

**THE STATE OF NEW HAMPSHIRE**  
**BEFORE THE**  
**NEW HAMPSHIRE SITE EVALUATION COMMITTEE**  
**DOCKET NO. 2015-06**

**SUPPLEMENTAL DIRECT TESTIMONY OF SARAH BARNUM**

**IN SUPPORT OF THE**  
**APPLICATION OF NORTHERN PASS TRANSMISSION LLC**  
**AND PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE**  
**D/B/A EVERSOURCE ENERGY**  
**FOR A CERTIFICATE OF SITE AND FACILITY TO CONSTRUCT A NEW**  
**HIGH VOLTAGE TRANSMISSION LINE AND RELATED FACILITIES IN**  
**NEW HAMPSHIRE**

**April 17, 2017**

1           **Q.     Please state your name and business address.**

2           A.     My name is Sarah A. Barnum. My business address is 25 Nashua Road, Bedford, NH  
3 03110.

4           **Q.     Who is your current employer and what position do you hold?**

5           A.     I am employed by Normandeau Associates Inc., as a Senior Wildlife Scientist in the  
6 Wetland/Terrestrial Group.

7           **Q.     What is the purpose of your supplemental testimony?**

8           A.     The purpose of my testimony is to provide supplemental information regarding the  
9 assessment of the potential effects of the Northern Pass Transmission Project (“Northern Pass” or  
10 “Project”) as proposed by Northern Pass Transmission LLC (“NPT”) and Public Service Company of  
11 New Hampshire d/b/a Eversource Energy (“PSNH”) (collectively the “Applicants”) on wildlife  
12 resources that was done after the submittal of my Pre-Filed Direct Testimony dated October 16, 2015.  
13 I also address issues raised by experts retained by Counsel for the Public regarding impacts of the  
14 Project on wildlife resources.

15           **Q.     Have you conducted any additional studies, analyses, consultations, or field**  
16 **reviews, since the submission of your Pre-Filed Direct Testimony on October 16, 2015?**

17           A.     Yes, I have visited the parcels of land offered by the Applicants as proposed mitigation  
18 to assess wildlife habitat values, updated the analysis of the acoustic bat survey results, developed  
19 more detailed Avoidance and Minimization Measures (“AMMs”) to reduce the impacts of Project  
20 construction on wildlife, met several times with staff of US Fish & Wildlife Service (“USFWS”) and  
21 New Hampshire Fish & Game Department (“NHFG”), and reviewed the wildlife-related pre-filed  
22 testimony of the Counsel for the Public’s experts and intervenors. Additionally, continued effort on  
23 the Karner blue butterfly (“Kbb”) mitigation process has yielded a more detailed mitigation plan.  
24 Specifically:

25• An updated Natural Resource Compensatory Mitigation Plan was submitted in December 2016 to the  
26 New Hampshire Department of Environmental Services (“NHDES”) and to the New Hampshire Site  
27 Evaluation Committee (“NHSEC”), which includes the results of the general wildlife habitat surveys  
28 on the mitigation parcels. App. Ex. 72. The Plan now includes a specific 6.9 acre parcel proposed for  
29 management as Pine Barrens habitat. The NHFG and USFWS agree this parcel is suitable  
30 compensation for construction impacts to Kbb.

- 1• As part of the Compensatory Mitigation Plan the Applicants have also prepared a management plan to  
2 manage portions of the ROW in the Concord area as Pine Barrens habitat to benefit Kbbbs and wild  
3 lupine.
- 4• We continued to consult with NHFG, NHDES and the New Hampshire Natural Heritage Bureau  
5 (“NHNHB”) on the AMMs to reduce the impacts of Project construction on listed wildlife and other  
6 wildlife resources, and a revised, detailed set of AMMs was provided to the agencies. The AMMs are  
7 set forth in plan sheet notes submitted to the agencies and included by reference in NHDES’s March 1,  
8 2017 permit approval. App. Ex. 75.
- 9• A report detailing the results of the re-analysis of the acoustic bat data was prepared and submitted to  
10 USFWS. This report is on the Applicants’ Track 2 Exhibit List.
- 11• Nine locations where ground clearances under overhead transmission lines are sufficient to allow taller  
12 vegetation to remain under such lines and that link intact forested habitat were identified. A report  
13 describing the locations was submitted to NHFG. This report is on the Applicants’ Track 2 Exhibit  
14 List.

15 **Q. Have you reviewed any testimony about the Project’s potential impacts on wildlife**  
16 **from witnesses for Counsel for the Public and intervenors?**

17 A. Yes, I have reviewed comments specific to wildlife from the Counsel for the Public’s  
18 (“CFP”) witnesses, and some intervenors. As CFP’s experts conducted the most extensive review of  
19 the application material on potential impacts on wildlife, I have focused on responding to their  
20 comments.

21 **Q. What is your general response to their testimony and report as it relates to**  
22 **wildlife?**

23 A. Generally, as detailed below, many of the CFP’s wildlife expert’s comments fail to  
24 consider that the Applicants have worked with the resource agencies throughout the application  
25 process to address the agencies’ issues. We discussed our survey and assessment methods for various  
26 wildlife habitats and species with NHFG, as set forth in the wildlife report provided as Appendix 36 of  
27 the NHSEC application, and as detailed in agency communications included in Appendix 48 of the  
28 NHSEC application and in the update to Appendix 48 on the Applicants’ Track 2 Exhibit List.

29

1 Also, their testimony does not take account of the revised, detailed AMMs that were submitted  
2 to the NHDES, NHHNB and NHFG, and that are now part of the NHDES permit approval conditions  
3 (See App. Ex. 75).

4 Adjustments to the Project design also were made to reduce impacts to Kbb, wild lupine,  
5 wetlands and vernal pools and roosting habitat for small-footed bats that were not part of their  
6 consideration.

7 **Deer Wintering Areas (“DWAs”) and Moose Concentration Areas (“MCAs”)** (p. 5, pre-  
8 filed testimony of Lew-Smith, Parsons, Amaral, and Reynolds (“CFP PFT”) – CFP’s wildlife experts  
9 contend that the AMMs offered to offset impacts to identified DWAs and MCAs are inadequate. As  
10 state above, however, the AMMs approved by NHDES address those measures. Further, the  
11 mitigation package offered by the Project includes land to be placed in conservation that will protect  
12 DWAs and MCAs. Field assessment of mitigation Sites B and C indicates that both of these parcels  
13 support extensive DWAs. Site C is part of a NHFG-mapped DWA, and Site B is part of a DWA  
14 known to NHFG, but not mapped. Field assessment also indicated that mitigation parcels B and K  
15 support extensive MCAs. The MCA on parcel B overlaps with the DWA there.

16 **Mast (Oak and Beech) Resources** (p. 5, CFP PFT) – In response to CFP’s wildlife experts’  
17 observation that mast resources in the Project area were inadequately identified, I refer to the  
18 December 7, 2010 e-mail from Carol Henderson of NHFG. (See update to Appendix 48 on the  
19 Applicants’ Track 2 Exhibit List). In that e-mail, NHFG requested that we “verify” the presence of  
20 mast trees in the ROW. Identifying locations with mast trees in the ROW by reference to structure  
21 number “verified” their presence, as requested by NHFG. The beech areas identified include Fish  
22 Brook Ridge (Structures DC 286-288), contrary to the CFP witnesses’ assertion. All the beech areas  
23 identified qualify as bear habitat. The mitigation package that has been offered for the Project  
24 addresses these impacts.

25 **Canada Lynx and American Marten** (p. 6, CFP PFT) – CFP’s wildlife experts contend that  
26 the AMMs offered are inadequate to offset impacts due to motorized vehicles using the ROW post-  
27 construction for both species, as well as loss of high quality habitat for marten. Although existing,  
28 authorized trails in the ROW will not be closed post-construction, the Project has committed to  
29 blocking unauthorized ATV use of the new ROW. That commitment is included as Condition 74 in  
30 the NHDES March 1, 2017 permit application approval. The Project is not proposing to keep any  
31 temporary construction access roads. If new trails are proposed in the ROW by a trails group in the

1 future, they would need landowner and easement holder permission and appropriate regulatory  
2 approvals. Additionally, the mitigation package offered by the Project includes high quality marten  
3 habitat. Site K, by virtue of its cover type, elevation, remoteness, and position in the landscape relative  
4 to known marten populations provides high quality marten habitat.

5 **Bird Species** (pp. 7-8, CFP PFT)

6 Upland Sandpiper – I did not address this grassland-obligate species in the Wildlife Report and  
7 Impact Assessment because the only known breeding population of this species in New Hampshire is  
8 at Pease Airport in Portsmouth. Grasslands greater than 100 acres in size potentially could provide  
9 habitat for this species, but with one exception, all such habitats that intersect the ROW are unsuitable  
10 due to their shape (high edge to interior ratios) and/or high amounts of woody growth. The exception is  
11 a large, heavily grazed pasture in Lancaster, but there are no records of this species at that site.

12 American three-toed woodpecker – No surveys for this species were conducted because  
13 potential habitat for this species was assessed by direct observation in the field, and no suitable habitat  
14 (mature or old-growth coniferous forests with an abundance of insect-infested snags or dying trees) for  
15 this species was observed within the Project ROW. Therefore, no direct or indirect (habitat) impacts  
16 are expected as a result of Project construction.

17 Northern Harriers – This species breeds in open grassland and wetland habitats. Grassland  
18 habitats near the northern portion of the new ROW are designated as harrier breeding habitat by  
19 NHNHB. However, a desktop assessment and field observations indicate that grassland habitats  
20 intersected by the ROW are likely to be unsuitable for nesting for one or more reasons (i.e., small in  
21 size, high edge to interior shapes, heavily grazed, appear to be mowed on a short rotation, high  
22 amounts of woody vegetation); wetland habitats intersected by the ROW are generally small and/or  
23 skinny, with a high edge to interior shape, have high amounts of woody vegetation, and are often  
24 separated from other open habitats by substantial forested areas. Regardless, the AMMs require  
25 surveys for nesting raptors, including harriers, prior to construction in locations with potential habitat  
26 where construction will occur during the nesting season, and appropriate avoidance of any nests  
27 identified.

28 Nesting Raptors, Herons, and Nighthawks – As with the northern harrier, the AMMs require  
29 surveys for nesting raptors, herons and nighthawks prior to construction in locations with potential  
30 habitat for one or more of these species, where construction will occur during their respective nesting  
31 seasons, and appropriate avoidance of any nests identified.

1            Wetland Birds – CFP’s wildlife experts contend that habitat analysis was not conducted for  
2 rusty blackbird, pied-billed grebe, and sedge wren. A desktop analysis of habitat for these species was  
3 conducted, which was augmented with extensive field observations. Because habitat within the ROW  
4 for the latter two species was determined generally to be of marginal quality, they are assumed to have  
5 a low likelihood of nesting in the Project area. Suitable habitat for rusty blackbird is present within the  
6 Project area and this species was directly observed in one location within the Project area. The value  
7 of the habitat in the Project area for this species varies with the successional stage created by ongoing  
8 periodic vegetation maintenance in the existing ROW and logging in the proposed new ROW corridor.  
9 There may be some impacts to this species’ habitat, but the AMMs and the mitigation package include  
10 extensive actions to minimize and restore wetland impacts, as well as protection of parcels that include  
11 suitable wetland habitats within the known breeding range of the rusty blackbird in New Hampshire.

12            **Avian Electrocution and Collision** (p. 9, CFP PFT) – The design of the transmission lines that  
13 will be built for the Project complies with APLIC’s design standards to reduce the risk of electrocution  
14 throughout the entire Project.

15            As detailed in Appendix 36 Section 9.2 of the Project’s application, collision with transmission  
16 lines does not appear to be a notable source of avian mortality in New England, and CFP’s experts  
17 have not presented any evidence to the contrary.

18            **RTE Snakes and Turtles** (p. 10, CFP PFT) – Not having the benefit of the updated AMMs,  
19 CFP’s wildlife experts state that minimization measures to avoid impacts to listed snake and turtle  
20 species are not adequately described. The AMMs included in the NHDES permit approval, however,  
21 require measures to minimize impacts to reptiles during construction. Additionally, the ROW can and  
22 does commonly provide preferred habitats for these species, and the AMMs also include maintenance  
23 recommendations (timing and pattern of mowing) to benefit these species during Project operations.

24            **State-listed RTE Insects** (p. 10, CFP PFT) – The RTE insects present in the Project ROW are  
25 Pine Barrens-associated, and are present in the ROW because current, ongoing maintenance of the  
26 existing ROW mimics natural disturbance regimes that favor Pine Barrens vegetation. Some impact to  
27 these species is likely to occur as a result of construction, but the Project AMMs submitted to NHFG  
28 on March 1, 2017 commit the Project to minimizing construction impacts in the Pine Barrens areas to  
29 the extent practicable. ROW maintenance practices (e.g., timing and methods of periodic woody  
30 vegetation control) post-construction will continue to promote Pine Barrens vegetation. The  
31 maintenance practices are designed specifically to benefit wild lupine, the host plant for three of the

1 four listed insect species known to be present in the ROW. These species will also benefit from  
2 management practices promoting lupine growth at the Kbb mitigation parcel.

3 **Karner Blue Butterfly (“Kbb”)** (p. 12, CFP PFT) – In their comments on minimization and  
4 mitigation measures relative to Kbb and wild lupine, CFP’s wildlife experts’ did not consider the  
5 revised AMMs and the final mitigation package. Northern Pass has coordinated with NHNHB and  
6 NHFG to identify the least impactful, practicable footprint for the Project, and it has included in the  
7 mitigation package a 6.9 acre parcel in Concord that will be managed to provide a net benefit to this  
8 species. The resource agencies, including USFWS, approve of the proposed mitigation plan.

9 **Bats** (p. 12, CFP PFT) – CFP’s bat expert states that the assessment of the four Special  
10 Concern bat species was inadequate. As described in Appendix 36, Section 10.5.1, no significant  
11 habitat impacts are expected for these bat species. Eastern red bat, hoary bat, or silver-haired bat are  
12 foliage roosters and often feed along forest edges. These habitat features are essentially ubiquitous  
13 throughout the landscape surrounding the Project area. No winter habitat is present in the Project area  
14 for these species, as they migrate south for the winter. No direct impacts will occur in areas where  
15 trees are felled in winter. The potential for direct impacts if trees are felled when bats are present is  
16 unknown, but mortality due to forestry activities is not noted as a concern with respect to these species  
17 in the literature or by the agencies. No significant habitat impacts are expected for the tricolored bat,  
18 either, as they roost in tree hollows and buildings, and often feed along forest edges, and these habitat  
19 features are essentially ubiquitous throughout the landscape surrounding the Project area. There are  
20 records of this species overwintering in one of the three hibernacula within five miles of the Project  
21 ROW, but no impacts to these hibernacula will occur as a result of Project construction. Again, the  
22 potential for direct impacts if trees are felled when bats are present is not noted as a concern with  
23 respect to these species in the literature or by the agencies.

24 CFP’s bat expert questioned the adequacy of the acoustic bat assessment methods used for the  
25 Project. Normandeau followed the USFWS’s guidelines, as advised by the agencies, and the results of  
26 the survey have been accepted by the USFWS.

27 CFP’s witnesses also raised a question about potential impacts to small-footed bats, a State  
28 protected species. In my report, I note three locations where a construction pad overlaps with  
29 potentially suitable small-footed bat roosting habitat. At one of these locations, in Deerfield, small-  
30 footed bats calls were detected by the acoustic survey conducted for the Project. The Project now  
31 intends to modify the design at the Deerfield location to avoid direct impacts to that potential roosting

1 habitat. The Applicants are currently analyzing whether avoiding direct impacts to the small footed  
2 bat habitat in the other two locations is practicable. Also, the AMM package proposes impact  
3 minimization measures that avoid blasting when bats may be present.

4 **Q. Please describe the Project's ongoing consultations with State and federal resource**  
5 **agencies.**

6 A. The Applicants have met with and provided additional information to the NHHNB and  
7 the NHFG to address wildlife issues, as well as ROW management and plant protection, which  
8 influence habitat for wildlife. We have also continued discussions with the USFWS regarding impact  
9 assessment and mitigation for the federally listed species known to be present in the Project area.  
10 Copies of correspondence and meeting notes are provided on the Applicants' Track 2 Exhibit List.  
11 Certain details remain to be finalized with NHFG, and Northern Pass is in regular contact with that  
12 agency to complete that effort.

13 **Q. Has your opinion regarding whether this Project will have a substantial negative**  
14 **effect on wildlife changed?**

15 A. No, my opinion that this Project will not have a substantial negative effect on wildlife  
16 has not changed.

17 **Q. Does this conclude your supplemental pre-filed testimony?**

18 A. Yes, it does.

19