The Nature Conservancy
Protecting nature. Preserving life.™

November 5, 2013

Mr. Brian Mills
Office of Electricity Delivery & Energy Reliability (OE-20)
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Mr. Mills:

I am writing on behalf of The Nature Conservancy, New Hampshire Chapter, to offer comments on the scoping of the Environmental Impact Statement regarding the application for a Presidential Permit by Northern Pass Transmission, LLC (OE Docket No. PP-371).

The Nature Conservancy ("TNC") is an international nonprofit organization dedicated to conservation for the benefit of both people and nature. Our mission is to conserve the lands and waters on which all life depends. We address the most urgent conservation challenges at ecologically relevant scales by pursuing non-confrontational, pragmatic, science-based analyses and market-based solutions. Our vision is to leave a sustainable world for future generations.

The Nature Conservancy's on-the-ground conservation work is carried out in all 50 states and in 35 countries with the support of approximately one million members. To date, we have helped conserve more than 119 million acres of land and 5,000 river miles around the world. Since 1961, The Nature Conservancy has helped to protect over 280,000 acres of land in New Hampshire by utilizing sound conservation science and working with a wide variety of public and private partners.

The Northern Appalachian Forest – stretching from Maine to the Adirondacks, and up into Quebec and the Maritime Provinces - represents the largest and most intact example of a Temperate Broad Leaf Forest in the Western Hemisphere. As a global conservation organization, The Nature Conservancy is directing our resources to help protect it. The Nature Conservancy is interested in ensuring that the proposed Northern Pass Transmission project does not unduly impact this sensitive and important ecological region.

The Nature Conservancy recognizes climate change, and society's response, as a significant issue for biodiversity and humanity. Shifting our nation away from its reliance on fossil fuels will require the siting of new renewable energy facilities that will have local and regional impacts on the natural environment. We believe that each facility should be evaluated on a site-by-site basis, while also taking into consideration the cumulative impacts that a project will have on the natural landscape.

The Nature Conservancy believes that the following issues are of concern and should be studied and reported on as part of the Environmental Impact Statement for the project.

Fragmentation of Intact Forests:
Northern Pass proposes the creation of a new 40 mile right of way in the project's northern section. This proposed right of way will result in the fragmentation of three intact forest blocks. Forest fragmentation occurs when large, continuous forests are divided into smaller blocks by roads and other transportation corridors, land use conversion (e.g., clearing for development or agriculture), or in this case, for new transmission rights of way.

Forest Blocks are large areas of contiguous forests, tens- to hundreds-of-thousands of acres in size, lacking ecologically significant fragmenting features. They have been widely used by TNC and many partners – including state and federal agencies – in land use and conservation planning for at least the past decade. Unfragmented forest blocks are considered to be very important features on the natural landscape because they support intact natural communities and ecological processes, and are large enough to withstand natural disturbances while sustaining viable populations of forest interior species.

The Applicant's proposal would fragment the Bunnell/Nash Stream, Dead Diamond River, and Indian Stream Forest Blocks identified by TNC through our ecoregional assessment for the Northern Appalachians (Anderson, M.G., et al. 2006), two of which (Bunnell/Nash Stream and Dead Diamond River) coincide with top priority forest blocks identified in NH's Wildlife Action Plan.

Direct clearing for the proposed overhead power lines is estimated to impact approximately 640 acres of forest based on a 200-foot right of way. The proposed project will have significant long-term impacts to these forests – including impacts to important wildlife, natural communities, and water resources. These forest blocks are exceptional and ecologically significant because they are unfragmented; the proposed project will erode these important landscape qualities.

Connectivity and Wildlife Habitat:
The proposed 40 miles of new right of way in the northern section of the proposed route will impact nearly 170 acres of land within habitat corridors identified by The Nature Conservancy as important for the movement of forest dwelling and wide ranging wildlife species including black bear and bobcat. The proposed project will also impact habitats commonly associated with the federally threatened and state endangered Canada lynx, the state threatened American marten, and valuable deer wintering areas identified by the New Hampshire Fish and Game Department.

These connectivity pathways and habitats facilitate the movement of organisms and ecological processes between areas of protected core habitats. During clearing of the rights of way and construction, these areas will be greatly disrupted and animal movement will be impaired. The proposed transmission corridor would also impact large areas of highly-ranked wildlife habitat that are prioritized in New Hampshire's Wildlife Action Plan. Post-construction impacts on animal movement are unclear and need further study and analysis, and depend in part on how much the new right of way will be utilized by people (for off-road vehicle travel, for example) and on management practices.

Floodplain Forests:
The proposed international crossing at Halls Stream would bring the transmission corridor through one of the most highly ranked floodplain forests in New Hampshire. Intact floodplain forests such as the occurrence on Halls Stream - where natural vegetation, associated wetlands, and physical processes like point bar formation and flooding are still found - are among the most imperiled forest types in New Hampshire.

Despite their rarity in New Hampshire, floodplain forests have a high value as wildlife habitat and make a disproportionally large contribution to ecosystem services including water filtration and providing natural flood storage for downstream areas (Costanza et al. 1997). The proposed new right of way intersects 4 acres of floodplain habitat at Halls Stream (assuming a 200-foot right of way). While the proposal would bury the Transmission line under the Connecticut River, the impact from construction and associated infrastructure should be further studied to understand its effects on the floodplain ecosystem.

The proposed project also appears to impact the floodplain of the Upper Ammonoosuc River. Along this river corridor, placement of towers outside the floodplain would reduce impacts, but clearing of floodplain vegetation in the right of way has the potential to increase erosion and potentially degrade these rare natural communities, as well as making them more susceptible to invasion by exotic, invasive plants.

Edge Effects of Transmission Corridor:

The impact of the Northern Pass project extends far beyond land directly in the path of the existing and proposed new right of ways. "Edge effects" represent the impacts of the juxtaposition of contrasting environments on an ecosystem. The term is commonly used in conjunction with the boundary between natural habitats, especially forests, and disturbed or developed land. When an edge is created to any natural ecosystem, such as an unfragmented forest, and the area outside the boundary is a disturbed or unnatural system, the natural ecosystem is seriously affected for some distance in from the edge.

Edge effects of cleared features such as a transmission right of way often extend up to 100 meters (328 feet) into the adjacent forest, wetland, or other natural land cover (Forman and others (see references)). The ecological "shadow", or secondary effects, of the proposed new right-of-way in the northern-most section of the project extends beyond the 777 acres that will need to be cleared in order to construct the line, to ~ 2,553 acres that may be impacted by edge effects (based upon 200 feet of ROW clearance).

Forests and lands along the remainder of the proposed corridor utilizing existing rights of way could also be impacted by increased edge effects. In order to construct the proposed overhead Transmission line, the Applicant will need to expand the width of the corridor along the existing rights of way in many areas. Based on a 200' ROW clearance, we estimate more than 8,300 acres along the route could be impacted by edge effects.

Edge effects include:

- introduction of invasive plants and diseases, and associated ecological degradation and economic costs.
- increased predation of nesting birds.
- increased deer densities (when deer become over-abundant, they cause a range of ecological and human impacts from increased Lyme exposure and animal-vehicle collisions to browsing of tree seedlings and saplings and alteration of the vegetation height and type in nearby areas)
- altered microclimate (temperature and moisture, which in turn can impact which plant species are able to grow along an edge).

Together, these effects can reduce the biological diversity in an entire ecosystem. The negative impacts of power line right-of-ways were summarized in a report prepared by the state of Wisconsin (Wilyard et al. 2004). This report also compiled beneficial impacts of power line right-of-ways. When sited and

managed properly, right-of-ways can provide habitat benefits for certain species that use open areas as habitat and/or as dispersal corridors (Wilyard et al. 2004).

The Environmental Impact Statement and associated studies should weigh the impacts of the created right of way, and guide decisions about alternative routes to consider (including burial along existing transportation rights of way) and potential areas to avoid because of these effects.

The amount of land potentially impacted by edge effects is listed below. The proposed 6 miles of underground sections along existing transportation rights of way are excluded from this summary. New overhead lines are assumed to have 200 meters of edge effects (100 m on each side), while towers placed in existing right-of-ways are assumed to have 100 meters of edge effects.

	Miles of right-of-way	Acres of edge effects
Forest blocks (TNC dataset)	27 (new ROW) + 13 (existing ROW) = 40 miles	2,094 (new ROW) + 299 (existing ROW) = 2,393 acres
Floodplain forest (TNC dataset)	< 1 mile	15 (new ROW) + 9 (existing ROW) = 24 acres
Conservation lands (NH dataset)	27 miles (existing ROW)	116 (new ROW) + 1,045 (existing ROW) = 1,161 acres
Total:	67 miles	3,578 acres

Climate Resiliency:

Across the entire proposed corridor, 1,934 acres of land are ranked above average in terms of climate resilience according to a 2012 analysis by The Nature Conservancy (Anderson et al. 2012). These areas, within patches of 1,000 acres of habitat or more, contain sufficient topographic and bedrock/soil type diversity to support a wide range of animal and plant species, even as the climatic regime changes over time.

These lands are thought to be the most able to sustain biodiversity and withstand the impacts of climate change, including increased frequency and intensity of storms, and changes in precipitation and average temperature. In the proposed 40 miles of new right-of-way, the clearing of vegetation followed by management that prevents the return of the original vegetation may threaten the ability of these lands to recover from natural disturbances, while edge effects may disrupt animal movement or breeding and introduce invasive species into areas that formerly contained good condition native plant and animal communities.

Carbon:

The Nature Conservancy believes that climate change is among the greatest threats to New Hampshire's nature and people. Reducing greenhouse gas emissions from energy generation is critical. If the proposed project reduces carbon and other greenhouse gas emissions, that outcome would be a relevant public benefit and should be reviewed and reported as part of the EIS process. The application, however, makes claims about the carbon benefits of the project that are not specifically outlined, substantiated or useful in determining the net benefit of the project. The Nature Conservancy believes that the EIS should determine whether and to what extent the project would result in reduction of carbon and other greenhouse gas emissions, and use that information to inform its analysis.

In particular, the following aspects should be included as part of a carbon analysis of the proposed project:

1. *A cross-border analysis of leakage:* Will any emissions reductions on the United States side of the border be counteracted by expansion of flooded boreal forests or new dam construction on the Canadian side of the border? Is the Canadian hydro-power likely to substitute for power generated by fossil fuels such as natural gas or coal? Will the project impact other New England renewable generation?

2. *The carbon impacts of the forest clearing along the proposed new right-of-way in the northern section:* The direct clearing of an estimated 777 acres of land (assuming a 200-foot right-of-way in which all vegetation is initially removed) will result in the loss of much of the carbon stored in those acres. Adding to the carbon impact, those cleared acres will store carbon at a much reduced rate given right-of-way maintenance which prevents the forest from growing back. A conservative estimate of carbon storage – an average 75 tons of carbon per forested acre across New England -- was provided by the Forest Guild in 2007 (Perschel et al. 2007).

3. *An appropriate time scale:* Looking at greenhouse gas impacts only in the years in which the Northern Pass transmission towers and right-of-ways are constructed is not adequate, and could underestimate the carbon benefits of the Northern Pass project. Similarly, modeling greenhouse gas impacts too far into the future is difficult and may introduce inaccuracies. A medium time scale (e.g., one to several decades) may best balance immediate carbon impacts with the potential longer-term carbon benefits claimed by the Applicant.

The EIS should provide a scientifically sound accounting of the greenhouse gas benefits / costs of the proposed project.

Underground and Other Alternatives

In The Nature Conservancy's motion to intervene in the Northern Pass Transmission Docket dated September 18, 2013, we argue that:

> "The Application as submitted is insufficient and incomplete as it does not identify any practical or legally feasible alternative routes for the transmission project, including any alternative routes that would avoid lands set aside in the public interest for their conservation and wildlife value."
>
> "The construction and continued maintenance of the corridor may significantly impact the wildlife, natural habitat and scenic values that these lands were permanently conserved to protect."
>
> "The Nature Conservancy believes that the public benefit determination that led to the permanent conservation of these state and federally protected lands require the Applicant to identify practical alternative routes that would avoid impacting them."

Of particular concern are the likely impacts of the proposed project on the following conserved lands: White Mountain National Forest (255 acres), Pondicherry National Wildlife Refuge (25.66 acres) , Coleman State Park (2 acres), Cape Horn State Forest (48.48 acres), Bear Brook State Park (19.69 acres) ,

Brookwood Open Space (2.07 aces), Nash Stream Forest (20.80 acres), William H. Thomas State Forest (10.75 acres), and Concord Pine Barrens (20.8 acres).

The Nature Conservancy believes that the EIS must include and reflect the results of detailed and independent assessments of all reasonable alternatives to the applicant's preferred proposal. This assessment should include an analysis of fully underground transmission alternatives that would be located in transportation or other existing corridors that would avoid impacts to these lands set aside in the public interest. The EIS should study alternative routes in New Hampshire and other states, as well as non-transmission alternatives to the project and the "no-build" alternative. These alternatives are reasonable and therefore must be studied with in-depth analysis in the EIS.

Proposed route through the Connecticut Lakes Headwaters

The Applicant's only identified alternative route would have the transmission line cross under land owned by the Connecticut Lakes Realty Trust (CLRT) and subject to a conservation easement held by the New Hampshire Department of Resources and Economic Development (NHDRED). These lands are a part of what is known as the Connecticut Lakes Headwaters conservation project.

The Nature Conservancy was one of three non-governmental organizations who worked with state and federal partners to conserve the 171,000-acre Connecticut Lakes Headwaters property, which included raising the $42 million needed to make the project a reality. The Nature Conservancy and our donors directly invested approximately $5.5 million to conserve 25,000 acres in the Headwaters project for the purpose of establishing a natural area for wildlife. This area is now owned by the NH Fish & Game Department, and is contiguous with the CLRT lands.

Major funding for the Headwaters easement was made possible in part through a grant from the Forest Legacy Program (FLP), administered by the USDA Forest Service in partnership with the States. Additional funding was made possible by the New Hampshire Land and Community Heritage Investment Program (LCHIP) through a direct expenditure authorized by the state Legislature, as well as through substantial donations made by private foundations, businesses and individuals.

The Nature Conservancy believes that the Applicant's proposed crossing of the Connecticut Lakes Headwaters is a major deficiency in the proposed application, and should be withdrawn as a viable alternative route for the Project. The clear language of the easement prohibits any commercial development of the protected land, and the Applicant's proposal violates a number of easement provisions.

In response to the Amended Application and the proposed crossing of the Headwaters easement, on August 16, 2013 the four members of the New Hampshire Congressional delegation jointly signed and delivered a letter to Agriculture Secretary Vilsack, whose agency administers the Forest Legacy Program, regarding their thoughts on this matter. In their letter, the delegation clearly states their opinion that "we do not believe that such a use of this land is permitted under the easement."

The Applicant states that the preferred alternative route is not legally viable unless they receive the permission of the Easement Holder and the current land owner. The Applicant further argues that "because of the conservation Easement, overhead is not a viable option there, and CLRT and NHDRED would have to consent to the construction of an underground segment." The Nature Conservancy disagrees with these statements, and believes that NHDRED does not have the authority under the

terms of the Conservation Easement to allow Northern Pass to cross over or under any portion of the land, or to make any amendments to the Easement to allow such a development to occur.

The language of the Easement would prohibit any amendment to allow development of transmission corridors as they are not consistent with the Purposes and Stewardship Goals as identified in Section 16 of the Easement entitled "Limitation on Amendment." This section reads as follows:

> "If circumstances arise under which an amendment to or modification of this Easement would be appropriate, the Fee Owner and the Easement Holder may, by mutual written agreement, jointly amend this Easement provided that no amendment shall be made that will adversely affect the qualifications of this easement to the status of the easement Holder under any applicable laws including the Forest Legacy Program (16 USC Section 2103c) the Land and Community Heritage Investment Program (RSA 227-M), and RSA 477:45-47. Any Amendment shall be consistent with the Purposes and Stewardship Goals of this Easement and shall not affect its perpetual duration. Any amendment shall be recorded in the Coos County Registry of Deeds after all approvals required by law have been obtained. Nothing in this Section shall require the Fee Owner or the Easement Holder to agree to any amendment or to consult or negotiate regarding any amendment."

Development of a commercial transportation corridor is clearly contrary to the specified "Purposes" of the Easement which include:

i. To conserve open spaces, natural resources and scenic values.
ii. To sustain traditional forest uses including forest management activities and permitted recreational activities.
iii. To conserve waterfront, streams, riparian areas and the quality of groundwater and surface water resources, and to conserve biological diversity, fish and wildlife habitats, rare plants and animals, rare and exemplary natural communities and cultural resources on the Property.
iv. To conserve the unusual natural habitat known as the "high elevation mountain spruce-fir forest."
v. To guarantee the Easement Holder's right to permit public access on the Property.
vi. To retain the Property as an economically viable and sustainable tract of land, conducive to ownership by a private timberland owner or timberland investor, for the protection of timber, pulpwood, and other forest products.

Finally, industrial or commercial activities such as the Northern Pass Transmission project are expressly prohibited in Section 2 of the Easement, entitled "Use Limitations." Section 2.A.i clearly states: "The Property shall be maintained in perpetuity as open space... without any residential, industrial or commercial activities being conducted thereon, except forest management activities."

Further, both the funding from the state LCHIP program and from the federal Forest Legacy Program provides statutory restrictions on the use of the Easement property that would prohibit the development of the Northern Pass project.

> The Headwaters Easement makes reference to specific New Hampshire statutory language (RSA 227-M:14) inserted which states:

> "notwithstanding any other provision in this Easement... no deviation in the uses of any resource acquired under this Easement to uses of purposes that are inconsistent with the Purposes of this Easement shall be permitted. The sale, transfer, conveyance or release of any resource asset from the public trust is prohibited except as specifically permitted in this Easement."

Section 18 identifies that the Easement was acquired with federal funds provided through the Forest Legacy Program. The Forest Legacy Statute states the Purposes of the program, and imposes additional restrictions on the conversation of land to other uses. 16 U.S.C. § 2103c (a) states that the program is established:

> "for the purpose of ascertaining and protecting environmentally important forest areas that are threatened by conversion to nonforest uses and, through the use of conservation easements and other mechanisms, for promoting forest land protection and other conservation opportunities. Such purposes shall also include the protection of important scenic, cultural, fish, wildlife, and recreational resources, riparian areas, and other ecological values."

16 U.S.C. § 2103c (i) requires that "the landowner shall be required to manage property in the manner that is consistent with the purposes for which the land was entered in the Forest Legacy Program, and shall not convert such property to other uses."

Because of the significant legal impediments to Northern Pass crossing the Connecticut Lakes Headwaters Conservation Easement, The Nature Conservancy believes that the Applicant's preferred alternative route is not practical or legally feasible and should not be considered for analysis.

In conclusion, The Nature Conservancy appreciates the opportunity to offer comments on the scoping of the Environmental Impact Statement regarding the application for a Presidential Permit by Northern Pass Transmission, LLC. We thank you for your consideration.

Respectfully submitted,

Jim O'Brien
Director of External Affairs
The Nature Conservancy
22 Bridge Street, 4th Floor
Concord, NH 03301
603.224.5853 X 28
Jim_obrien@tnc.org

References

Fragmentation of Intact Forests: Anderson, M.G., et al. 2006. *The Northern Appalachian/Acadian Ecoregion: Ecoregional Assessment, Conservation Status and Resource CD.* The Nature Conservancy, Eastern Conservation Science and The Nature Conservancy of Canada: Atlantic and Quebec regions (http://conserveonline.org/workspaces/ecs/napaj/nap).

Floodplain forest importance: Costanza, R., d'Arge, R., de Groot, R., Farberk, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R., Paruelo, J, Raskin, R., Sutton, P., and M. van den Belt. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387: 253-260.

Carbon per acre: Perschel, R., Evans, A, and M. Summers. (2007). Climate change, carbon, and the forests of the Northeast. Pg 11. http://www.forestguild.org/publications/research/2007/ForestGuild_climate_carbon_forests.pdf

Edge effects:
Forman, R.T., and L.E. Alexander. (1998). Roads and their Major Ecological Effects. *Annual Review of Ecology and Systematics* 29: 207-231.

Forman, R.T., and D.R. Deblinger. (2000). The Ecological Road-Effect zone of a Massachusetts (U.S.A.) Suburban Highway. *Conservation Biology* 14: 36-46

Haskell, D.G. (2000). Effects of Forest Roads on Macroinvertebrate Soil Fauna of the Southern Appalachian Mountains. *Conservation Biology* 14(1): 57-63.

Matlack, G.R. (1993). Microenvironment Variation Within and Among Forest Edge Sites in the Eastern United States. *Biological Conservation* 66: 185-194.

Trombulak, S.C., and C.A. Frissell. (2000). Review of the Ecological Effects of Roads on Terrestrial and Aquatic Communities. *Conservation Biology* 14(1): 18-30.

Watkins, R.Z., Chen, J., Pickens, J., and K.D. Brosofske. (2003). Effects of Forest Roads on Understory Plants in a Managed Hardwood Landscape. *Conservation Biology* 17(2): 411-419.

Wilson, C. Peer review of "Ecological impacts of the proposed REMC power line on the Box Creek Wilderness property" http://uniqueplacestosave.org/wp-content/uploads/FINAL-Peer-Review-of-C-Wilson.pdf

Wilyard, C., Tikalsky, S., and P. Mullins. (2004). Ecological effects of fragmentation related to transmission line rights-of-way: A review of the state of the science. Wisconsin Department of Administration, Division of Energy, http://digitalarchive.oclc.org/request?pid=objid:0000015767.

Yahner, R.H. (2000). Eastern Deciduous Forest: Ecology and Wildlife Conservation. University of Minnesota Press: Minneapolis, MN.

Resilience: Anderson, M.G., M. Clark, and A.O. Sheldon. 2012. Resilient sites for terrestrial conservation in the Northeast and Mid-Atlantic region. The Nature Conservancy.
http://conserveonline.org/workspaces/ecs/documents/resilient-sites-for-terrestrial-conservation-1