward NH Plan' money is being spent prior to completion of the EIS process, where mitigation needs are typically identified. FEIS mitigation plans and funds should be transparent, and directly address the project's actual impacts as defined throughout the EIS process. They should not be designed by the Applicant for the Applicant's gain. Until such time that the public has sufficient information to accurately scrutinize the claims for this plan, and understand the substance behind these promises, the 'Forward NH Plan' should not be considered in the Presidential Permit review process.

## Substantive DEIS Issues

AMC provides the following substantive comments on elements of the DEIS.

### A. Section 1.4 – Project Objectives

The DEIS Section 1.4.1 *Electrical Diversity* is outdated. It lists the winter of 2013/2014 as exemplary of extreme reliability concerns. It fails to acknowledge that the winter of 2014/2015 was even colder and did not experience similar reliability concerns or wild market price oscillations due to regulatory changes instituted by ISO-NE. New England's 2015 Average Wholesale Power Prices fell to their second-lowest level since 2003<sup>22</sup>. The DEIS cites ISO\_NE's 2013 Annual Market Report, whose conclusions have since markedly changed to a much more positive perspective. ISO-NE's Forward Capacity Market auction procured sufficient resources to meet demand in 2019-2020, including more than 1,400 MW of new generating capacity that will help replace recently retired and retiring generators. The 2016 auction clearing price is 25% lower than last year's auction<sup>23</sup>.

The FEIS needs to update the information in this section to more accurately and fairly reflect recent market changes since this Application was originally submitted, ongoing investigations by FERC, and the new alternatives to this Project that are coming into the market to provide electrical diversity.

### B. Section 2.2 Description of Geographic Analysis Section.

At Section 2.3.2.3 Southern Section, the DEIS describes the geographic limits of the analysis as terminating at the Deerfield Substation at MP 187. However, the proposed Project actually extends beyond to the Scobie substation in Londonderry, NH. The required re-conducting of the existing 345 kV line between Deerfield and Scobie will include tower replacements and considerable construction impacts to wetlands, both in the ROW and in order to access the ROW. The conclusion in Section 4.4.13 Water Resources that wetland impacts in the ROW are expected to "not be significant" is neither accurate nor supported by data. The FEIS must properly assess the impacts to wetlands from the Deerfield substation to the Scobie substation as it is an essential element of this project as proposed.

### C. Visual Impact Analysis

**Background:** The impact on visual resources of the proposed Northern Pass Project is one of the most controversial components of this project with important economic implications. As currently filed before the New Hampshire Site Evaluation Committee (SEC) and vaguely described in Alternative 7 in the Supplement to the DEIS, Northern Pass would be 192 miles long, with 60 miles buried, but a remaining 132 miles of overhead transmission line including 32 miles of new corridor. It would impose over 1,100 new large industrial structures on the landscape. Though the DEIS visual impact analysis correctly identifies the Northern Section as currently having "high intrinsic visual quality"<sup>24</sup> and "minimal scenic impacts"<sup>25</sup>, its overall visual analysis contains major flaws that underestimates the true "intrinsic visual quality" of the proposed corridor's landscape and the visual impact of the proposed Project.

The visual resource analysis uses two distinct approaches to analyze the visual impacts<sup>26</sup>:

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<sup>22</sup> [http://www.iso-ne.com/static-assets/documents/2016/03/20160329\\_prelim\\_2015\\_prices\\_release.pdf](http://www.iso-ne.com/static-assets/documents/2016/03/20160329_prelim_2015_prices_release.pdf)

<sup>23</sup> [http://www.iso-ne.com/static-assets/documents/2016/02/20160211\\_fca10\\_initialresults\\_final.pdf](http://www.iso-ne.com/static-assets/documents/2016/02/20160211_fca10_initialresults_final.pdf)

<sup>24</sup> DEIS Visual Assessment Technical Report, Figure 9)

<sup>25</sup> DEIS Vol. 1 at page 3-61

<sup>26</sup> DEIS at Section 3.1.1

1. Big Picture - GIS (ArcMap) to conduct a:
  - a. Visibility analysis (ZVI – zone of visual impact, or viewshed analysis)
  - b. Landscape assessment (Scenic Impact)
  - c. Evaluation of visual exposure from roads.
2. Specific Viewpoints - A more focused viewpoint assessment that includes:
  - a. An extensive visual inventory of the existing conditions
  - b. Preparation of representative photo-realistic visual simulations.

Problematic is the data limitation rule that the visual consultant applied, i.e. “*data sources or certain parameters would not be considered if necessary data attributes were absent or the data were geographically restricted*”.<sup>27</sup> Not all of the historic resources featured in the Section 106 report were incorporated into the visual assessment. Yet Section 106 is a stand-alone and separate process from the DEIS and these historic features can be an important part of the contextual visual landscape, e.g. an old farmhouse or barn in a field that contributes to the cultural as well as scenic elements of the landscape. Eliminating potentially important parameters, or using inappropriate surrogate data because the required data was not available in readily useable GIS format or across the whole study area, as occurred in the *Scenic Impact* model, are strategies of convenience, not accuracy. The *Scenic Impact* results are then averaged, which tends to dilute the high impact areas, homogenize real differences, and provides minimal sense of the range of variability around the averages. This can and does greatly compromise the results derived as will be discussed in the following sections.

The Specific Viewpoint approach in the Supplement to the DEIS is based on only six so-called “representative” photo simulations for 132 miles, some which use outdated 2014 engineering data. It is also not immediately apparent, if it was done at all, how the various distinct components of the analysis, e.g. ZVI, Scenic Impact Model, road miles exposed, and photo simulations, were cumulatively synthesized to assess the overall visual impact of the various alternatives. Rather, the Visual Resource Summary Impact Table<sup>28</sup> relies almost solely on the flawed *Scenic Impact* values (net change in average scenic impact, total average scenic impact) and road miles impacted.

**Proper Summary context:** Absent or outdated in the DEIS and its Supplement is a proper statistical description of the tower types, configurations, and heights as now proposed by the Applicant (its Application to the NH Site Evaluation Committee varies from that studied in the Supplement, for example). The 132-mile above ground overhead component will involve 32 miles of a new transmission corridor up to 120 feet wide, the installation of 1,176 new HVDC or 345-kV towers (733 lattice towers 60 to 160 feet tall; 258 monopole towers 60 to 145 feet tall; and 185 H Frame towers 48 to 120 feet tall). In addition the existing 115 kV line’s visual impact includes 1,044 H Frame poles at  $\leq 55$  feet of which 378 will remain and 664 will be removed, and 403 monopoles  $\leq 75$  feet of which 403 will remain and 50 will be removed. Currently, structures in the ROW north of the White Mountain National Forest are dominantly wooden H frames. The 115 kV replacement poles, unlike many of their existing counterparts, are much larger structures that will be well above tree height, including steel monopoles up to 130 feet tall. Basic summary statistical tables on visually impacted acres by region, town, etc. as derived from the ZVI, and other informative statistics are mostly absent or obscure and should be included.

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<sup>27</sup> 2.3.3 Data Limitations - *The visual inventory described in Section 2.4.4 is the only major effort at original data collection for the VIA. Otherwise, the VIA was limited to using existing public data that were available in a form suitable for analysis. In general, this means that the data were in a standard geographic digital format, or could easily be converted to such a format. In addition, the data needed to be reasonably complete. Data sources that did not include the necessary attributes or that were geographically restricted were not considered appropriate for use. VISUAL IMPACT ASSESSMENT - A Technical Report for the Northern Pass Transmission Line Project- July 10, 2015*

<sup>28</sup> e.g. DEIS Supplement, November 2015, Section 4.1 Table 2

**Approach #1 Big Picture - Landscape Assessment “Scenic Impact Model”:** Landscape assessment is an approach to evaluate the suitability for or potential effects of a proposal. The landscape assessment model that was developed in the DEIS generally follows the approach used in the USFS’ Scenery Management System described in *Landscape Aesthetics: A Handbook for Scenery Management* (USFS 1995). The ultimate model outcome, in this case “*Scenic Impact*”, is very dependent on assignments of rank, coefficients applied, and how problems of non-available data are addressed. The numeric ranking approach used in this analysis<sup>29</sup> to permit quantitative comparisons of the various Alternatives has serious flaws as described in the following sections. These flaws need to be remedied in the FEIS to properly assess the overall visual impacts; otherwise, the magnitude of the Scenic Impact will remain underestimated.

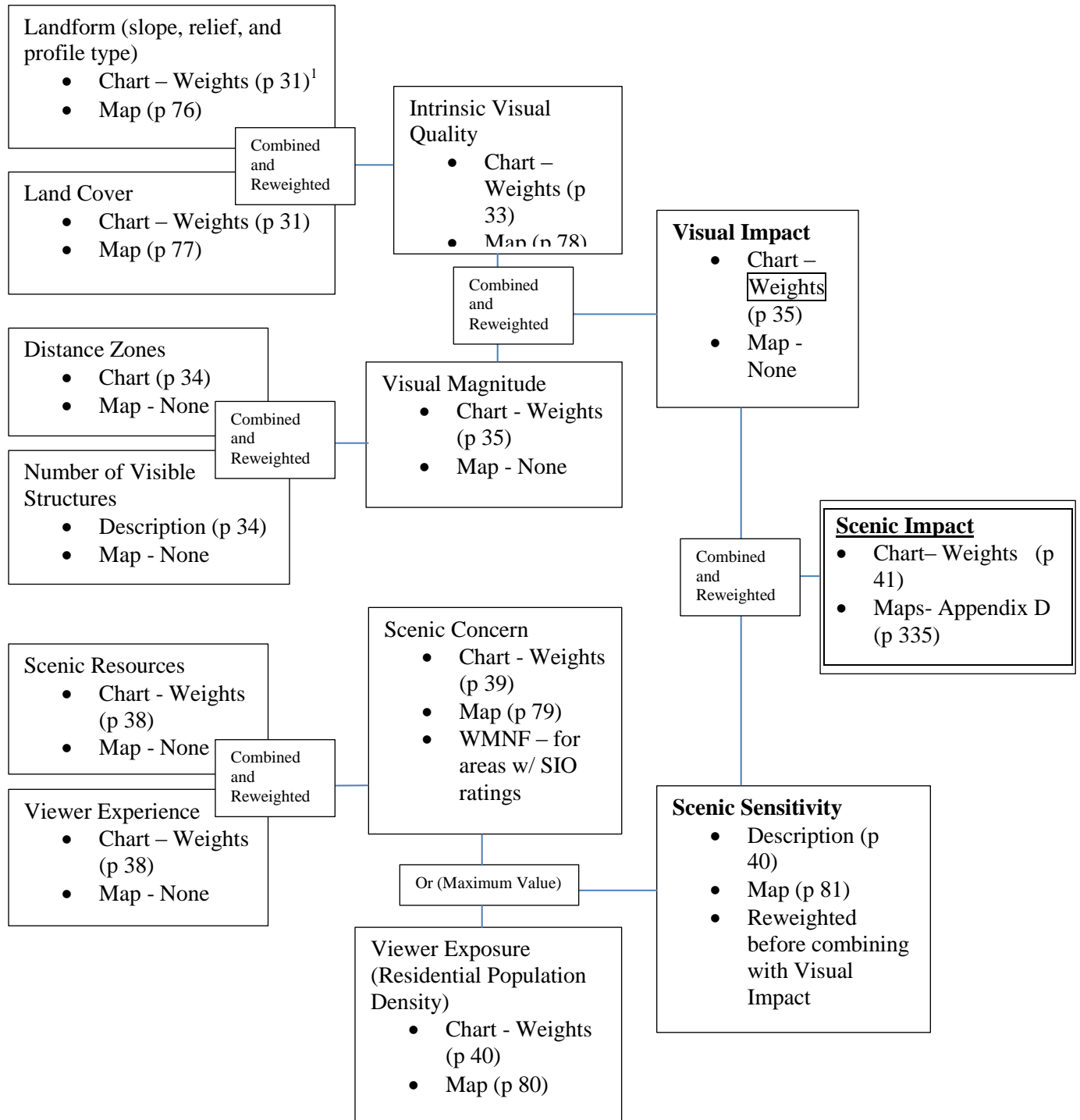
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<sup>29</sup> VISUAL IMPACT ASSESSMENT - A Technical Report for the Northern Pass Transmission Line Project- July 10, 2015

Following is the matrix used in the DEIS to derive the ultimate “Scenic Impact”.

Modified Figure 3. Diagram of the landscape assessment procedure with types of data used.

(Note: Page numbers refer to the VISUAL IMPACT ASSESSMENT - A Technical Report for the Northern Pass Transmission Line Project- July 10, 2015.)



The division of the State into sub regions is reasonable. Specific problems with the model input follow:

**Visual Impact Component of the Overall ‘Scenic Impact’**

*i) Intrinsic Visual Quality*—the intrinsic scenic potential of the landscape, independent of human perception. The general principle is that landscapes with greater relief and landscapes with more natural land cover have higher visual quality.

*a) Land Form-* The approach and results are reasonable.

*b) Land Cover* – The *land cover* visual analysis is based on 2011 National Land Cover Data (NLCD 2011) and collapses 15 distinct classifications into 6 broad land cover classifications. This is very coarse and does not adequately account for important patch habitats, e.g. mid -sized cliff, stream, etc. that contribute to the visual quality of a landscape. The NH State Wildlife Action Plan (2010, updated in 2015) land cover (habitat data layer) classification is more nuanced and should be used for viewshed analysis instead of the NLCD.

*c) Combining Landform and Land Cover Weights to Obtain Intrinsic Visual Quality* –Apparently the consultant combined its overly simplistic land cover ranking and landform value rankings and then divided by 2 to generate its ‘Intrinsic Visual Quality’ ranking, e.g. Visual Impact Assessment Table 4. At a very broad landscape level this simplistic approach may suffice, but it compromises an understanding of the actual visual impact within a sub-region.

**Table 4. Combining Landform and Land Cover Weights to Obtain Intrinsic Visual Quality**

Land Cover	Landform (Relative Relief)				
	Mountains (5)	High Hills (4)	Moderate Hills (3)	Low Hills (2)	Flat (1)
Open Water (5)*	5	5	4	4	3
Forest (4)	5	4	4	3	3
Farm & Open Land (3)	4	4	3	3	2
Dev. Open Space (2)	4	3	3	2	2
Suburban Residential (1)	3	3	2	2	1
Urban Development (0)	3	2	2	1	1

*ii) Visual Magnitude-* a measure of the sense of visual prominence.

*a) Distance Zones-* The DEIS “Distance zones” used in the model are problematic (Visual Impact Assessment Table 5) .The separation of ‘Immediate (0-53 feet)’ and ‘Foreground (53- 1,320 feet)’ in the ranking system defies common sense because the new proposed tower sizes are up to 160 feet tall, with the majority in the 80- 110+ feet range. This separation biases the numeric ranking system used in the overall calculations to a lower visual impact. For example, a person could be standing less than one tower height away and be ranked in the ‘Foreground’ rather than ‘Immediate’ of the new structure. This biases the numeric ranking system used in the overall calculations to a lower visual impact. Therefore in the



FEIS the differentiation between ‘Immediate’ and ‘Foreground’ should be condensed into just ‘Foreground’.

**Table 5. Distance zones**

Distance Zone	Distance (miles)
Immediate	0.0—0.01
Foreground	0.01—0.25
Near Middleground	0.25—1.5
Far Middleground	1.5—3.0
Near Background	3.0—5.0
Far Background	5.0—10.0
Distant	Greater than 10

*b) Number of Visible Structures-* This approach is used in many wind power visual studies as the structures are usually identical. However this is an oversimplified approach for this project where the tower structure type, height, and visual dominance vary considerably. This visual variability should be accounted for in the ranking, but is not. This results in an underestimation in the “Net change in Average Scenic Impact” that is relied on very heavily in the analysis (e.g. Supplement to the DEIS, Section 4.1, Table 2), since it treats the visual impact of an existing 55 foot wooden tower as equal to that of a new 160 foot tall steel lattice tower, which is nonsensical.

*c) Visual Magnitude Ratings –* Visual Impact Assessment at Table 6 (below) in the visual ranking system needs to be redone in the FEIS using more appropriate data as described above. For example in the DEIS Table 6 a person could be standing 75 feet away from a 100 foot tall lattice tower, be ranked in the ‘Foreground’ and given a “visual magnitude rating” of low. This defies common sense and perpetuates the under estimation of visual impact.

**Table 6. Visual Magnitude Ratings Based on the Number of Structures Visible at Each Distance Zone or Closer**

Distance Zone	Visual Magnitude Rating					
	Very High	High	Moderate	Low	Very Low	None
Immediate	1 or more	—	—	—	—	—
Foreground	6 or more	3 – 5	2	1	—	—
Near Middleground	32 or more	16 – 31	6 – 15	4 – 5	2 – 3	1
Far Middleground	64 or more	32 – 63	10 – 31	7 – 9	4 – 6	3 or less
Near Background	96 or more	48 – 95	14 – 47	10 – 13	6 – 9	5 or less
Far Background	—	—	—	60 or more	30 to 59	29 or less
Distant	—	—	—	—	—	—

*iii) Visual Impact* is calculated from the interaction of Visual Quality and Visual Magnitude (Visual Impact Assessment at Table 7). It is an indication of the intrinsic impact, irrespective of the sensitivity of

people or sites affected. The problems discussed above with this calculation result in an underestimation of visual impacts that needs to be remedied in the FEIS.

**Table 7. Combining Intrinsic Scenic Value and Visual Magnitude Ratings to Obtain Visual Impact**

Intrinsic Visual Quality	Visual Magnitude Rating					
	Very High (5)	High (4)	Moderate (3)	Low (2)	Very Low (1)	None (0)
Very High (5)*	5	5	4	3	2	0
High (4)	5	4	3	2	1	0
Medium (3)	4	3	2	1	1	0
Low (2)	3	2	1	1	1	0
Very Low (1)	2	1	1	1	1	0

\*The numbers in gray are the ratings from Tables 4 and 6.

**Scenic Sensitivity Component of the Overall ‘Scenic Impact’**

This component of the overall Scenic Impact analysis is very problematic, and suffers from lack of relevant data and misapplication of surrogate data. This results in an underestimation of actual visual impacts.

*i) Scenic Resources-* Many Section 106 scenic resources were inappropriately excluded from this analysis, yet they can be an important part of the overall visual landscape and should not be excluded when assessing the overall “Scenic Impact”. The Scenic resources were also ranked based on a hierarchy of land ownership, e.g.

Level of Designation

1. Nationally designated recreation resources have a very high value (rated 5)
2. State scenic resources have a high value (rated 4)
3. Recreation resources designated by local governments or non-governmental organizations have a medium value (rated 3) --
4. Other areas in the recreation resource database have a very low value for designation (rated 1)

This system underweights the scenic resource. For example, some of the most-climbed mountains in the whole northeastern region, and United States for that matter, for their views are Mount Monadnock and Cardigan Mountain in NH, which are State Parks. Yet they would be under-ranked in this scheme since they are not under federal ownership. Mount Moosilauke (under the ownership of Dartmouth College), and the Ossipee Mountain Range and the Castle in the Clouds (owned by the Lakes Region Conservation Trust), are similarly highly sought out for their views, yet would be ranked even lower using this ranking scheme. This is nonsensical. Scenic resources should be ranked on their actual scenic value, not simply ownership, particularly when this is a study of the impacts within a state, not the whole country. A ranking approach such as that used in the NH State Wildlife Action Plan (2010, updated in 2015)<sup>30</sup> for habitat types –e.g. state wide significance, regional significance, etc. would be much more appropriate as it uses actual knowledge of the resource, and at the appropriate state level, not an overly-simplistic approach based on a hierarchy of ownership.

<sup>30</sup> <http://www.wildlife.state.nh.us/wildlife/wap.html>

ii) *Viewer Experience*- AMC concurs that scenery has some importance for activities identified with recreation resources. Table 9 needs to be refined as it excludes recreational activities like canoeing/boating on open waters or rivers visually impacted by the project, e.g. the very popular and scenic Ponotook Reservoir on the Androscoggin River in Dummer. These activities are identical to hiking, driving on scenic roads, etc. in the desires of their participants for high scenic quality. For most anglers, fishing is as much about the ambience of the environment as catching a fish, and this is underrated in the approach taken here. To lump all campground/picnic areas /natural areas/ ski areas etc. into a single category is a major oversimplification exhibiting minimal knowledge of the resource itself and what role the visual landscape plays in the experience of these places. Camping at an urban KOA Campground versus a remote State Park are quite simply not equal in the scenic ambience being sought by the user, nor should they be ranked as such.

**Table 9. Importance of Scenery for a High Quality Experience**

<b>Activity</b>	<b>Importance</b>	<b>Comment</b>
<b>Very High</b>		
Scenic Road	5	Scenic appreciation central to this activity, especially for passengers
Trail area or Hiking trail	5	Area often selected for its scenic attributes—scenic appreciation often mentioned as part of the hiking
Excursions	5	Assumed to be related to hiking or driving for pleasure.
<b>High</b>		
Campground	4	Area often selected because it is scenic—scenic appreciation often mentioned
Picnic Area	4	Area often selected because it is scenic—scenic appreciation often mentioned
Recreation resort	4	Area often selected because it is scenic—scenic appreciation often mentioned
<b>Moderate</b>		
Fishing	3	Often in scenic areas—but requires focused attention away from scenery
Hunting	3	Often in scenic areas—but requires focused attention away from scenery
Natural area	3	Catchall for a conservation area or activities that have non-scenic objectives
<b>Activity</b>		
<b>Importance</b>		
<b>Comment</b>		
Park	3	Catchall for many activities—most have non-scenic
Snow Ski Area	3	Often in scenic areas—but requires focused attention away from scenery
Vacation Farm	3	Some activities may focus on countryside scenery

Water Sports Area	3	Often in scenic areas—but requires focused attention away from scenery
Winter Sports Area	3	Often in scenic areas—but requires focused attention away from scenery
<b>Low</b>		
Field Sports	2	Outdoors—but the setting is non-contributing
Golf	2	Outdoors—but the focus is not on scenery
Historic	2	Typically indoors, or focused on architecture
Racetrack	2	May be outdoors—but the setting is non-contributing
Rock hounding	2	May be outdoors—but the setting is non-contributing
Shooting Preserve	2	May be outdoors—but the setting is non-contributing
<b>Very Low</b>		
Gymnasium	1	Indoors
Special Event Fac.	1	Indoors
Other	1	

iii) *Scenic Concern* - The ratings for scenic resource designation and the importance of scenery to experience quality are combined to obtain the scenic concern ratings, Visual Impact Assessment at Table 10.

**Table 10. Combining Level of Designation and Viewer Experience Ratings to Obtain Scenic Concern**

Level	Ratings	Importance of Scenery for a High Quality Experience				
		5	4	3	2	1
Federal	5	5	5	4	3	2
State	4	5	4	3	2	1
Local/NP	3	4	3	2	1	1
Other/Private	1	3	2	1	1	1
No designation	0	0	0	0	0	0

With this scheme, more nonsensical results occur, e.g. Figure 10 in the Visual Assessment Technical Report shows zero “Scenic Concern” for most of the Northern Region. Until the flawed data inputted into this matrix are corrected, the results of Table 7, Figure 10, etc. are without merit.

iv) *Viewer Exposure* – Alleging that any real data on how the public views this industrialization of the landscape is lacking (though the DEIS record has thousands of comments overwhelmingly objecting to these structures on the landscape), this analysis uses a very poor surrogate - 2010 resident US census data converted into residents per unit area. e.g. Visual Impact Assessment Table 11.

**Table 11. Potential for Viewer Exposure Ratings**

Potential for Visual Exposure		Population per Square Kilometer	
Rating	Description	Lower limit	Upper limit
5	Very high	5,000	700,000
4	High	1,000	5,000
3	Moderate	500	1,000
2	Low	10	500
1	Very low	0	10
0	None	0	0

The results (i.e. Visual Impact Assessment Technical Report, Figure 10) show the Northern Region to have “very low” to “no” potential viewer exposure due to low US census data. This is counter intuitive for multiple reasons. Areas ranked as having a natural landscape in the “Visual Impact” component of this analysis invariably have a low US Census count, otherwise they would not be natural in appearance and would be less visually desirable. For example, this means the White Mountain National Forest, Yellowstone National Park, or the North Region of this study area, all of which have minimal to no US census tabulated residences, would be ranked as having ‘low’ to ‘none’ potential for visual exposure. Yet these same locations are advertised for this very attribute of low population density, and are sought out by millions of tourists and vacation home owners. The assumptions used in this scheme are illogical, without merit, and result in a gross underestimation of the overall “Scenic Impact” of the Project. The data used by the DEIS needs to be revised, and incorporate relevant resident and vacation home owners, and transient tourist visitation information.

v). *Scenic Sensitivity*– The “scenic sensitivity” value is developed from the highly problematic “scenic concern” and “viewer exposure” components of the model. Remedying the problems of these sub-components is essential to developing realistic and meaningful “scenic sensitivity” values.

### **Scenic Impact**

The model combines the highly compromised **Visual Impact** (intrinsic measure) and **Scenic Sensitivity** (social concerns) into the very important summary ‘**Scenic Impact**’ ranking value. Unless the previously enumerated flaws are remedied in the FEIS, both the “Net Change in Average Scenic Impact” and “Total Scenic Impact” analyses used to summarize the visual impacts will greatly underestimate the project’s overall “Scenic Impact.” The FEIS must remedy these flaws in order for this analysis to be valid.

**Approach #2 - Specific Viewpoint Analysis - Photo simulations and KOP:** The visual assessment for Alternative 7 (revised preferred Alternative) in the Supplement to the DEIS (November 2015) appears to be a proxy subtractive mathematical exercise based on the original analysis used in the DEIS issued in September 2015<sup>31</sup>. From the many photographs taken by the visual consultant, 65 scenes were selected for photo simulations in the DEIS<sup>32</sup>.

<sup>31</sup> “The Project design information used to create the simulations was provided by Northern Pass as a GIS shape file dated March 10, 2014”, Section 2.4.5.3 Modeling the Project Structures at page 49. VISUAL IMPACT ASSESSMENT - A Technical Report for the Northern Pass Transmission Line Project- July 10, 2015

<sup>32</sup> 2.4.5.1 Selecting Photographs, page 48. Ibid.

The 65 original photo simulations were reduced to a subset of 15 Key Observation Points (KOP) photo simulations<sup>33</sup> intended to be representative of the impacts along the 180-190 mile corridor. Of these 15 KOP photo simulations, 9 are now moot due to the additional proposed burial, meaning only 6 are germane to Alternative 7 in the Supplement to the DEIS. This means that only 6 KOP photo simulations were used to assess 132 miles of overhead transmission line impacts. Furthermore, in many cases the tower type, height, and/or location of structures have changed since these photo simulations were done. In the DEIS and its Supplement there is only one KOP photo simulation or visual impact assessment of the above-to-below-ground transition stations. As proposed in Alternative 7, there will be 6 such structures, several which will be directly roadside and visually prominent. These transition stations are sizeable building and tower structures (80 feet in height, DEIS at 2.3.25).

In summary, the FEIS visual assessment needs to be overhauled. The FEIS must include a better visual impact analysis of the above-to-below ground transition stations, additional relevant photo simulations to be more representative of the 132 miles of the overhead corridor, use the greatly revised Project design information for both the ZVI and photo simulation analyses, and remedy the many flaws in the matrix used to derive the ‘Scenic Impact’ rankings. It also needs to coherently integrate the results from the two primary methods used – ‘Big Picture GIS’ and ‘Specific Viewpoints’.

### **C. Historic and Cultural Resources and Section 106 Process**

**i) The draft Section 106 “Programmatic Agreement” timeline undermines the “avoid, minimize, mitigate” hierarchy that is central to the National Historic Preservation Act (NHPA), as well as NEPA.** The evolving Section 106 “Programmatic Agreement” (PA) currently proposes a five-year timeframe for completing the Section 106 process. Even though the draft PA includes the appropriate hierarchy of avoid, minimize, and mitigate in its stipulations (#17), and as part of the Historic Properties Treatment Plan (Draft PA at IV (B)), the project as proposed could be permitted, and under construction, before the proposed five-year timeline for the PA ends. Finalizing the PA would resolve the United States Department of Energy’s (DOE) Section 106 process and allow for the completion of review of the project under the National Environmental Policy Act (NEPA). Similarly, as discussed below, the New Hampshire Site Evaluation Committee’s (SEC) review of the project would be finished before the PA is fully implemented. Once DOE and the SEC complete their review and issue decisions on the project, the approved route for the proposed transmission line cannot be significantly changed without reopening the federal and state review processes.

Given that the single best method to avoid impacts on these resources is complete underground burial of the project in existing transportation corridors, application of this avoid, minimize, mitigate hierarchy would be moot if the project has already been approved by DOE and the SEC as proposed because 132 miles of above-ground transmission, and potentially some segments of the proposed buried route as well, cannot “avoid” having adverse impacts on historic and cultural resources. In fact, Stipulation 16 of the draft PA states that “*DOE has determined that the proposed Project associated with DOE’s undertaking has the potential to result in direct, indirect, and cumulative adverse effects on properties listed in or eligible for listing in the National Register, hereafter called historic properties as defined in 36 CFR § 800.16(l)*”. In other words, you already know that adverse impacts on historic resources are likely if this project is constructed as proposed, and yet the draft timeline in the PA would take avoidance of those impacts off the table as a strategy.

**ii). There is a significant disjunction between the federal “Section 106” process for assessing impacts to historic and cultural resources, and the timeline for the NEPA and SEC processes.** With the April 4<sup>th</sup>, 2016 deadline for public comments on the DEIS, we assume that the DOE will shortly

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<sup>33</sup> 2.4.6 Key Observation Points, page 51, Ibid.

begin considering them, and presumably will issue a Final Environmental Impact Statement and decision within less than five years. But given the current draft Section 106 “PA” timeline, the DOE will be issuing the FEIS with incomplete information about impacts on historic resources. The NH Site Evaluation Committee, which must make a determination as to whether “*the site and facility will not have an unreasonable adverse effect on aesthetics, historic sites, air and water quality, the natural environment, and public health and safety*” (RSA 162-H:16, IV (c), emphasis added) before it can issue a certificate, is statutorily required to complete review of any application, and issue a decision, within 365 days of acceptance of an application (RSA 162-H:7, VI-d). The proposed extended timeline for the Section 106 process means that the DOE and SEC will not have the full benefit of considering information emerging from the Section 106 review and analysis, and leaves unanswered the question what information, other than that provided by the Applicants, the DOE and SEC will use to determine whether the Project’s impacts on historic resources are or are not unreasonably adverse before issuing its decision.

This project was submitted to the DOE in 2010, more than 5 years ago. An extension of an additional 5 years for completion of the Section 106 process is unwarranted.

**D. Socioeconomics** – The socioeconomic analysis is one-dimensional relative to electric rates (e.g. at Section 2.5.2, Table 2.4; Socioeconomics Technical Report for the Draft Environmental Impact Statement) as it appears to only consider potential changes in wholesale electricity costs, not transmission costs. The FEIS should acknowledge the important fact that one factor contributing to the Northeast’s well above-average energy rates is unfair transmission costs. The Federal Energy Regulatory Commission (FERC) has instituted a section 206 proceeding (Docket No. EL16-19-000), to determine why New England ratepayers are paying more for energy transmission than ratepayers in other parts of the country. In the FERC order issued on Dec. 28, 2015, FERC found that “ISO-New England’s (ISO-NE) Transmission, Markets, and Services Tariff (ISO-NE Tariff) is unjust, unreasonable, and unduly discriminatory or preferential.” They noted that the Regional Network Service (RNS) and Local Network Service (LNS) formula rates lack sufficient detail to determine how certain costs are derived and recovered, and, accordingly, FERC has established hearing and settlement procedures to develop just and reasonable rates – as well as to establish an effective date for ratepayer refunds. The cost of regional energy used to comprise sixty percent of our electric bill; now upwards of sixty percent of our electric bill is comprised of transmission and distribution costs. The massive build-out that the utilities have undertaken is driven in part by the high rate of return that transmission builders are guaranteed on a basically no-risk investment. With interest rates near zero, it’s hard to justify guaranteed rates of return on transmission investments in the 9 to 12 percent range, paid for by ratepayers. This high rate of return makes this project very lucrative for Northern Pass, and it should be noted that Eversource/Public Service of New Hampshire is part of this FERC investigation. The FEIS must factor in transmission costs in any socioeconomic analysis as this Project is driven by profit rather than the public good, and these unfair regional transmission costs may be as or more important than recent natural gas price spikes impacts on overall electric rates as cited in the DEIS.

**D. Wildlife Resources** –This controversial Project has pursued an extremely convoluted process, with the original Application submitted in October 2010, major revisions in 2013, and most recently revised again in September 2015. As a result many of the data sources used in the DEIS are outdated. The DEIS Wildlife Resources analysis heavily relied directly and indirectly on the 2005 NH State Wildlife Action Plan<sup>34</sup> (NH SWAP). However, the NH SWAP was updated in 2015. The 2015 update includes a total of 169 species identified as Species of Greatest Conservation Need (SGCN), of which 27 species are listed as state endangered and 14 listed as state threatened. The 2005 Wildlife Action Plan listed 118 species as

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<sup>34</sup> References cited in the Wildlife Technical Report for the Draft Environmental Impact Statement - July 20, 2015.

SGCN, and though 13 of those species were deemed recovered enough or stable enough not to be included on the 2015 list, new additions caused the overall number of SGCN to increase. The 2015 Wildlife Action Plan also identifies 27 distinct habitats that support both common species and SGCN, based on habitat types developed by the Northeast Terrestrial Habitat Classification and the Northeast Aquatic Habitat Classification. And it encompasses land use changes. The DEIS Supplement to the DEIS (November 2015) should have acknowledged and incorporated the changes to the updated NH SWAP, but failed to do so (Supplement to DEIS, November 2015, Section 4.11). The FEIS needs to update the analysis and models (e.g. NH Connectivity Model) derived from the 2010 NH SWAP<sup>35</sup>, using the updated 2015 NH SWAP.

Alternative 7 in the DEIS Supplement (as analyzed by Alternative 2 in the DEIS) could impact the Karner Blue Butterfly, particularly in the Concord, NH sand barrens (Southern section), e.g. “*Based on these measures, Alternative 2, “May Affect, and is Likely to Adversely Affect” the Karner blue butterfly, depending upon completion of consultations with the USFWS and NHFG.*” The remedies proposed in the Wildlife Technical Report are vague, without substantive detail, and mostly based on proposed future consultation w/ resource agencies. Much greater detail and specificity on avoidance and mitigation are needed in the FEIS, considering this is a Federally-listed Endangered Wildlife Species.

**E. Wetlands** –In its Application to the NH SEC<sup>36</sup>, Northern Pass states that they may need to amend the wetlands impact totals since they have not identified all of the potential impact sites, including off ROW laydown and staging areas, and off ROW access roads, both of which could add significantly to the wetlands impact totals. It appears the DEIS may have the same issue—an underrepresentation of wetland impacts from the Project. If such is the case, the FEIS must also remedy this shortcoming in its final analysis.

The Appalachian Mountain Club appreciates the consideration given to the above comments.

Respectfully submitted,

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<sup>35</sup>Ibid, Section 1.3 Methods

<sup>36</sup>[http://www.nhsec.nh.gov/projects/2015-06/application/Volume-XXIX/2015-06\\_2015-10-19\\_nptlc\\_psnh\\_app\\_31\\_wetlands\\_rivers\\_streams\\_vernal\\_pools\\_resource\\_rpt\\_impact\\_analysis.pdf](http://www.nhsec.nh.gov/projects/2015-06/application/Volume-XXIX/2015-06_2015-10-19_nptlc_psnh_app_31_wetlands_rivers_streams_vernal_pools_resource_rpt_impact_analysis.pdf)