

SALISBURY DESCRIPTION

Land Area: 39.6 square miles (NHES)

Inland Water: 0.2 square miles (NHES)

Population: 1,420 residents (NHES)

Population Density: 35.9 persons/square mi (NHES)

Town Location: Salisbury is located in Merrimack County, and is bounded by Andover to the north, Franklin to the east, Boscawen and Webster to the south, and Warner abuts the southwestern town border.

Study Area: The study area is located on the east side of Salisbury. It covers 22.29% of the total land area (5,677 acres).

Physical Characteristics

The Blackwater River is located in the western area of town. Steep slopes are primarily located in west and along the town borders. Portions of Mount Kearsarge State Forest are located in the northwest corner of town. The top of Mount Kearsarge is in Warner and Wilmot, the eastern slopes of the mountain are the towns highest, measuring over 1,700 feet above sea level.

Cultural Development Patterns

The land area was granted in 1736 as Baker's Town, and was incorporated in 1768 as Salisbury. Development is centered near the intersection of US Route 4 and Route 127; residential development is scattered throughout town, generally east of US Route 4. Of the developed areas in town, approximately 90% is residential, 2% is commercial and 8% is public utility, current use, or other. Of the residential development, approximately 98% of residential housing is single family (NHES).

Land Use Planning

The Existing and Future Land Use goal in the Salisbury Master Plan seeks to preserve the beauty and rural character of town by restricting and managing growth in certain areas of town. Development of diverse residential housing, commercial and light manufacturing, and continued development along the southern end of Route 4 are encouraged in the Master Plan. The Blackwater Flood Control Reservoir, a large tract of conserved land, is located in the southwestern portion of town. The town's zoning ordinance creates three districts and one overlay district with varied permitted uses. The Town Planning Board meets the first Monday of the month at 7pm.

TABLE 4-13: SALISBURY SCENIC RESOURCES

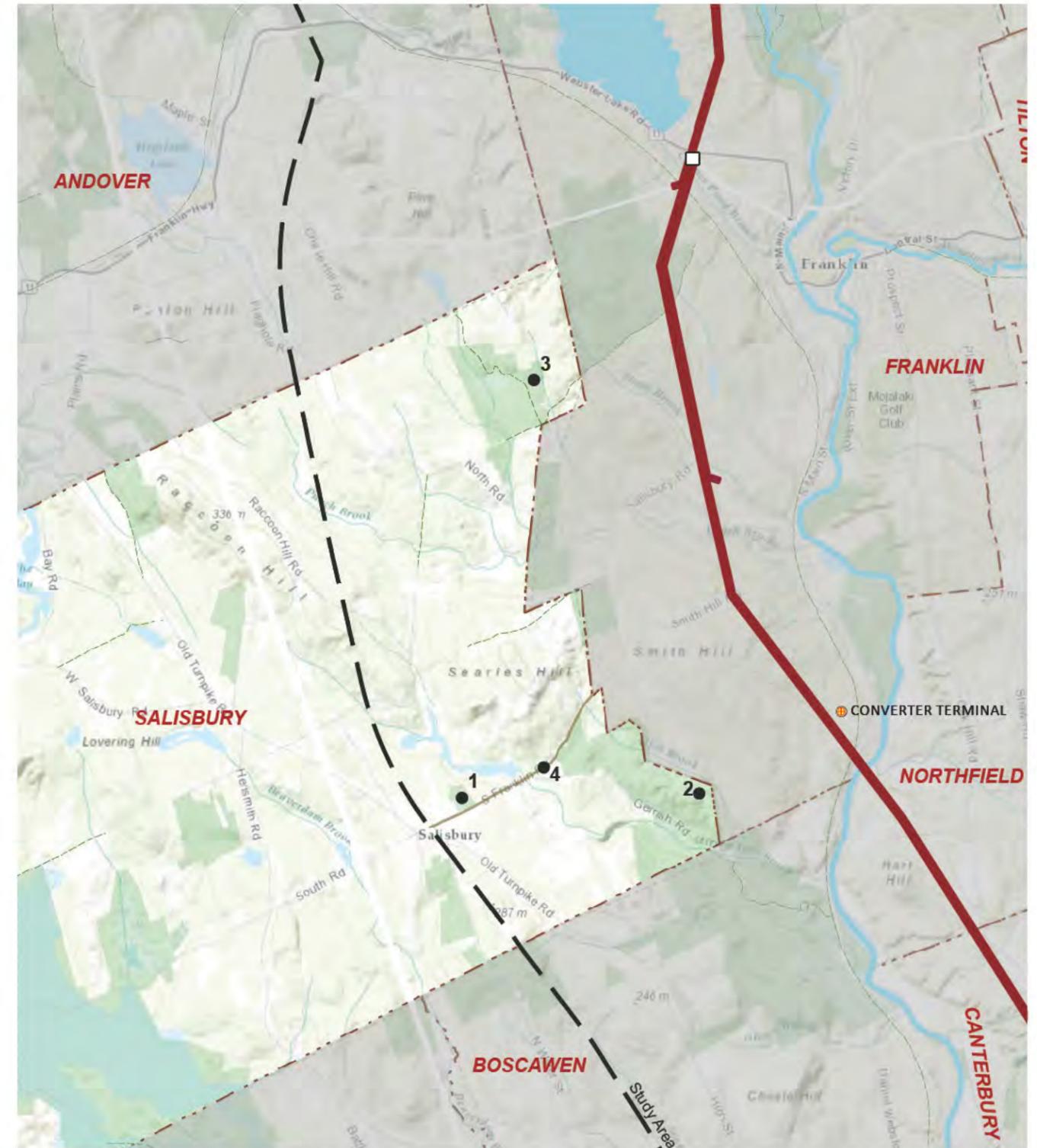
#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Lake Easement	Conservation Easement	14	Five Rivers Conservation Trust	2.6 mi	LOW	NO		
2	State Forest Nursery	State Forest Nursery	6	State	1.2 mi	LOW	YES		
3	Celmer Easement	Conservation Easement	14	Society for the Protection of NH Forests (easement holder)	1.1 mi	LOW	NO		
4	Currier and Ives Scenic Byway	NH Rt. 127. State designated Scenic & Cultural Byway.	8	NH Dept. of Transportation	1.6 mi	MEDIUM	NO		

STATE/REGIONAL SOURCES:

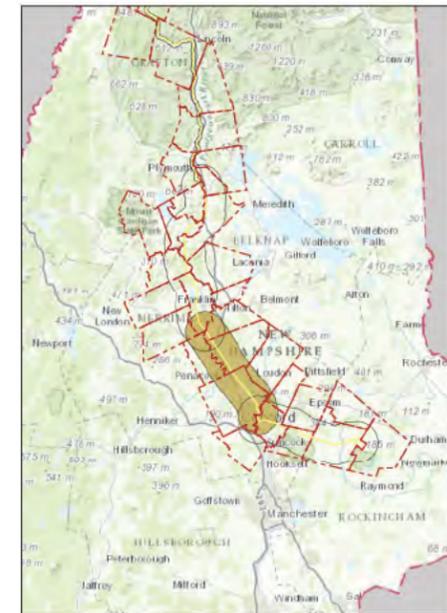
(6) State Lands Administered by State of NH Department of Resources and Economic Development and the NH Fish and Game Department, July 2007

(8) New Hampshire DOT Scenic Byway Map, October 2008. <http://www.nh.gov/dot/programs/scbp/index.htm>

(14) National Conservation Easement Database: <http://www.conservationeasement.us/projects/>



SUBAREA 5



Northfield
Canterbury
Concord

SUBAREA 5 DESCRIPTION

CORRIDOR LENGTH: 15.6 miles

LOCATION: Northfield/Franklin town boundary (just south of AC/DC junction) to the Concord/Pembroke town boundary.

HOST COMMUNITIES

- Northfield
- Canterbury
- Concord

ADJACENT COMMUNITIES

- Boscawen
- Loudon

Subarea 5 starts at the Franklin/Northfield town line and continues 15.6 miles in a southerly direction through Northfield, Canterbury, and Concord. The towns of Boscawen and Loudon are adjacent to the line.

The NPT project in Subarea 5 is a 345-kV AC line that will be co-located in existing transmission corridors. Subarea 5 also includes the Oak Hill substation in Concord.

PHYSICAL CHARACTERISTICS

Landform

Subarea 5 lies within the Gulf of Maine Coastal Plain, which is characterized by rolling topography drained by the Merrimack River. The most pronounced landforms are found in the Broken Ground section of Concord, a 5 square mile area north of Turtle Pond known for its rugged terrain, trails, and wetlands.

Water

The transmission corridor parallels the east side of Interstate 93, which parallels the Merrimack River throughout most of Subarea 5. The transmission line also crosses the Soucook River, a highly meandering river that forms Concord's southern boundary. The subarea contains a number of smaller ponds that are generally less than a mile in width. One of the most visible waterbodies is Turtle Pond in Concord, where a series of existing transmission lines cross over the southwestern end.

Vegetation

Forest cover is a mixture of hardwood/softwoods throughout the subarea.

CULTURAL DEVELOPMENT PATTERNS

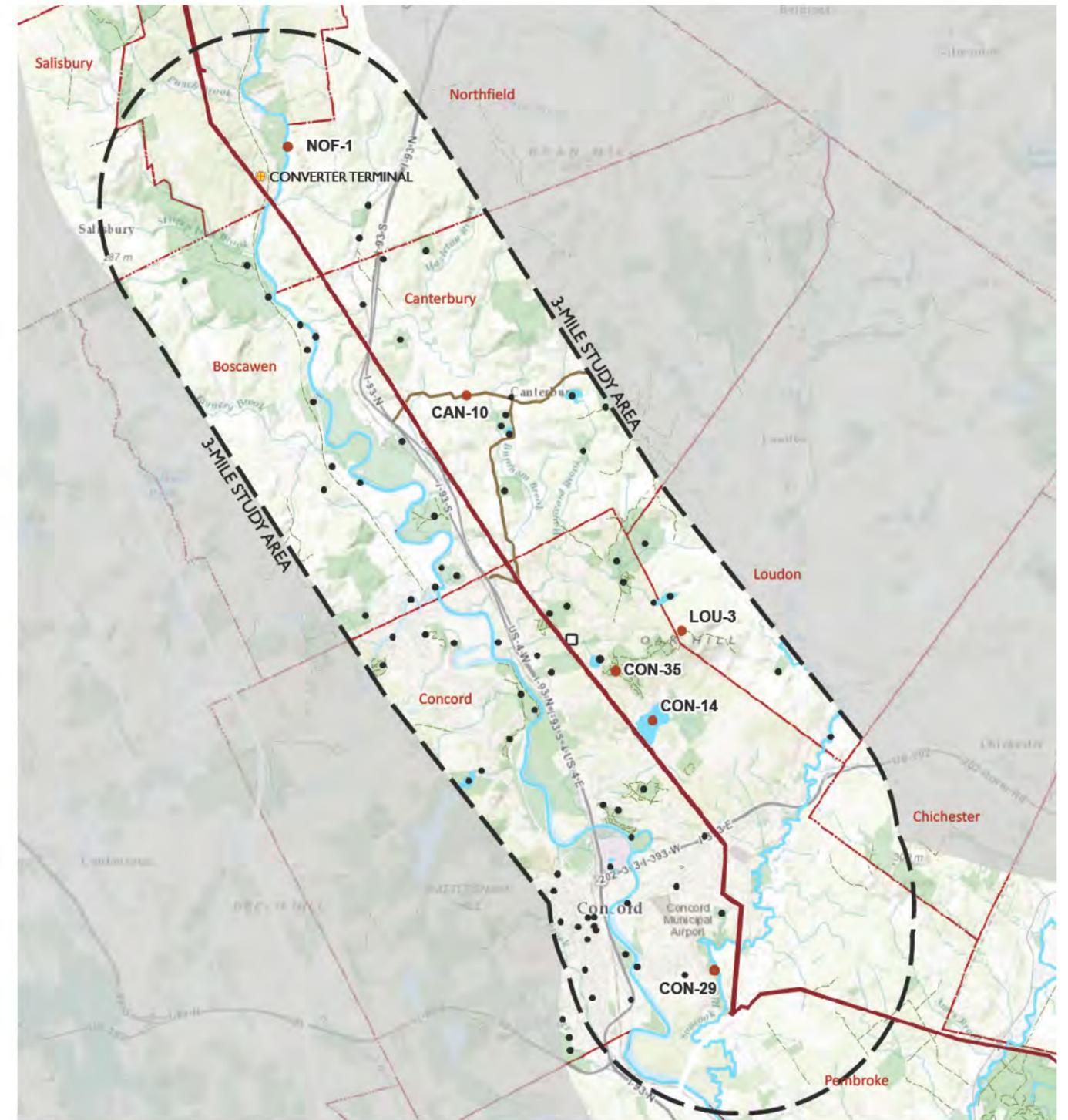
The three host communities in Subarea 5 are all located in Merrimack County. Populations range from 2,390 in Canterbury to 42,419 in Concord, New Hampshire's third largest city and the State Capital. The subarea is served by an interconnected network of local, state, and interstate highways, and a rail line in the river valley. The transmission corridor parallels Interstate 93 throughout most of the subarea, and crosses it at the north end in Canterbury. The transmission corridor also crosses Interstate 393 on Concord. State Route 132 is designated at the Canterbury Shaker Village Byway, connecting I-93 with the historic Shaker Village at the eastern end of Canterbury.

Land use within the study area in Subarea 5 is comprised of residential development (low to high density); commercial and industrial development; institutional use; forestland; recreation; and agriculture. The greatest residential density and concentration of uses is found on both sides of the Merrimack River in Concord.

Properties dedicated for conservation and recreation within the study area include State Fish & Game land (Turtle Pond); Wildlife Management Areas (Hoit Road Marsh); easement holdings; municipal recreation areas; and town forests.

RECREATION & TOURISM

The subarea offers a variety of recreation and tourism opportunities in municipal parks, conservation areas, regional snowmobile trails, riverfront trails and access sites, and historic/government attractions. Both the Merrimack and the Soucook Rivers have multiple access points throughout their lengths.



- EXISTING TRANSMISSION CORRIDOR
- UNDERGROUND TRANSMISSION CORRIDOR
- OTHER TRANSMISSION LINE
- SUBSTATION
- TRANSITION STATION
- SCENIC RESOURCE WITHOUT INDIVIDUAL VISUAL IMPACT ASSESSMENTS
- SCENIC RESOURCE WITH INDIVIDUAL VISUAL IMPACT ASSESSMENTS
- CONSERVATION AREA
- WATER RESOURCE
- SCENIC BYWAY

SUBAREA 5 IMPACT SUMMARY

SUMMARY TABLE: SCENIC RESOURCES WITH INDIVIDUAL VISUAL IMPACT ASSESSMENTS

MAP ID	TOWN	SCENIC RESOURCE	SCENIC SIGNIFICANCE	OVERALL VIA RATING
NOF-1	NORTHFIELD	Merrimack River	MEDIUM	LOW-MEDIUM
CAN-10	CANTERBURY	Canterbury Shaker Village Byway	LOW-MEDIUM	LOW-MEDIUM
CON-14	CONCORD	Turtle Pond	MEDIUM	LOW
CON-29	CONCORD	Soucook River	LOW	LOW
CON-35	CONCORD	Oak Hill Trails (Vista Trail Overlook)	MEDIUM	MEDIUM
LOU-3	LOUDON	Oak Hill Fire Tower	MEDIUM-HIGH	LOW

The proposed Northern Pass Transmission project will not have an unreasonable adverse effect on the aesthetics of Subarea 5. This conclusion is based upon the following:

1. Significance of Scenic Resources and Distance from the NPT Project

A total of 78 scenic resources within the six-mile wide study area were identified in the 5 communities that comprise Subarea 5. Of these, 6 resources with at least medium cultural significance were further evaluated to determine the possible visual effect of the NPT line. This list of resources is presented in the Summary Table.

The horizontal distance to the NPT transmission corridor varies throughout Subarea 5. The Scenic Resources Table for each community provides the distance to the corridor, measured at the place where the viewpoint evaluated in the VIA is nearest the corridor.

There are several scenic resources of state-wide significance that are within the 3-mile study area that will not have views of the project. These include Colonial Village Green and Canterbury Shaker Village in Canterbury and Sewall Falls State Recreation Area, the Merrimack River, and the State Capital in Concord.

2. Extent, Nature, and Duration of Public Use

There is a wide variety of public uses in Subarea 5, including hiking, bird watching, fishing, boating, swimming, picnicking, sightseeing, snowmobiling, cross-country skiing, ice fishing, ice skating, mountain biking, and cycling. See the VIA for individual scenic resources for a description of the expected extent, nature, and duration of public use.

3. Scope and Scale of Change in the Landscape (viewed from scenic resources)

Existing Transmission Corridor

The NPT project in Subarea 5 will be located in an existing transmission corridor, 15.6 miles in length, ranging in width from 230 to 260 feet. The corridor typically has two 115-kV lines, one supported on wooden H-frame structures and a second on wooden monopole structures.

No additional right-of-way is required to install the NPT project. Additional clearing within the existing right-of-way will be necessary in some areas to accommodate the 345-kV transmission line and to conform to current code requirements.

Transmission Structures

The most commonly used design for the 345-kV line in Subarea 5 will be weathering steel H-frame and 3-pole structures. The most common structure height will be 80 feet. Taller structures will be used in specific locations to cross roads, rivers, and other power lines, to account for changes in topography, and to provide the clearances required by the National Electrical Safety Code for electrical transmission lines and gas pipelines (where present within the transmission corridor). Spacing of individual structures will also vary, depending on the terrain and the alignment of the corridor. The most frequent distance between structures ranges from approximately 500 to 700 feet.

In most sections of the line the 115-kV H-frame structures will be relocated to weathering steel monopole structures to accommodate the 345-kV line.

Conductors and Shield Wires

The arms of the structures on the proposed 345-kV lines support insulator strings and bundled conductors. The relocated 115-kV line will also have arms that support insulator strings and conductors. All will have thinner overhead shield wires attached to the top of the structures.

4. Evaluation of Overall Visual Impact

The Summary Table indicates the visual effect and overall visual impact on each of the scenic resources that were evaluated in Subarea 5. The overall visual impact is derived from the assessment of visual effect and the possible effects on user groups, as determined by the VIA. The possible visual impacts vary:

- Low (Turtle Pond and Soucook River in Concord, Oak Hill Fire Tower in Loudon, and Soucook River in Concord)
- Low-Medium (Canterbury Shaker Village Byway in Canterbury and Concord, Merrimack River in Northfield and Boscawen).
- Medium (Oak Hill Trails in Concord).

None of the overall visual impacts were found to be greater than Medium.

LINEAR RESOURCES

The individual VIAs provide an assessment of points along linear scenic resources where the NPT project may be visible. The following section evaluates the cumulative visual impact on those linear resources in Subarea 5 where the project may be visible from more than one point.

UPPER MERRIMACK RIVER

The project intersects the Upper Merrimack River at one location, between Franklin and Northfield south of the converter terminal. In addition to the crossing, there may be occasional views of the project at distances of 1.0 to 1.5 miles from some locations in Boscawen. The cumulative visual impact on the 117-mile long river will be low. This conclusion is based on the following:

- The river intersects with the corridor at one point along the 117-mile river. The NPT project will affect less than 1% of the total length of the byway, and will have a low-medium visual impact at the point of crossing.
- The occasional views of the tops of several structure and conductors from the river in Boscawen would be at distances where the structures may not be recognizable.

CANTERBURY SHAKER VILLAGE BYWAY

Canterbury Shaker Village Byway is a 12-mile series of roads between Interstate 93 and Canterbury Shaker Village. The cumulative visual impact on the Byway will be low. This conclusion is based on the following:

- The intersections occur near Interstate 93, several miles from the major attractions along the byway.
- The NPT project will not be visible from the Colonial Village Green and the Canterbury Shaker Village.
- The NPT project will affect less than 1% of the total length of the byway, and will have a low-medium visual impact at the points of crossing.

5. Visibility of the NPT Project Will Not Offend the Sensibilities of a Reasonable Person

Although there are places where the NPT project will be visible and may be considered an adverse visual effect in Subarea 5, there are no scenic resources where the visibility of the NPT will offend the sensibilities of a reasonable person. This conclusion is based upon the following considerations:

- All the scenic resources that were evaluated in Subarea 5 already have a transmission line prominently visible.
- Many of the scenic resources where the transmission line will be visible also have other forms of human development, many of which are prominently visible in the landscape. These include transmission lines (Canterbury Shaker Village Scenic Byway in Canterbury; Turtle Pond and Soucook River in Concord); highways (Canterbury Shaker Village); and waterfront development (Turtle Pond).
- The VIA demonstrates that the NPT project will not have a high overall visual impact on any of the scenic resources within Subarea 5.

6. Effectiveness of Mitigation Measures

The planning and design process for the NPT project incorporates many measures that are designed to avoid, minimize, or mitigate adverse effects on aesthetics.

The transmission line in Subarea 5 follows an existing transmission corridor, which is the typical condition for Subareas 2, 4, 5, and 6. The use of the existing corridor eliminates the need for a new corridor and avoids the visual effect that a new line would have on the surrounding landscape.

The existing 115-kV transmission line has been redesigned and relocated in many locations to accommodate the NPT project, minimize the amount of additional clearing within the right-of-way, and eliminate the need to acquire additional land to expand the right-of-way.

Shorter weathering steel H-frame structures will be used in this Subarea as an alternative to the galvanized steel lattice structures that are commonly used throughout most of the NPT project.

See individual scenic areas for a complete description of the mitigation measures employed in the planning and design process for Subarea 5.

NORTHFIELD DESCRIPTION

Land Area: 28.6 square miles (NHES)

Inland Water Area: 0.3 square mile (NHES)

Population: 4,823 residents (NHES)

Population Density: 168.7 persons per square mile (NHES)

Town Location: Northfield is located in Merrimack County, and is centrally positioned between Tilton, Canterbury, Belmont and Franklin.

Study Area: The study area is located on the west side of Northfield. The study area covers 34.72% of the total land area (6,419 acres).

Physical Characteristics

The western boundary of Northfield is largely defined by the Merrimack River, while the northern boundary abuts the Winnepesaukee River. The topography in town is hilly, with steep gradients along Mount Tuggs Road, Forest Pond, Brown and Bean Hill, and Tioga River (USGS). Northfield Town Forest and Knowles Pond Conservation Area contain the community's largest tracts of protected land.

Demographics

The population of Northfield experienced a 40% increase between 1980 and 1990 to approximately 4,277 residents, and has remained relatively steady. In 2014 the population measured 4,823 with a median age of 39. Of the residents 25 years of age or older, approximately 20 percent have attained a Bachelor's degree or higher (NHES).

Cultural Development Patterns

Northfield was first settled in the early 1700s by the same Europeans who established territories in Canterbury. Due to the mills and the railroad, the population surged in the late 1800s. A similar development boom was experienced in 1960 when Interstate 93 was completed. Of Northfield's developed area, approximately 85% is residential, of which 72% is single family (NHES). Development within Northfield is predominantly located in the northern half of town in the village area. Limited industrial and commercial development is located along NH Route 140 between Tilton and Belmont.

Land Use Planning

According to the town's website, residents place a high value on Northfield's rural character, history and heritage. According to the master plan, residents and municipal agents agree that residential growth has outpaced the town. Recommendations for future land use include encouraging commercial growth while guiding development in the appropriate areas of town to maintain the development pattern.

Existing Transmission Corridor

Physical Features: The existing transmission corridor runs 1.5 miles north-south across the west side of Northfield. The corridor right of way is 225 feet in width, and contains two 115-kV lines supported by wooded monopole and H-frame structures hanging in height from 43 to 83.5 feet.

Surrounding Topography: The area adjacent to the transmission corridor is characterized by the rolling topography, with Hart Hill located to the west.

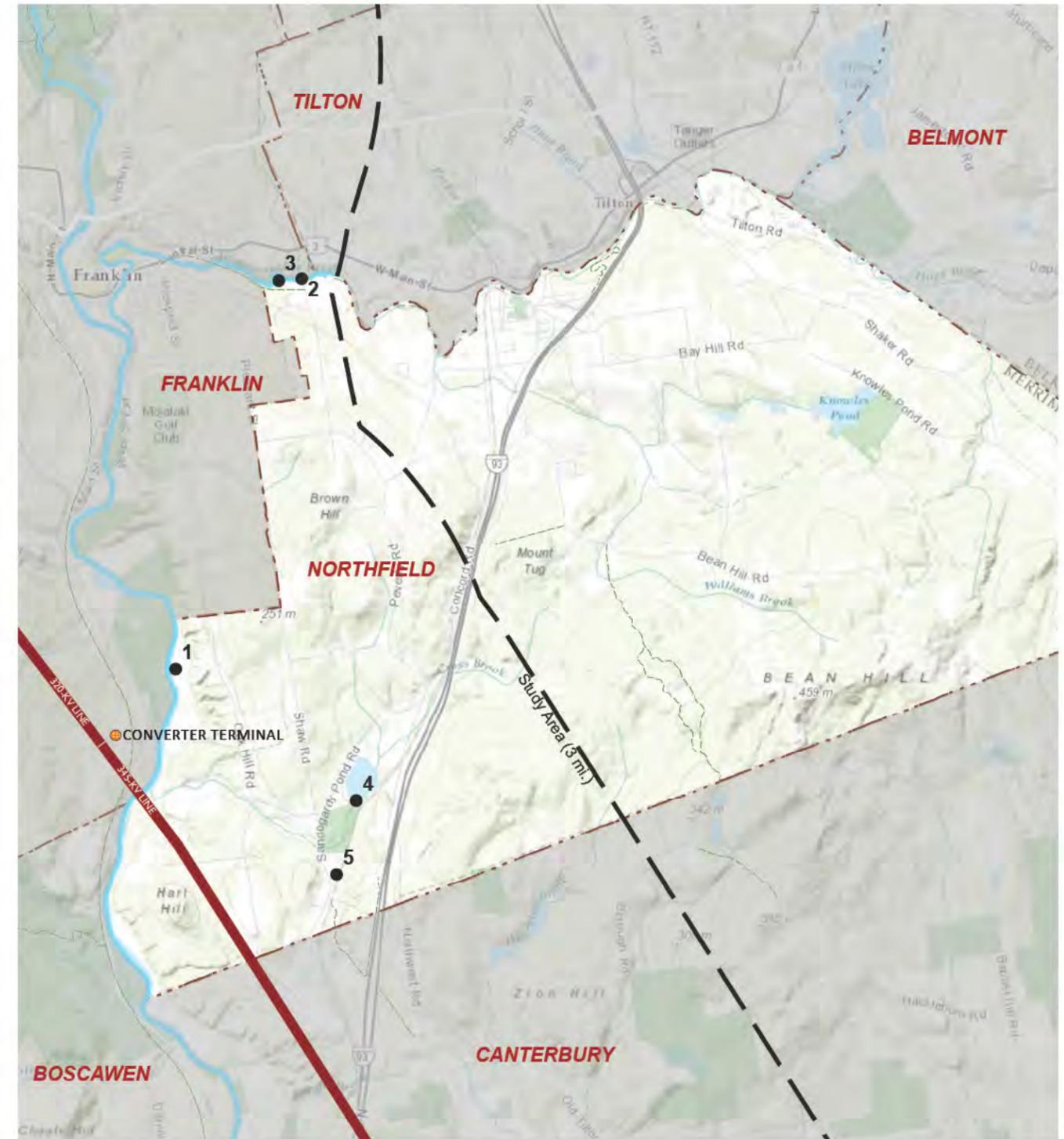
Vegetation: Vegetation bordering the transmission corridor is typically hemlock hardwood-pine, grasslands, and floodplain (WAP).

Adjacent Land Use: Land use in the immediate vicinity of the transmission corridor is predominately forested, with some low density residential and agricultural use. The corridor crosses the Pemigewasset River and Fiddlers Choice Road.

The transmission corridor is located in the Conservation District (CONS) Zone, while a short segment of the right-of-way located along Oak Hill Road is within the Single Family Residential District (R1) Zone. The corridor is located within the Groundwater Protection Overlay District including the entire portion in the R1 Zone and approximately two thirds of the corridor located within the CONS Zone.

Changes within Existing Transmission Corridor

The proposed 345-kV line will be located in the center of the corridor on structures ranging in height from 70 to 100 feet. The 115-kV line on the east side of the corridor will remain in place and the 115-kV line to the west will be relocated further west to make room for the 345-kV line in the center of the corridor. The relocated 115-kV line will be supported by structures ranging from 79 to 100 feet. Approximately 20 to 60 feet of additional clearing will occur on the west side of the existing corridor to make room for 345-kV line.



NORTHFIELD SCENIC RESOURCES

TABLE 5-1: NORTHFIELD SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Merrimack River	Designated in the NH Rivers Management Program.	4	NH Dept. of Environmental Services	Crosses Corridor	MEDIUM	YES	MEDIUM	MEDIUM
2	Winnepesaukee River	Publicly accessible waterbody. Access point located outside of Study Area.	2	State	2.8 mi	LOW	NO		
3	Winnepesaukee River Trail	Part of the Merrimack River Heritage Trail. Five-mile pedestrian/biking trail links Tilton, Northfield and Franklin along the Winnepesaukee River.	A	Various	2.5 mi	LOW	NO		
4	Sandogardy Pond / Glines Park	Publicly accessible waterbody. Town beach, playground, bathhouse, public boat access. Northfield's only public swimming.	A / 2	Town	1.5 mi	MEDIUM	NO		
5	Snowmobile Trail 9, 350	State-wide Snowmobile trail.	3	Various	0.9 mi	LOW	NO		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Scenic Significance Rating

STATE/REGIONAL SOURCES:

- (2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm
- (3) New Hampshire Snowmobile Association Map, 2014
- (4) Map of Designated Rivers in the New Hampshire River Protection Program, Department of Environmental Services: <http://des.nh.gov/organization/divisions/water/wmb/rivers/designriv.htm>

LOCAL SOURCES:

- (A) Northfield Master Plan, 2014

MERRIMACK RIVER (I)

NORTHFIELD

OVERALL VISUAL IMPACT **LOW-MEDIUM**

The Merrimack River begins in Franklin at the convergence of the Pemigewasset and Winnepesaukee Rivers and runs for 117 miles to the Atlantic Ocean. Two separate segments of the river are designated in the New Hampshire Rivers Management and Protection Program: the upper Merrimack and the lower Merrimack. The Upper Merrimack extends 30 miles from its origin in Franklin to Garvin Falls on the Concord/Bow town line and is within the 3-mile NPT study area for approximately 20 of those miles. The NPT project crosses the Upper Merrimack River at one location, i.e., at the Franklin/Canterbury town line. The lower Merrimack is in southern New Hampshire, outside the NPT study area.

The Upper Merrimack is recognized in the NH Rivers Management and Protection Program for its scenic and recreational resources. The river provides a variety of recreational opportunities. During the high-flow periods in the spring, there are stretches of water ideal for whitewater kayaking. According to the AMC River Guide the river is navigable throughout the year, but should be avoided at times of high water. The section from Franklin to Boscawren, where the crossing is located, is described as having moderate current. The upper Merrimack River is home to some of the best areas in the State for both warm water and cold water fishing (Upper Merrimack River Local Advisory Committee, p. 11).

The upper Merrimack River is characterized by a diversity of scenery including riverfront development in Franklin, expansive agricultural lands, dense upland forest cover, floodplain forests, high and low sand bluffs, exposed bedrock, and historic structures. Land use in the immediate vicinity of the crossing is primarily forestland and agriculture.

The 1999 Wild and Scenic River Study for the upper Merrimack River found that 26 miles of the river between its origin in Franklin and the Manchester Street Bridge in Concord are eligible for inclusion in the National Wild and Scenic Rivers System. This conclusion was based on the river's free-flowing character and the presence of outstanding resource values in recreation, fish and aquatic values, wildlife, cultural, and geologic and natural features. The 1999 Study determined the most appropriate classifications for the eligible portion of the Upper Merrimack was "scenic" for the segment between Franklin and Sewall's Island; and "recreational" for the segment between Sewall's Island and the Manchester Street Bridge. No portion of the eligible river area of the upper Merrimack was found to meet all of the requisite criteria of suitability for inclusion in the Wild and Scenic River System. Although the eligible segments of the upper Merrimack met most of the criteria of suitability, the 1999 Study concluded the adjacent riparian communities failed to show sufficient support for the designation. Based upon the lack of support, the Study recommended no designation at that time (Upper Merrimack Wild and Scenic River Study, Draft Report).

Existing Transmission Corridor

The transmission line crosses the river at the midpoint of a series of reverse curves. The existing right-of-way is 230 feet wide and cleared to 160 to 190 feet. The corridor contains two existing 115-kV lines. The one on the east side is supported by wooden monopole structures that range in height from 74 to 88 feet within 1,000 feet of the river. The line on the west side of the corridor is supported by wooden H-frame structures that range in height from 43 to 47 feet within 1,000 feet of the river.

The transmission lines are currently visible by motorists on Route 3 in Franklin, walkers and cyclists on the Northern Rail Trail in Franklin, as well as boaters on the river. The closest water access location to the north is 4.5 miles upstream in Franklin at the Winnepesaukee River Shore bank Access behind Franklin High School. To the south, the closest point to the corridor crossing is 3.75 miles away at the Intervale Road Canoe Access.

Changes within Existing Transmission Corridor

The 115-kV transmission line on the east side of the corridor will remain in place. The 115-kV transmission line on the west side of the corridor will be moved farther west and replaced with weathering steel monopole structures that range in height from 83.5 to 99 feet. Up to 40 feet of vegetation will be removed on the west side of the corridor to accommodate the relocated 115-kV line. The new 345-kV DC line will be located in the center of the corridor and will be supported by weathering steel H-frame structures ranging in height from 85 to 89 feet.

The Merrimack River defines the boundary between Subarea 4 and 5. See Northern Rail Trail description in Franklin (Subarea 4).

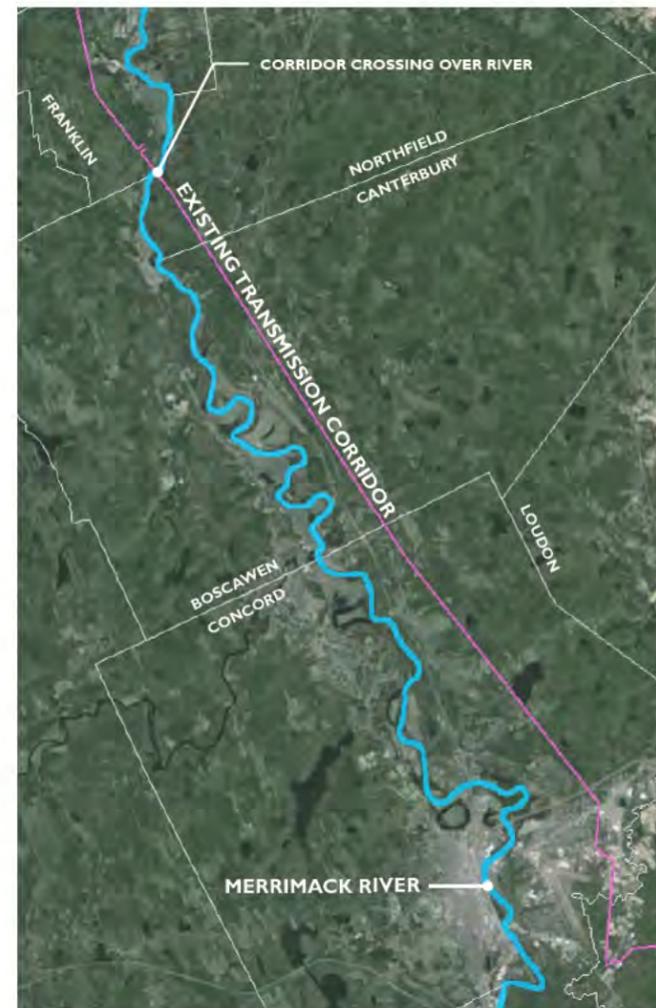
Cultural Value: Medium

River designated in the NH Rivers Management Protection Program, recognized for its scenic resources.

Visual Quality: Medium

The landscape of this section of the Merrimack River is defined by low mixed wooded hillsides, large floodplain fields, a state highway that parallels the river, and occasional riverfront homes. The river varies in width from 300 to 400 feet, and shows moderate amount of movement.

Scenic Significance: Medium



Approximately 20 miles of the Merrimack river are located within the 3-mile study area of the NPT project.

1.5 MILES



South facing bird's eye view of NPT corridor crossing over the Merrimack River. The Northern Rail Trail and Route 3 parallel the river at the crossing.

MERRIMACK RIVER (I)

NORTHFIELD

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- Boaters on the river may begin to see the transmission structure on the east side of the river and an additional set of conductors approximately 1,500 feet upstream from the crossing. The structures on the west side of the river will not become visible until the boater is within a few hundred feet of the corridor, due to the riparian vegetation that lines the west side of the river. South of the transmission corridor crossing the river begins a series of meanders in Boscaawen, west of the NPT project. Boaters on the river may see occasional views of the tops of several of the structures and the conductor at a distance of 1 to 1.25 miles due to the relatively flat topography and breaks in the riparian vegetation. While there are technically views of the project, the structures will likely not be noticeable to paddlers on the river over the trees and at this distance.

Mitigation

- Maintaining non-capable riparian vegetation within the corridor.
- With landowner permission, planting large non-capable native shrubs within the corridor to maintain the continuity of riparian vegetation to minimize contrast in color and texture.
- Using weathering steel H-frame structures will minimize the contrast in form and color.

User Groups: Boaters, anglers, pedestrians on North Rail Trail, and motorists on Route 3.

User Expectation: Medium

- Paddlers' expectation of scenic quality is influenced by the meandering nature of the river, the active

agricultural lands, and the forestland that is the predominant land use. The expectation is diminished by the presence of Route 3 on the west side of the river.

Extent, Nature, and Duration of Public Use: Low

- According to the AMC River Guide, this section of the river is passable at all water levels. The Guide describes this section as 'attractive and easy,' making it one of the few parts of the river that may be suitable for family groups.
- See Northern Rail Trail in Subarea 4 for a description of the Northern Rail Trail adjacent to the river.

Overall Visual Impact: Low-Medium

The construction of a new transmission line will have a low-medium overall visual impact on this section of the upper Merrimack River. The presence of the new 345-kV DC transmission line and the upgraded 115-kV transmission line should not have an effect on the way people use or enjoy the river.

- Boaters already see conductors crossing the river and transmission structures when they are within the corridor crossing.
- The structures will not block or interfere with existing views of the water.
- The structures will not change the inherent nature of the river nor will they visually dominate the view.

Northfield Works Cited

Upper Merrimack River Local Advisory Committee. Upper Merrimack River Buffer Protection Study. July 2010.



View facing south from the existing corridor crossing over the Merrimack River and Route 3 in Franklin. The Merrimack River is not visible due to vegetation and topography.

CANTERBURY DESCRIPTION

Land Area: 43.9 square miles (NHES)

Inland Water Area: 0.9 square mile (NHES)

Population: 2,290 residents (NHES)

Population Density: 52.2 persons per square mile (NHES)

Town Location: Canterbury is located in Merrimack County, and is centrally positioned between the rural areas of Northfield, Boscawen, and Loudon.

Study Area: The study area is located on the west side of Canterbury. The study area covers 52.39% of the total land area (15,035 acres).

Physical Characteristics

The western boundary of Canterbury is largely defined by the Merrimack River. The topography in town is rolling hills, with steep slopes along Bryant and Forest Pond Brooks and the central part of the northern town border. Gold Star Sod Farms, Burroughs/McGraw Easement, and land surrounding Shaker Village contain the community's largest tracts of conserved land (NHES, USGS, GRANIT).

Demographics

The population of Canterbury increased by 58% between 1970 and 1980, accounting for over one-third of the total population change. In 2014 there were a total of 2,290 residents in Canterbury with a median age of 48. Of the residents 25 years of age or older, approximately 51% have attained a Bachelor's degree or higher (NHES).

Cultural Development Patterns

The land area known as Canterbury was granted in 1727 and incorporated in 1741. Canterbury Shaker Village, a self-contained community of the United Society of Believers, also known as the Shakers, was established in 1792 and today functions as an outdoor museum (NHES). Low-density residential is primarily located in the southwestern portion of town. Commercial and industrial development is located along the western and eastern town borders, adjacent to the Styles Bridges Highway and Rocky Pond Road.

Land Use Planning

According to the town's website, residents place a high value on Canterbury's rural character, location, and commuting distance. The Canterbury town website also lists the historic town center as an area of attraction. The Master Plan emphasizes local desire to preserve the small town atmosphere, uncrowded, quiet living conditions, and scenic natural environment as stated in the Master Plan, section VI. The Land Use portion of the master plan encourages limited growth and preservation of natural resources.

Existing Transmission Corridor

Physical Features: The existing transmission corridor runs 5.9 miles north-south across the west side of Canterbury. The corridor right of way is 225 feet in width, and contains two 115-kV lines supported by wooded monopole and H-frame structures ranging in height from 38.5 to 83 feet.

Surrounding Topography: The area adjacent to the transmission corridor is characterized by rolling topography and steep slopes (>15%). Steep slopes exist primarily near the Brill conservation area, southwest of where the corridor intersects Interstate 93.

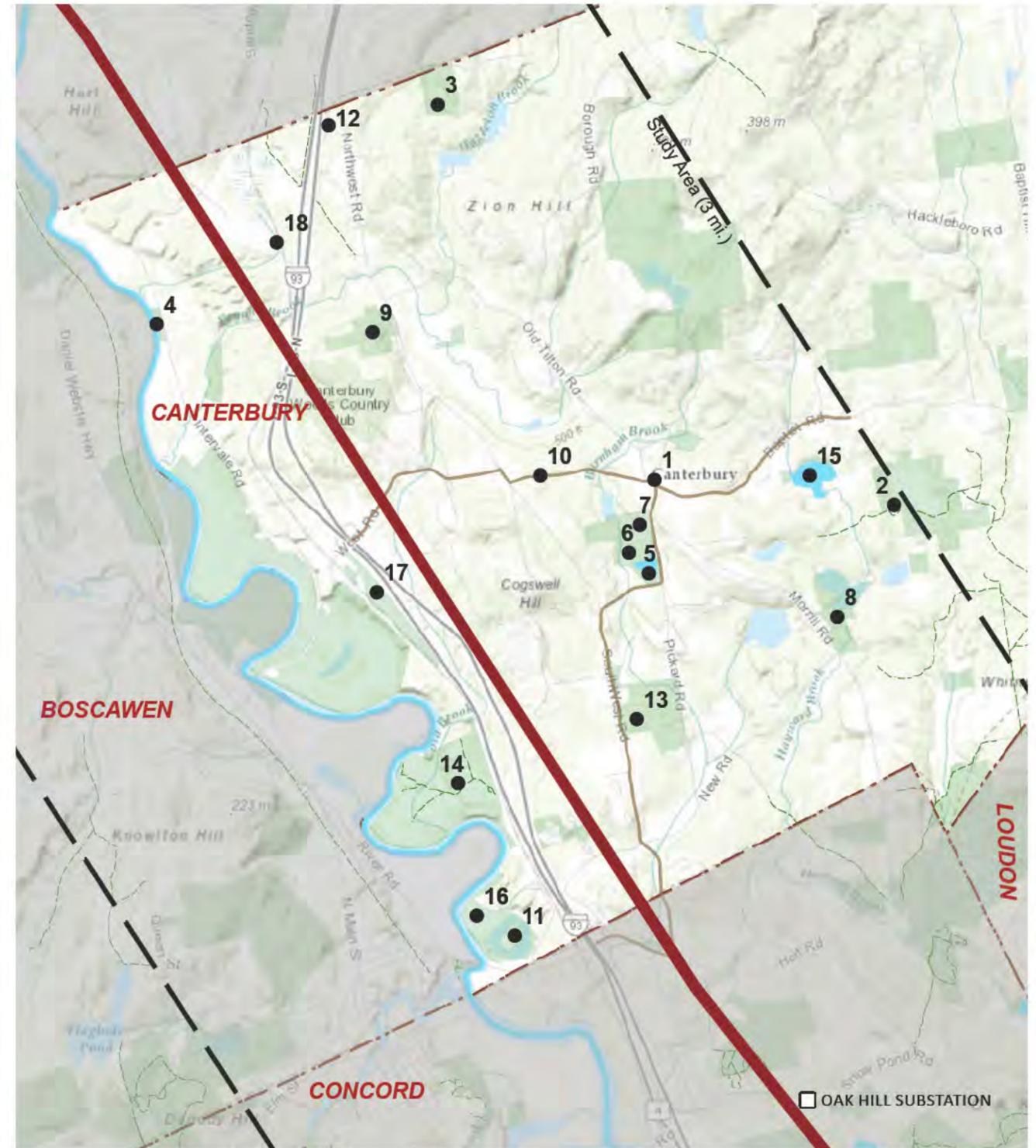
Vegetation: Vegetation bordering the transmission corridor is typically Appalachian oak-pine, pitch pine, hemlock hardwood-pine, and grassland (WAP).

Adjacent Land Use: Land use in the immediate vicinity of the transmission corridor is predominately forest, with light commercial, some agricultural, and low-density residential. The corridor intersects and portions are located adjacent to Interstate 93. The corridor crosses Canterbury Woods Country Club, and crosses the eastern corner of a conservation parcel. The corridor crosses the rail line as well as Intervale Road, W. Road, Old Schoolhouse Road, and Boyce Road.

The existing transmission line corridor is located with the Rural (RU) zone and a small portion of the Industrial (I) zone. The corridor intersects Agricultural/Conservation (A) zone lands, and is located adjacent to a Commercial (C) zone. The corridor intersects the Residential (R) zone. About two-thirds of the length of the existing right-of-way within Canterbury is included in the Agricultural/Conservation zone.

Changes within Existing Transmission Corridor

The proposed 345-kV line will be located in the center of the corridor on structures ranging in height from 65 to 115 feet. The 115-kV line on the east side of the corridor will remain in place and the 115-kV line to the west will be relocated further west to make room for the 345-kV line in the center of the corridor. The relocated 115-kV line will be supported by structures ranging from 74.5 to 124 feet. Approximately 20 to 60 feet of additional clearing will occur on the west side of the existing corridor to make room for the 345-kV line.



CANTERBURY DESCRIPTION

TABLE 5-2: CANTERBURY SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Colonial Village Green	Cultural resource located on Canterbury Shaker Village Scenic Byway.	A	Town of Canterbury	1.7 mi	MEDIUM	NO		
2	Schoodac Conservation Area	Conservation area includes wetland and woodlot.	A	Town of Canterbury	2.9 mi	LOW	NO		
3	Ayers State Forest	State Forest. No public access.	6 / 1	State	1.7 mi	MEDIUM	NO		
4	Merrimack River	Designated in the NH Rivers Management Program. Two public water access points in Canterbury. The point identified on the map is the location of the Intervale Road Canoe Access. VIA in Northfield.	2 / A	Town of Canterbury	0.4 mi	MEDIUM	YES	MEDIUM	MEDIUM
5	Kimball Pond	Publicly accessible waterbody (shore bank) adjacent to conservation area.	30	State	1.2 mi	MEDIUM	NO		
6	Kimball Pond Conservation Area	Conservation area located on Kimball Pond.	2 / A	Town of Canterbury	1.4 mi	LOW	NO		
7	Hildreth's Field	Adjacent to Kimball Pond Conservation Area	A	Town of Canterbury	1.4 mi	LOW	YES		
8	Morrill Pond WMA	Wildlife Management Area. Publicly accessible access to Morrill Pond (Canoe/Cartop).	6 / 2	State	2.2 mi	LOW	NO		
9	Brill Easement	Open fields on west side of site, forests on east side of site.	14	Society for the Protection of NH Forests (easement holder)	0.2 mi	LOW	NO		
10	Canterbury Shaker Village Byway	Route 132 and local roads in Concord and Canterbury. State designated Scenic and Cultural Byway.	8	NH Dept. of Transportation	Crosses Corridor	MEDIUM	YES	MEDIUM	MEDIUM
11	Riverland Conservation Area	Conservation area with Merrimack River frontage. Includes two oxbow ponds, wetlands, fields and woods. Important bird watching area.	2 / 9 / A	Town	1.1 mi	MEDIUM	NO		
12	NH DOT Picnic/ Rest Area	NH DOT rest area located on east side of I-93. No scenic vista from this site.	10	NH Dept. of Transportation	1.1 mi	LOW	NO		
13	Hutchins and Ambeau Forests	Conservation area with opportunities for a variety of recreational activities.	7	Society for the Protection of NH Forests	0.6 mi	MEDIUM	NO		

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
14	Upper Merrimack Oxbow (proposed conservation area)	An effort is currently underway to put land into conservation for public recreation and wildlife viewing.	B	Private	0.5 mi	LOW	YES		
15	Crane Neck Pond	Public Water Body	30	State	2.5mi	MEDIUM	NO		
16	Booth Conservation Easement	Conservation Easement on Merrimack River	14	Town of Canterbury (easement holder)	0.7 mi	LOW	NO		
17	Hildreth Agric. Pres. Rest.	Conservation Easement	14	New Hampshire Department of Agriculture	0.3 mi	LOW	YES		
18	Snowmobile Trail 15, 350	State-wide Snowmobile trail.	3	Various	Crosses Corridor	LOW	YES		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Scenic Significance Rating

STATE/REGIONAL SOURCES:

- (1) NH State Park Listing: www.nhstateparks.org/
- (2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm
- (3) New Hampshire Snowmobile Association Map, 2014
- (8) New Hampshire DOT Scenic Byway Map, October 2008. <http://www.nh.gov/dot/programs/scbp/index.htm>
- (9) NH Fish and Game Department website the Merrimack River Wildlife Heritage Trail: <http://merrimack.wildnh.com>
- (10) NH DOT Rest Areas: <http://www.visitnh.gov/planning-and-travel-tools/local-information-resources.aspx#3>
- (14) National Conservation Easement Database: <http://www.conservationeasement.us/projects/>
- (30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014

LOCAL SOURCES:

- (A) Town of Canterbury Master Plan, 2010
- (B) Society for the Protection of NH Forests fundraising brochure for the Upper Merrimack Oxbow: http://concordtu.org/yahoo_site_admin/assets/docs/Canterbury_flier6.11142020.pdf

CANTERBURY SHAKER VILLAGE SCENIC BYWAY (10)

CANTERBURY

OVERALL VISUAL IMPACT **LOW-MEDIUM**

Canterbury Shaker Village Byway is a 12-mile series of roads between Interstate 93 and Canterbury Shaker Village. The eastern end of the Byway terminates at the Shaker Village, a National Historic Landmark that functions as a nonprofit museum and educational institution. The village, which was a working Shaker community from 1780 to 1990, is located on 694 acres of land with 25 original buildings open to the public. This is a major tourist attraction in Canterbury (Canterbury Shaker Village Byway Tour). The village is 5.5 miles from the transmission corridor.

The Byway is located in both Concord and Canterbury and is accessible from Interstate 93, exits 17 and 18. Local roads in Canterbury converge at the Village Green, a traditional New England town center a well-defined green, a gazebo, historic church, cemetery, and village stores. The corridor is 1.6 miles west of the Village Green.

In addition to the two village centers, the Byway includes a variety of scenic and natural resources, including agricultural landscapes, forests, and wetlands. The Hutchins Forest, south of Canterbury, is an 88-acre managed forest area with recreational trails open to the public. The land is maintained by the Society for the Protection of NH Forests (SPNHF Hutchins Forest).

The existing transmission corridor runs north-south parallel to Interstate 93 and intersects the Byway in two locations. The corridor crosses the southern leg of the Byway in Concord at the corner of Hoit Road and Route 132, approximately 0.5 mile east of the Interstate. The corridor crosses the northern section of the Byway in Canterbury at West Street, approximately 0.3 mile east of the Interstate. The crossings are not located near any distinct cultural, scenic, or natural resources.

Existing Transmission Corridor

The existing 225-foot wide right-of-way contains two 115-kV transmission lines within a 220-foot cleared corridor. The line crosses the intersection of Hoit Road and Route 132 on a diagonal and runs through several residential neighborhoods. The 115-kV line on the east side of the corridor consists of wooden monopole structures that range in height from 65.5 to 88 feet within 1,000 feet of the intersection. The second 115-kV line in the center of the corridor consists of wooden H-frame structures that range in height from 43 to 57 feet.

The line crosses West Street in a wooded area characterized by rural residential and commercial uses. The 115-kV line on the east consists of wooden monopole structures that range in height from 75 to 93 feet within 1,000 feet of the road. The second 115-kV line consists of wooden H-frame structures that range in height from 43 to 52 feet.

None of the existing transmission structures are visible from the Canterbury Village Green or the Shaker Village.

Changes within Existing Transmission Corridor

The 115-kV monopole line on the east side of the corridor will remain in place. At the southerly crossing at Hoit Road and Route 132, the H-frame 115-kV line near the center of the corridor will be replaced with weathering steel monopole structures on the west side of the corridor, ranging in height from 92 to 101.5 feet. The 345-kV line will be supported by weathering steel H-frame structures, located between the two monopole 115-kV lines, ranging in height from 90 to 100 feet.

Some additional clearing within the right-of-way on the western side of the corridor will be required to install the relocated 115-kV line. Tree removal areas will vary in width from 10 to 40 feet wide as necessary. In addition, white pine buffers on the west side of Mountain Road (Route 132) that now screen the line will be removed.

At the northerly crossing at West Street, the H-frame 115-kV line will be replaced with monopole weathering steel structures ranging in height from 83.5 to 101.5 feet. The 345-kV line will be supported by weathering steel H-frame structures ranging in height from 75 to 110 feet.

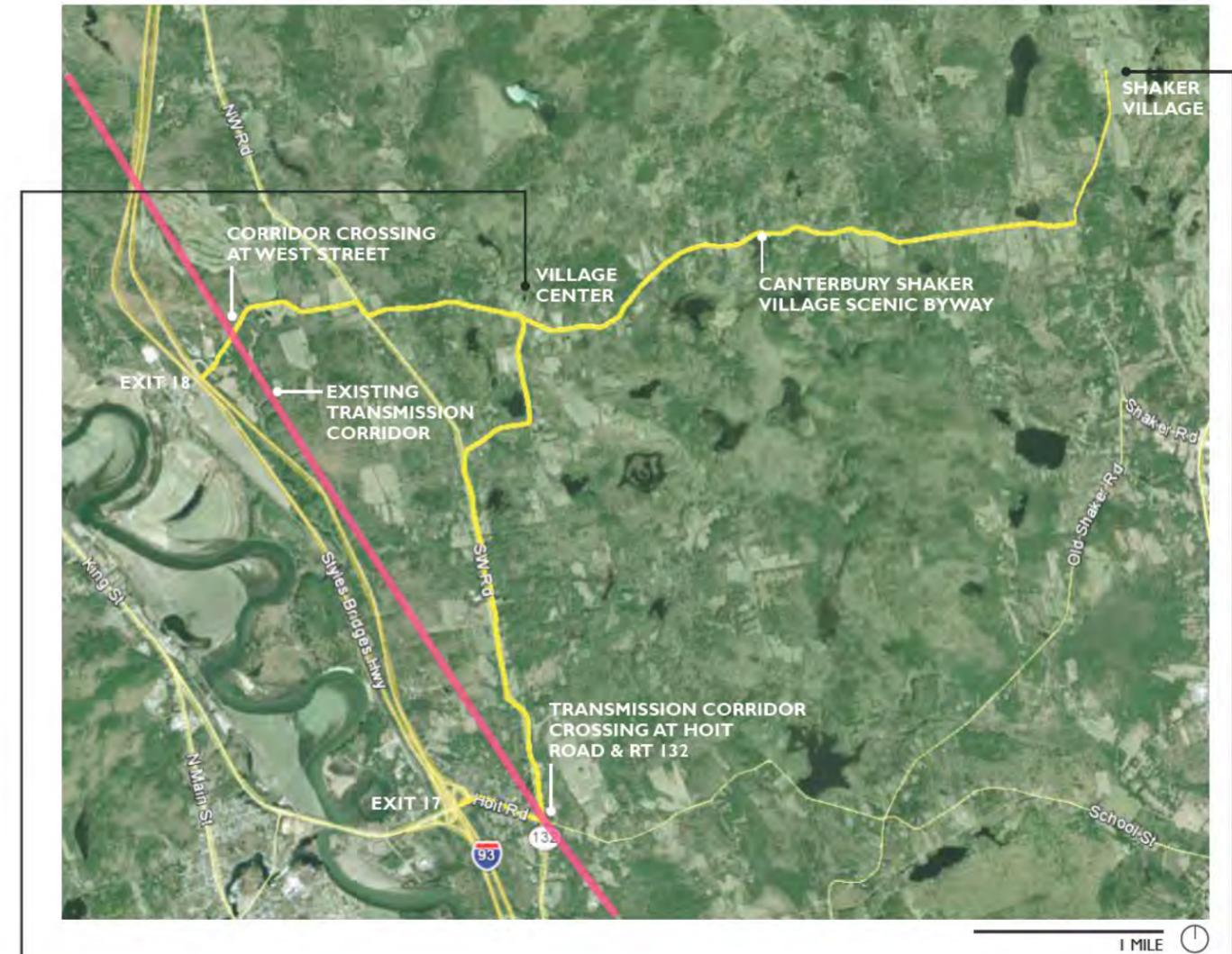
Cultural Value: Medium

A designated NH DOT Scenic and Cultural Byway.

Visual Quality: Low

The majority of the cultural landmarks and natural resources that led to the designation of the Byway are located to the east of the transmission corridor and will not be affected by the NPT project.

Scenic Significance: Low-Medium.



North facing bird's eye view of the Colonial Village Center in Canterbury. Motorists can turn south on the Byway to connect to Route 132 or continue on West Road to connect with Interstate 93. The NPT project will not be visible from the village center.



Canterbury Shaker Village - view over vegetable garden towards historic Shaker Buildings. The Shaker Village is the terminus and primary destination for those travelling the scenic byway. The NPT project will not be visible from the Shaker Village (photo source: www.discovernewengland.org)

CANTERBURY SHAKER VILLAGE SCENIC BYWAY (10)

CANTERBURY

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- The new transmission structures will be located within an existing corridor that crosses the Byway at two locations. The new structures will be taller than the existing structures and will have a greater visual presence where visible.
- The NPT project will not be visible from either the Village Green or the Shaker Village, which are the focal points of the Byway.
- The additional clearing will make the transmission corridor and structures more visible from the roadway at both crossing locations.

Mitigation

- With landowner permission, planting new roadside trees and tall shrubs of non-capable species to screen views down the corridor and maintain the continuity of roadside vegetation that defines the edge of the right-of-way at the two intersections.
- Using weathering steel structures to reduce contrast in color and form.
- Using H-frame structures to minimize the height and scale of the transmission line.
- Maintaining the same spacing with existing transmission structures.

User Groups: Motorists, residents, tourists.

User Expectation: Low

- The two sections of the Byway at the corridor crossings are not particularly scenic or culturally important. User expectations are lower here than at the cultural landmarks located several miles from the transmission corridor.
- The Byway passes through residential and commercial areas, where there will be expectation of human development.
- Tourists who select the scenic Byway to travel to Canterbury Shaker Village have a higher sensitivity than those who travel these roads frequently in their daily activities.
- Users are already accustomed to driving under transmission lines.

Extent, Nature, and Duration of Public Use: Low

- The structures will be visible at two locations on the 12-mile scenic byway.
- Motorists are passing both locations by way of automobile. There is no scenic resource or view that would cause motorists to stop at either corridor crossing location.
- Motorist travelling at 35 mph will be in the transmission corridor for less than 5 seconds on their way to two scenic and cultural resources.

Overall Visual Impact: Low-Medium

The additional structures will have a low-medium visual impact on the Canterbury Shaker Village Byway and should not result in a change in the way people now use or enjoy the route.

- The two corridor crossings will affect less than 0.8% of the length of the 12-mile long scenic Byway, and none of the attractions that draw visitors to it.
- The structures will not block or interfere with existing views.
- The new transmission structures and conductors will not change the inherent character of the scenic resource.
- The visual impact is greatly reduced by the use of weathering steel H-frame structures.
- People who currently drive the Scenic Byway to access the Canterbury Shaker Village will still be able to enjoy these pursuits. The experience at the Shaker Village will remain unchanged.

Additional Considerations

Canterbury Shaker Village Byway was identified by the NH Scenic & Cultural Byways Council for possible de-designation as a Scenic Byway because there is no corridor management plan in place and there is no known Byway advisory committee. The NHDOT's interim Scenic Byways Program coordinator is in the process of identifying these deficiencies and determining whether to maintain or de-designate the Byway (2011-2012 Biannual Report by the NH Scenic & Cultural Byways Council, p. 20). If this Scenic Byway was de-designated, the experience along the roadway would no longer be designated as a scenic resource and the roadways would not be included in the VIA.

Canterbury Works Cited:

- Society for the Protection of New Hampshire Forests. Hutchins Forest. Web. 18 Dec 2014. <<http://www.forestsociety.org/ourproperties/guide/?block=68>>.
- NH Department of Transportation. Scenic and Cultural Byways: Canterbury Shaker Village Byway. Web. 8 Dec 2014. <<http://www.nh.gov/dot/programs/scbp/tours/canterbury.htm>>.
- NH Department of Transportation. Canterbury Shaker Village Byway Tour. PDF File.
- Canterbury Planning Board. Plan for Tomorrow; Master Plan 2010, Canterbury, NH. 2010.



North facing birds eye view of existing corridor crossing at West Street.



PHOTO 1: Facing southwest on West Street at existing corridor crossing.



PHOTO 2: Facing north on West Street directly in corridor.



West facing birds eye view of existing corridor crossing at Hoit Road and Route 132



PHOTO 3: View facing south on Route 132 (Mountain Road) approaching intersection and existing transmission corridor.



PHOTO 4: View of north from the intersection with Route 132 (on right) and Hoit Road (on left).

CONCORD DESCRIPTION

Land Area: 64.0 square miles (NHES)

Inland Water Area: 3.2 square miles (NHES)

Population: 42,590 residents (NHES)

Population Density: 665.5 persons per square mile (NHES)

Town Location: Concord is located in Merrimack County, and is centrally positioned between the rural areas of Hopkinton, Loudon, and Bow.

Study Area: The study area is located on the east side of Concord. Downtown Concord is located on the western edge of the study area. The study area covers 60.52% of the total land area (26,025 acres).

Physical Characteristics

The topography in town is relatively rolling, with areas of steep terrain encompassing over 15 percent of total land area. The Penacook Lake Watershed, State Prison Farm and Quarries, Holt Road Marsh State WMA, and St. Paul's School are large tracts of protected land outside of the downtown area. The highest point in town is estimated to be Pine Hill, west of Long Pond (History of Concord, New Hampshire: Volume 1; Concord (NH) City History Commission, Amos Hadley). The Contoocook River, the Merrimack Rivers, the Soucook River, the Turkey River, flow through town. Other water resources include 14 Great Ponds, the Great Bog, and Broken Ground. Steep slopes exist around the banks of the Merrimack and Contoocook Rivers, as well as at Rattlesnake Hill.

Demographics

Concord experienced a 22% increase in population between 1980 and 1990. In 2014 the census estimated the population of Concord to be 42,590 persons, which is the third highest among New Hampshire's incorporated municipalities. The median age of residents in Concord is approximately 40, and approximately 34% of residents 25 years of age or older have attained a Bachelor's degree or higher (NHES).

Cultural Development Patterns

Concord was founded in 1720, and development quickly grew around the fertile banks of the Merrimack River, with residential growth confined to the town center. In 1808, Concord received the designation of state capitol. Manufacturing and extraction businesses were prosperous, with the Granite industry expanding considerably after the Civil War era and into today. Dense residential and commercial development is centrally located within the city. Concord's Urban Growth Boundary (UGB) contains 93% of development within 31% of available land. The area outside the UGB is predominantly rural in nature, containing a majority of the town's sensitive natural resource areas. Of Concord's developed area, approximately 41% is commercial and 54% is residential. Of the residential development, 49% of residential housing is single family (NHES).

Land Use Planning

According to the town's Master Plan, residents place a high value on Concord's rural character and historic district. The Master Plan emphasizes the need to protect open/undeveloped space. The chapter discussing Land Use encourages growth within the defined Urban Growth Boundary, and infill development throughout town. The protection of water resources is a priority in land use planning.

Existing Transmission Corridor

Physical Features: The existing transmission corridor runs 8 miles north-south across the east side of Concord. In the southern stretch of the corridor in Concord, the corridor alignment has a series of offsets, resulting in a zigzag alignment, with three angled points. The corridor right of way ranges from 250 to 258 feet in width throughout most of Concord. At the third offset, the corridor width increases to 260 feet. The existing corridor contains two 115-kV lines supported by wooden monopole and H-frame structures ranging in height from 28 to 95.5 feet. An existing distribution line is located on the west side of the corridor from south of the Oak Hill Substation to the first corridor alignment offset.

Surrounding Topography: The area adjacent to the corridor is characterized by dense residential and commercial use at the southern end of the corridor, and forested residential and open space in the central and northern sections of the corridor.

Vegetation: Vegetation bordering the transmission corridor is typically pitch pine, hemlock hardwood-pine, marshes, and grasslands, with some areas containing soils suitable for agricultural use (WAP).

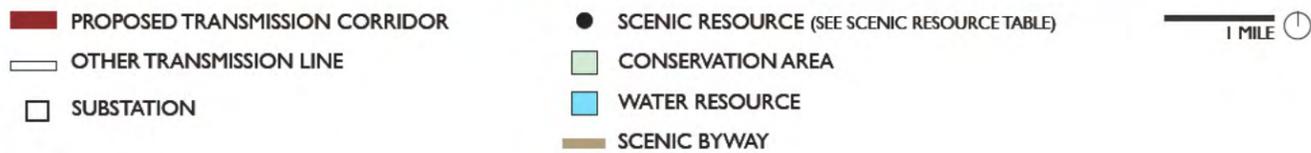
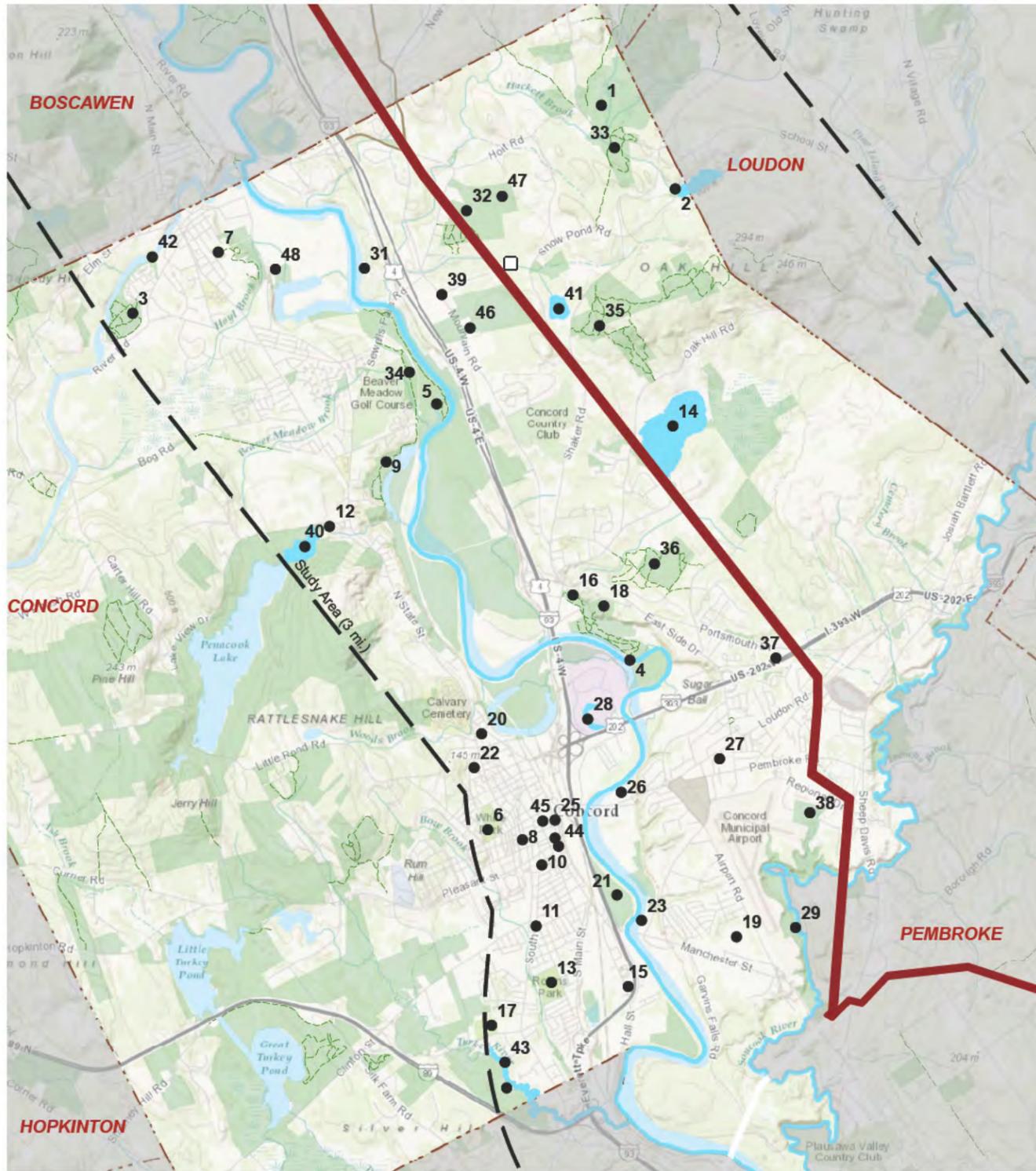
Adjacent Land Use: The corridor is bordered by residential, agricultural, utility/transportation, and commercial uses. Route 132/Mountain Road, Hoit Road, Shaker Road, Loudon Road, and Interstate 393 intersect the transmission corridor in Concord. Single-family residential development is adjacent to the majority of the project right-of-way.

The corridor is located within a number of land use zones as it crosses a variety of development types and densities in Concord. The majority of the corridor is located in Medium Density Residential District (RM) and Open Space Residential District (RO). A smaller portion of the existing corridor is located in High Density Residential District (RH); Gateway Performance District (GWP), Office Park Performance District (OPF); Industrial District (IN); and Shoreland Protection District overlay area adjacent to Turtle Pond.

Changes within Existing Transmission Corridor

The proposed 345-kV line will be located in the center of the corridor on structures ranging in height from 48 to 125 feet. The 115-kV line on the east side of the corridor will remain in place and the 115-kV line to the west will be relocated further west to make room for the 345-kV line in the center of the corridor. The relocated 115-kV line will be supported by structures ranging from 42 to 120 feet. The existing distribution line (located on the west side of the corridor from south of the Oak Hill Substation to the first corridor alignment offset) will be reconstructed on the west side of the corridor. Sparse patches of additional clearing will occur within the existing corridor. The additional clearing will range from approximately 10 to 40 feet.

CONCORD DESCRIPTION



CONCORD DESCRIPTION

TABLE 5-3: CONCORD SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Hoit Road Marsh WMA	Wildlife Management Area and publicly accessible pond area.	2 / 6	State	1.5 mi	LOW	NO		
2	Hot Hole Pond	Publicly accessible waterbody (ramp).	2 / A	State	1.6 mi	MEDIUM	NO		
3	Contocook River Park	City park with vistas of the Merrimack River and shore bank access	2	City of Concord	2.7 mi	LOW	YES		
4	Merrimack River	Designated in the NH Rivers Management Program. Two public water access points in Canterbury. VIA in Northfield.	4 / 2	NH Dept. of Environmental Services	0.7 mi	MEDIUM	NO		
5	Sewalls Falls State Multi-Use Recreation Area	State recreation area with Merrimack River access.	2	State	1.0 mi	MEDIUM	NO		
6	White Park	City park with sports fields in residential neighborhood	A	City of Concord	2.9 mi	LOW	YES		
7	Rolfe Park	City park with sports fields and trails	A	City of Concord	1.5 mi	LOW	NO		
8	Thompson Playlot	City park in residential area with basketball court	A	City of Concord	2.6 mi	LOW	NO		
9	Morono Park Trail	Waterfront park and recreation area, with Merrimack River access.	2	City of Concord	1.5 mi	LOW	NO		
10	Fletcher-Murphy Playlot	City with basketball court and playground	A	City of Concord	2.6 mi	LOW	NO		
11	McKee square	Small city park. A green space between roads in commercial area	A	City of Concord	2.6 mi	LOW	NO		
12	Garrison Park	City park with sports fields near Garrison School	A	City of Concord	2.5 mi	LOW	YES		
13	Rollins Park	City park with sports fields a pool in residential neighborhood	A	City of Concord	2.4 mi	LOW	NO		
14	Turtle Pond	Publicly accessible waterbody (ramp). Wood deck for wildlife and scenic viewing.	2	State Fish & Game Dept.	Crosses Corridor	MEDIUM	YES	MEDIUM	MEDIUM
15	Reed Playground	City Park. Identified as protected open space in 2008 Master Plan.	A	City of Concord	1.8 mi	LOW	NO		
16	Merrill Park	City park with pool and sports fields in residential neighborhood.	A	City of Concord	1.3 mi	LOW	NO		
17	Martin Park	City park.	A	City of Concord	3.0 mi	LOW	NO		
18	Merrimack River Outdoor Education and Conservation Area	Conservation and recreation area on Merrimack River.	7	Society for the protection of NH Forests	1.1 mi	LOW	No		

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
19	Sanel Park	City park with baseball fields.	A	City of Concord	0.8 mi	LOW	NO		
20	Kimball Playground	City park with pool, playground in residential neighborhood.	A	City of Concord	2.6 mi	LOW	NO		
21	Healy Park	City park with Merrimack River Access.	2	City of Concord	1.9 mi	LOW	NO		
22	Grappone Park	City park with sports fields in residential neighborhood.	A	City of Concord	2.9 mi	LOW	NO		
23	Terrill Park	City park.	A	City of Concord	1.7 mi	LOW	YES		
24	Bicentennial Square	City square (0.2 acre)	A	City of Concord	2.3 mi	LOW	YES		
25	Eagle Square	City square (0.42 acre)	A	City of Concord	2.3 mi	LOW	NO		
26	Kiwanis Riverfront Park	City park with frontage on Merrimack River	A	City of Concord	1.7 mi	LOW	NO		
27	Keach Park/ Heights Playground	City park with playground, sports fields, and pool in residential neighborhood	A	City of Concord	0.8 mi	LOW	NO		
28	Fort Eddy Pond	Shore bank access location to Merrimack Park.	2	NH Technical Institute.	1.8 mi	LOW	NO		
29	Soucook River	Publicly accessible waterbody (shore bank).	2	State	Crosses Corridor	LOW	YES	MEDIUM	MEDIUM
30	Cilley State Forest	State Forest. Includes farm, woodland, and floodplain.	5	State	2.7 mi	MEDIUM	NO		
31	Merrimack River Greenway Trail (proposed)	Planned recreation trail along the Merrimack River:	A	Various	Various	N/A	NO		
32	Spear's Park	City park with access to wooded area and recreation trails.	B / A	City of Concord	Crosses Corridor	LOW	YES		
33	Riley Trails	City trails.	A	City of Concord	1.6 mi	LOW	NO		
34	Beaver Meadow Golf Course	Municipal golf course. Identified as protected open space in 2008 Master Plan.	A	City of Concord	1.6 mi	LOW	NO		
35	Oak Hill Trails	Town forest maintained hiking trails. Trails provide access to Oak Hill Fire Tower in Loudon. Vista Trail provides managed scenic vista.	B	City of Concord	0.5 mi from Vista Trail Overlook	MEDIUM	YES	MEDIUM	LOW-MEDIUM
36	Curtisville and Bachelder Mill Road Trails	Hiking trails in flat wooded area near residential developments. An observation deck overlooks wetland on the Bachelder Mill Road trails.	B	City of Concord	0.2 mi from closest trail	LOW	NO		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Cultural Value Rating

CONCORD DESCRIPTION

TABLE 5-3: CONCORD SCENIC RESOURCES (CONTINUED)

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
37	East Sugar Ball Road Accessible Trail	Short paved trail adjacent to Interstate connect neighborhood streets.	B	City of Concord	Crosses Corridor	LOW	Yes		
38	Karner Blue Butterfly National Wildlife Refuge	Short walking trails through habitat for federally endangered butterfly species. Habitat supports over 726 butterfly and moth species.	9	City of Concord	0.2 mi	LOW	YES		
39	Canterbury Shaker Village Byway	Route 132 and local roads in Concord and Canterbury. State designated Scenic and Cultural Byway. VIA in Canterbury.	8	NH Dept. of Transportation	Crosses Corridor	MEDIUM	YES	MEDIUM	MEDIUM
40	Penacook Lake	Waterbody with limited public access	30	State	3.0 mi	LOW	YES		
41	Snow Pond	Waterbody with limited public access	30	State	0.1 mi	LOW	YES		
42	Contoocook River	River not designated in NH Rivers Management Program	30	State	2.0 mi	LOW	YES		
43	Turkey River	River not designated in NH Rivers Management Program	30	State	2.6 mi	LOW	NO		
44	Concord Historic District	Historic district listed on the National Register of Historic Places. The district includes the following NRHP properties: Farrington House, Eagle Hotel, the Endicott Hotel, and the New Hampshire Savings Bank building.	34	Various	2.3 mi	HIGH	NO		
45	Concord Civic District	Historic district listed on the National Register of Historic Places. The district includes the State House and the Old Post Office (a NRHP).	34	Various	2.3 mi	HIGH	NO		
46	Blood Conservation Easement (SPNHF & Aggric. Pres. Rest.)	Conservation Easement	14	New Hampshire Department of Agriculture	Crosses Corridor	LOW	YES		
47	Richards Community Forest	Conservation Easement adjacent to Spear's Park	14	SPNHF	0.1 mi	LOW	YES		
48	Randall Property	Conservation easement on Merrimack River.	14	City of Concord (land owner) / Audubon Society of New Hampshire (easement holder)	1.5 mi	LOW	YES		

STATE/REGIONAL SOURCES:

- (2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm
- (4) Map of Designated Rivers in the New Hampshire River Protection Program, Department of Environmental Services: <http://des.nh.gov/organization/divisions/water/wmb/rivers/desigriv.htm>
- (5) Delorme Atlas and Gazetteer for New Hampshire, 16th Edition, 2010
- (6) State Lands Administered by State of NH Department of Resources and Economic Development and the NH Fish and Game Department, July 2007 (3) New Hampshire Snowmobile Association Map, 2014
- (7) Society for the Protection of NH Forests – List of Properties, January 2013
- (8) New Hampshire DOT Scenic Byway Map, October 2008. <http://www.nh.gov/dot/programs/scbp/index.htm>
- (9) NH Fish and Game Department website the Merrimack River Wildlife Heritage Trail: <http://merrimack.wildnh.com>
- (30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014

LOCAL SOURCES:

- (A) City of Concord Master Plan, 2008
- (B) Concord Trail Maps, by Concord Conservation Commission, 2010

TURTLE POND (15)

CONCORD

OVERALL VISUAL IMPACT **LOW**

Turtle Pond (also known as Turtletown Pond) is a 159-acre water body 3 miles northeast of downtown Concord, managed by the New Hampshire Fish and Game Department (NHFGD Inland Fisheries Division Map) and used by the public for fishing, boating, and wildlife observation. The average depth of the pond is approximately 10 feet and supports a variety of wildlife, including seven fish species. Recreational facilities include:

- Paved parking lot with space for approximately 15 cars.
- Public boat launch.
- Portable toilets
- Kiosk display with information about the pond
- A 325 SF wooden observation deck for pond viewing and accessible fishing.

Turtle Pond is part of a five square mile section of Concord called Broken Ground, an area known for its rugged terrain and wetlands. The City's Master Plan recommends public acquisition of most of Broken Ground in recognition of its habitat diversity and the range of recreational resources available to the public.

With the exception of the transmission corridor and several houses, the majority of the land adjacent to the pond is either forested or farmland, with little evidence of development. Extensive areas of wetlands are found along the north and east edges of the pond, much of which is part of the Turtletown Wildlife Management Area (WMA) and Turtle Pond East conservation area (NHFGD Inland Fisheries Division Map). The topography surrounding the pond is gently rolling, creating a moderate sense of enclosure. The wetlands in the vicinity of the wooden deck provide visual interest in the immediate foreground as the ecological conditions transition from submerged wetland vegetation to forested uplands.

Existing Transmission Corridor

The existing transmission line is located along the southwestern edge of the pond in a 257.5-foot right-of-way. Transmission structures are visible from the viewing deck and most areas on the pond.

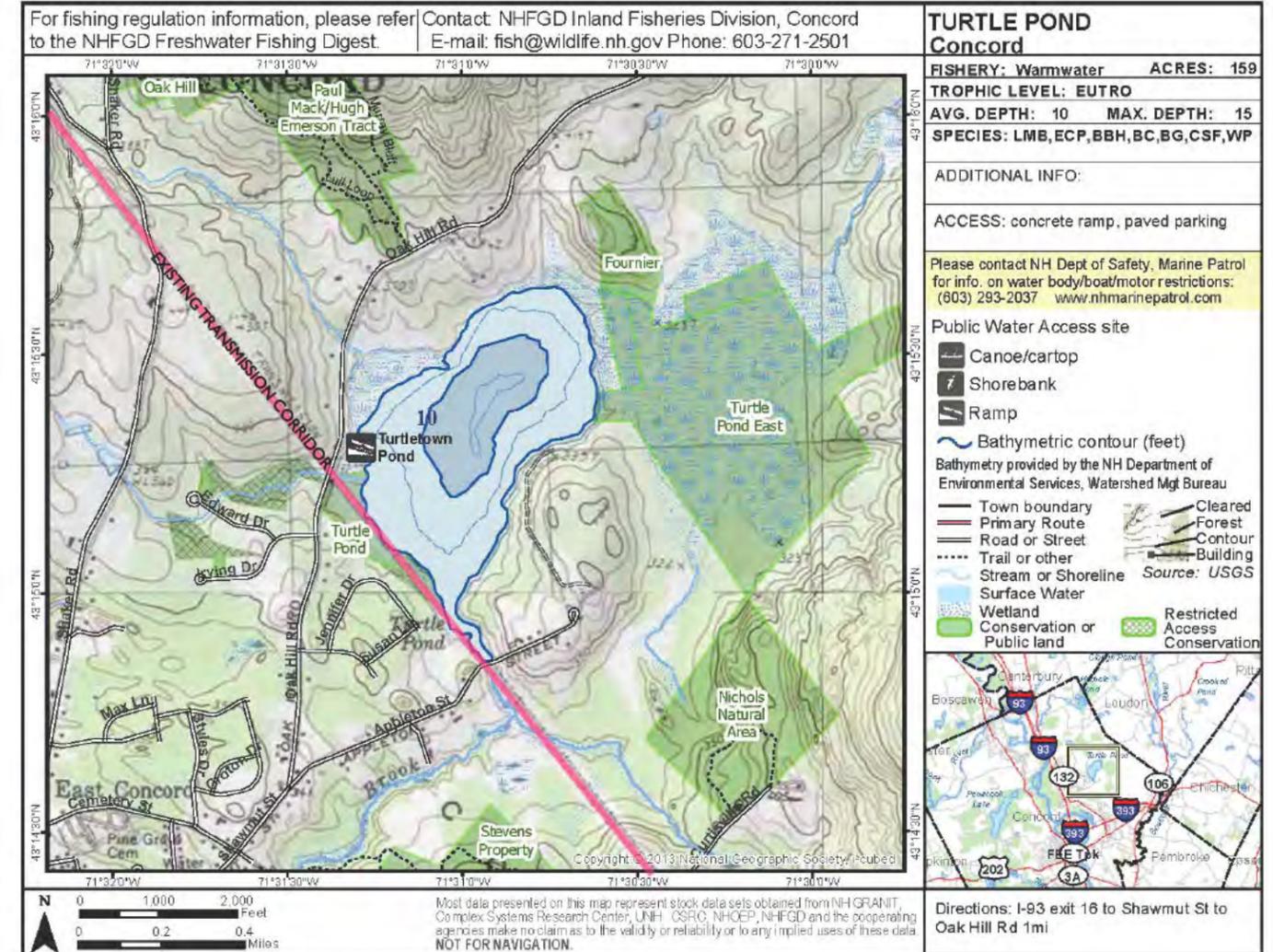
There are currently two 115-kV transmission lines within the corridor, plus a local distribution line on its western edge. The existing 115-kV line nearest the pond is supported on steel monopole structures that range in height from 84 to 97 feet. The second 115-kV transmission line consists of wooden H-frame structures that range in height from 43 to 61 feet.

Five 115-kV monopole structures, three 115-kV H-frame structures, and six smaller distribution structures are currently visible from the observation deck. Unlike most transmission corridors located in wooded settings, there is no well-defined edge of clearing at the southern end of Turtle Pond since the corridor crosses over the pond and its associated wetlands.

Changes within Existing Transmission Corridor

The 115-kV monopole line nearest the pond will remain in place. The 115-kV H-frame line in the center of the corridor will be relocated farther west and will be mounted on weathering steel monopole structures ranging in height from 90 to 115 feet. The distribution line will also be relocated farther west within the corridor and mounted on new wooden poles ranging in height from 33 to 43 feet.

The 345-kV line will be supported by weathering steel H-frame structures located between the two 115-kV lines, and will range in height from 90 to 110 feet. The only vegetation clearing required in the vicinity of the pond will be the removal of several isolated trees and minor maintenance clearing. (See Turtle Pond Photosimulation.)



Official NHFGD Depth Map for Turtle Pond



Panoramic view from observation deck in the western corner of Turtle Pond. The image continues to the southeast on the next page. The majority of the land adjacent to the pond is either forested or farmland, with little signs of development other than the existing transmission corridor.

TURTLE POND (15)

CONCORD

Cultural Value: Medium.

A publicly accessible water body managed by the NHFGD in close proximity to a well-populated area.

Visual Quality: Medium

The wetlands and forested uplands immediately adjacent to the pond and the topography in the mid-ground of the pond create visual interest and add to the visual quality of this resource.

Scenic Significance: Medium

VISUAL IMPACT ASSESSMENT

Visual Effect: Low

- Four 345-kV H-frame structures and 4 relocated 115-kV monopole structures will be visible from the pond and overlook area. The structures will follow the same pattern and spacing as the existing 115-kV structures.
- The scale of the proposed 345-kV structures and relocated 115-kV structures is similar to the existing structures within the corridor.
- The use of weathering steel H-frame structures reduces the contrast in color and form. The structures will be visible against a wooded backdrop, with the top of some of the structures visible against the sky. No additional clearing will be required in the area visible from the pond.
- The structures and conductors will not block or interfere with the views of the water. From the observation deck, the viewers have a greater than 180° view of the pond facing east. The structures will not be a dominant part of the view from the deck.
- The new structures will occupy the same amount of the horizontal field of view that currently contains transmission structures.
- No additional clearing will be done in the area visible from the pond.

Mitigation

- Using weathering steel structures to reduce contrast in color and form.
- Using H-frame structures to minimize the height and scale of the structures.
- Maintaining similar spacing with existing transmission structures.

User Groups: Boaters, anglers, bird watchers, picnickers, and those viewing the pond from the observation deck.

User Expectation: Medium

- The pond offers an easily accessible contrast from the urban area of Concord. Users expect some cultural modifications in the landscape when located this close to the city.
- The primary public users on the pond who will have a view of the transmission line are anglers and boaters.

While this group most likely accepts the current visual quality of the resource, with a major transmission corridor at the southern end, it is likely that their primary motivation is the quality of the fishing.

- User groups are primarily local residents from the greater Concord area. As a local resource, visitors are expected not to travel great distances with the specific purpose of visiting Turtle Pond.
- Users are accustomed to an existing transmission line corridor crossing the southern edge of the pond.

Extent, Nature, and Duration of Public Use: Medium

- Recreation is limited to day-use, primarily local and regional residents. Visitors come to view the water body, riparian vegetation, and wildlife for short-moderate amounts of time. The scenic quality of the pond is important to the naturalist-visitor but may be secondary to those who primarily come to fish or boat.

Overall Visual Impact: Low

The additional transmission structures will have a low-medium overall visual impact on Turtle Pond. The NPT project should not result in a substantial change in the way people now use or enjoy the pond.

- The structures will not block or interfere with existing views of the water.
- The structures will not change the inherent character of the pond or visually dominate the views of or from the pond.
- The visual impact is reduced by the use of weathering steel H-frame structures that are the same scale as remaining 115-kV structures.
- People who currently visit the pond for fishing, boating, and wildlife observation will still be able to enjoy these pursuits.



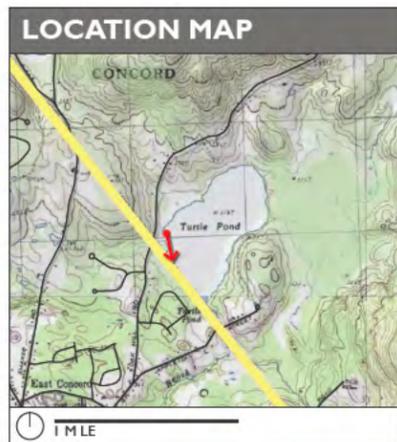
View from the observation deck during leaf off conditions. Self weathering steel H-frame structures will be used to support the 345-kV line.



Continuation of panoramic view of Turtle Pond.



Turtle Pond Observation Deck



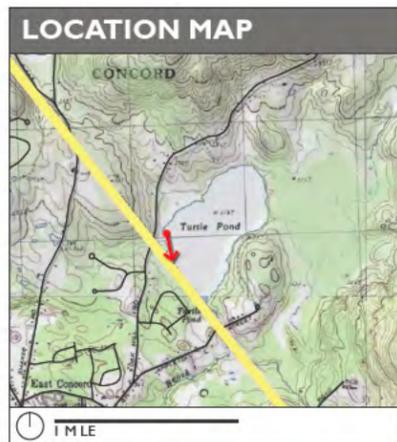
TECHNICAL INFORMATION			
TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Wood Monopole and H-Frame	Wood Monopoles to remain / Wood H-Frames to be replaced with Weathering Steel Monopoles
	Height range of visible 115-kV structures	61 - 92.5 ft (monopole) / 43 - 56.5 ft (H-frame)	79 - 101.5 feet (weathering steel monopole)
	345-kV structure type	N/A	Weathering Steel H-Frame
	Height range of visible 345-kV structures	N/A	80 - 110 feet
	Right-of-way width	257.5 feet	257.5 feet
PHOTOGRAPH	Date and time: 8/1/14 at 12:55pm	Location: 43.255135° N, -71.521292° W	Viewing Direction: Southeast
	Distance to visible structures: 0.13 to 0.5 mile	Number of transmission structures visible in the photosimulation: 14	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D7100	Photo Source: TJD&A

NOTES
GENERAL NOTES Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.
PHOTOSIMULATION PRODUCTION By Terrence J. DeWan & Associates
VIEW DESCRIPTION View is from the observation deck/fishing platform at the Turtle Pond boat launch.

TURTLE POND, CONCORD
PHOTOSIMULATION: PANORAMA



Turtle Pond Observation Deck



TECHNICAL INFORMATION			
TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Wood Monopole and H-Frame	Wood Monopoles to remain / Wood H-Frames to be replaced with Weathering Steel Monopoles
	Height range of visible 115-kV structures	61 - 92.5 ft (monopole) / 43 - 56.5 ft (H-frame)	79 - 101.5 feet (weathering steel monopole)
	345-kV structure type	N/A	Weathering Steel H-Frame
	Height range of visible 345-kV structures	N/A	80 - 110 feet
	Right-of-way width	257.5 feet	257.5 feet
PHOTOGRAPH	Date and time: 8/1/14 at 12:55pm	Location: 43.255135° N, -71.521292° W	Viewing Direction: Southeast
	Distance to visible structures: 0.13 to 0.5 mile	Number of transmission structures visible in the photosimulation: 14	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D7100	Photo Source: TJD&A

NOTES
<p>GENERAL NOTES</p> <p>Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.</p>
<p>PHOTOSIMULATION PRODUCTION</p> <p>By Terrence J. DeWan & Associates.</p>
<p>VIEW DESCRIPTION</p> <p>View is from the observation deck/fishing platform at the Turtle Pond boat launch.</p>

TURTLE POND, CONCORD
EXISTING CONDITIONS: NORMAL VIEW (SOUTHEAST)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

TURTLE POND, CONCORD
PHOTOSIMULATION: NORMAL VIEW (SOUTHEAST)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

TURTLE POND, CONCORD
EXISTING CONDITIONS: NORMAL VIEW (SOUTH)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

TURTLE POND, CONCORD
PHOTOSIMULATION: NORMAL VIEW (SOUTH)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

SOUCOOK RIVER (33)

CONCORD

OVERALL VISUAL IMPACT **LOW-MEDIUM**

The Soucook River is a tributary of the Merrimack River, originating at the outlet of Rocky Pond in Canterbury and Loudon and flowing south for approximately 29 miles. For most of its length, the river meanders through the gently rolling terrain of Merrimack County. The river is not designated in the NH Rivers Management Protection Program.

The river is primarily used for recreation by people in canoes and anglers with non-motorized watercraft. The river has six water access locations large enough to put in a canoe or kayak (NHFGD Table of Public Access). Concord and Pembroke each have shore bank access sites within the study area, the closest being 0.23 mile upstream in Concord off of Route 106. This site has paved parking for six vehicles and a narrow geotextile path leading down to the water.

While much of the riverbank is wooded, there is a considerable amount of visible development in the adjacent landscape. Route 106 follows the river, crossing it in four locations. The river valley has natural sand and gravel deposits, which has led to the development of gravel operations close to the river in many areas. The transmission corridor crosses the river at the southern end of an industrialized area west of Route 106 in Concord. South of the crossing the land is mostly forested until it joins the Merrimack River.

Existing Transmission Corridor

The meandering nature of the river prevents views of the transmission corridor until a point just east of their intersection. The river runs diagonally through the corridor in a pair of reverse curves. A paddler entering the corridor from the east currently sees the clearing and structures for approximately 1,000 feet before entering the woods on the west side of the corridor.

The right-of-way for the existing transmission corridor is 265 feet in width and is mostly cleared of vegetation where it crosses the river. The corridor includes two 115-kV transmission lines supported by wooden H-frame structures and a distribution line on the west side.

On the east side of the corridor at the intersection of the Soucook River, the first 115-kV line is supported by 3-pole wooden H-frame structures. On the north side of the river the nearest structure is 47.5 feet in height and located approximately 310 feet from the shoreline on top of a steep embankment. On the south side of the river the nearest structure is 74.5 feet in height and located approximately 250 feet from the shoreline.

In the center of the corridor, the second 115-kV line is supported by H-frame structures. On the north side of the river, the nearest structure is 42 feet in height and located approximately 250 feet from the shoreline on top of a steep embankment. On the south side of the river, the nearest structure is 42 feet in height and located approximately 60 feet from the river.

Changes within Existing Transmission Corridor

The 3-pole structures on the eastern 115-kV line will be replaced in the same approximate locations with monopole galvanized steel structures, 75 feet in height on the north side of the river and 90 feet in height on the south side. The 115-kV line in the center of the corridor will be relocated farther to the west and replaced with monopole galvanized steel structures, 90 feet in height north of the river and 102 feet in height south of the river. The 115-kV structure that is now 60 feet from the water will be replaced with a structure approximately 275 feet from the river.

The new 345-kV line will be installed in the center of the corridor on weathering steel H-frame structures. The structure on the top of the bank and on the north side of the river will be 75 feet in height; the two structures south of the river will be 90 and 80 feet in height. The most visible structure (to someone on the river) will be approximately 30 feet from the edge of the water. No additional clearing will be required.

Cultural Value: Low

A publicly accessible river (small non-motorized watercraft) located in a populated, industrialized area.

Visual Quality: Low

The river is not known for its visual quality and it is not a state designated river. Paddlers and anglers traveling along this river pass under highway abutments, industrial excavation facilities, and suburban development patterns.

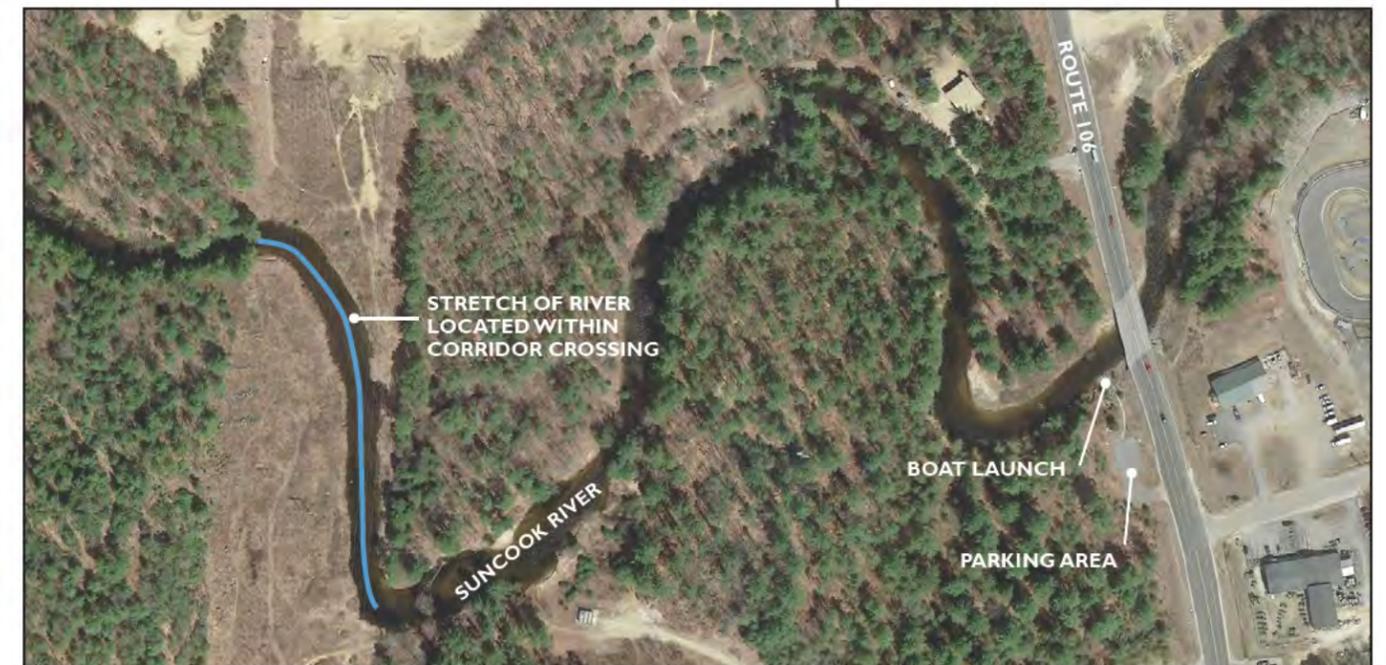
Scenic Significance: Low



Bird's eye view facing west of the Soucook River between Route 106 and the existing transmission corridor. Steep banks along the river limit visibility of the adjacent commercial development along the river.



0.5 MILE



400 FEET

SOUCOOK RIVER (33)

CONCORD

VISUAL IMPACT ASSESSMENT

Visual Effect: Low

- The new structures will be located in an existing corridor clearing that already has several transmission lines passing over the river.
- The relocated 115-kV structure in the center of the corridor will be taller than the existing structure, but located approximately 210 feet farther from the shoreline, which will reduce the scale of the taller structure. The relocated 115-kV line on the east side of the corridor will increase in height by approximately 13 to 19 feet.
- The 345-kV structures will be approximately 16 to 32 feet taller than the existing structures and will be prominently visible within the existing corridor.
- The transmission structures will dominate the view to boaters passing through the corridor for a relatively short time.

Mitigation

- Maintaining riparian vegetation within the river corridor wherever possible.

User Groups: Canoers/kayakers, anglers.

User Expectation: Low

- The developed and industrial character of the surrounding landscape in Concord and Pembroke lowers the sensitivity of paddlers and anglers on this river. Users expect some level of cultural modification along the river corridor.
- At the existing corridor crossing, users are accustomed to passing under a transmission line.

- The river crosses a second transmission line in Concord, decreasing user expectation for a high-quality corridor landscape. The second crossing is located approximately 3.5 miles downstream from the NPT crossing, shortly before the confluence between the Soucook and Merrimack Rivers.

Extent, Nature, and Duration of Public Use: Medium.

- The scenic quality of the landscape is intrinsic to the experience of paddling and secondary to the activity of fishing.
- The nearest shore bank access point is upstream from the crossing, suggesting that most paddlers putting in at this location will pass through the corridor.
- The nearest access point can accommodate a limited number of vehicles, suggesting the extent of use is relatively low.
- The average paddler will be within the corridor for 3-4 minutes, following a meandering route that will open and close views of the transmission corridor.

Overall Visual Impact: Low

The construction of a new transmission line and reconstruction of the existing line will have a low-medium overall visual impact on the Soucook River and should not have an effect on the way people currently use or enjoy the river.

- The structures will not block or interfere with existing views.
- The minimal presence of the transmission structures and conductors in relation to the 29 mile stretch of the river will not change the inherent character of the scenic resource; less than 1% of the length of the river will be affected by the changes to the transmission corridor.
- The visual impact is greatly reduced by the use of weathering steel H-frame structures.
- People who currently paddle the river and fish along the way will still be able to enjoy these activities.



Parking area at boat launch on Route 106, 0.23 mile upstream of the existing transmission corridor crossing. There will be no visibility of the project from this location.



Path leading down to the hand-carry boat launch from the parking area on Route 106. There will be no visibility of the project from this location.



View facing east the Route 106 bridge over the Soucook River from the boat launch. The transmission corridor is located 0.23 mile downstream from this point. There will be no visibility of the project from this location.



View from the boat launch facing west down the Soucook River. There will be no visibility of the project from this location. Views of the existing transmission corridor are limited by the meandering nature of the river and its steep embankments.



Bird's eye view facing north of the Soucook River at the existing corridor crossing.

OAK HILL TRAILS (36) CONCORD

OVERALL VISUAL IMPACT **MEDIUM**

Oak Hill is located just north of Turtle Pond in the northeastern part of Concord between Shaker Road and Oak Hill Road. Over the past several decades the City has been acquiring land and easements in the Oak Hill / Broken Ground area to protect its habitat value and recreational resources. (See Turtle Pond for further description of Broken Ground.)

The Oak Hill trails are managed by the Concord Conservation Commission, primarily for hikers, mountain bikers, and experienced cross-country skiers. The Vista Trail is one of the more popular hiking trails, due to its relatively short length and the western views of Mount Kearsarge, Mount Sunapee, Ragged Mountain, and Mount Cardigan. Approximately 3/4 of an acre has been cleared on the hillside below the overlook to open up the view. Other viewing opportunities on Oak Hill include the vista point off the Dancing Bear Trail (view to the northwest) and the Oak Hill Fire Tower in Loudon (see Oak Hill Fire Tower for farther description) (Concord Trail System Oak Hill Trails Brochure, Concord Conservation Commission, 2010).

The trail systems are easily accessed by parking lots and trailheads on Shaker Road on the west and Oak Hill Road on the east. The larger parking area on Shaker Road is well marked with a sign reading Oak Hill City Forest Hiking Trails. This entrance includes a gravel parking area for 8-10 cars and a well-maintained kiosk with information about the Oak Hill City Forest and the history of the area.

Existing Transmission Corridor

At its closest point, the existing transmission corridor is approximately 0.5 mile west of the overlook on the Vista Trail. The line of structures and conductors is broken by intervening hills and vegetation. While approximately 13 existing transmission structures are visible, they do not form a continuous line in the 30-degree horizontal field of view through which they are seen. The corridor runs perpendicular to the overlook and follows the topography of the landscape without appearing above



Entrance to the Oak Hill City Forest on Shaker Road 0.6 mile from transmission corridor. There will be no views of project from this location.

the horizon. In most instances the structures are seen against a wooded backdrop that minimize the contrast in color and texture. The vegetation in the cleared corridor is approximately 8 to 10 feet tall, which helps to reduce the contrast in color and texture between the corridor and the surrounding woodlands.

There are currently two 115-kV lines located in the corridor. The one on the eastern side of the corridor is supported by wooden monopole structures that range in height from 61 to 88 feet. The second line, in the center of the corridor, is supported by wooden H-frame structures that range in height from 43 to 57 feet. South of the Oak Hill Substation, there is a smaller distribution line on the western edge of the corridor. The corridor right-of-way is 257.5 feet in width; all but 20 feet is cleared.

In several places the corridor slopes laterally, with as much as a 80-foot grade change between the east and west sides. This has the effect of making the relatively short distribution line on the west side of the corridor appear taller than it actually is, when seen from the Oak Hill trails.

Changes within Existing Transmission Corridor

The 115-kV line on the east side of the corridor will remain in place. The 115-kV line in the center of the corridor will be relocated farther west and mounted on weathering steel monopole structures that will range in height from 83.5 to 92 feet. The distribution line will also be relocated farther west (uphill) within the corridor to make room for the 345-kV line.



Typical trail conditions at Oak Hills. The only views of the NPT Project are at the cleared Vista Trail lookout at the Oak Hill Fire Tower.

The 345-kV line will be supported by weathering steel H-frame structures between the two 115-kV lines in the center of the corridor. The heights of the 345-kV structures will range from 80 to 100 feet. There will be minimal vegetation clearing within the corridor, except for that required for maintenance.

Cultural Value: Medium

Conservation lands (partially owned by the City of Concord) open to the public and preserved primarily for scenic qualities. The trails are located on city forestland and managed by the Concord Conservation Commission. The trails are well maintained and designed to support frequent use. Viewshed management indicates that this area is well supported by the community.

Visual Quality: Medium

Vegetation along the trail is mixed second growth hardwood/softwoods, which effectively block most of the views beyond the immediate foreground. The only viewing opportunities are at places where selective tree removal

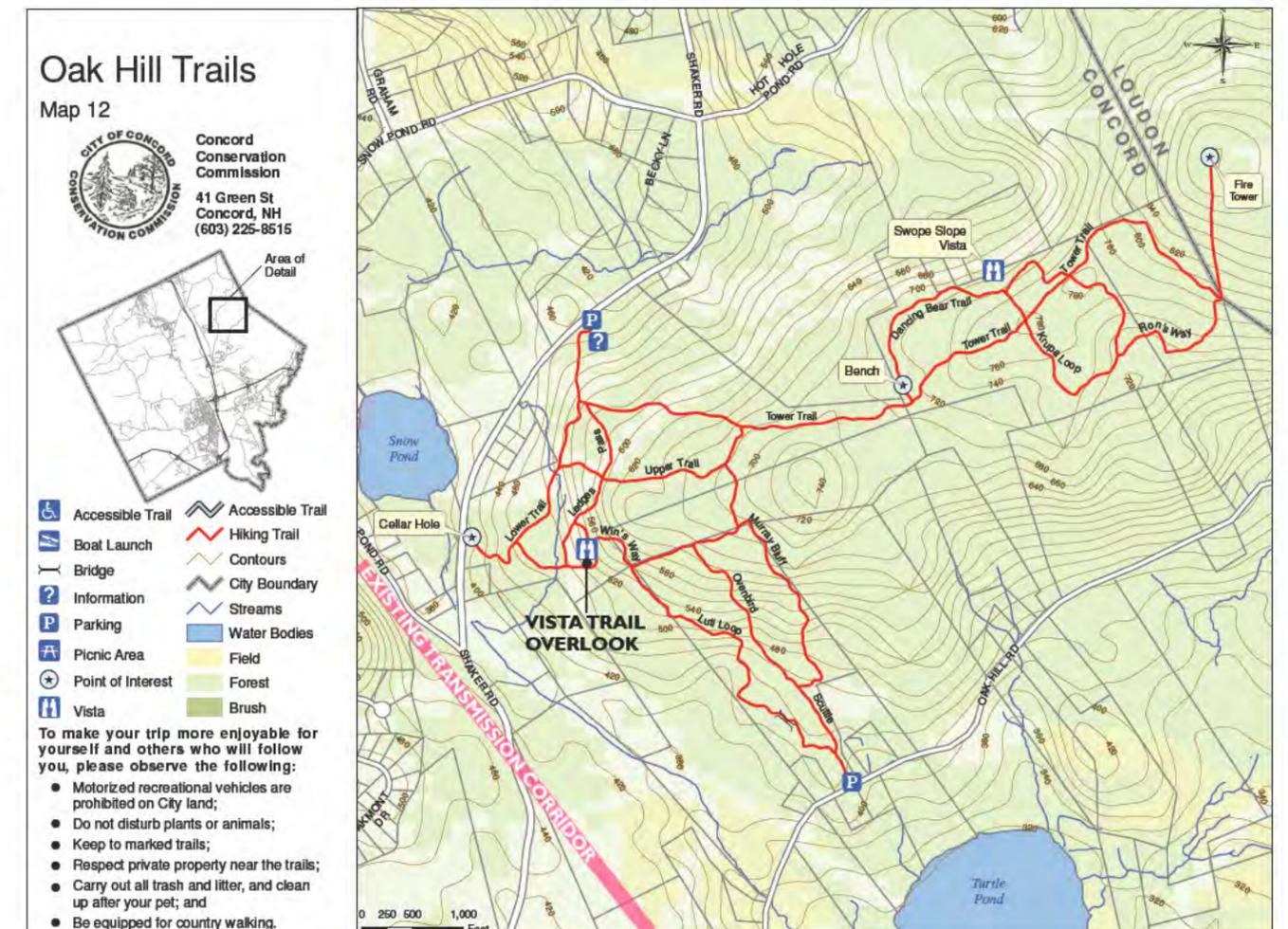
has opened up midground and background views of rolling countryside and more distant mountains, which are typical of this part of New Hampshire. Visible development includes a row of buildings, a cell tower, farms fields, and the existing transmission corridor in the foreground.

Scenic Significance: Medium

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- The structures will remain below the peak of the hill and will not be visible above the tree line.
- The use of weathering steel H-frame structures will reduce contrast in color and form.
- The position of 345-kV structures in the center of the corridor places them at a lower elevation than the existing distribution line and the relocated 115-kV line.



Map of Oak Hill Trail system by Concord Conservation Commission. Vista Trail Overlook is identified as one of two lookouts in the city forest trail system.

OAK HILL TRAILS (36)

CONCORD

- The transmission structures will not become a dominant feature in the landscape since they will be seen from a viewer-superior position against a mostly wooded backdrop.
- The structures and conductors will not block or interfere with views of the rolling topography in the background, which is the primary focal point.
- This is a viewing location that already has considerable evidence of man-made change, including the existing transmission corridor, roadways, and commercial and residential development.

Mitigation

- Using weathering steel structures to reduce contrast in color and form.
- Using H-frame structures to minimize the height and scale of the structures.
- Maintaining similar spacing with the existing transmission structures.
- Positioning the 345-kV line downhill from the existing distribution line to reduce the perceived scale of the NPT structures.

User Groups: Local residents, hikers, mountain bikers, and cross country skiers.

User Expectation: Medium

- This is a city forest located 4 miles from downtown Concord. With such close proximity to a developed area, users expect some cultural modifications in the landscape.
- The view from the Vista Trail includes many forms of development, including the existing transmission line.

Extent, Nature, and Duration of Public Use: High

- The Oak Hill City Forest provides an opportunity for local residents to hike forested trails and experience views of the rolling southern New Hampshire landscape.
- The parking area and trails are well maintained and marked with good signage.
- The majority of the trail system is in the woods. Cleared overlooks afford the opportunity to stop and enjoy the view.
- The scenic quality of the midground and background views is important to hiking and secondary to activities such as mountain biking.

Overall Visual Impact: Medium

- The new transmission line and reconstruction of an existing line will have a medium overall visual impact on the views from the Vista Trail. The NPT project should not result in a noticeable change in the way people now use or enjoy the Oak Hill City Forest trail system.
- The structures will not block or interfere with existing views.
- Possible visual impact is reduced by the use of weathering steel H-frame structures and the position of the structures within the corridor.
- The proposed transmission structures will not change the inherent character of the Oak Hill City Trail system.
- People who currently use the trails will still be able to enjoy these pursuits.



Approximately 3/4 acre of vegetation has been cleared below the Vista Trail overlook to open views to the west.



View of the existing transmission corridor from the Vista Trail overlook. The NPT project will consist of weathering steel H-frame structures 80 to 100 feet in height. The 115-kV line in the center of the corridor will be relocated on weathering steel monopole structures 83 to 92 feet in height.



Vista Trail Overlook. The bench provides hikers with an opportunity to sit and take in the view. The existing transmission corridor is visible at a distance of 0.5 mile. The NPT project will be visible within the same corridor.

Concord Works Cited:

- City of Concord Planning Board. Master Plan 2030: Concord New Hampshire. June 18, 2008.
- NHFHD Inland Fisheries Division, Concord. Turtle Pond Depth Map.
- Angler Web. Soucook River. 9 Dec 2014. <http://www.anglerweb.com/fishing_spots/soucook-river>.
- Merrimack River Watershed Council. <<http://www.merrimack.org/watershed-resources/>>.
- New Hampshire Fish and Game Department (NHFGD). Table of Public-access boating and fishing sites in New Hampshire. Web. 14 Aug 2014. <http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm>.
- City of Concord. Concord Municipal Website: Facilities. Web. 18 Dec 2014 <<http://www.concordnh.gov/Facilities/Facility/Details/58>>.
- City of Concord Conservation Commission. Oak Hill Trails Brochure and Map. September 2010.
- City of Concord Conservation Commission. Spear's Park Trails Brochure and Map. September 2010.

BOSCAWEN DESCRIPTION

Land Area: 24.9 square miles (NHES)

Inland Water: 0.5 square mile (NHES)

Population: 3,952 residents (NHES)

Population Density: 159.0 persons/square mi (NHES)

Town Location: Boscawen is located in Merrimack County, and is bounded by Franklin and Northfield to the north, the Merrimack River to the east, Concord and Webster to the south, and Salisbury to the west.

Study Area: The study area is located on the east side of Boscawen. It covers 61.38% of the total land area (9,975 acres).

Physical Characteristics

The Merrimack River defines the eastern boundary of town. The topography in town is hilly. Table VI-22 in the town's Master Plan lists Dagody Hill near the southern boundary of town (620') and Knowlton Hill on upper Queen Street (760') as the highest elevations within town. Steep slopes exist throughout town; the conserved area west of N. Main Street contains slopes 25 percent or greater.

Cultural Development Patterns

The town is primarily rural in character, with dense commercial and residential development located within the southern and central parts of town along U.S. Routes 3 and 4, near the Merrimack River. Of the developed area in Town, property types are approximately 84% residential, 13% commercial and 3% public utility, current use, or other; approximately 45% of residential housing is single family (NHES).

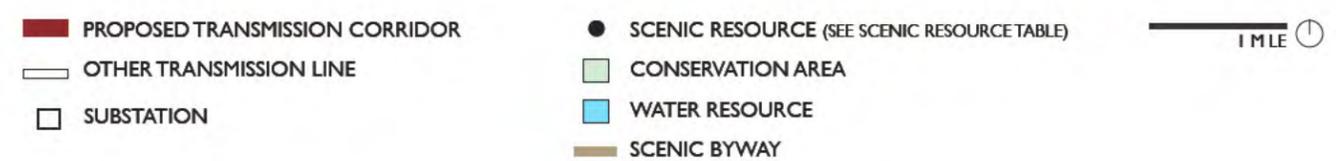
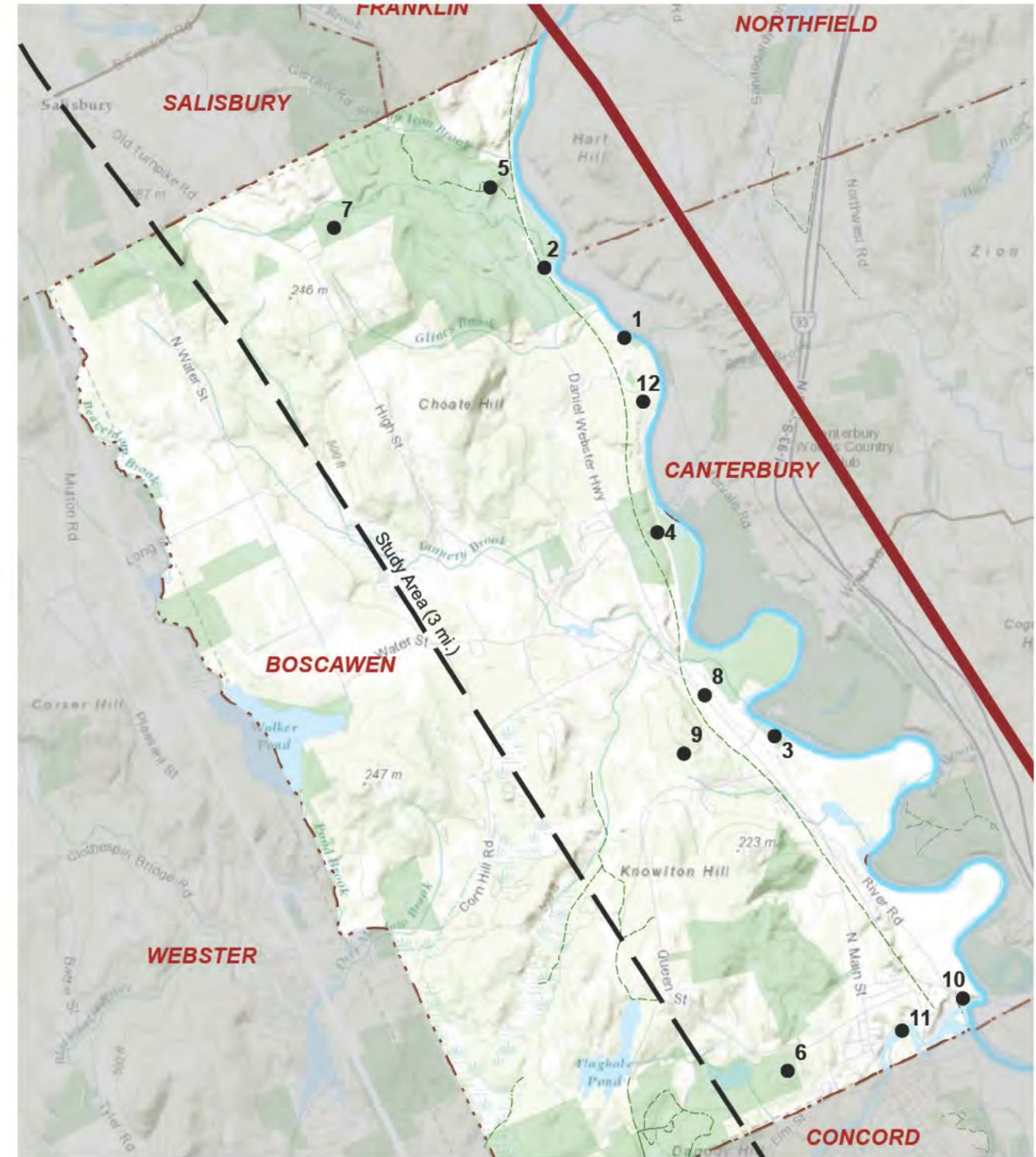
Land Use Planning

The goals and objectives in the Master Plan look to encourage orderly growth in already developed portions of town to preserve rural character and open space. Specifically, the town hopes to acquire conservation easements on lands currently in public or utility ownership such as the Boscawen Town Forest and those of the Penacook-Boscawen Water Precinct (Page VI-2).

The Master Plan contains a Viewsheds Map for Boscawen which includes scenic views throughout town. This includes views of the Merrimack River, Mount Kearsarge, and farmlands.

Changes within Existing Transmission Corridor

The nearest point of the transmission line corridor is located in Canterbury approximately 0.5 mile east of the Boscawen town boundary. The transmission line is located in an existing corridor.



BOSCAWEN DESCRIPTION

TABLE 5-4: BOSCAWEN SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Merrimack River	Designated in the NH Rivers Management Program. VIA in Northfield.	4	State	0.4 mi	MEDIUM	YES	MEDIUM	MEDIUM
2	Northern Rail Trail	Non-motorized recreational trail converted from railway to trail by The Friends of the Northern Rail Trail in Grafton County (FNRT). VIA in Franklin.	27	Managed by Friends of Northern Rail Trail	0.9 mi	MEDIUM	YES	MEDIUM	MEDIUM
3	Boscawen Town Park (Jamie Welch Memorial Field)	Town Park with water access	B	Town	1.7 mi	LOW	YES		
4	Merrimack River State Forest	State Forest	6	State	1.1 mi	LOW	YES		
5	State Forest Nursery	Nursery	6	State	0.8 mi	LOW	YES		
6	Hirst State Wildlife Management Area	State WMA	11	State	2.4 mi	LOW	NO		
7	Cabot Memorial Forest	Hiking Trails	A / 6 / 7	Private	1.9 mi	LOW	NO		
8	Route 3 - Scenic Viewsheds	8 scenic viewshed locations facing west toward corridor on Daniel Webster Highway and King Street.	C	State	1.6 mi	LOW	YES		
9	The Mountain Scenic Viewshed	Town designated scenic viewshed road. Located on unpaved road north of Queen Street at Dove Road.	C	Town of Boscawen	1.8 mi	LOW	NO		
10	Hannah Duston Memorial State Historic Site	Waterfront Park on Merrimack River with shore bank access, railroad tracks, and tribute statue for Hannah Duston. The memorial is on the NH State Register of Historic Places.	A / B / 29	State	1.1 mi	MEDIUM	NO		
11	Contoocook River	River not designated in NH Rivers Management Program	30	State	1.3 mi	LOW	NO		
12	State Snowmobile Trail 11, 335	State-wide Snowmobile trail.	3	Various	1.0 mi	LOW	YES		

STATE/REGIONAL SOURCES:

- 4) Map of Designated Rivers in the New Hampshire River Protection Program, Department of Environmental Services: <http://des.nh.gov/organization/divisions/water/wmb/rivers/degriiv.htm>
- (6) State Lands Administered by State of NH Department of Resources and Economic Development and the NH Fish and Game Department, July 2007 (3) New Hampshire Snowmobile Association Map, 2014
- (7) Society for the Protection of NH Forests – List of Properties, January 2013
- (11) NH State Wildlife Management Areas: http://www.wildlife.state.nh.us/Wildlife/WMA_index.htm
- (27) Designated Trout Ponds in New Hampshire: http://www.wildlife.state.nh.us/Fishing/trout_ponds.html
- (30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014

LOCAL SOURCES:

- (A) Town of Boscawen Master Plan, 2001-2002
- (B) Town of Boscawen Open Space Trail System Plan, by the Boscawen Conservation Commission and Trails Steering Committee and by the Central NH Regional Planning Commission, 2002
- (C) Town of Boscawen Scenic Viewshed Map, from Master Plan Document 2001-2002

LOUDON DESCRIPTION

Land Area: 46 square miles (NHES)

Inland Water: 0.7 square mile (NHES)

Population: 5,321 residents (NHES)

Population Density: 115.6 persons/square mi (NHES)

Town Location: Loudon is located in Merrimack County, and is centrally positioned with Gilmanton and Canterbury to the north, Concord the southeast, Chichester and Pembroke to the south, and Pittsfield to the east.

Study Area: The study area is located on the southwest side of Loudon. It covers 12.69% of the total land area (3,794 acres).

Physical Characteristics

The Soucook River flows through the central portion of town, running along and intersecting Route 106. The eastern portion of town is primarily forested. The topography in town is generally rolling. Oak Hill is located in the western portion of town, and reaches elevations of more than 900 feet (USGS topo maps).

Cultural Development Patterns

Loudon, Canterbury and Northfield were originally part of a 1727 grant. Loudon independently incorporated in 1773, and was named in honor of John Campbell, fourth Earl of Loudoun. Town is primarily rural in character, especially in the eastern portion of town. Development is concentrated along Route 106 (near the Soucook River) and in the western portion of town, which abuts Concord. Of the developed area in Loudon, approximately 81% is residential, 16% is commercial and 3% is public utility, current use, or other; approximately 86% of residential housing is single family (NHES).

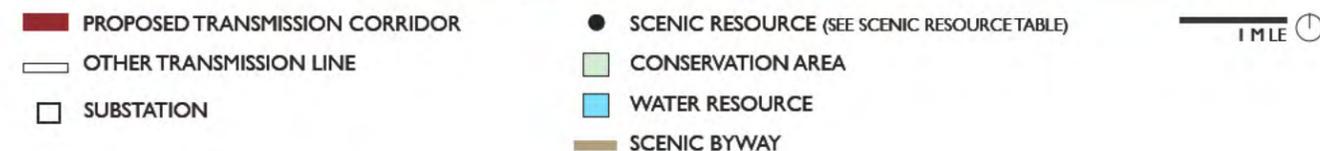
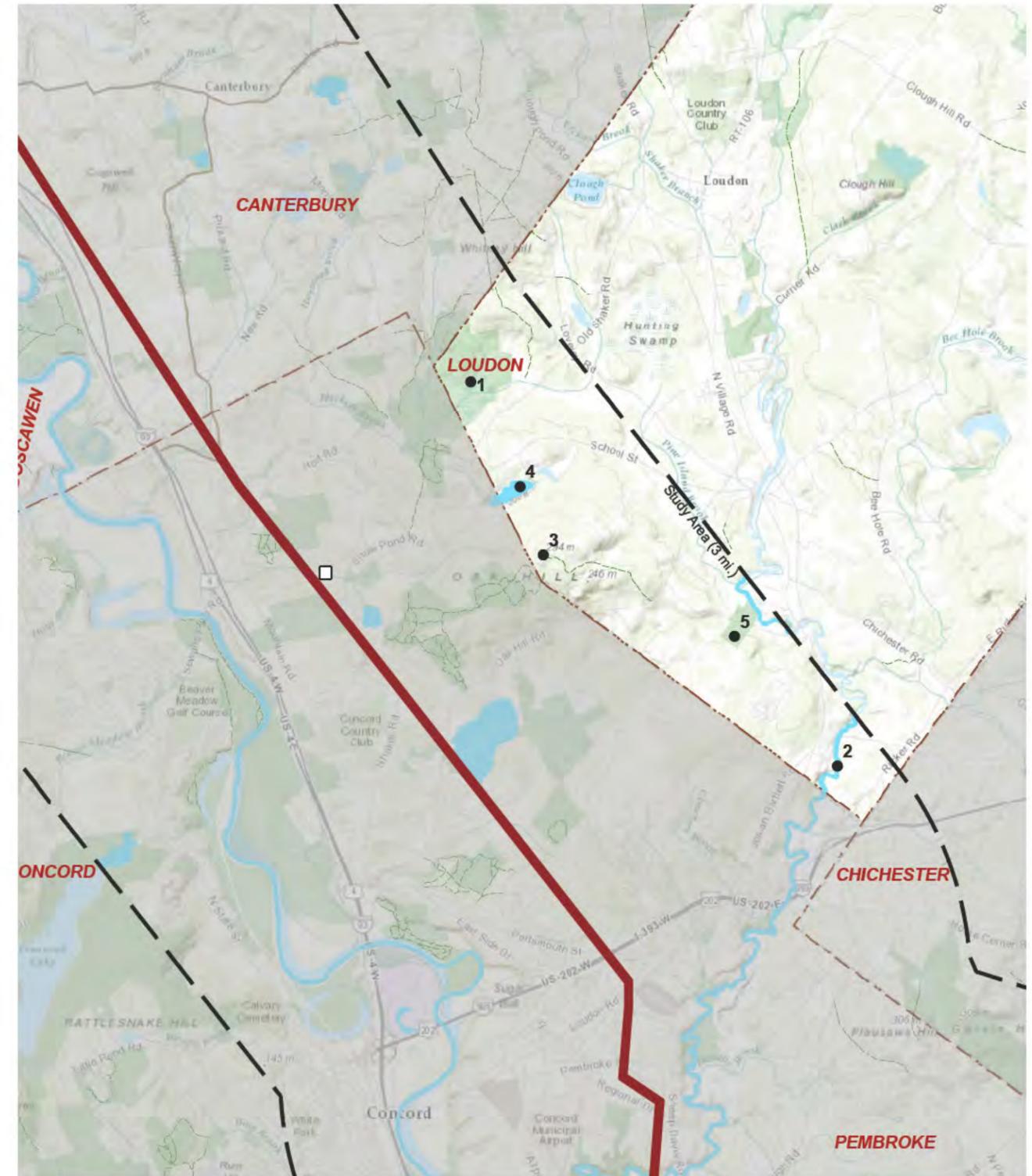
Land Use Planning

The town Master Plan sets to guide development while protecting the character of a small, rural town. Chapter XIII discusses Existing and Future Land Use, and encourages orderly growth while protecting the land, various resources, and residents. The Loudon zoning ordinance establishes five districts and three overlay districts, each with specific purposes, uses and regulations. The zoning ordinance is designed to lessen congestion, secure safety, and promote general health and welfare. The planning board in Loudon meets the third Thursday each month (town website).

The northwestern corner of town abuts the Hoit Road Marsh WMA and the Soucook River Forest is located west of Route 106, adjacent to the Soucook River.

Changes within Existing Transmission Corridor

The nearest point of the transmission line corridor is located in Concord approximately 1.6 miles east of the Loudon town boundary. The transmission line is located in an existing corridor.



LOUDON DESCRIPTION

TABLE 5-5: LOUDON SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Hoit Road Marsh WMA	Wildlife Management Area. Publicly accessible pond in Concord.	A / 6	State	2.0 mi	LOW	NO		
2	Soucook River	Publicly accessible waterbody (shore bank). No river access in Canterbury within Study Area.	A	State	2.5 mi	LOW	NO		
3	Oak Hill Fire Tower	Standing and active fire tower. Accessible from Oak Hill Trails in Concord	6 / 12	State	1.8 mi	MEDIUM	YES	MEDIUM	MEDIUM
4	Hot Hole Pond	Publicly accessible waterbody (ramp). Access point located in Concord.	A	State	1.8 mi	MEDIUM	NO		
5	Soucook River State Forest	State Forest	6	State	2.5 mi	MEDIUM	NO		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Cultural Value Rating

STATE/REGIONAL SOURCES:

(6) State Lands Administered by State of NH Department of Resources and Economic Development and the NH Fish and Game Department, July 2007

(12) NH Division of Forests and lands Fire Lookout Towers: <http://www.firelookout.org/lookouts/nh/nh.htm>

LOCAL SOURCES:

(A) Town of Loudon Master Plan, 2001

OAK HILL FIRE TOWER (3)

LOUDON

OVERALL VISUAL IMPACT **LOW**

The Fire Tower on Oak Hill (elevation 920 feet) was constructed in 1928 in southern Loudon near the Concord city line. In 1971, the cab (enclosed top of structure) was replaced and the height of the tower was raised to 55 feet. Today it is one of 15 fire lookout towers that are maintained and operated from early spring to late fall by the NH Division of Forests and Lands (New Hampshire Division of Forest and Lands website).

The fire tower is located on a conservation easement and surrounded by private land. The tower is accessible by trails in Concord that were developed in cooperation by the landowner and the Loudon Conservation Commission (see description of Oak Hill Trails in Concord). It is also accessible via a private road off the Oak Hill Road in Loudon that is usually gated to vehicular access.

While the ground level at the summit of Oak Hill is enclosed by trees, the fire tower offers panoramic views of New Hampshire's western mountains, Mt. Kearsarge, Mt. Cardigan, and several of the White Mountains to the north.

Existing Transmission Corridor

At its closest point, the existing corridor is 1.7 miles southwest of the fire tower. There are currently two 115-kV lines located in the corridor: one with wooden monopole structures on the eastern side of the corridor, ranging in height from 61 to 88 feet, the second in the center of the corridor supported by wooden H-frame structures, ranging in height from 43 to 57 feet. A smaller distribution line occupies the western edge of the corridor, with structure ranging in height from 40 to 50 feet. The corridor right-of-way is 257.5 feet in width; all but 20 feet is cleared.

From the fire tower, the transmission corridor appears to run perpendicular to the southwesterly view. The corridor clearing is mostly hidden due to intervening topography and vegetation. Several of the structures and conductors in the corridor are visible rising above the surrounding forestland, particularly at the Oak Hill Substation in Concord, 1.9 miles to the west.

Changes within Existing Transmission Corridor

The monopole 115-kV line on the east side of the corridor will remain in place. The H-frame 115-kV line near the center of the corridor will be replaced farther to the west on weathering steel monopole structures that will range in height from 90 to 115 feet.

The 345-kV line in this section of the project will be supported by weathering steel H-frame structures in the center of the corridor and will range in height from 90 to 110 feet. There will be minimal vegetation clearing, except for that required for maintenance. See Oak Hill Fire Tower Photosimulation.

Cultural Value: Medium

Conservation land open to the public with an accessible State-owned fire tower.

Visual Quality: Medium

While the summit of Oak Hill is enclosed by trees, the fire tower offers a panoramic view of New Hampshire's western mountains, Mt. Kearsarge, Mount Sunapee, Ragged Mountain, Mt. Cardigan, and several of the White Mountains to the north. The topography in the midground is gently rolling; the background is layered, adding visual depth to the view. Development patterns are primarily rural residential with agricultural fields and some industrial developments. The largely natural landscape of Oak Hill has been modified by three communications towers that share the summit with the fire tower.

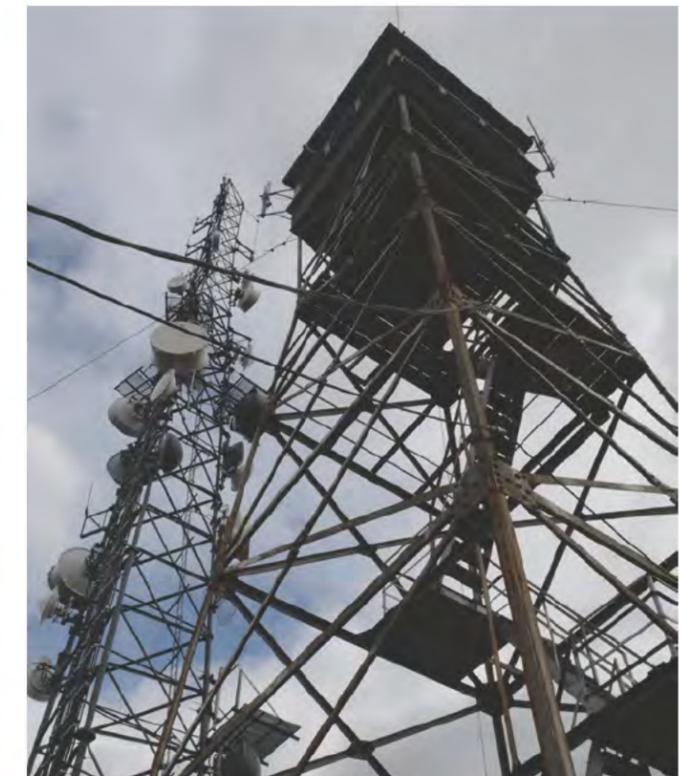
Scenic Significance: Medium



0.6 mile trail from Oak Hill Road to the Oak Hill Fire Tower. There will be no views of the project ground in the vicinity of the fire tower.



The closest communications tower is 25 feet from the Oak Hill Fire Tower. Vegetation in the foreground blocks views of the transmission corridor from the ground.



Base of Oak Hill Fire Tower.

OAK HILL FIRE TOWER (3)

LOUDON

VISUAL IMPACT ASSESSMENT

Visual Effect: Low

- The transmission structures will not become a dominant feature in the landscape, since they will be seen from a viewer-superior position against a mostly wooded backdrop at a distance of 1.7 miles.
- The structures and conductors will not block or interfere with the views of the rolling topography in the background, which is the primary focus of the view.
- The use of weathering steel H-frame structures will reduce the contrast in color and form.
- This viewing location already has considerable evidence of human development, including the existing transmission corridor, roadways, and commercial and residential development.

Mitigation

- Using weathering steel structures to reduce the contrast in color.
- Using H-frame structures to minimize the height and scale of the structures, and to reduce the contrast in color in the wooded landscape.
- Maintaining similar spacing with existing and proposed transmission structures.

User Groups: Local and regional hikers.

User Expectation: Medium

- View expectation is diminished by the presence of three communications towers in the immediate foreground of the fire tower.

- This fire tower is located 4 miles from downtown Concord. With such close proximity to a developed area, users should expect some cultural modifications in the landscape would be visible from the fire tower.

Extent, Nature, and Duration of Public Use: Medium.

- The trail is accessible from the Oak Hill City Forest trails. The trails are well marked with adequate parking, suggesting the fire tower receives frequent visitors.
- The scenic quality of the landscape is important to the experience of the view from the top of the fire tower.
- The fire tower is accessed by an extension of an actively used trail system in Oak Hill City Forest. The quality of the trail system suggests that the tower is frequently visited by day hikers.

Overall Visual Impact: Low.

The construction of a new transmission line and reconstruction of the existing line will have a low overall visual impact on the view from the Oak Hill Fire Tower. The new transmission line should not result in a substantial change in the way people currently use or enjoy the tower or the trails leading to it.

- The transmission structures will appear as relatively minor additions to the landscape, since they will be seen from a viewer's superior position against a mostly wooded backdrop.
- This is a viewing location with considerable evidence of man-made change, including the existing transmission corridor, roadways, and commercial and residential development.
- Potential visual impacts are reduced by the use of weathering steel H-frame structures that will match the color and texture of the relocated 115-kV line.
- The proposed transmission structures will not change the inherent character of the fire tower or the views from it.

Loudon Works Cited

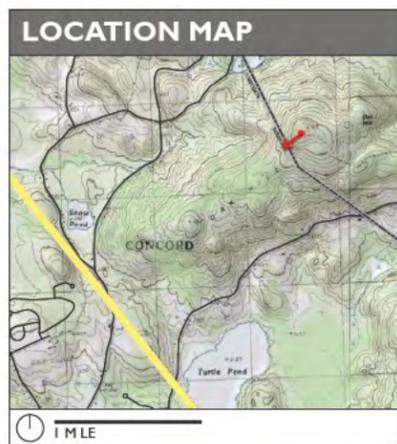
- Forest Fire Lookout Association. New Hampshire Fire Towers. 8 Aug 2008. Web. 12 Dec 2014. <<http://www.firelookout.org/lookouts/nh/nh.htm>>.
- New Hampshire Division of Forest and Lands. New Hampshire Fire Lookout Quest. Web. 2 Dec 2014. <<http://www.nhdf.org/fire-control-and-law-enforcement/fire-towers.aspx>>.



North facing bird's eye view of the fire tower. The road clearing leads down to Oak Hill Road. There are three telecommunication towers in the immediate foreground of the fire tower (source: Bing Maps).



View to the east from the fire tower. The is located behind the viewer in this image.

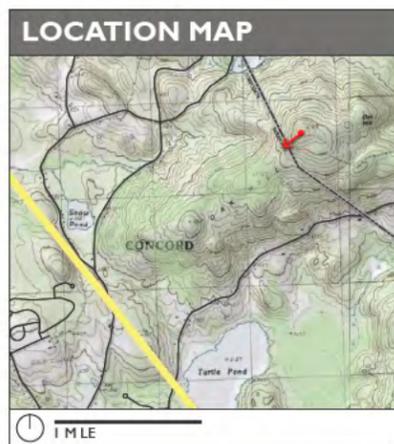


TECHNICAL INFORMATION			
		EXISTING	PROPOSED
TRANSMISSION LINE	115-kV structure type	Wood Monopole and H-Frame	Wood Monopoles to remain / Wood H-Frames to be replaced with Weathering Steel Monopoles
	Height range of visible 115-kV structures	61 - 92.5 ft (monopole) / 43 - 56.5 ft (H-frame)	50 - 120 feet
	345-kV structure type	N/A	Weathering Steel H-Frame
	Height range of visible 345-kV structures	N/A	90 - 110 feet
	Right-of-way width	257.5 feet	257.5 feet
PHOTOGRAPH	Date and time: 4/29/15 at 2:53pm	Location: 43.278894° N, -71.505844° W	Viewing Direction: Southwest
	Distance to visible structures: 1.75 to 2.89 miles	Number of transmission structures visible in the photosimulation: 11	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D7100	Photo Source: TJD&A

NOTES
GENERAL NOTES Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.
PHOTOSIMULATION PRODUCTION By Terrence J. DeWan & Associates
VIEW DESCRIPTION Leaf-off view from second platform from the top of the Oak Hill Fire Tower.

OAK HILL FIRE TOWER, LOUDON

PHOTOSIMULATION: PANORAMA



TECHNICAL INFORMATION			
TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Wood Monopole and H-Frame	Wood Monopoles to remain / Wood H-Frames to be replaced with Weathering Steel Monopoles
	Height range of visible 115-kV structures	61 - 92.5 ft (monopole) / 43 - 56.5 ft (H-frame)	50 - 120 feet
	345-kV structure type	N/A	Weathering Steel H-Frame
	Height range of visible 345-kV structures	N/A	90 - 110 feet
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PHOTOSIMULATION PRODUCTION By Terrence J. DeWan & Associates.
VIEW DESCRIPTION Leaf-off view from second platform from the top of the Oak Hill Fire Tower.

OAK HILL FIRE TOWER, LOUDON
EXISTING CONDITIONS: NORMAL VIEW (FACING SOUTHWEST)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

OAK HILL FIRE TOWER, LOUDON
PHOTOSIMULATION: NORMAL VIEW (FACING SOUTHWEST)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

OAK HILL FIRE TOWER, LOUDON
EXISTING CONDITIONS: NORMAL VIEW (FACING WEST)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

OAK HILL FIRE TOWER, LOUDON
PHOTOSIMULATION: NORMAL VIEW (FACING WEST)



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

SUBAREA 6



Pembroke
Allenstown
Deerfield

SUBAREA 6 DESCRIPTION

CORRIDOR LENGTH: 17.6 miles

LOCATION: Concord/Pembroke town boundary to the Deerfield Substation terminus

HOST COMMUNITIES

- Pembroke
- Allenstown
- Deerfield

ADJACENT COMMUNITIES

- Bow
- Chichester
- Epsom
- Northwood
- Nottingham

Subarea 6 is the southernmost section of the Northern Pass transmission corridor. The subarea begins east of the Concord line in the town of Pembroke and continues 17.6 miles east through Allenstown to the Deerfield substation. The corridor runs perpendicular to the Merrimack River and spans the county line between Merrimack and Rockingham County.

PHYSICAL CHARACTERISTICS

Landform

The landform in this area is characterized by rolling hills and broad plains. The highest elevations are found at Nottingham Mountain and Fort Mountain, located north of the transmission line in Epsom and Deerfield. Other notable hills in this Subarea are Catamount Hill and Bear Hill in Bear Brook State Park and three peaks in Pawtuckaway State Park: Mount Pawtuckaway, Middle Mountain and South Mountain.

Water

This Subarea is located in the heart of the Merrimack Valley. The subarea's defining physical feature is the Merrimack River, which runs north-south along its western edge. The Suncook River is another significant river that meets the Merrimack River on the western end of the Subarea. There is a network of small ponds and streams across the Subarea.

Vegetation

Forest vegetation patterns are primarily deciduous and mixed forests.

CULTURAL DEVELOPMENT PATTERNS

Subarea 6 is located in one of the most developed and populated areas in the State. The Merrimack River runs parallel to Interstate 93, forming a major highway and river

development corridor that connects the urban areas of Concord and Manchester. The eight communities in this subarea are primarily residential, located east of this development corridor, with access to the labor markets in Concord and Manchester.

The characteristic development pattern in this subarea is mostly residential and rural residential, with some remnant pasture and farmland. While the transmission line is primarily located in rural areas, some sections of the line cross suburban and village landscapes in Pembroke, Allenstown, and Deerfield. Most communities have large tracts of land dedicated for recreation and conservation, including State Park, State Forests, Town Forests, and private conservation land.

RECREATION & TOURISM

The recreational resources in this area are easily accessible from southern New Hampshire and the Boston area via Interstate 93. The close proximity to a highly populated area makes the State Parks and other scenic resources readily available for day trips and weekends. Bear Brook State Park in Allenstown and Pawtuckaway State Park in Nottingham are the two primary recreational resources located within the 6-mile study area.

IMPACT SUMMARY

The proposed Northern Pass Transmission project will not have an unreasonable adverse effect on the aesthetics of Subarea 6. This conclusion is based upon the following:

1. Significance of Scenic Resources and Distance from the NPT Project

A total of 100 scenic resources within the six-mile wide study area were identified in the 8 communities that comprise Subarea 6. Of these, 5 resources with at least medium cultural significance were further evaluated to determine the possible effect of the NPT line. Two of the resources (Bear Brook State Park and Pawtuckaway State Park) have multiple viewpoints that were evaluated separately.

The horizontal distances to the NPT transmission corridor vary throughout Subarea 6. See the Scenic Resources table for each community for the distance to the corridor, measured at the place where the viewpoint evaluated in the VIA is nearest the transmission corridor.

There are several scenic resources of state-wide significance that are within the 3-mile study area will **not** have views of the project. These include the Merrimack River in Pembroke and Bow; and the CCC Camp and Archery Pond in Bear Brook State Park in Allenstown.

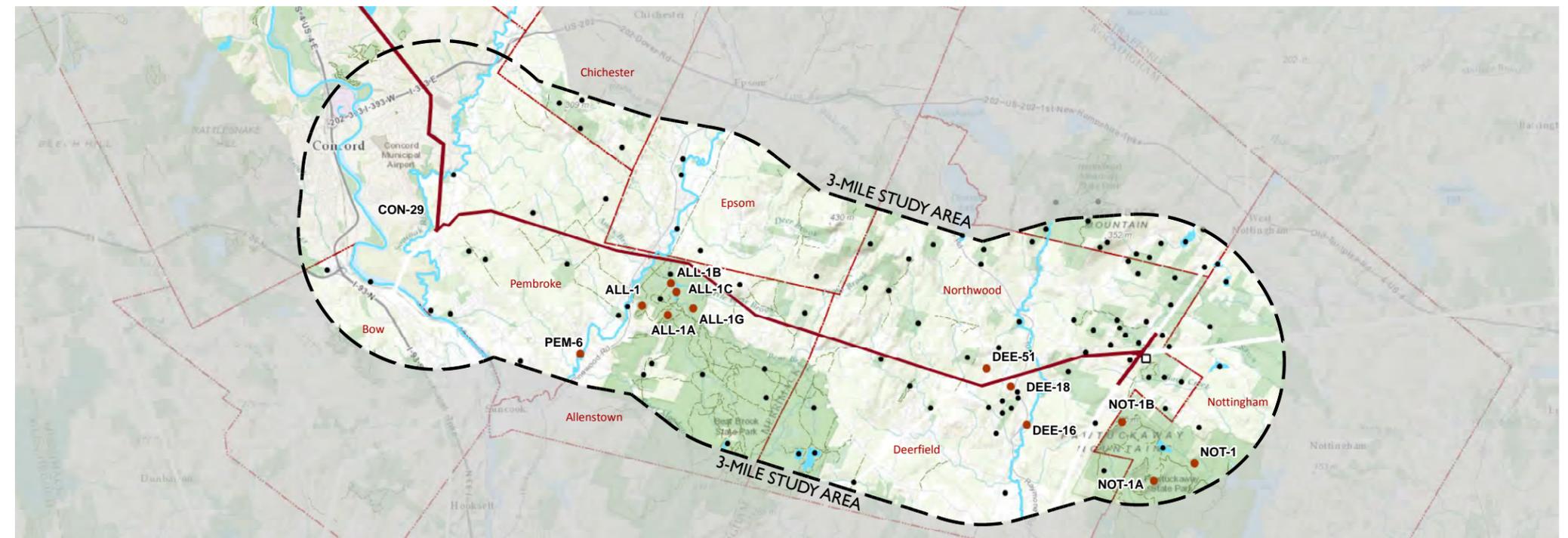
2. Extent, Nature, and Duration of Public Use

There is a wide variety of public uses in Subarea 6, including hiking, bird watching, swimming, fishing, paddling, hunting, sightseeing, picnicking, snowmobiling, ATV riding, ice fishing, cycling, mountain biking, and bouldering. See the VIA for individual scenic resources for a description of the expected extent, nature, and duration of public use.

3. Scope and Scale of Change in the Landscape (viewed from scenic resources)

Existing Transmission Corridor

The NPT project in Subarea 6 will be located in an existing transmission corridor, 17.6 miles in length, ranging in width from 150 to 200 feet in width. The existing corridor has one or two 115-kV lines, supported by either wooden H-frame or wooden monopole structures.



- EXISTING TRANSMISSION CORRIDOR
- OTHER TRANSMISSION LINE
- SUBSTATION
- SCENIC RESOURCE WITHOUT INDIVIDUAL VISUAL IMPACT ASSESSMENTS
- SCENIC RESOURCE WITH INDIVIDUAL VISUAL IMPACT ASSESSMENTS
- CONSERVATION AREA
- WATER RESOURCE
- SCENIC BYWAY

3 MILES

SUBAREA 6 IMPACT SUMMARY

SUMMARY TABLE: SCENIC RESOURCES WITH INDIVIDUAL VISUAL IMPACT ASSESSMENTS

MAP ID	TOWN	SCENIC RESOURCE	SCENIC SIGNIFICANCE	OVERALL VISUAL IMPACT RATING
ALL-1	ALLENSTOWN	Bear Brook State Park	MEDIUM-HIGH	LOW (cumulative rating of large area resource)
ALL-1A	ALLENSTOWN	Catamount Hill Summit Trail	MEDIUM-HIGH	MEDIUM
ALL-1B	ALLENSTOWN	Black Hall Road Trail	LOW-MEDIUM	LOW-MEDIUM
ALL-1C	ALLENSTOWN	Catamount Pond	HIGH	NONE
ALL-1G	ALLENSTOWN	CCC Camp	MEDIUM-HIGH	NONE
DEE-16	DEERFIELD	Lamprey River	LOW-MEDIUM	LOW-MEDIUM
DEE-51	DEERFIELD	Upper Lamprey Scenic Byway	MEDIUM-HIGH	LOW-MEDIUM
DEE-18	DEERFIELD	Deerfield Center	HIGH	LOW-MEDIUM
NOT-1	NOTTINGHAM	Pawtuckaway State Park	MEDIUM-HIGH	LOW (cumulative rating of large area resource)
NOT-1A	NOTTINGHAM	Fire Tower	MEDIUM-HIGH	LOW
NOT-1B	NOTTINGHAM	North Mountain Trail - Overlook	MEDIUM-HIGH	LOW-MEDIUM
PEM-6	PEMBROKE	Suncook River	MEDIUM	MEDIUM

With the exception of one location in Pembroke, no additional right-of-way is required to install the NPT project. Additional clearing within the existing right-of-way will be necessary in some areas to accommodate the 345-kV transmission line and to conform to current code requirements.

Transmission Structures

The NPT project will introduce new 345-kV transmission structures in the existing transmission corridor. The 345-kV structures will primarily be weathering steel H-frame structures, weathering steel monopole structures, and galvanized steel lattice structures. The most common structure heights range from 120 to 130 feet. Taller structures will be used in specific locations to cross roads, rivers, and other power lines, to account for changes in topography, and to provide the clearances required by the National Electrical Safety Code for electrical transmission lines and gas pipelines (where present within the transmission corridor).

In most sections of the line the 115-kV H-frame structures will be relocated to monopole structures to accommodate the 345-kV line. The finish of each structure will match the finish of the adjacent 345-kV structure. Spacing of individual structures will also vary in spacing on the terrain and the alignment of the corridor. The most frequent spacing between structures ranges from approximately 500 to 700 feet.

Conductors and Shield Wires

The arms of the structures on the proposed 345-kV line support insulator strings and bundled conductors. The relocated 115-kV line will also have arms that support insulator strings and conductors. Both will have thinner overhead shield wires attached to the top of the structures.

4. Evaluation of Overall Visual Impact

The Summary Table indicates the visual effect and overall visual impact on each of the scenic resources that were evaluated in Subarea 5. The overall visual impact is derived from the assessment of visual effect and the possible effects on user groups. The possible visual impacts vary:

- None (Catamount Pond, CCC Camp / Museum Complex in Bear Brook State Park in Allenstown)
- Low (Bear Brook State Park as a whole; Pawtuckaway Fire Tower and Pawtuckaway State Park as a whole)
- Low-Medium (Black Hall Road Trail in Bear Brook State Park, Deerfield Center, Upper Lamprey Scenic Byway and Lamprey River in Deerfield, and North Mountain Trail in Pawtuckaway State Park).
- Medium (Suncook River in Pembroke; Catamount Hill Summit Trail in Bear Brook State Park).

None of the impacts were found to be greater than Medium.

LINEAR RESOURCES

UPPER LAMPREY SCENIC BYWAY

The Upper Lamprey Scenic Byway is a 45-mile series of roads between in Candia, Deerfield and Northwood. The cumulative visual impact on the Byway will be low. This conclusion is based on the following:

- The NPT project will intersect the Byway at a single crossing on Church Street, adjacent to Deerfield Village. This crossing is forested on both sides and only visible from within the corridor right-of-way.
- The NPT project will have a low-medium visual impact on Deerfield Center, where the structures will be mostly hidden by existing vegetation.
- Several of the structures will be visible above the tree line from 0.3 miles of Nottingham Road. Westbound motorists will be able to see the structures clearly for approximately 20 seconds.
- The tops of several structures will be seen between residential structures from the top of Meetinghouse Hill Road (a total of 0.2 miles of filtered visibility). The NPT project will not be visible from the historic Old Center Cemetery or Chase Corner.
- These areas of visibility represent less than 1% of the overall 45-mile length of the byway.

5. Visibility of the NPT Project Will Not Offend the Sensibilities of a Reasonable Person

While there are places where the NPT project will be visible and may be considered an adverse visual effect, there are no scenic resources in Subarea 6 where the visibility of the NPT will offend the sensibilities of a reasonable person. This conclusion is based upon the following considerations:

- Many of the scenic resources where the transmission line will be visible also have other forms of development, many of which are prominently visible in the landscape. These include *transmission lines and/or substations* (Catamount Hill Trail and Black Hall Road Trail in Bear Brook State Park in Allenstown, Deerfield Center and the Upper Lamprey Scenic Byway in Deerfield, Pawtuckaway Fire Tower and North Mountain Overlook in Pawtuckaway State Park in Nottingham); *highways* (Suncook River in Pembroke).
- The VIA demonstrates that the NPT project will not have a high overall visual impact on any of the scenic resources within Subarea 6.

6. Effectiveness of Mitigation Measures

The planning and design process for the NPT project incorporates many measures that are designed to avoid, minimize, or mitigate adverse effects on aesthetics.

The transmission line in Subarea 6 follows an existing transmission corridor, which is the typical condition for Subareas 2, 4, 5, and 6. The use of the existing corridor eliminates the need for a new corridor and avoids the visual effect that a new line would have on the surrounding landscape.

The existing 115-kV transmission line has been redesigned and relocated in many locations to accommodate the NPT project, minimizing the amount of additional clearing within the right-of-way, and avoiding the impact of widening the transmission corridor through additional acquisition of easements.

See individual scenic areas for a complete description of the mitigation measures employed in the planning and design process for Subarea 6.

PEMBROKE DESCRIPTION

Land Area: 22.6 square miles (NHES)

Inland Water Area: 0.2 square mile (NHES)

Population: 7,129 residents (NHES)

Population Density: 314.9 persons/sq mi (NHES)

Town Location: Pembroke is located in Merrimack County, and is centrally positioned between the urban areas of Concord and Hooksett and the rural area of Epsom.

Study Area: The study area covers all of Pembroke, with the exception of the most southern area of town. The study area covers 95.99% of the total land area (14,012 acres).

Physical Characteristics

The boundaries of Pembroke are largely defined by the Suncook, Soucook and Merrimack Rivers. The topography in town is relatively flat to rolling, with steeper gradients at the eastern and northern town boundaries. The Pembroke master plan lists Plausawa Hill as the highest point in town. The Whittemore Conservation and Recreation Area contain the community's primary natural and recreational resources, while multiple other areas also provide protection to the town's natural resources. Forested land is located throughout the northern portion of town.

Demographics

Pembroke experienced a 35% increase in population between 1980 and 1990. The population in 2014 was estimated to be 7,129 residents, with a median age of 37. Of the residents 25 years of age or older, approximately 24% have attained a Bachelor's degree or higher (NHES).

Cultural Development Patterns

Pembroke was formally chartered in 1759. Industrial buildings were erected along the Suncook River, including the Pembroke Cotton Factory Company, in 1811 and the area remained an industrial center for much of the 19th and 20th centuries. Of Pembroke's developed area, approximately 78% is residential and 17% is commercial (NHES). Development was historically dense in the southwestern portion of town, and that remains true today. Scattered rural-residential parcels are located throughout the rest of town.

Land Use Planning

Pembroke's Master Plan demonstrates that residents find significance in the town's rural character, location,

and commuting distance. The Master Plan prioritizes identification and protection of wildlife habitat, wetland, water supply and conservation parcels.

The Master Plan emphasizes the need to promote light industrial and commercial growth within the town, in addition to more commerce and a reduction in tax burden for residential uses. The community would like to concentrate development in the existing developed area and maintain the rural character that defines the rest for the community.

Existing Transmission Corridor

Physical Features: The existing transmission corridor runs north-south for 1.2 miles from the town boundary with Concord to the intersection of Route 103 and Route 3. The corridor alters alignment in a v-shape angle and runs east for 5 miles to the town boundary into Allenstown. In the north-south corridor alignment contains two 115-kV lines supported by wooded monopole and H-frame structures hanging in height from 41 to 97 feet, and the corridor is 265 feet in width. At the point of realignment, the corridor is reduced to a single 115-kV line with structures ranging in height from 60.5 to 88.5 feet and the corridor is 150 feet in width.

Surrounding Topography: The area adjacent to the transmission corridor is characterized by rolling topography.

Vegetation: Vegetation bordering the transmission corridor is typically hemlock hardwood-pine, pitch pine, and grasslands (WAP).

Adjacent Land Use: Land in the immediate vicinity of the transmission corridor is predominately woodland, commercial, and low-density residential. North Pembroke Road, Suncook Valley Highway, and Sheep Davis Road intersect the transmission corridor in Pembroke.

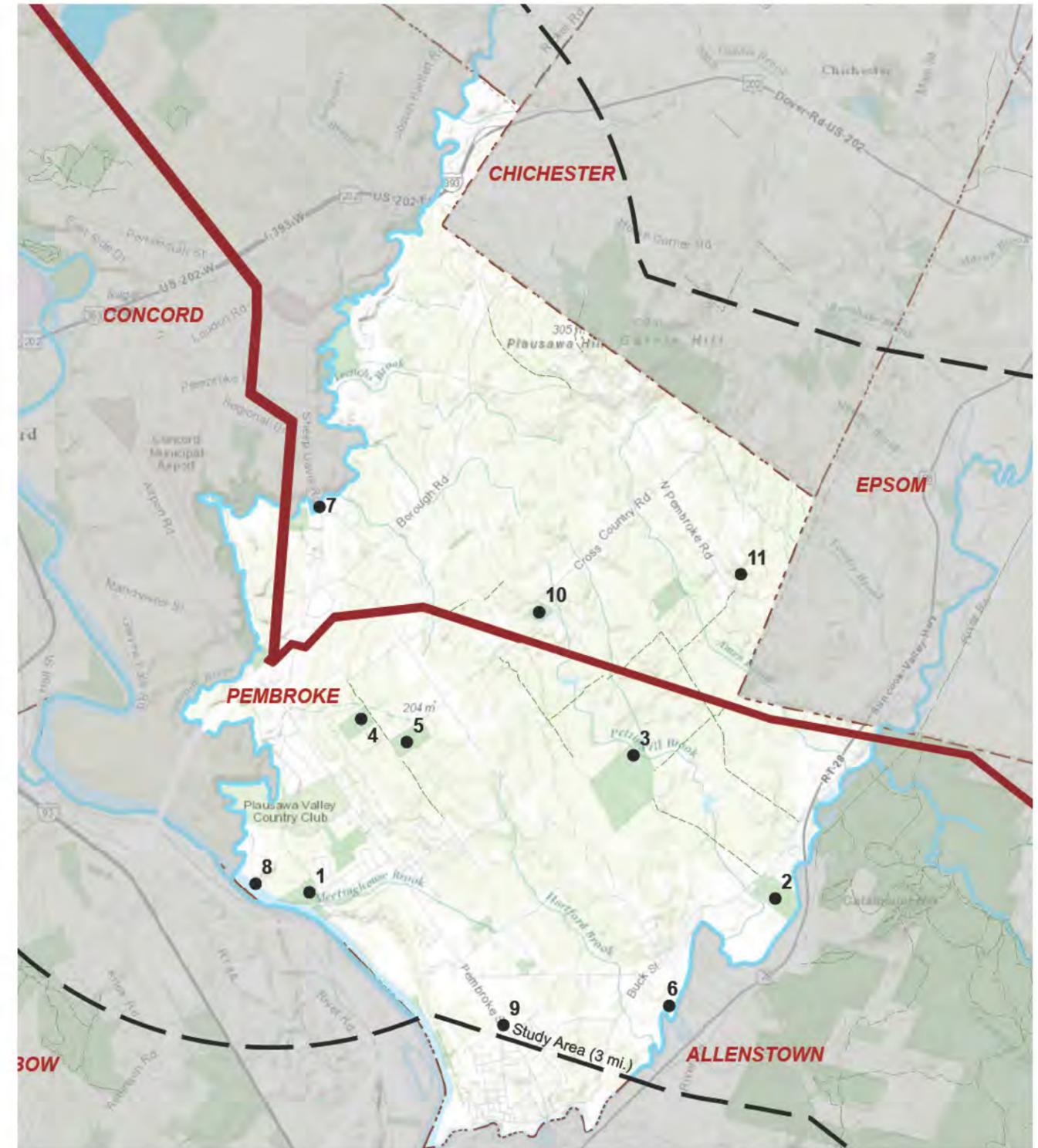
The corridor is located within the Commercial/Light Industrial (C-I) Zone and the Rural/Agricultural – Residential (R-3) Zone.

Changes within Existing Transmission Corridor

The 345-kV line will be constructed within the existing corridor right of way on structures ranging in height from 60 to 145 feet.

In the north-south corridor alignment, the 115-kV line on the east side of the corridor will remain in place and the 115-kV line to the west will be relocated further west to make room for the 345-kV line in the center of the corridor. The relocated 115-kV line will be supported by structures ranging from 50 to 110 feet. There will be additional clearing required in this section of the corridor.

In the east-west corridor alignment, the 115-kV line will be relocated further north within the existing corridor to make room for the 345-kV line. The relocated 115-kV line will be supported by structures ranging from 60 to 130 feet. There will be approximately 20 to 100 feet of additional clearing on the south side of the existing right of way.



PEMBROKE DESCRIPTION

TABLE 6-1: PEMBROKE SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	White Sands Conservation Area	Conservation area on Merrimack River	A / B	Town of Pembroke	1.9 mi	LOW	NO		
2	Hillman Farm	Agricultural and historic importance. Public access for hunting, fishing, and other recreation activities permitted during the non-growing seasons.	31	Parcel owned by Town of Pembroke. Easement held by Five Rivers Conservation Trust.	1.2 mi	LOW	YES		
3	Whittemore Town Forest	Town forest with publicly accessible recreational trails.	B	Town of Pembroke	0.5 mi	LOW	NO		
4	Bragfield Pond Conservation Area	Camping	B	Town of Pembroke	0.7 mi	LOW	NO		
5	Pembroke Town Forest - Butterfield Tract	Small pond onsite	B	Town of Pembroke	0.9 mi	LOW	NO		
6	Suncook River	Publicly accessible waterbody. Cartop access is located on Rt 28 in Pembroke.	B / 2	State	Crosses Corridor	LOW	YES	MEDIUM	MEDIUM
7	Soucook River	Publicly accessible waterbody. Cartop access is located on Rt 106 in Concord. VIA in Concord.	2	State	0.3 mi	LOW	YES	MEDIUM	LOW-MEDIUM
8	Merrimack River	Upper Merrimack River is designated in the NH River Management Program	2 / 4	State	1.7 mi	MEDIUM	NO		
9	Pembroke Park	Town park. Master Plan lists this as a park with a historically significant memorial.	A	Town of Pembroke	2.9 mi	LOW	NO		
10	Scripture Conservation Easement	Conservation Easement	14	Town of Pembroke (easement holder)	0.2 mi	LOW	NO		
11	Snowmobile Trail #15	State-wide Snowmobile trail.	3	Various	Crosses Corridor	LOW	YES		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Cultural Value Rating

STATE/REGIONAL SOURCES:

(2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm

(3) New Hampshire Snowmobile Association Map, 2014

(4) Map of Designated Rivers in the New Hampshire River Protection Program, Department of Environmental Services: <http://des.nh.gov/organization/divisions/water/wmb/rivers/designriv.htm>

(31) Conservation/Public Lands. Data available from Earth Systems Research Center, UNH. Source: Society for the Protection of NH Forests and other land trusts. April 2013.

LOCAL SOURCES:

(A) Town of Pembroke Master Plan, 2004

(B) Town of Pembroke Master Plan Conservation and Public Lands Map, October 2004

SUNCOOK RIVER (6)

PEMBROKE

OVERALL VISUAL IMPACT **MEDIUM**

The Suncook River is a 35.7-mile tributary of the Merrimack River. The river runs north-south, beginning at Crystal Lake in Gilmanton and draining into the Merrimack River in Pembroke. Within the 6-mile study area the river meanders through Chichester and Epsom, then follows the town line between Pembroke and Allenstown. The Suncook is publicly accessible, with three water access points within the Study Area: public boat ramps in Pittsfield and Barstead and a shore bank access at the Buck Street Dam in Allenstown (NHFGD Table of Public-Access).

Mill industries shaped early development along the Suncook River. In the 18th century, dams were developed along the river as a power source for sawmills, forge shops, and paper mills (2004 Master Plan, III-8). In Pembroke, there are remnants of four historic mills and five historic dams marking the location of former industrial sites. Current development along the river corridor is primarily agricultural with some residential. At the convergence with the Merrimack River, the corridor is more densely developed with suburban residential uses abutting the riverbank.

The Suncook River is used recreationally for fishing and paddling. The remnant dam structures provide fish habitat for anglers on the river (2004 Master Plan, III-19). The 'Friends of the Suncook River' is a local organization whose mission is to protect this resource by forming a greenway network and providing education about the river and watershed (Friends of Suncook River website).

The NPT corridor crosses the Suncook River on one location at the border of Allenstown and Pembroke, approximately 400 feet from the Epson Town line. The river meanders throughout its floodplain for several miles on either side of the crossing. The corridor crosses a relatively straight section of the river that is approximately 1,400 feet in length. On the east side of the crossing, the corridor is located in Bear Brook State Park. On the west side of the crossing the river parallels Bachelder Road, a residential street off of Route 28.

Existing Transmission Corridor

The right-of-way for the existing transmission corridor is 150 feet in width and contains a 115-kV transmission line supported by wooden monopole structures. Approximately 120 feet of the corridor is currently cleared. On the east side of the river, the closest structure is 73.5 feet in height and approximately 440 feet from the riverbank. On the west side of the river, the nearest structure is 83.5 feet in height and approximately 100 feet from the river bank.

The corridor crossing is roughly perpendicular to the Suncook River. Southbound paddlers currently see the existing 115-kV conductors for approximately 600 feet. Within the cleared corridor, 7 existing structures are visible ascending the hill to the east. Views to the west are mostly screened by a line of white pines on the west side of Bachelder Road. The top of one structure is visible over the vegetation to the west. Views from Bachelder Road are limited by the alignment of the road and dense roadside vegetation.

Changes within Existing Transmission Corridor

The existing 115-kV transmission line will remain in place. Approximately 30 feet of vegetation will be removed within the existing right of way to provide a 150-foot wide cleared corridor to accommodate the proposed transmission line. The 345-kV line will be located on the south side of the corridor and supported by weathering steel monopole structures, ranging in height from 110 to 130 feet. On the west side of the river the two structures closest to the river will be weathering steel monopoles, 120 and 130 feet in height. The structure on the east side of the river will be approximately 450 feet from the edge of the water. The structure on the west side will be approximately 28 feet from the edge of Bachelder Road and 100 feet from the edge of the river.

Cultural Value: Medium

A publicly accessible waterway that is actively used for water-based recreation. The Suncook River is not designated under the NH Rivers Management and Protection Program. The portion of the transmission line east of the river is in Bear Brook State Park.

Visual Quality: Medium.

The corridor passes through forested areas, agricultural fields, and residential developments.

Scenic Significance: Medium.



Forested shoreline of Suncook River 1.2 miles south of corridor crossing. There will be no visibility of the NPT project from this location.



Bird's eye view facing north over Suncook River and existing transmission corridor. Land on the east side of the river is part of Bear Brook State Park.



Route 28 Bridge and ATV trail bridge over the Suncook River. There will be no visibility of the NPT project from this location.

SUNCOOK RIVER (6)

PEMBROKE

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- The new structures will be located within an existing cleared corridor adjacent to a 115-kV transmission line that passes over the river.
- The use of weathering steel monopole structures (from 3132-219 to 3132-232) will minimize the contrast in color, form, and texture when seen from the river and Bachelder Road.
- The 345-kV structures are located approximately 440 feet from the edge of the river, outside of the immediate foreground.
- The 345-kV structures will be approximately 50% taller than the existing 115-kV structures.

Mitigation

- Maintaining riparian vegetation where possible within the corridor.
- With landowner permission, establishing new non-capable plantings on the east side of the river to limit the easterly view of the transmission line within Bear Brook State Park.
- With landowner permission, replacing the white pines on the west side of Bachelder Road with plantings that will achieve a maximum height of 15 feet.
- Using weathering steel monopole structures to minimize contrasts in color and texture with the existing structures.
- Maintaining the same spacing pattern with the existing structures.

User Groups: Canoers/kayakers, anglers, and local residents.

User Expectation: Low-Medium.

Paddlers and anglers experience highway abutments, residential developments, as well as forestlands and agricultural areas. In the area around the existing corridor crossing, the river is adjacent to a residential neighborhood on Bachelder Road. River users expect to experience some cultural modification within the river corridor.

Pembroke Works Cited:

Pembroke Planning Board and Central NH Regional Planning Commission. 2004 Town of Pembroke Master Plan. October 12, 2004.

Friends of Suncook River. New Hampshire Friends of Suncook River. Web. 6 Dec 2014. <<http://www.friendsofsuncookriver.org>>.

New Hampshire Fish and Game Department (NHFGD). Table of Public-access boating and fishing sites in New Hampshire. Web. 14 Aug 2014. <http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm>.

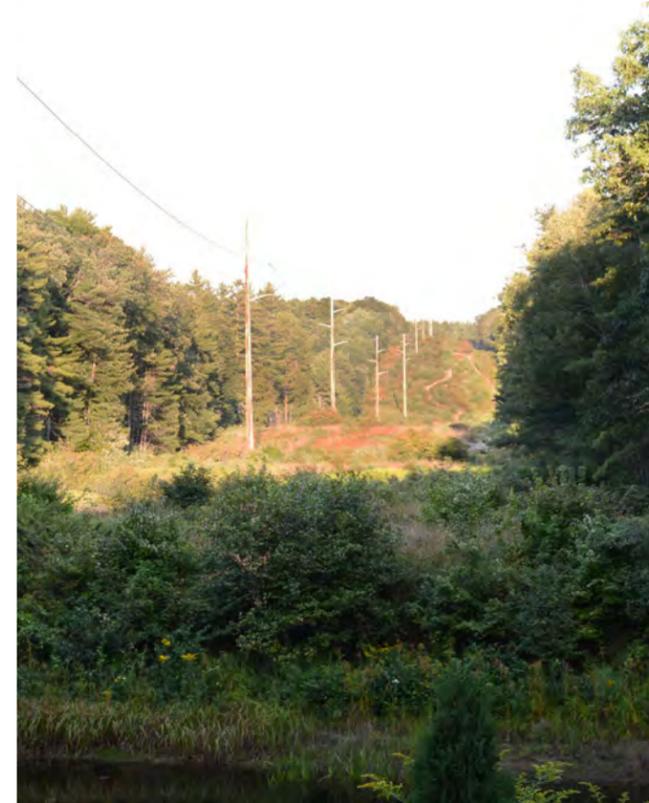
Extent, Nature, Duration of Public Use: Medium.

- Three public access points within the study area indicate that the river is well used for recreational pursuits.
- Visitors use the river to paddle and fish. The scenic quality of the landscape is intrinsic to the experience of paddling and secondary to the activity of fishing.
- The meandering nature of the river at this location limits the amount of time that a river user comes in contact with the transmission line.
- Boaters currently see the existing transmission line for 600-900 feet, depending upon their direction of travel. Within the corridor they are able to see the structures for the 150-foot width of the clearing. This will change slightly by the additional clearing required. At 3mph, the average paddler would have a view of the conductors and the edge of the corridor for 2.5 to 3.5 minutes.

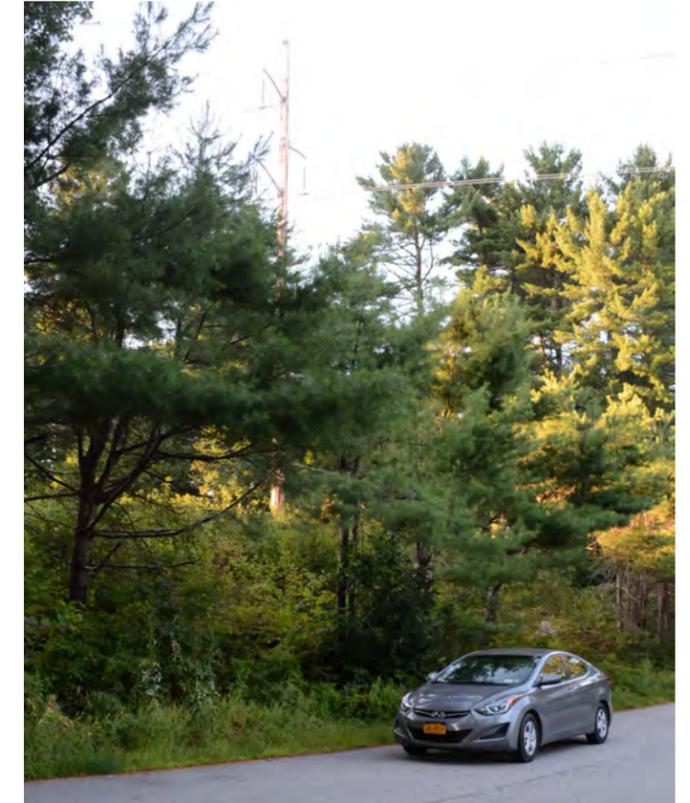
Overall Visual Impact: Medium

The additional transmission structures will have a medium overall visual impact on this section of the Suncook River. The NPT should not result in a substantial change in the way people currently use or enjoy the river as a whole.

- The river runs through populated areas where paddlers and other recreational users are already accustomed to transmission lines and other forms of human development.
- The minimal presence of the transmission structures and conductors in relation to the 37.5 miles stretch of the river will not change the inherent character of the river; less than 0.5% of the length of the river will be affected by the changes to the existing transmission corridor.
- The structures will not block or interfere with existing scenic views from the river.
- People who currently paddle the river and fish along the way will still be able to enjoy these pursuits.



East facing view of existing transmission corridor on east side of river. In Bear Brook State Park, the 345-kV structures will be supported by weathering steel monopole structures in the center of the corridor, south of the existing 115-kV line.



Existing white pine buffer will be removed as part of the installation of the 345-kV line and replaced with non-capable plantings within the right-of-way, with landowners permission.



Plantings within the transmission corridor between Bachelder Road and the Suncook River.



Mature trees between Bachelder Road and the Suncook River partially block views of the river and transmission corridor. Photo taken from within the corridor ROW.

ALLENSTOWN DESCRIPTION

Land Area: 20.5 square miles (NHES)

Inland Water: 0.1 square mile (NHES)

Population: 4,138 residents (NHES)

Population Density: 210.6 persons/sq mi (NHES)

Town Location: Allenstown is located in Merrimack County, and is centrally positioned between the urban areas of Concord and Manchester.

Study Area: The study area covers the northern portion of Allenstown. The study area covers 72.85% of the total land area (9,593 acres).

Physical Characteristics

The western boundary of Allenstown is defined by the Merrimack and Suncook Rivers. The topography in the town is relatively flat to rolling with some hills in the northern area of town and in Bear Brook State Park. The highest point of land is Catamount Hill in Bear Brook State Park. The State Park is the community's primary natural resource, occupying over 51% of Allenstown's total acreage.

Demographics

The population in Allenstown increased by 61% between 1970 and 1980, and has been slowly declining since 2000. In 2014 the town's population was approximately 4,318 residents, with a median age of 40. Of the population 25 years of age or older, approximately 13% have attained a Bachelor's degree or higher (NHES).

Cultural Development Patterns

The early settlement of Allenstown developed around sawmills and manufacturing areas on the Suncook and Merrimack Rivers. The majority of this early industry has disappeared and has been largely replaced by residential development. Town is primarily rural in character. The concentrated area of development is located in the southwest corner of Allenstown at the intersection of Routes 3 and 28, and the convergence of the Merrimack and Suncook Rivers. Of Allenstown's developed area, approximately is 78% residential, 19% is commercial and 3% is public utility, current use, or other. Approximately 45% of residential housing is single family (NHES).

Land Use Planning

According to the town's Master Plan, residents place a high value on Allenstown's rural character, conservation lands, and close proximity to nearby urban center. The town is a member of the Bear-Paw Regional Greenway, a land trust in Southeastern New Hampshire that works to conserve green corridors. The Master Plan emphasizes the need to promote light industrial and commercial growth within the town. The community would like to concentrate development in the existing developed area and maintain the rural character that defines the rest for the community.

The majority of recent development has occurred in the northeastern area of town along Deerfield Road, north of Bear Brook State Park. The 2003 Master Plan identifies this area as a point of concern, as the community would like to see this part of town maintain its rural character.

Existing Transmission Corridor

Physical Features: The existing corridor runs 4.0 miles east-west through Allenstown with a right of way width of 150 feet, with approximately 120 feet of the corridor cleared. The corridor contains an existing 115-kV transmission line supported by wooden monopole structures that range in height from 47.5 to 88 feet.

Surrounding Topography: The area adjacent to the transmission corridor is generally located on rolling topography and on the side of the hills measuring approximately 100 to 350 feet above the landscape.

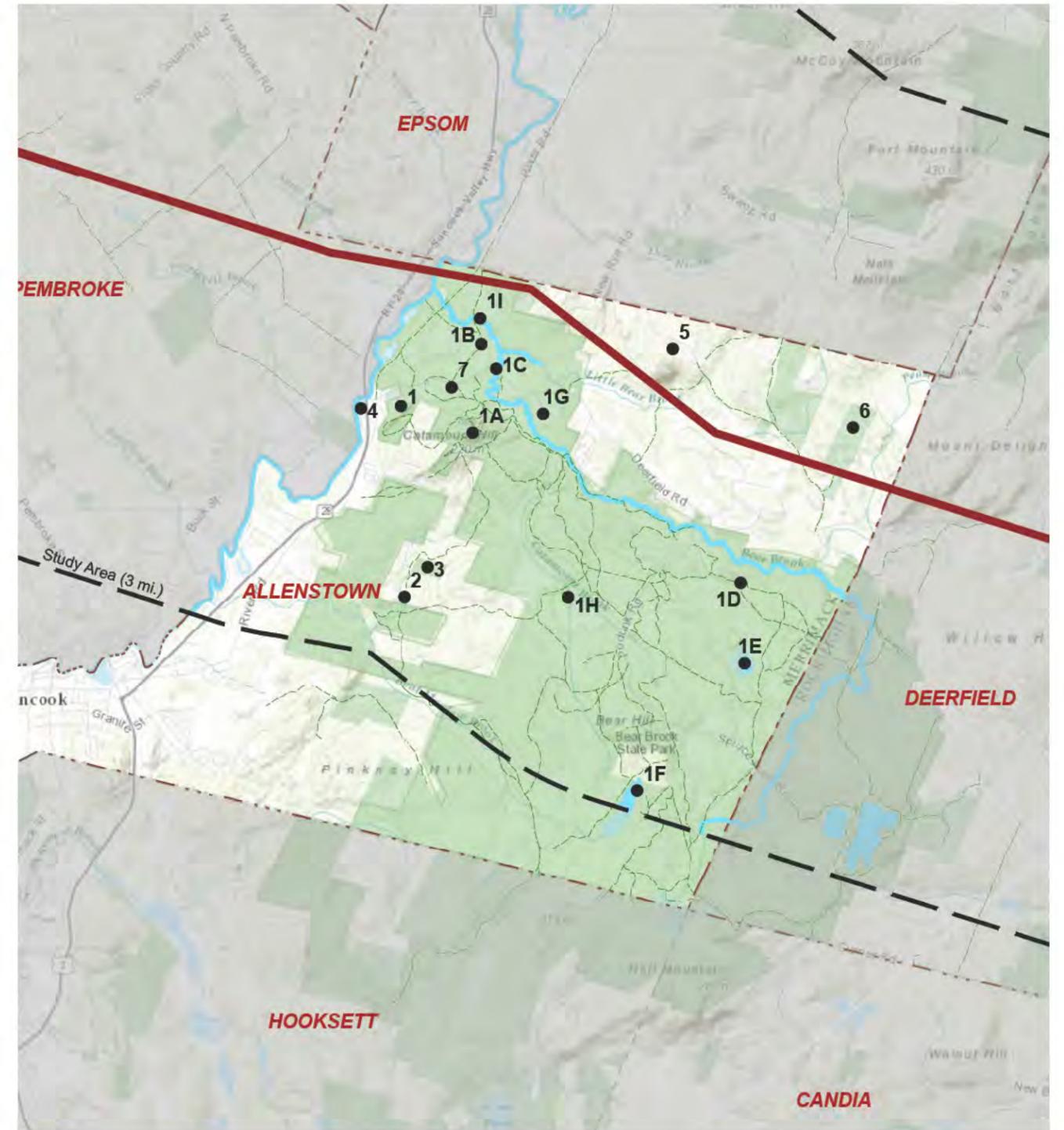
Vegetation: Vegetation bordering the transmission corridor is typically mixed deciduous and evergreen second growth.

Adjacent Land Use: Land use in the immediate vicinity of the transmission corridor is predominately woodland and low density residential. New Rye Road is the only public road that intersects the transmission corridor in Allenstown. There is rural-residential development on both sides of the corridor on New Rye Road. A medium-density single family development contains parcels located adjacent to the south side of the corridor on Chestnut Drive. The corridor intersects snowmobile trail Primary 360 and Fort Mountain Trail, and portions of the right-of-way are part of the trail.

The existing transmission line corridor runs through the Open Space/Farming Zone. The corridor also crosses two overlay districts: the Groundwater Protection Overlay District in the northeast and the Agricultural Conservation Overlay District in the northwest.

Changes within Existing Transmission Corridor

The 345-kV line will be constructed within the existing corridor right of way on structures ranging in height from 110 to 160 feet. There will be no relocation of the 115-kV line in Allenstown. There will be approximately 10 to 35 feet of additional clearing on the south side of the existing right of way.



ALLENSTOWN DESCRIPTION

TABLE 6-2: ALLENSTOWN SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Bear Brook State Park	Largest NH State Park.	1 / A	NH Dept. of Recreation and Economic Development	Crosses Corridor	HIGH	YES	MEDIUM	MEDIUM-HIGH
1A	Catamount Hill Summit Trail	Bear Brook State Park Trail. Highest peak in park	1	NH Dept. of Recreation and Economic Development	1.4 mi from vista	HIGH	NO	MEDIUM	MEDIUM-HIGH
1B	Black Hall Road Trail	Bear Brook State Park Trail	1	NH Dept. of Recreation and Economic Development	Crosses corridor	MEDIUM	YES	LOW	LOW-MEDIUM
1C	Catamount Pond	Bear Brook State Park public water access. Pavillion is historically significant CCC architecture.	1 / 2 / B	NH Dept. of Recreation and Economic Development	0.5 mi	HIGH	YES	HIGH	HIGH
1D	Archery Pond	Bear Brook State Park. Waterbody with limited public access.	1 / 2	NH Dept. of Recreation and Economic Development	1.1 mi	HIGH	NO		
1E	Smith Pond	Bear Brook State Park. Waterbody with limited public access.	1	NH Dept. of Recreation and Economic Development	1.6 mi	HIGH	NO		
1F	Bear Hill Pond	Bear Brook State Park. Waterbody with limited public access.	1	NH Dept. of Recreation and Economic Development	3.0 mi from cartop access	HIGH	NO		
1G	CCC Camp Museum Complex	Bear Brook State Park. Original CCC camp is on is on the National Historic Register of Historic Places.	1	NH Dept. of Recreation and Economic Development	0.6 mi	HIGH	NO	MEDIUM	MEDIUM-HIGH
1H	Hayes Marsh	Bear Brook State Park Publicly accessible waterbody.	1 / 2	NH Dept. of Recreation and Economic Development	1.6 mi from shore bank access	HIGH	NO		
1I	Bear Brook	River not designated in NH Rivers Management Program	30	NH Dept. of Recreation and Economic Development		LOW	YES		
2	Cold Spring Pond	Publicly accessible waterbody.	2	NH Fish & Game Dept.	2.5 mi from shorebank access	MEDIUM	NO		
3	Allenstown Town Forest	Town Forest with no maintained public access trail.	A	Town of Allenstown	2.2 mi	LOW	NO		

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
4	Suncook River	Buck Street Dam provides public water access. River is not a designated State river. See the town of Pembroke for information on the corridor crossing. VIA in Pembroke.	2 / A	State	1.0 mi from Shorebank access and crosses corridor	LOW	YES	MEDIUM	MEDIUM
5	Local Scenic Viewshed south of Wing Road	Locally designated scenic viewshed identified in Master Plan.	B	Town	0.2 mi	LOW	YES		
6	NRCS WRP Eames	Site conserved in the Federal Wetland Reserves Program.	13	National Resources Conservation Service (easement holder).	Crosses corridor	LOW	YES		
7	Snowmobile Trail #360, #15	State-wide Snowmobile trail.	3	Various	Crosses Corridor	LOW	YES		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Cultural Value Rating

STATE/REGIONAL SOURCES:

- (1) NH State Park Listing: www.nhstateparks.org/
- (2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm
- (3) New Hampshire Snowmobile Association Map, 2014
- (13) USDA Wetland Reserves Program (WRP): <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/wetlands/>
- (30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014

LOCAL SOURCES:

- (A) Allenstown Master Plan, 2003
- (B) Scenic Vistas and Farms – MAP 7 in 2003 Allenstown Master Plan

BEAR BROOK STATE PARK (I) ALLENSTOWN

OVERALL VISUAL IMPACT **LOW**

Bear Brook State Park is the largest developed State Park in New Hampshire, covering nearly 10,000 acres of land in four communities. Most of the park is located in Allenstown (6,564 acres), with additional land in Deerfield (1,938 acres), Hooksett (793 acres), and Candia (290 acres) (Master Plan, VI-8). Approximately 6,900 acres of the park is located within the six-mile study area (including land in both Allenstown and Deerfield).

The park is known for both its natural landscape as well as its architectural features. Recreational amenities include 40 miles of trails used for hiking, equestrian, mountain biking, cross-country skiing, and snowshoeing. Other facilities include a sand beach on a man-made pond, the State's only public archery range, stocked fishing ponds, playgrounds, and campgrounds (Master Plan, X-17 (Bear Brook State Park Official Website). The park receives approximately 50,000 annual visitors for hiking, camping, and day use of the public beach and picnic area at Catamount Pond (Master Plan, VI-8).

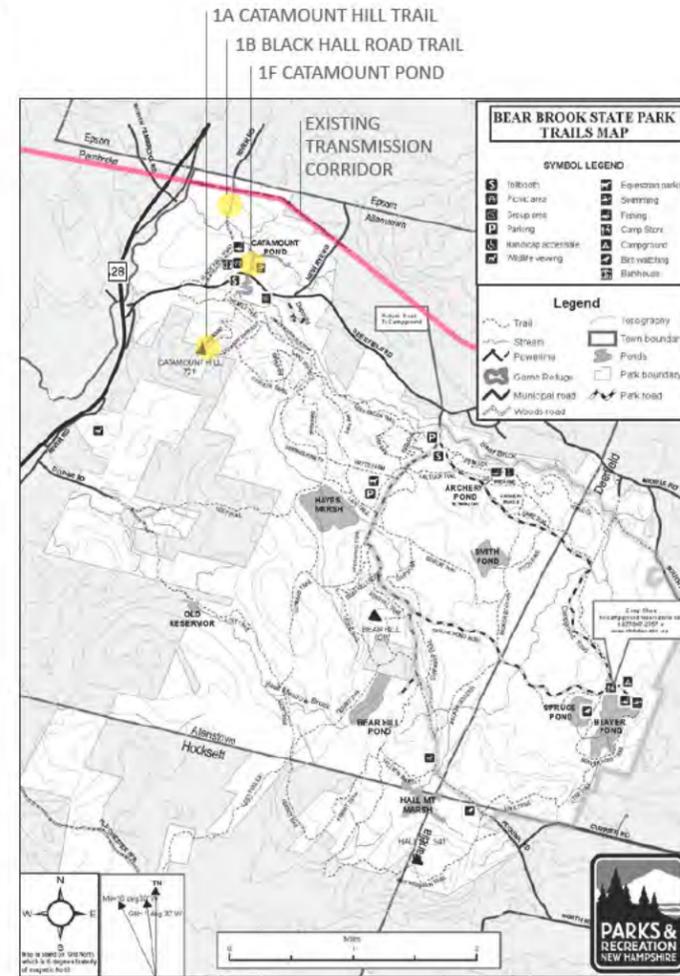
Bear Brook State Park also contains one of the most complete and intact Civilian Conservation Corps (CCC) camps in the country. Some of the original structures have been converted to a museum complex.

Existing Transmission Corridor

The right-of-way for the existing corridor in the State Park is 150 feet wide (cleared to approximately 120 feet) with a 115-kV transmission line supported by wooden monopole structures that average 75 feet in height. The existing transmission line crosses the Park near its northern boundary, approximately 350-500 feet from the Epsom town line. The corridor crosses Black Hall Road, a State Park trail that runs north-south from Deerfield Road to the northern boundary of the park. The transmission line is also visible from the north vista on the Catamount Hill Trail and at the entrance to the CCC camps (but not the camps themselves).

Changes within Existing Transmission Corridor

The existing 115-kV transmission line will remain in place. Up to 30 feet of vegetation within the right-of-way will be removed to provide a 150-foot wide cleared corridor to accommodate the proposed line. The 345-kV transmission line will be supported by weathering steel monopole structures on the south side of the corridor, starting at the Suncook River and extending eastward to New Rye Road. East of that point the line will be supported by galvanized steel lattice structures. Most of the new structures within Bear Brook State Park will range in height from 110 to 130 feet (one angle structure will be 145 feet in height), which is 50 to 66% taller than the 115-kV structures. In most locations the proposed 345-kV structures will be aligned next to the existing monopole structures.



Bear Brook State Park Visual Impact Assessment

Visual impact assessments (VIAs) are provided for four locations in the park: a) the Catamount Trail, b) the Black Hall Road Trail, c) Catamount Pond, and d) the CCC camps. There will be no views from either Catamount Pond or the CCC camps.

Overall Visual Impact On Bear Brook State Park: Low

The construction of a new transmission line and reconstruction of an existing line will have a low visual impact on Bear Brook State Park as a whole, and should not result in a substantial change in the way people now use or enjoy the recreational facilities in the park.

- The presence of the proposed structures and conductors will not change the inherent character of the Park.
- The structures will only be visible from two of the many trails within the State Park, and none of the other major attractions.
- The visual impact is greatly reduced by the use of weathering steel monopole structures.

CATAMOUNT HILL TRAIL (IA) ALLENSTOWN

OVERALL VISUAL IMPACT **MEDIUM**

The Catamount Hill is one of the most popular trails in Bear Brook State Park, offering two scenic vistas and access to the highest point of land in the park. This is an easy 2.3-mile loop trail that reaches an elevation of 721 feet, beginning and ending at the One Mile Trail. The trailhead is accessible from the parking area at Catamount Pond. Portions of the trail are steep and rocky; occasional granite steps are built into the slopes. A few park benches are located along the trail. The surrounding forest has a relatively closed canopy and an open understory. There is evidence of the former Catamount Quarry, which once operated on the northwest side of Catamount Hill (Master Plan, III-9). Improvements to the scenic viewpoints were recently completed as part of an Eagle Scout Project.

There are two viewpoints along the trail near the peak of Catamount Hill: one oriented to the east (Viewpoint 1) and a second oriented to the north (Viewpoint 2). The VIA for the Catamount Hill Trail is based upon an evaluation of Viewpoint 2, which is closer to the transmission line and has more direct views of the project.

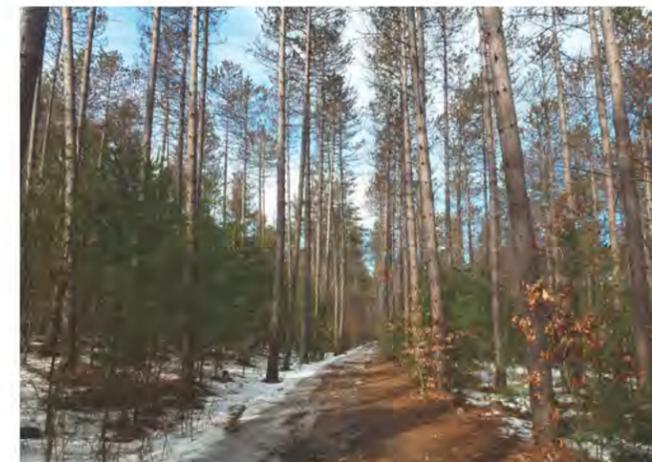
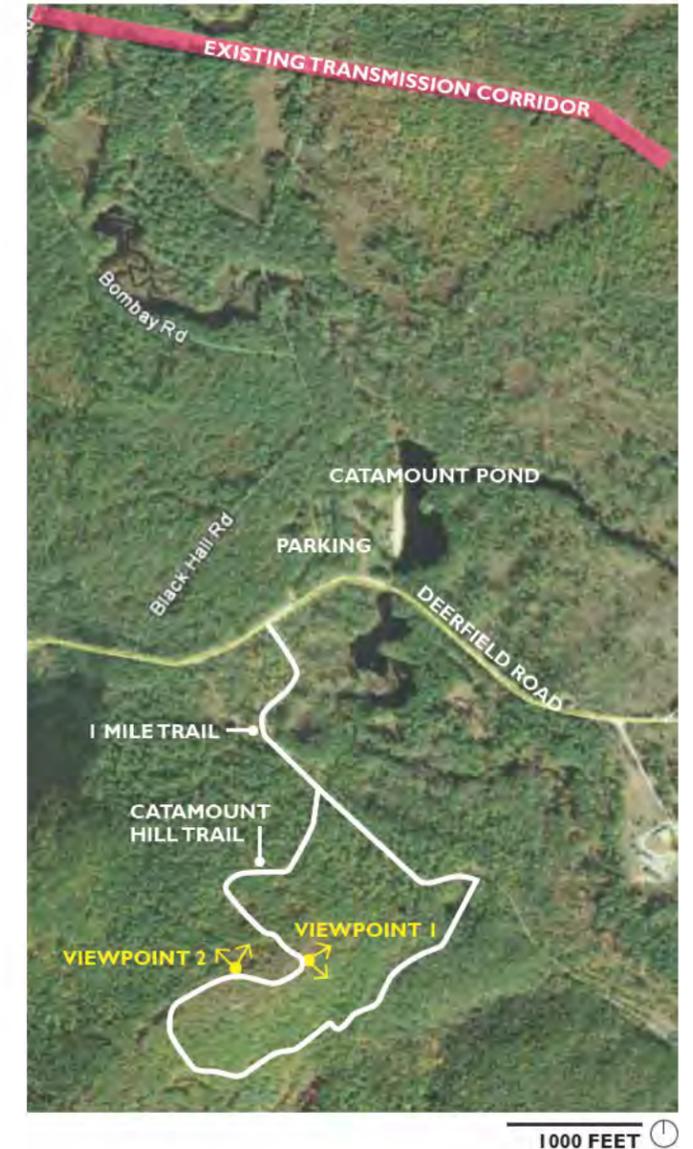
Cultural Value: High

One of the most popular hiking trails in the largest State Park in NH.

Visual Quality: Medium

The trail is part of an area noted for its juxtaposition of historic, cultural, and natural features. The trail offers hikers an opportunity to overlook the surrounding landscape, which is composed of relatively low landforms with more pronounced hills and low mountains in the background. Vegetation along the trail is mixed second growth hardwood/softwoods, which effectively block most of the views beyond the immediate foreground.

Scenic Significance: Medium-High.



Typical trail conditions on One Mile Trail. The NPT project will not be visible from this location.



Typical trail conditions on Catamount Hill Trail. The NPT project will not be visible from this location.

CATAMOUNT HILL TRAIL (1A)

ALLENSTOWN

VIEWPOINT 1 (East)

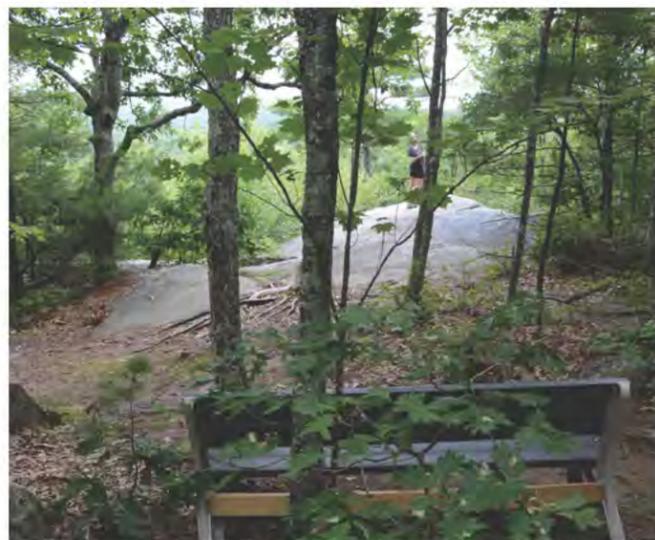
This viewpoint consists of a large rock face, opening up a view of the landscape to the east. A bench on the trail faces east towards the opening, but is set back in the woods with no views beyond the immediate foreground. The view appears to have been managed in the past, but recent growth now partially blocks the view of forested peaks in the midground and background. The focal point of the view is Saddleback Mountain, the highest peak visible from this location, seen at a distance of approximately 9 miles. Development in the view includes a transmission tower on Saddleback Mountain, a house on a nearby hillside, and the existing transmission corridor.

Existing Transmission Corridor

Two sections of the existing transmission corridor are visible from this viewpoint. The closest is approximately 1.4 mile away, where 2 structures are visible below the overlook. Due to the viewing distance and the surrounding vegetation, these structures are insignificant in relation to the full view, taking up approximately 2 degrees of the horizontal field of view. The cleared corridor is not visible and trees behind the transmission line help reduce its visibility. The second section of the transmission corridor is visible at a distance of approximately 3.4 miles as it crosses over a more distant peak. While the clearing is visible, it is not a dominant element in the landscape; likewise, the structures and conductors are barely visible.

Changes within Existing Transmission Corridor

Six or more weathering steel monopoles will be visible in the mid-ground, with heights of up to 130 feet and aligned with the existing 115-kV structures. The installation of the 345-kV line will require approximately 25 feet of clearing on the south side of the corridor to accommodate the additional structures. This additional clearing width will not make the corridor any more prominent when seen from this viewpoint.



VIEWPOINT 1: Viewpoint 1 is a rock face oriented to the east. Recent growth has partially obstructed the views (see photo to right).

VIEWPOINT 2 (North)

The second overlook is a short hike uphill from Viewpoint 1 and is near the high point of land. The site features a bench oriented toward the view and a display explaining the work that was done for the Scout project. The viewpoint faces north and includes several rolling hills in the midground and the Belknap Mountain range in the background. Recent understory growth has partially blocked the view, which appears to have been created by selective tree removal in the immediate foreground. Signs of development include three houses in the mid-ground, several areas of forest cutting on the opposite hillside, and the existing transmission corridor.

Existing Transmission Corridor

The existing transmission line is seen in the midground at a distance of slightly less than 1 mile. The corridor clearing is not visible due to topography and intervening vegetation. The number of visible structures varies from 2 to 6, depending upon viewer position. Most of the existing structures are blocked by trees in the immediate foreground.

Changes within Existing Transmission Corridor

Between 2 and 6 of the proposed 345-kV structures will be visible in the corridor, partially screened by vegetation in the immediate foreground. See Photosimulation.



VIEWPOINT 1: View facing east to the existing transmission corridor. The corridor is faintly visible in the two locations.

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- The height of the new structures will make them appear as large objects seen above the surrounding forested landscape, resulting in a moderate contrast in scale.
- The transmission structures will not become dominant features in the landscape, since they will be seen from a viewer-superior position against a mostly wooded backdrop.
- The use of weathering steel monopole structures will reduce the contrast in color and form.
- The additional clearing required will not expose the ground surface of the corridor. The appearance of the corridor will remain essentially unchanged.
- The new structures will be seen as relatively small objects at these distances and will be subordinate to the other features in the landscape.

Mitigation

- Using weathering steel structures to minimize contrast in color and form.
- Maintaining similar spacing and alignment with existing transmission structures to avoid pattern contrasts.

User Groups: Day Hikers

User Expectation: Medium

- Users should anticipate a largely wooded landscape in the State Park, but should also expect to see some forms of development in the surrounding landscape, given its proximity to urban and suburban centers.

Extent, Nature, and Duration of Public Use: High.

- The Catamount Hill Trail is the most popular hiking trail in the park, with a large parking area and adequate signage.
- The parking area and trails are well maintained and marked with good signage. A ranger post is located near the trailhead at the park entrance.
- The majority of the trail is in a wooded landscape; the cleared vistas and benches offer the opportunity to enjoy the view. The scenic quality of the midground and background landscape is essential to the hiking experience.

Overall Visual Impact: Medium

The additional transmission structures will have a medium visual impact on the views from the Catamount Hill Trail overlooks. The NPT project should not result in a substantial change in the way people currently use or enjoy the trail.

- The structures will not block or interfere with existing views.
- The transmission structures will not become a dominant features in the landscape, since they will be seen from a viewer-superior position against a mostly wooded backdrop.
- The use of weathering steel monopole structures will reduce contrast in color, line, and form with the surroundings landscape.
- The proposed transmission structures will not change the inherent character of the State Park or the trail.
- People who currently use the trails will still be able to enjoy hiking and views from the overlook.



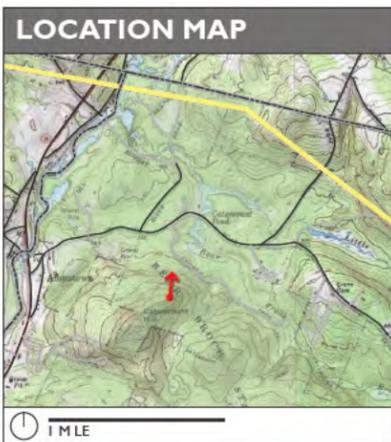
VIEWPOINT 2: Photo on next page was taken near the further bench. See Photosimulation. The project will not be visible from this vantage point.

CATAMOUNT TRAIL SCENIC VIEWPOINT - BEAR BROOK STATE PARK, ALLENSTOWN

EXISTING CONDITIONS: PANORAMA



Bench at scenic viewpoint on Catamount Hill Trail.



TECHNICAL INFORMATION			
TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Wood Monopole	Existing to remain
	Height range of visible 115-kV structures	61 - 88 feet	Existing to remain
	345-kV structure type	N/A	Weathering Steel Monopole
	Height range of visible 345-kV structures	N/A	110 - 145 feet
Right-of-way width	150 feet	150 feet	

PHOTOGRAPH	Date and time: 7/31/14 at 12:40pm	Location: 43.155753° N, -71.389330° W	Viewing Direction: North
	Distance to visible structures: 1.17 to 1.21 miles	Number of transmission structures visible in the photosimulation: 3	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D7100	Photo Source: TJD&A

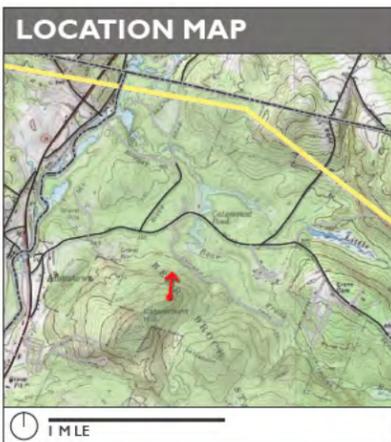
NOTES
<p>GENERAL NOTES</p> <p>Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.</p>
<p>PHOTOSIMULATION PRODUCTION</p> <p>By Terrence J. DeWan & Associates.</p>
<p>VIEW DESCRIPTION</p> <p>View from a scenic viewpoint on the Catamount Hill Trail near the summit of Catamount Hill in Bear Brook State Park.</p>

CATAMOUNT TRAIL SCENIC VIEWPOINT - BEAR BROOK STATE PARK, ALLENSTOWN

PHOTOSIMULATION: PANORAMA



Bench at scenic viewpoint on Catamount Hill Trail.



TECHNICAL INFORMATION

TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Wood Monopole	Existing to remain
Height range of visible 115-kV structures	61 - 88 feet	Existing to remain	
345-kV structure type	N/A	Weathering Steel Monopole	
Height range of visible 345-kV structures	N/A	110 - 145 feet	
Right-of-way width	150 feet	150 feet	

PHOTOGRAPH	Date and time: 7/31/14 at 12:40pm	Location: 43.155753° N, -71.389330° W	Viewing Direction: North
	Distance to visible structures: 1.17 to 1.21 miles	Number of transmission structures visible in the photosimulation: 3	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D7100	Photo Source: TJD&A

NOTES

GENERAL NOTES

Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.

PHOTOSIMULATION PRODUCTION

By Terrence J. DeWan & Associates.

VIEW DESCRIPTION

View from a scenic viewpoint on the Catamount Hill Trail near the summit of Catamount Hill in Bear Brook State Park.

CATAMOUNT TRAIL SCENIC VISTA - BEAR BROOK STATE PARK, ALLENSTOWN

EXISTING CONDITIONS: NORMAL VIEW



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

CATAMOUNT TRAIL SCENIC VISTA - BEAR BROOK STATE PARK, ALLENSTOWN

PHOTOSIMULATION: NORMAL VIEW



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

CATAMOUNT POND (IF)

ALLENSTOWN

OVERALL VISUAL IMPACT **NONE**

The Catamount Pond area includes a 16-acre man-made pond on both sides of Deerfield Road, a sand beach, a large granite pavilion, a group picnic area, picnic tables, a playground, monuments, open park space, and parking for approximately 150 cars. The focal point for the pond and the surrounding area is the Alderic O. Violette Pavilion, located between the open lawn area and the beach at the edge of the swimming pond. The granite pavilion and a formal stairway to the pond are notable examples of CCC architectural work from 1938.

Catamount Pond is located at the convergence of Bear Brook and Little Bear Brook. The pond was dug by hand by CCC enrollees and completed about 1935. In the warmer months the pond is used for swimming; in the winter the pond is used for ice skating. The pond is surrounded by a dense stand of mature white pines (approximately 70-90 feet in height) that screen the existing transmission corridor.

Deerfield Road, the main access into Bear Brook State Park, crosses the narrowest point of the pond south of the pavilion. A wooden footbridge spans the pond on the north side of the road, affording a panoramic view of the pond, beach, and pavilion. The footbridge leads to a trail that continues to the pines on the eastern side of the pond.

Existing Transmission Corridor

The existing transmission corridor is located 0.6 mile north of Catamount Pond. The right-of-way is 150 feet in width (cleared to approximately 120 feet) and contains a 115-kV transmission line supported by wooden monopole structures that average 75 feet in height. At its high elevation, the transmission corridor is approximately 180 feet above the surface of the pond. However, the dense evergreen vegetation between the corridor and the pond blocks views of the existing structures and conductors from the pond and the parkland that surrounds it.

Changes within Existing Transmission Corridor

The existing 115-kV transmission line will remain in place. Patches of vegetative clearing ranging from 10 to 25 feet will be removed to provide a 150-foot wide cleared corridor to accommodate the proposed transmission line. The 345-kV transmission line will be supported by weathering steel monopole structures on the south side of the corridor. The 345-kV structures will range in height from 110 to 130 feet (one angle structure will be 145 feet in height).

Cultural Value: High

Catamount Pond is a focal point of the largest State Park in NH. The area surrounding the pond is rich in historic and recreational value.

Visual Quality: High

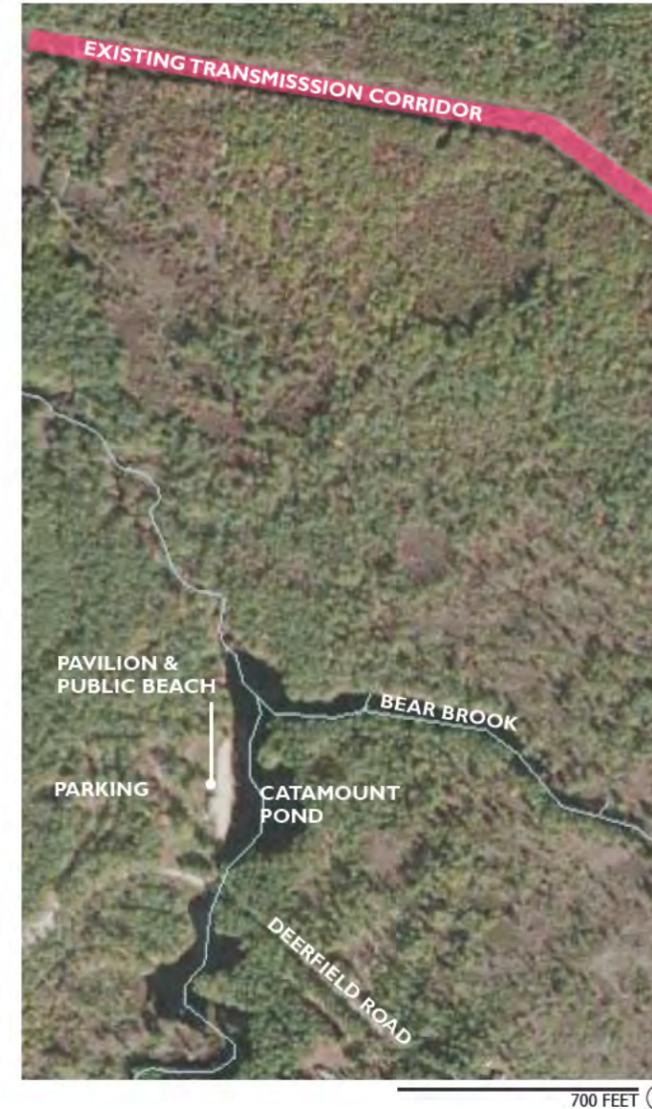
The area is noted for the juxtaposition of historic, cultural, and natural features in a park-like environment. Surrounding landforms are relatively low and typical of this part of NH. Vegetation is relatively consistent throughout the site, with mature white pines defining the edge of the viewshed. Catamount Pond is a relatively complex waterbody that is co-dominant in the landscape. Views are focused on the foreground, with no views of midground interest. The view is memorable, accented by the CCC-era pavilion and grand stairway. The most discordant element is Deerfield Road, which bisects the pond and contributes noise and an automotive presence to the beach area. Parking is located several hundred yards from the pond, resulting in a largely pedestrian environment.

Scenic Significance: High

VISUAL IMPACT ASSESSMENT

Visual Effect: None

There will be no visibility of the proposed structures from the pond area or the footbridge at the southern end of the pond. Field investigations and cross-sectional analysis confirm there will be no visibility from either location.



North side of Alderic O. Violette Pavilion and staircase leading to Catamount Pond beach. The project will not be visible from this location.



View looking north from Deerfield Road toward Catamount Pond and footbridge. The project will not be visible from this location.



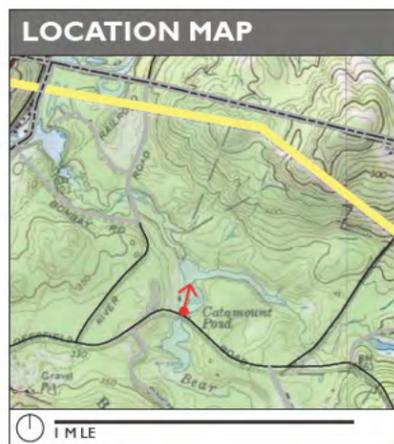
View looking north from Catamount Pond footbridge in leaf-off conditions. Public Beach and Alderic O. Violette Pavilion located on the west side of pond. The project will not be visible from this location.

CATAMOUNT POND - BEAR BROOK STATE PARK, ALLENSTOWN

EXISTING/PROPOSED CONDITIONS (STRUCTURES NOT VISIBLE)



Footbridge over Catamount Pond.



TECHNICAL INFORMATION

TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Wood Monopole (not visible)	Existing to remain
	Height range of visible 115-kV structures	61 - 88 feet (not visible)	Existing to remain
	345-kV structure type	N/A	Weathering Steel Monopole (not visible)
	Height range of visible 345-kV structures	N/A	110 - 145 feet (not visible)
Right-of-way width	150 feet	150 feet	

PHOTOGRAPH	Date and time: 7/31/2014 at 1:26pm	Location: 43.162979° N, -71.385680° W	Viewing Direction: North
	Distance to visible structures: 0.62 - 0.67 mile	Number of transmission structures visible in the photosimulation: 0	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D7100	Photo Source: TJD&A

NOTES

GENERAL NOTES
Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.

PHOTOSIMULATION PRODUCTION
By Terrence J. DeWan & Associates.

VIEW DESCRIPTION
View from the footbridge across narrowest point in Catamount Pond, adjacent to Deerfield Road. The existing and proposed structures are behind trees in the foreground and will not be visible from the pond.

BLACK HALL ROAD TRAIL (1B) ALLENSTOWN

OVERALL VISUAL IMPACT **LOW-MEDIUM**

Black Hall Road is a trail in the northern section of the Park that connects Deerfield Road to River Road in Epsom. Approximately one mile of the trail is located in the park. This is the only one of the 26 trails in Black Brook State Park that physically intersects the transmission line. The NH Division of Parks and Recreation offers this description of the trail: *“This little known trail provides access to a truly diverse area of the park. The land accessed by Black Hall Road has been managed through controlled burns to provide diversified habitat for various animals. The area consists of pitch pine forests, low-bush blueberry meadows, stands of aspen, and an early succession meadow that will eventually develop into a full forest”* (Bear Brook State Park Trail Descriptions, p. 1).

Existing Transmission Corridor

The right-of-way for the existing corridor in the State Park is 150 feet wide (cleared to approximately 120 feet) with a 115-kV transmission line supported by wooden monopole structures that average 75 feet in height. The corridor intersects Black Hall Road approximately 300 feet south of the Epsom town line. The transmission line clearing comes into view approximately 200 feet on either side of the corridor, due to the trail alignment and trees on either side of the trail leading up to the crossing. The nearest 115-kV monopole structure is approximately 100 feet away from the east side of the trail; four additional structures are visible to the east before the corridor goes over a hill. On the west side of the trail, the corridor remains flat, affording unimpeded views down the corridor. The nearest structure is approximately 550 feet from the west side of the trail. Existing structures immediately adjacent to the corridor are 72.5 to 86.5 feet in height.

Changes within Existing Transmission Corridor

The existing 115-kV transmission structures will remain in place. The proposed 345-kV line will be supported by weathering steel monopoles located on the south side of the corridor, aligned with the 115-kV structures. Vegetation removal will occur on the south side of the corridor on the west side of the trail crossing. The vegetation removal will range in width from 10-25 feet and will continue approximately 175 feet down the corridor to the west. Additional vegetation removal of the same width range will occur in other areas along the corridor that may also be visible from the trail. The proposed 345-kV structures nearest the trail will be 110 and 130 feet in height.

Cultural Value: Medium

While the Black Hall Road Trail is in NH’s largest State Parks, the Park brochures describe the trail as ‘little known’. The trail does not loop or connect to the greater trail network.

Visual Quality: Low

The trail offers hikers an opportunity to see actively managed woodland, with little visual contact beyond the immediate foreground. Vegetation along the trail is mixed second growth



West facing bird’s eye view showing intersection of Black Hall Road with existing transmission corridor (source: Bing Maps).

hardwood/softwoods, which effectively block most of the views. There are no waterbodies visible from the trail. The trail passes under the existing transmission line and past areas that are control burned as part of the management regime. The trail connects with a residential neighborhood on the north side of the park.

Scenic Significance: Low – Medium

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- NPT will introduce a new set of transmission structures and conductors in the existing transmission corridor. The use of weathering steel monopole structures will reduce the contrast in color, line, and form.
- The proposed structures will be aligned with the existing structures to maintain the rhythm established by the 115-kV line.
- The removal of 10-25 feet of woodland vegetation will result in a slightly widened corridor.
- The 345-kV structure on west of the trail will be 37.5 feet taller than the existing 115-kV structure. The structure on the east side of the trail will be 43.5 feet taller than the existing. The increase in height will result in a moderate contrast in scale. The use of monopole structures at the trail crossing will also reduce the perceived scale and dominance of the structures.

- The taller 345-kV structures will be the dominant features in a corridor that is already characterized by transmission structures. The new structures will not block or interfere with existing views outside of the transmission corridor.

Mitigation

- Using weathering steel monopole structures will minimize the visual impact of the structures at this trail crossing.

User Groups: Hikers and local residents walking between River Road and the State Park.

User Expectation: Low.

- Users expect conditions in the State Park to be forested and natural in appearance. However, current users are accustomed to seeing transmission structures in an actively managed landscape.

Extent, Nature, and Duration of Public Use: Low.

- Visitor use levels are not available; however, the Park brochure’s describe of the trail as ‘little known’ suggest that it receives light use.
- The trail connects with a residential neighborhood north of the State Park on River Road, providing local residents with access to the State Park. The terrain is flat, allowing a variety of user groups to access the trail.

- The trail is located in a wooded low-lying area of the State Park. The most scenic element is the wetland and stream crossing of Bear Brook. There is no distinct destination along the trail (such as a waterbody or scenic vista).
- The trail is separate from the interconnected trail network throughout the western side or rest of the park. The location within the park away from the trail network reduces the frequency of use along this trail.

Overall Visual Impact: Low-Medium

The addition of a new transmission line within the existing corridor will have a low-medium overall visual impact on the Black Hall Road Trail. NPT should not result in a substantial change in the limited way people now use the trail.

- The transmission line is visible from less than 3% of the mile-long length of the trail. The average hiker will be in the corridor for approximately 34 seconds.
- The proposed 345-kV structures will appear in a landscape that already is dominated by an existing transmission line.
- The use of weathering steel monopole structures will reduce contrast in color, line, and form with the surrounding treetops and landscape.
- The structures will not block or interfere with existing views, and will not impact a scenic section of the trail or State Park Trail system.
- The presence of the additional transmission structures and conductors will not change the inherent character of the trail.

CCC CAMP MUSEUM COMPLEX (IG) ALLENSTOWN

OVERALL VISUAL IMPACT **NONE**

Bear Brook State Park contains one of the most complete and intact CCC camps in the country in use by the public. The entrance to the camp is located on the south side of Deerfield Road, near its intersection with New Rye Road.

The history of the camp dates back to 1935. As part of the New Deal, the federal government acquired the land to form the Bear Brook CCC Camp. At one point there were more than one hundred and thirty camp structures. The Camp closed in 1942 and a year later the federal government transferred the land to the State to serve as New Hampshire's largest State Park (Allenstown master Plan, p. III-13).

The camp has been listed on the National Register of Historic Places since 1992. There are six buildings remaining in the camp. Four are open to the public as part of a museum complex that includes the New Hampshire Antique Snowmobile Museum, Old Allenstown Meeting House, and the Richard Diehl Civilian Conservation Corps (CCC) Museum (Allenstown master Plan, p. III-13).

The historic structures share a space with the State Park's Forest & Lands Division and the Supply Depot. A sign on Deerfield Road marks the entrance to the camp and a paved road provides access to parking and the museums. The area around the camp complex is forested, which separates it from the traffic on Deerfield Road. The park land on the north of the Deerfield Road entrance has been selectively harvested, which opened up filtered views to the north from the CCC camp entrance toward the transmission line.

Existing Transmission Corridor

The right-of-way for the existing corridor in the State Park is 150 feet wide (cleared to approximately 120 feet) with a 115-kV transmission line supported by wooden monopole structures ranging from 70 to 95 feet in height. The transmission line is 0.6 mile north of the camp entrance and located on a ridgeline approximately 200 feet in elevation above Deerfield Road. The corridor clearing is not visible from the camp complex; however two transmission structures are visible from the Deerfield Road entrance, approximately 800 feet from the nearest camp structure. The two visible structures are 70 and 83.5 feet in height.

Changes within Existing Transmission Corridor

The existing 115-kV transmission line will remain in place. Up to 35 feet of vegetation will be removed to provide a 150-foot wide cleared corridor to accommodate the proposed transmission line. The 345-kV transmission line will be supported by weathering steel monopole structures on the south side of the corridor. The 345-kV structures will range in height from 110 to 130 feet (one angle structure will be 145 feet in height). The proposed 345-kV structures will be aligned next to the existing 115-kV monopole structures.

Two of the proposed 345-kV structures will be visible from the entrance to the camp through the remaining trees on the north side of Deerfield Road. The corridor is partially screened by vegetation in the immediate foreground, which restricts visibility. The new structures will not be visible from the CCC Camp museum complex.

Cultural Value: High

Important cultural and historic resource located in a State Park. Listed on the National Register of Historic Places.

Visual Quality: Medium

Historic single story wood structures surrounded by forestland. Buildings are connected by a paved road and are interspersed among State Park maintenance and supply buildings.

Scenic Significance: Medium-High

Visual Effect: None

Neither the NPT corridor nor the proposed structures will be visible within the CCC camp / museum complex. Some of the transmission structures will be intermittently visible from the camp entrance on Deerfield Road. As the cleared woodlot on the north side of Deerfield Road regenerates, the views of the structures will gradually disappear. The views of the NPT structures should have no effect on the way the general public now uses and enjoys the former CCC Camp.

Allenstown Works Cited

Allenstown Planning Board and Central New Hampshire Regional Planning Commission. 2003 Allenstown Master Plan. 6 March 2003.

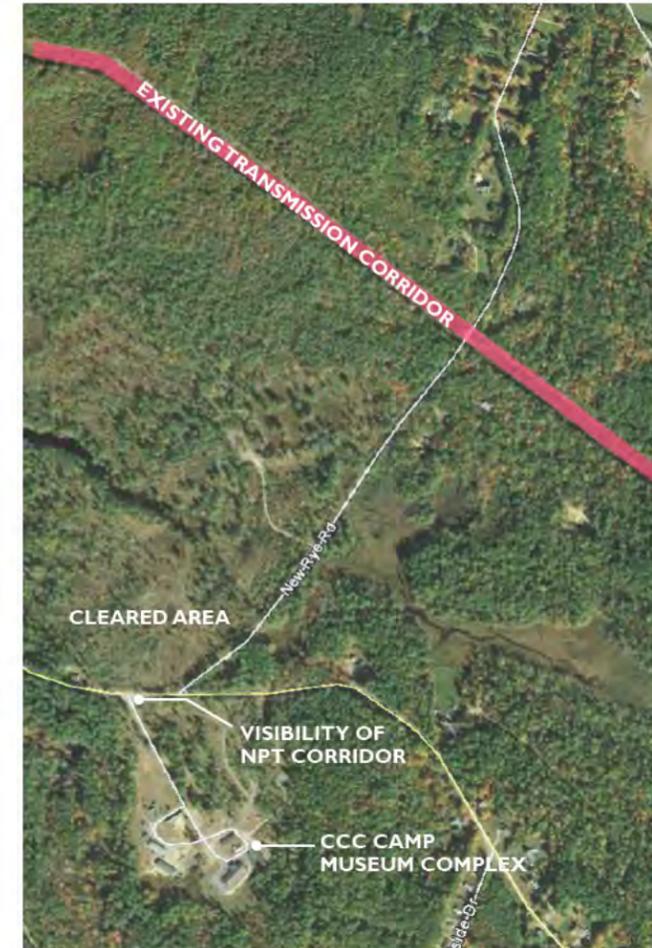
Allenstown Employment Report, Economic & Labor Market Information Bureau, NH Employment Security. Allenstown, NH. February 2014.

NH Department of Resources and Economic Development Division of Parks and Recreation. Bear Brook State Park. Web. 25 Oct 2014. <<https://www.nhstateparks.org/explore/state-parks/bear-brook-state-park.aspx>>.

NH Department of Resources and Economic Development Division of Parks and Recreation. Bear Brook State Park Trail Descriptions. PDF File.

NH Department of Resources and Economic Development Division of Parks and Recreation. Bear Brook State Park Trails Map. PDF File.

Griffith, G.E., Omernik, J.M., Bryce, S.A., Royte, J., Hoar, W.D., Homer, J.W., Keirstead, D., Metzler, K.J., and Hellyer, G., 2009, Ecoregions of New England (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,325,000).



Buildings in CCC Camp and Museum Complex. The project will not be visible in the above images.



North facing view from Museum entrance on Deerfield Road. Recently cut wooded area opens up a filtered view of the existing transmission corridor 0.6 mile away. As trees revegetate the views will be eliminated from this point. The cutting is not visible from the historic CCC camp.

DEERFIELD DESCRIPTION

Area: 50.8 square miles (NHES)

Inland Water Area: 1.3 square miles (NHES)

Population: 4,302 residents (NHES)

Population Density: 84.7 persons/sq mi (NHES)

Town Location: Deerfield is located in Rockingham County, and is centrally positioned between Epsom, Allenstown, Candia, Raymond, Nottingham and Northwood.

Study Area: The study area is located in the center of Deerfield, leaving the northwest corner and southern edge of town outside of the corridor. The study area covers 84.38% of the total land area (28,139 acres).

Physical Characteristics

Pawtuckaway and Bear Brook State Parks occupy roughly ten percent of the Town area and an additional seventeen percent of the Town is designated as conservation land. The topography in town is hilly, with steep slopes along the Mountain Road crossings and near Mt. Delight Road. The Lamprey River runs through the central portion of town.

Demographics

The population has been steadily increasing since 1970, with a 68% increase between 1970 and 1980. The population in 2014 was 4,302 residents, with a median age of 42. Of the residents 25 years of age or older, approximately 34% have attained a Bachelor's degree or higher (NHES).

Cultural Development Patterns

Deerfield was created in 1766 from a portion of the Nottingham Grant of 1722. Deerfield thrived as a center for trade, commerce, education, and hospitality between Concord and Portsmouth. In 1850 the population and economy declined due to cleared forest land, unsuitable farmland, and tourist bypass from railroad transportation. Population growth began in the 1950's and increased significantly during the 1970's and 1980's. Between 1990 and 2005, Deerfield's population grew by just over 30 percent. Of Deerfield's developed area, approximately 85% is residential, and of that approximately 94% is single family (NHES).

Land Use Planning

Residents place a high value on Deerfield's rural character, agricultural history and progressive community. The town Master Plan promotes development that preserves features which

contribute to Deerfield's rural character, and reduces impacts on natural resources by minimizing sprawl. Deerfield consists of approximately 50% land used for residential purposes. The Master Plan encourages limited commercial and light industrial land use to create a sustainable local economic base.

Existing Transmission Corridor

Physical Features: The existing corridor runs 7 miles east-west through Deerfield from west the town boundary over the Suncook River to the Deerfield Substation (the terminus of the project corridor). The first 3.6 miles to the west has a right of way width of 150 and contains a single 115-kV line supported by structures ranging from 47.5 to 92.5 feet in height. The corridor intersects with another transmission corridor 3.5 miles west of the Deerfield Substation and picks up a second 115-kV line. The corridor right of way increases in width to 200 feet from this point to the substation. Both 115-kV transmission lines are supported by wooden monopole structures that range in height from 47.5 to 92.5 feet. The 115-kV line that ties into the corridor is located on the north side of the corridor and the 115-kV line that continues from the east section of the corridor crosses over to the south.

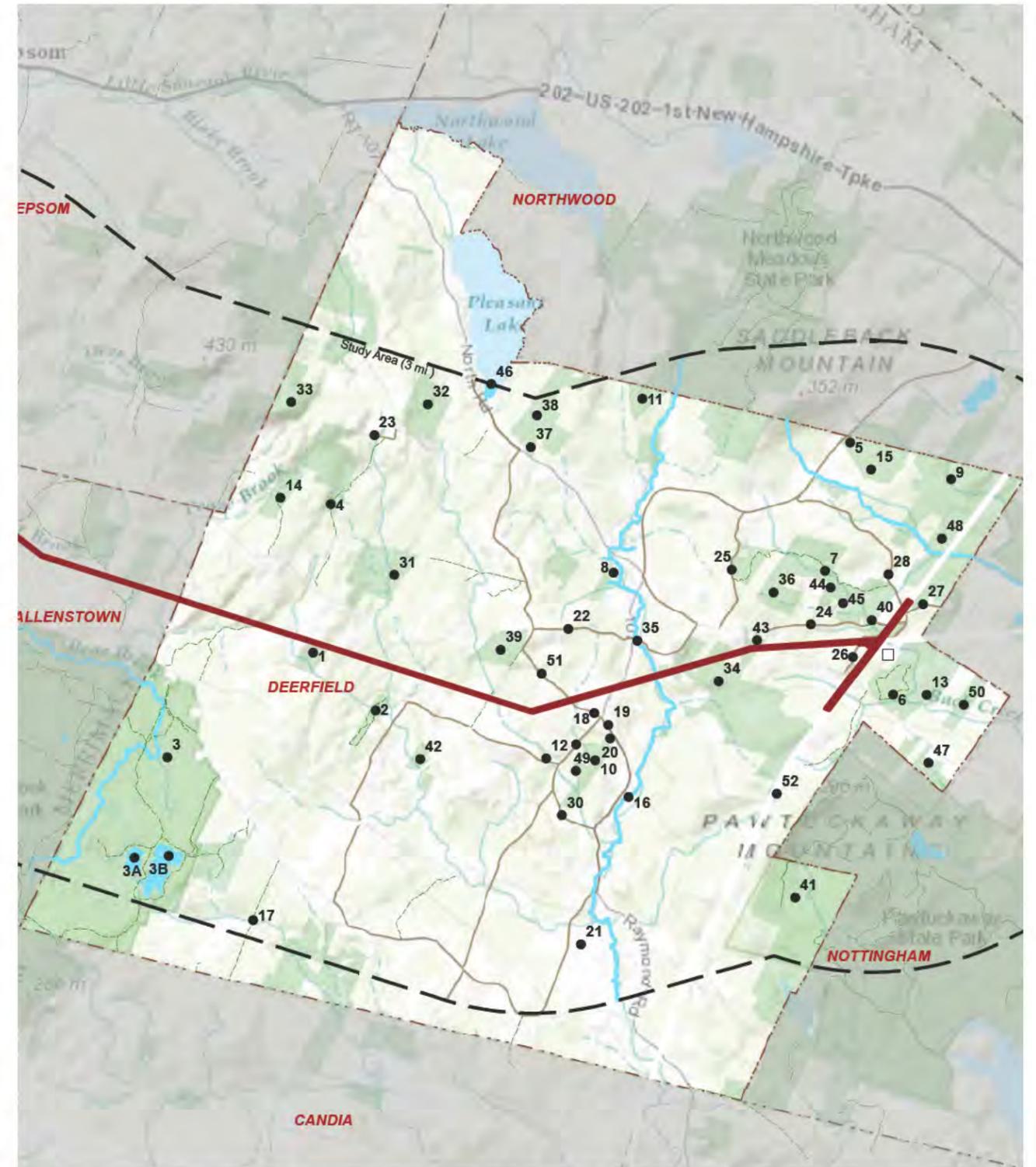
Surrounding Topography: The topography is hilly, with steep slopes along the Mountain Road crossings and near Mt. Delight.

Vegetation: Vegetation bordering the transmission corridor is typically hemlock hardwood-pine, Appalachian oak-pine, and grasslands. Land cover in the immediate vicinity of the transmission corridor is predominately forest, with some agricultural among low density residential (WAP).

Adjacent Land Use: The project right-of-way abuts forested land and land used for residential, wetland/water, conservation, and agricultural purposes.

Changes within Existing Transmission Corridor

The 345-kV line will be constructed on the south side of the existing corridor right of way on structures ranging in height from 70 to 155 feet. In the 150-foot corridor right of way on the west side of Deerfield, the 115-kV line will remain in place and the 345-kV line will be located on the south side of the corridor. In the 200-foot right of way on the east side of Deerfield, the 115-kV line on the south side of the corridor will be relocated to the center of the corridor on structures ranging from 74.5 to 105 feet. The existing 115-kV line that ties in from the second transmission line corridor will remain in place on the north side of the corridor. The relocated 115-kV line will be supported by structures ranging from 74.5 to 105 feet. There will be approximately 10 to 45 feet of additional clearing on the south side of the existing right of way, and additional 13 acre clearing around the Deerfield Substation.



DEERFIELD DESCRIPTION

TABLE 6-3: DEERFIELD SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Alvah Chase Town Forest	Coorridor crossing at north end of land. No trail access.	D	Town of Deerfield	Crosses Corridor	LOW	YES		
2	Arthur Chase Town Forest	40 acres. Hiking trail. No vistas.	A	Town of Deerfield	0.3 mi	LOW	NO		
3	Bear Brook State Park	Largest NH State Park. Most of park is located in Allenstown. VIA in Allenstown.	1	NH Dept. of Recreation and Economic Development	0.6 mi from State Park in Deerfield	HIGH	YES	MEDIUM	MEDIUM-HIGH
4	Corey WMA	Conservation land maintained as a Wildlife Management Area	6	NH Fish & Game Dept.	1.3 mi	LOW	YES		
5	Dole Marsh WMA	Conservation land maintained as a Wildlife Management Area	6	NH Fish & Game Dept.	1.7 mi	LOW	NO		
6	Dowst-Cate Town Forest	Town park with wooded trails.	A	Town of Deerfield	0.2 mi	LOW	YES		
7	Great Brook Trail	Non-motorized hiking trail runs across tracts of local conservation land.	A	Private	0.8 mi	LOW	NO		
8	Freese Pond/ Conservation Area	Publicly accessible waterbody with shorebank access and conservation area. Public access for hiking, fishing, boating.	A	Town of Deerfield	1.0 mi	LOW	NO		
9	Lamontagne WMA	Conservation land maintained as a Wildlife Management Area	5 / 6	NH Fish & Game Dept.	1.0 mi	LOW	YES		
10	Lindsey-Flanders Conservation Area	Town park with wooded trails. No vistas.	A	Town of Deerfield	0.4 mi	LOW	NO		
11	McNeil Conservation Area Town Forest	Town forest with no known trails.	D	Town of Deerfield	2.5 mi	LOW	NO		
12	Peg King Park	Town park with wooded trails.	A	Town of Deerfield	0.4 mi	LOW	NO		
13	Weiss Town Forest	Town forest with no known trails.	D	Town of Deerfield	0.6 mi	LOW	YES		
14	Wells Town Forest	Town forest with no known trails.	D	Town of Deerfield	1.1 mi	LOW	NO		
15	Woodman State Forest	State Forest. with no known trail. Also located in Northwood.	6	State	1.6 mi	MEDIUM	NO		

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
16	Lamprey River	Designated in the NH Rivers Management Program.	4	NH Dept. of Environmental Services	Crosses Corridor	MEDIUM	YES	LOW	LOW-MEDIUM
17	North Branch River	Tributary of the Lamprey River and included in the designation as a NH Rivers Management Program. Publicly accessible waterbody with access for paddling and fishing. No access in Deerfield.	4	State	2.8 mi	MEDIUM	NO		
18	Deerfield Center	Historic Village Center and Town Hall, both listed on National Register of Historic Places.	C	Town of Deerfield	0.2 mi	HIGH	YES	HIGH	HIGH
19	White Building Playground	Town recreational facility	A	Town of Deerfield	0.2 mi	LOW	NO		
20	Bicentennial Field	Town baseball field	A	Town of Deerfield	0.4 mi	LOW	NO		
21	Deerfield Fairgrounds	Town fairgrounds. Identified in Master Plan as culturally and historically significant	C	Town of Deerfield	2.4 mi	LOW	YES		
22	Meetinghouse Hill Road	Town voted Scenic Road (east of Old Corner Road)	B	Town of Deerfield	0.4 mi	LOW	YES		
23	Whittier Road	Town voted Scenic Road	B	Town of Deerfield	2.8 mi	LOW	NO		
24	Perry Road	Town voted Scenic Road	B	Town of Deerfield	0.2 mi	LOW	YES		
25	Harvey Road	Town voted Scenic Road	B	Town of Deerfield	0.3 mi	LOW	NO		
26	Cate Road	Town voted Scenic Road	B	Town of Deerfield	Crosses Corridor	LOW	YES		
27	Bean Hill Road	Town voted Scenic Road	B	Town of Deerfield	0.5 mi	LOW	NO		
28	Coffeetown Road	Town voted Scenic Road	B	Town of Deerfield	0.5 mi	LOW	YES		
29	Candia Road	Town voted Scenic Road	B	Town of Deerfield	0.8 mi	LOW	NO		
30	Cole Road	Town voted Scenic Road	B	Town of Deerfield	0.8 mi	LOW	NO		

DEERFIELD SCENIC RESOURCES

TABLE 6-3: DEERFIELD SCENIC RESOURCES (CONTINUED)

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
31	Freese Town Forest	Town Forest. No Trails	A	Town of Deerfield	2.3 mi	LOW	YES		
32	Fogg/Shores Town Forest	Town Forest. No Trails	A	Town of Deerfield	0.5 mi	LOW	NO		
33	Olsen/Villnave Conservation Land	Conservation lands. No clear trail designed for the public to Nottingham.	C	State	2.1 mi	LOW	NO		
34	Menard	Conservation Easement	14	Society for the Protection of New Hampshire Forests (easement holder)	Crosses Corridor	LOW	YES		
35	Menard Easement	Conservation Easement	14 / A	Bear-Paw Regional Greenways (easement holder)	0.3 mi	LOW	NO		
36	Pendleton Conservation Easement	Conservation Easement	14	Town of Deerfield	0.2 mi	LOW	NO		
37	Doane / Schorr Easement	Conservation Easement	14 / A	Bear-Paw Regional Greenways (easement holder)	2.5 mi	LOW	YES		
38	Katharyn Williams Easement	Conservation Easement	A	Town of Deerfield	2.6 mi	LOW	NO		
39	Clifford Easements	Three contiguous conservation easement parcels	A	Town of Deerfield	0.3 mi	LOW	NO		
40	Burbank, H. Conservation Easement	Conservation Easement	A	Town of Deerfield	0.1 mi	LOW	YES		
41	Pawtuckaway State Park	State Park. Actively used for bouldering, hiking, camping, swimming, boating, fishing. Majority of resources are located in Nottingham, small portion is in Deerfield. VIA in Nottingham.	1	State	2.1 mi	HIGH	NO		
42	Fowler Conservation Easements	Four contiguous conservation easement parcels	A	Town of Deerfield	0.7 mi	LOW	NO		
43	Geddes Trust, Melinda L	Conservation Easement	A	SPNHF	Crosses Corridor	LOW	YES		
44	Jaeger Conservation Easement	Conservation Easement	A	Town of Deerfield	0.2 mi	LOW	NO		

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
45	Steve Cruikshank Memorial Easement	Conservation Easement	A	Bear-Paw Regional Greenways (easement holder)	0.2 mi	LOW	NO		
46	Pleasant Lake	Public Water body	2	NH Fish & Game Dept.	2.8 mi	MEDIUM	NO		
47	Rosenfield / Mallette Easement	Conservation Easement	14	Bear-Paw Regional Greenways (easement holder)	1.2 mi	LOW	NO		
48	Curry Conservation Easement	Conservation Easement	14 / A	Town of Deerfield	0.1 mi	LOW	YES		
49	Linden Conservation Easement	Conservation Easement adjacent to Lindsey-Flanders Conservation Area	14 / A	Town of Deerfield	0.6 mi	LOW	YES		
50	Sherburne Conservation Easement	Conservation Easement		The Nature Conservancy	1.5 mi	LOW	YES		
51	Upper Lamprey River Scenic Byway	State designated Scenic and Cultural Byway. Includes: NH Rt 43 / 4/ 107 + local roads (Church Street, Nottingham Road, Parade Road).	8	NH Dept. of Transportation	Crosses Corridor	MEDIUM	YES	HIGH	MEDIUM-HIGH
52	Snowmobile Trail 17	State-wide Snowmobile trail.	3	Various	Crosses Corridor	LOW	YES		

YELLOW ROWS: Resources with possible VIEWS of the corridor and at least a MEDIUM Cultural Value Rating

STATE/REGIONAL SOURCES:

- (1) NH State Park Listing: www.nhstateparks.org/
- (4) Map of Designated Rivers in the New Hampshire River Protection Program, Department of Environmental Services: <http://des.nh.gov/organization/divisions/water/wmb/rivers/desigriv.htm>
- (3) New Hampshire Snowmobile Association Map, 2014
- (5) Delorme Atlas and Gazetteer for New Hampshire, 16th Edition, 2010
- (6) State Lands Administered by State of NH Department of Resources and Economic Development and the NH Fish and Game Department, July 2007

LOCAL SOURCES:

- (A) Town of Deerfield Trail Inventory and Plan by Lamprey River Advisory Committee and Neatline Associates, August 2011
- (B) Town of Deerfield Municipal Scenic Roads – Town website Aug 6, 2014: http://www.townofdeerfieldnh.com/Pages/DeerfieldNH_Webdocs/aboutdf/roads
- (C) Town of Deerfield Master Plan, 2009
- (D) Bear-Paw Print: News and Information about Bear-Paw Regional Greenways, 2012

LAMPREY RIVER (16)

DEERFIELD

OVERALL VISUAL IMPACT **LOW-MEDIUM**

The Lamprey River flows east-west for 50 miles from Northwood to Newmarket, where it drains into the Great Bay coastal estuary. In 1990, the section of the Lamprey in the towns of Lee and Durham were nominated into the New Hampshire Rivers Management and Protection Program (RMPP) in recognition of its ecological, historical, recreational, and water supply resources. In 2011, the entire Lamprey River and five of its tributaries (The Little, North, North Branch, Pawtuckaway, and Piscassic Rivers) were included in the RMPP.

The Lamprey River enters Deerfield from the north in Northwood Meadows State Park and runs south to the Raymond border. This section of river is classified as a third and fourth order stream and is not large enough for recreational boating (the average width of the river within the NPT study area is 15 to 20 feet and a few feet deep). All public access locations are downstream from the corridor crossing. Land use around this section of the river consists of rural residential, agricultural, and forestland. Recreational opportunities in the study area are limited to hiking and fishing (Deerfield Trail Inventory Management Plan, p. 2).

The existing corridor crosses the Lamprey River approximately 200 feet west of Mountain Road. An informal walking trail / service road in the transmission corridor leads down to the river between two private homes in an adjacent residential subdivision.

Existing Transmission Corridor

The existing 200-foot wide corridor contains two 115-kV transmission lines on wooden structures (monopoles, H-frames, and 3-pole H-frames) that range in height from 52 feet to 84 feet. The nearest structure on the east side of the river is approximately 140 feet from the east side of Mountain Road. On the west side of the river, the nearest structure is approximate 245 feet away.

Five structures are visible at the river crossing looking west (two on the north side of the corridor and three on the south side). Four structures are visible at the river looking east over Mountain Road (two on the south side of the corridor and two on the north side). Vegetation within the corridor primarily consists of woody shrubs and grasses.

Changes within Existing Transmission Corridor

The existing 115-kV line on the north side of the corridor will remain in place. The southerly 115-kV line will be relocated closer to the middle of the corridor on weathering steel monopole structures that will range in height from 84 to 91 feet.

The 345-kV line will be supported on weathering steel monopole structures located on the south side of the corridor and 35 feet from the edge of the right-of-way. The monopole structures on either side of the river will each be 120 feet in height. The structure on the east will be approximately 375 feet from the river and on the east side of Mountain Road; the structure on the west will be approximately 250 feet from the river. Some additional vegetation clearing (from 10 to 40± feet) will be required on the south side of the corridor to install the new transmission line.

Cultural Value: Medium

The Lamprey River is a designated river in the NH Rivers Management and Protection Program and noted for its scenic qualities. A section of the river designated as a National Wild and Scenic River is downstream in Lee and Durham and will not be affected by the NPT project.

Visual Quality: Low

While parts of the Lamprey River are considered scenic and are actively used by boaters and anglers, the character of the landscape where the existing transmission corridor crosses the river is common.

Scenic Significance: Low-Medium

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- The NPT project will introduce a new set of transmission structures and conductors in an existing transmission corridor that passes over the Lamprey River. The proposed transmission structures will be twice as tall as the existing 115-kV structures. The new monopole structures will contrast the form, line, texture, and scale of the existing wooden structures.
- The 345-kV structures will dominate the view within the corridor, due to their additional height.
- The additional clearing will result in a slightly widened corridor with the removal of up to 40 feet of woodland vegetation.

Mitigation

- Using weathering steel monopole structures in view from the river to reduce potential contrast in color and form.
- Maintenance of riparian vegetation on either side of the stream channel.

User Groups: Local motorists on Mountain Road, pedestrians, and snowmobilers/ATV riders.

User Expectation: Low

There are no formally designated trails or other recreational facilities in the immediate vicinity of the transmission corridor. The Lamprey River is not large enough to boat on in this area. The most common recreational activity in this area is the use of an informal trail within the corridor. User expectation is influenced by the presence of the existing transmission corridor.

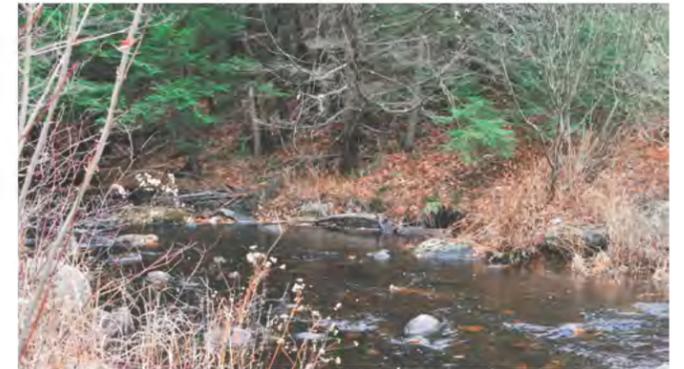
Extent, Nature, and Duration of Public Use: Low

- This section of the Lamprey River is not actively used for water recreation and is not recognized for its scenic significance.
- The water in the river at the point of crossing is too shallow for boating.

Overall Visual Impact: Low-Medium

The addition of a new transmission line within the existing corridor will have a low-medium overall visual impact on this section of the Lamprey River. NPT should not result in a substantial change in the limited way people now use this portion of the river.

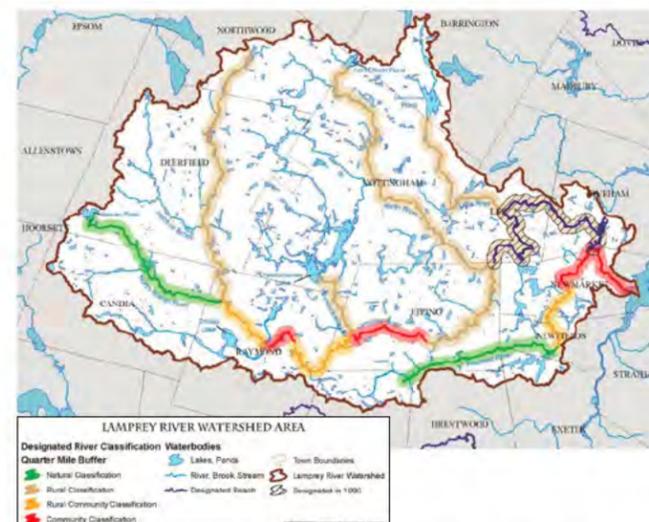
- The structures will not block or interfere with existing views.
- The transmission structures will not change the inherent character of the Lamprey River, which at this location is a relatively narrow stream passing through an open transmission corridor in a low density residential neighborhood.
- The presence of the structures should not result in a substantial change in the way people now use the resource.



View of Lamprey River at existing corridor crossing.



View of Lamprey River facing west. Lamprey River is 15-20 feet in width and classified as a third and fourth order stream in Deerfield. Two 115-kV lines are currently located within the transmission corridor.



The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers. (Source: A Report to the General Court. NH Rivers Management and Protection Program, Department of Environmental Services, Office of the Commissioner. January 2011).



North facing bird's eye view of existing transmission corridor crossing over Lamprey River and Mountain Road in Deerfield (source: Bing Maps).

UPPER LAMPREY RIVER SCENIC BYWAY (51)

DEERFIELD

OVERALL VISUAL IMPACT **LOW-MEDIUM**

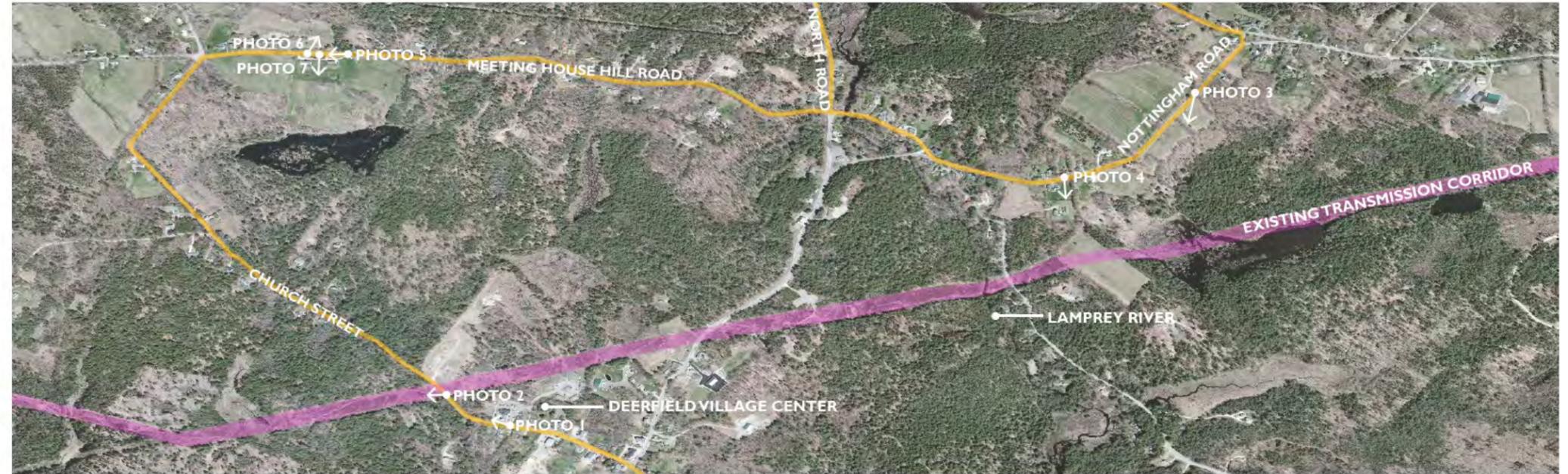
In 2014, the NH Department of Transportation Scenic and Cultural Byways Program announced the designation of three new state byways in NH. Included in this group is the Upper Lamprey Scenic Byway, which is described as “a 45-mile route that contains outstanding scenic vistas, natural resources, and historic villages that celebrate the scenic and cultural heritage of New England. Winding through the towns of Candia, Deerfield, and Northwood, it features panoramic views of the mountains to the north, farms and forests to the east and west, and historic and cultural relics at every corner” (NH Department of Transportation News Release, May 12, 2014).

The new byway consists of a series of looped routes connecting cultural, historical, recreational, and scenic attractions in the three communities. In Deerfield, the route includes Church Street, Nottingham Road, and Meeting House Hill Road. The promotional brochure includes the Town Center Historic District as one of the historic resources. The map recommends that Church Street be driven south to north.

The corridor crossing at Church Street in Deerfield is the only place where the NPT project crosses the Byway. The NPT project will also be visible from two other locations along the Byway, Nottingham Road south of Deerfield Parade, and Meeting House Hill Road, east of Chase Corner.

Existing Transmission Corridor

- Deerfield Center.** The existing transmission corridor runs in an east-west alignment along the northern edge of Deerfield Center. The 200-foot wide right-of-way is cleared to its entire width and contains two 115-kV transmission lines on wooden monopole structures that range in height from 47.5 feet to 92.5 feet. The existing corridor is separated from the Town Center Historic District by a stand of trees that averages 150 feet in width. None of the existing transmission structures are prominently visible from the historic buildings in Deerfield Center. Motorists within the transmission corridor north of Deerfield Center presently see up to 6 115-kV structures looking east and up to 3 structures looking west (see photo 2).
- Nottingham Road.** Motorists travelling southwest on Nottingham Road, currently have filtered views of up to 3 115-kV structures over open fields for a distance of 0.3 mile. The structures are approximately 900 feet south of Nottingham Road at its closest point.
- Meeting House Hill Road.** Several of the structures in the existing transmission corridor are visible from the top of Meeting House Hill at distances of at least 0.75 mile. The structures are not visible from inside the Old Center Cemetery, which is situated on the north side of the hill (see photo 7).



North facing bird's eye view of the Upper Lamprey Scenic Byway (source: Bing Maps).

Changes within Existing Transmission Corridor

The existing 115-kV line on the north side of the corridor will remain in place. The southerly 115-kV line will be relocated closer to the middle of the corridor on monopole structures that will range in height from 74.5 feet to 101.5 feet. The 345-kV line will be located on the south side of the corridor, 35 feet from the edge of the right-of-way. The new line will be supported by weathering steel monopole structures that will range in height from 105 feet to 140 feet. Monopole structures will be installed between Church Street and the east side of the Lamprey River.

Cultural Value: Medium

State designated Scenic Byway.

Visual Quality: High

Road network through traditional and historically important New England village centers and scenic rural roads.

Scenic Significance: Medium-High.



PHOTO 1: East facing view of Church Street in Deerfield Center. Existing vegetation screens views of the transmission line.



PHOTO 2: East facing view of existing transmission corridor at Church Street.



PHOTO 3: South facing view from Nottingham Road.



PHOTO 4: Views of the existing 115-kV transmission lines are filtered by intervening vegetation and residential buildings on the south side of Nottingham Road.

UPPER LAMPREY RIVER SCENIC BYWAY (51)

DEERFIELD

VISUAL IMPACT ASSESSMENT

Visual Effect: Medium

- Deerfield Village Center: None-Low.** Filtered views of the NPT structures will be possible from a limited number of locations on Church Street during leaf-off season. During the leaf-on seasons, the new structures will be largely screened by mature evergreen and deciduous trees, the Deerfield Community Church south of the transmission corridor, and by the other large structures within the village (See Deerfield Village Center resource VIA).
- Church Street Corridor Crossing: Medium.** Church Street Crossing is the only intersection with the transmission corridor along the Byway. The new structures will result in a contrast in form and scale when compared with the existing 115-kV structures and will dominate the view within the existing corridor. All structures visible from the road crossing will be weathering steel monopole. A motorist travelling at 25 MPH will encounter the corridor and the new structures for approximately 5 seconds.
- Nottingham Road: Medium.** Westbound motorists on Nottingham Road will see portions of two to three 345-kV weathering steel monopole structures over a total distance of approximately 1,600 feet (0.3 mile). In leaf-off conditions, motorists will see the structures over open fields, which allow greater visibility, for a distance of 800 feet. A motorist traveling at 25 MPH will see the structures and conductors over these fields for approximately 20 seconds. They will also see the structures filtered through trees and buildings for another 20 seconds. At least two of the structures and the conductors will appear above the horizon. The new structures will appear almost twice as tall as the surrounding trees and existing transmission structures and will result in a contrast in form and scale when compared with the existing 115-kV structures. The NPT structures may occasionally dominate the view when seen through openings in the intervening woodland.
- Meeting House Hill Road: Low.** Several of the NPT structures will be visible between the residential structures and landscaping on the south side of Meeting House Hill Road. The new structures will appear larger than the existing 115-kV line and will contrast with their form, but will not dominate the view since they will be seen against a wooded backdrop at the base of Meeting House Hill and will not appear to break the horizon.

Mitigation

- Using weathering steel monopole structures from the west side of Church Street crossing and the east side of the Lamprey River (17 structures) to minimize contrast in form and color within the existing corridor.

User Groups: Pedestrians, motorists, community members, scenic byway travelers, tourists.

User Expectation: Medium-High

- The historic quality of Deerfield Center is one of the attractions of the Byway. Users have an expectation that this area maintain the pattern and character

that led to its inclusion on the National Register and as part of the Upper Lamprey Scenic Byway.

- People who presently drive along Church Street north of the village are already accustomed to seeing the existing transmission corridor.

Extent, Nature, and Duration of Public Use: Medium

- Since the Upper Lamprey Scenic Byway was just designated, there is no way to determine the extent of public use that is currently receives.
- By virtue of its inclusion as a State scenic byway, it is expected to attract visitors from throughout New Hampshire.

Overall Visual Impact: Low-Medium

The additional transmission structures will have a low-medium overall visual impact on the Upper Lamprey Scenic Byway as a whole. The project should not result in a substantial change in the way people now use or enjoy this scenic byway.

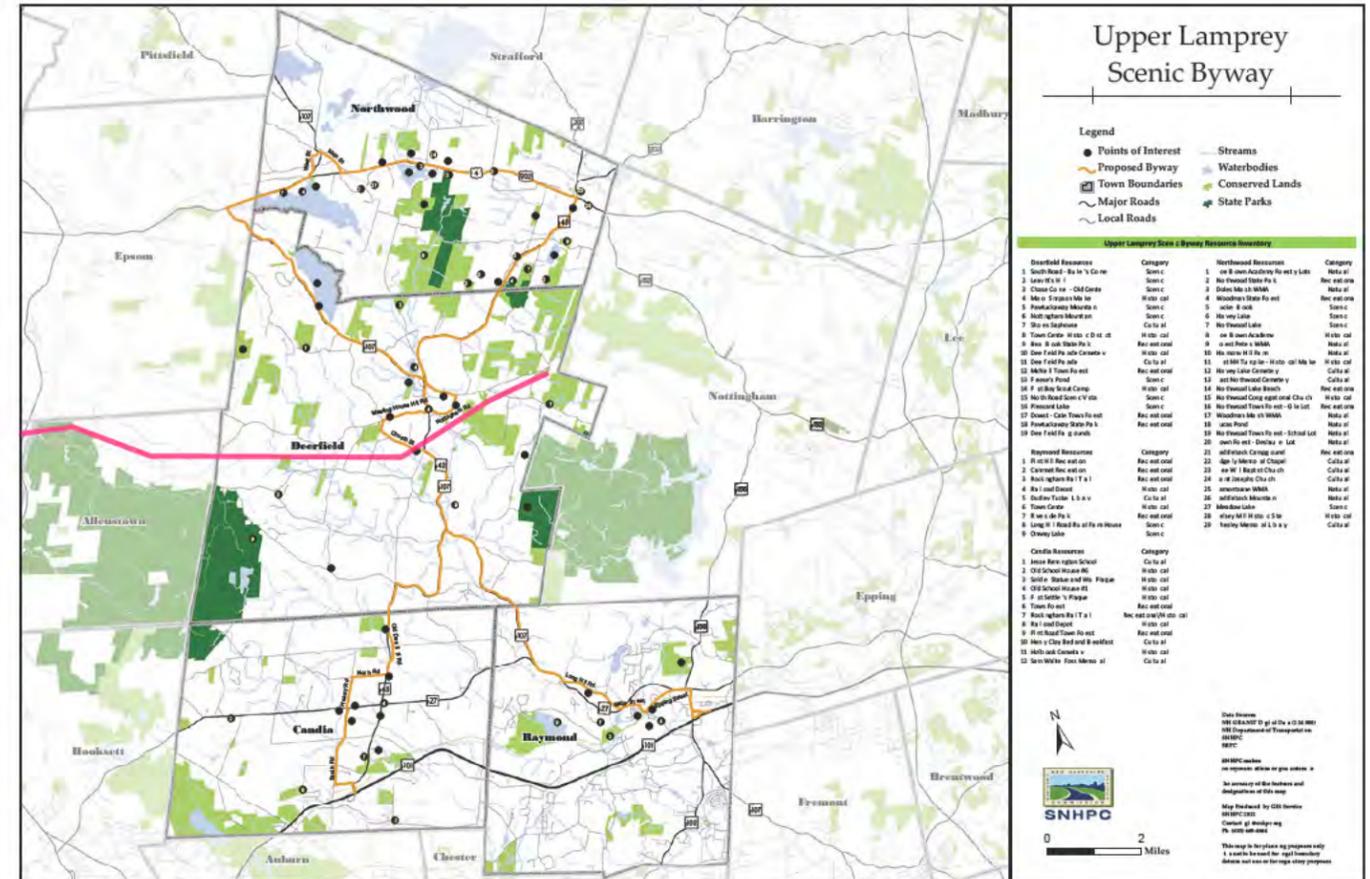
- One 200-foot wide transmission corridor crossing and a view of the structures from a 0.3 mile section of Nottingham Road and the top of Meeting House Hill Road represent a very small portion of the overall 45-mile length of the byway.
- Deerfield Center is effectively screened from the transmission corridor by mature vegetation. It is unlikely that motorists will experience both the historic center and the transmission corridor at the same time.



PHOTO 5: West facing view on Meeting House Hill Road. Historic cemetery on right. There will no project visibility from this vantage point.



PHOTO 6: Gates at the entrance to Old Center Cemetery on Meeting House Hill Road. The transmission line is not visible from inside the cemetery. There will no project visibility from this vantage point.



Official NH DOT Map of the Upper Lamprey River Scenic Byway.



PHOTO 7: Existing transmission line is visible at the base of the hill at a distance of over 0.75 mile and seen through a private residential property. Proposed and relocated structures will have greater visibility due to the increase in height.

DEERFIELD CENTER (18)

DEERFIELD

OVERALL VISUAL IMPACT **LOW-MEDIUM**

Deerfield Center (also known as Old Center) is the original downtown area of Deerfield, and remains an important part of the community's civic identity. The historic center is located on Church Street, west of the intersection with Route 43/107, and comprises the old Deerfield Town Hall, the Philbrick-James Library, Gazebo Field, the Deerfield Bible Church, and the Deerfield Community Church. The Deerfield Center Historic District, which was added to the National Register of Historic Places in 2002, is made up of 14 major building and three outbuildings.

Unlike other scenic resources that have distinct viewpoints and visual connections with broader landscape, the scenic significance of Deerfield Village lies in the cohesive character created by the historic structures and contextual open spaces along Church Street. Views are largely inward, with a number of noteworthy focal points.

This village hub became the center of community development early in its history. The first town meetinghouse was constructed at this location and the field around it was used for a variety of early community activities (2008 Deerfield Master Plan, p. 21). Deerfield Center is one of five villages in Deerfield; the others include Deerfield Parade, Rand's Corner, Leavitts Hill, and Butler's Corner. The 2008 Master Plan recommends classifying the five areas as Historic Town Villages in an effort to preserve and build upon the traditional village character (p. 27).

Existing Transmission Corridor

The existing transmission corridor runs in an east-west alignment along the northern edge of Deerfield Center. The 200-foot wide right-of-way is cleared to its entire width and contains two 115-kV transmission lines on wooden monopole structures that range in height from 61 feet to 84 feet. At its closest point the existing corridor is approximately 240 feet northwest of the Deerfield Community Church, and separated from the village by a stand of trees that averages 150 feet in width. None of the existing transmission structures are prominently visible from the historic buildings in Deerfield Center.

Several of the transmission structures are visible to the north from Upham Drive, the access road into a senior housing development adjacent to the village. Motorists in the corridor on Church Street north of Deerfield Center can see up to 6 structures looking east and up to 3 structures looking west.

Changes within Existing Transmission Corridor

The existing 115-kV line on the north side of the corridor will remain in place. The southerly 115-kV line will be relocated closer to the middle of the corridor on monopole structures that will range in height from 74 feet to 84 feet (approximately 10 feet taller than the original structures they are replacing).

The 345-kV line will be located on the south side of the corridor, 35 feet from the edge of the right-of-way. The new line will be supported by weathering steel monopole structures that will range in height from 115 feet to 140 feet in the immediate vicinity of Deerfield Center. This includes the five structure west of Church Street (3132-282) to the three structures east of Mountain Road (3132-298). Up to 40 feet of additional clearing will be required within the right-of-way on the south side of the corridor to install the new line.



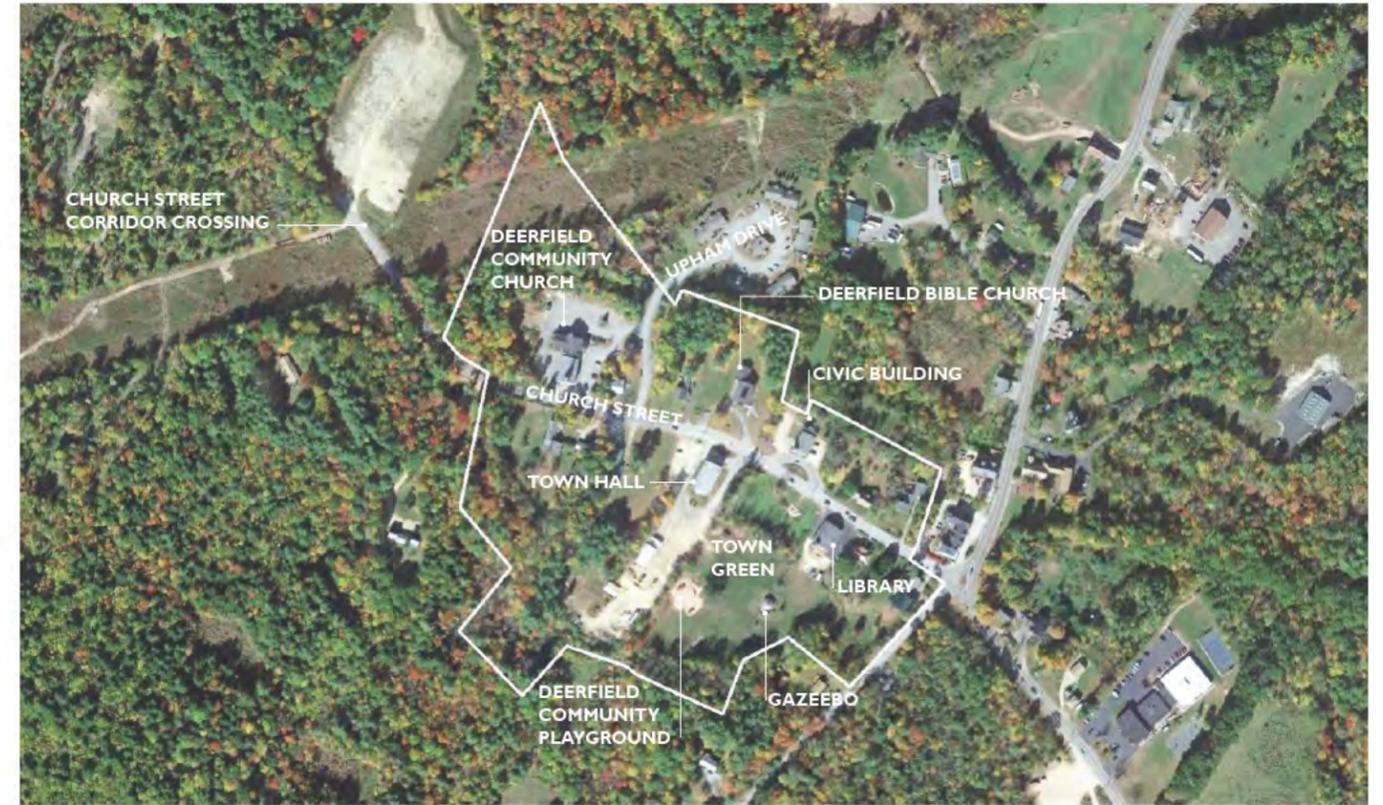
Existing deciduous trees in foreground of the church will block views of NPT structures.



The top of one 345-kV structure will be visible above the roof line of the church in leaf-off conditions.



View facing east on Church Street. From left to right: Deerfield Bible Church - civic building with commercial offices - Deerfield Town Hall - Town Green with gazebo and Deerfield Community Playground. The transmission line is in the opposite direction of the photograph.



Aerial view of Deerfield Center with Historic District outlined (source: Google Earth, imagery date 10/9/14. Historic district outline from the Preservation Company)

450 FEET



East view of Town Green and gazebo. The NPT project will not be visible in this direction.



West view of Town Green and Town Hall from the gazebo. The NPT project will not be visible from this viewpoint.

DEERFIELD CENTER (18)

DEERFIELD

Cultural Value: High

A village center and Historic District on the National Register of Historic Places. Included in the recently designated Upper Lamprey Scenic Byway, NHDOT.

Visual Quality: High

The traditional New England architecture and the configuration of buildings and open space create a distinctive, unified village landscape.

Scenic Significance: High.

VISUAL IMPACT ASSESSMENT

Visual Effect: Low (Church Street within the Historic District)

- Filtered views of the NPT will be possible from a few locations within the Historic District. During the leaf-on seasons, the new structures will be largely screened by the stand of mature evergreen and deciduous trees, the Deerfield Community Church south of the transmission corridor, and by the other large structures within the village.
- The primary viewing area is on Church Street, the main road where the majority of the historic buildings are located. Views of the transmission structures and conductors will be intermittent, as structures come in and out of view and the viewer's perspective of the corridor shifts walking or driving along the road. The photosimulation illustrates the effectiveness of the existing trees to screen views of the transmission structures. Leaf-off conditions will allow filtered views of the conductors and the tops of one or two of the transmission structures. In leaf-on conditions, there will be limited visibility from the majority of the historic district, including the Town Park behind the Town Hall.
- Motorists on Church Street and the occasional pedestrian passing through Deerfield Center will have views of the additional structures and conductors while they are within the 200-foot wide corridor. Upham Drive, the road leading to the senior housing neighborhood, will have a full view of one or two of the proposed transmission structures and conductors. The drive and the housing it serves are outside of the historic district and not considered a scenic resource.

Mitigation

- Using weathering steel monopole structures to minimize contrast in form and color within the existing corridor.

User Groups: Pedestrians, motorists, community members, scenic byway travelers, tourists.

User Expectation: Medium-High

- The visual quality of the village is a part of the identity of Deerfield Center. Users have an expectation that this area maintain the pattern and character that led to its inclusion on the National Register and as part of the Upper Lamprey Scenic Byway.

- User expectation is diminished to a minor extent by the presence of local distribution lines, parking lots, and utilitarian amenities (such as dumpsters and storage sheds) visible throughout the village.
- People who drive or walk along Church Street north of the village are already accustomed to seeing the existing transmission corridor.

Extent, Nature, and Duration of Public Use: High

- Deerfield Center is a working landscape. Local residents are drawn to the village for a variety of activities: e.g., attending church services, going to the library, or participating in events on the green.
- By virtue of its inclusion as a National Register Historic District and on the roster of State scenic byways, it also attracts visitors from throughout New England.

Overall Visual Impact: Low-Medium

The additional transmission structures will have a low-medium overall visual impact on Deerfield Center. NPT should not result in a substantial change in the way people now use or enjoy this historic village center.

- There will be limited views of the proposed transmission structures and conductors within the historic village center.
- The areas of greatest visibility (Upham Road, the Church Street Crossing) are outside of the historic district. In these locations the proposed transmission structures will appear in a landscape that already is heavily influenced by the existing transmission corridor.
- The minimal presence of the transmission structures and conductors will not change the inherent character of the historic village center.



The Sherburne Woods senior housing on Upham Drive is located outside of the historic Village Center.



Three of the buildings in Deerfield Center that are part of the Historic District centered on Church Street. The project will not be visible in any of the above images.



View facing west on Church Street in front of Deerfield Community Church. Existing transmission corridor is visually blocked by trees and the church.



Deerfield Works Cited:

Deerfield Planning Board. Town of Deerfield 2008 Updated Master Plan. 2008.

Neatline Associates and Lamprey River Advisory Committee. Town of Deerfield Trail Inventory and Plan. August 2011.

Town of Deerfield. Town of Deerfield Municipal Scenic Roads. Web. Aug 6, 2014. <http://www.townofdeerfieldnh.com/Pages/DeerfieldNH_Webdocs/aboutdf/roads>.

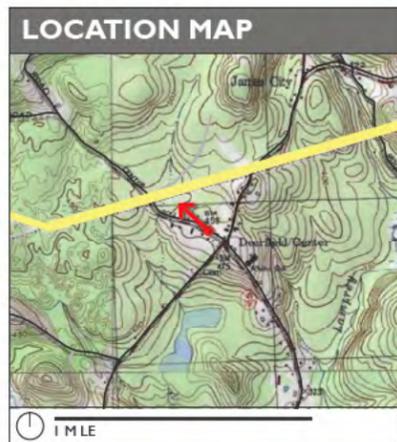
State of New Hampshire Department of Environmental Services Office of the Commissioner. The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers: Report to the General Court. January 2011.

New Hampshire Fish and Game Department (NHFGD). Table of Public-access boating and fishing sites in New Hampshire. Web. 14 Aug 2014. <http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm>.

Lamprey River Advisory Committee. 2013 Lamprey River Management Plan. Web. 16 Dec 2014. <<http://www.lampreyriver.org/about-us-2013-management-plan-draft>>.

DEERFIELD VILLAGE CENTER - CHURCH STREET, DEERFIELD

EXISTING CONDITIONS: PANORAMA



TECHNICAL INFORMATION

TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Steel and Wood Monopole (not visible)	Weathering Steel Monopole
	Height range of visible 115-kV structures	84 - 88 feet (not visible)	97 feet
	345-kV structure type	N/A	Weathering Steel Monopole
	Height range of visible 345-kV structures	N/A	130 feet
Right-of-way width	200 feet	200 feet	

PHOTOGRAPH	Date and time:	4/14/11 at 3:07pm	Location:	43.133392° N, -71.242717° W	Viewing Direction:	West
	Distance to visible structures:	0.20 mile	Number of transmission structures visible in the photosimulation:	1 (leaf-off conditions)		
	Camera Focal length (50mm equivalent):	35mm	Camera Make/Model:	Canon REBEL SLR	Photo Source:	LandWorks

NOTES

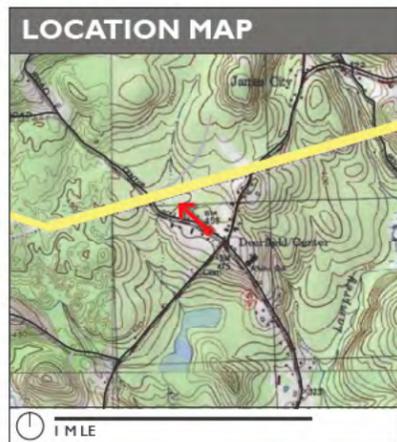
GENERAL NOTES
Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.

PHOTOSIMULATION PRODUCTION
By Terrence J. DeWan & Associates.

VIEW DESCRIPTION
View of Church Street in front of the historic Town Hall looking toward Deerfield Community Church (leaf-off conditions).

DEERFIELD VILLAGE CENTER - CHURCH STREET, DEERFIELD

PHOTOSIMULATION: PANORAMA



TECHNICAL INFORMATION

TRANSMISSION LINE	EXISTING		PROPOSED	
	115-kV structure type	Steel and Wood Monopole (not visible)	Weathering Steel Monopole	
Height range of visible 115-kV structures	84 - 88 feet (not visible)	97 feet		
345-kV structure type	N/A	Weathering Steel Monopole		
Height range of visible 345-kV structures	N/A	130 feet		
Right-of-way width	200 feet	200 feet		

PHOTOGRAPH	Date and time:	4/14/11 at 3:07pm	Location:	43.133392° N, -71.242717° W	Viewing Direction:	West
	Distance to visible structures:	0.20 mile	Number of transmission structures visible in the photosimulation:	1 (leaf-off conditions)		
	Camera Focal length (50mm equivalent):	35mm	Camera Make/Model:	Canon REBEL SLR		
			Photo Source:	LandWorks		

NOTES

GENERAL NOTES
Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.

PHOTOSIMULATION PRODUCTION
By Terrence J. DeWan & Associates.

VIEW DESCRIPTION
View of Church Street in front of the historic Town Hall looking toward Deerfield Community Church (leaf-off conditions).

DEERFIELD VILLAGE CENTER - CHURCH STREET, DEERFIELD
EXISTING CONDITIONS: NORMAL VIEW



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

DEERFIELD VILLAGE CENTER - CHURCH STREET, DEERFIELD

PROPOSED CONDITIONS: NORMAL VIEW



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

BOW DESCRIPTION

Land Area: 28.2 square miles (NHES)

Inland Water: 0.4 square miles (NHES)

Population: 7,573 residents (NHES)

Population Density: 268.8 persons/square mi (NHES)

Town Location: Bow is located in Merrimack County, and is centrally positioned with Concord to the north, Pembroke and Allenstown to the east, Hooksett and Dunbarton to the south, and Hopkinton to the west.

Study Area: The study area is located on the northeast side of Bow. It covers 16.54% of the total land area (3,021 acres).

Cultural Development Patterns

Bow was one of several communities established to relieve the congestion caused by dense populations along the seacoast; grants in this area were given to many prominent Portsmouth families. Mills operated in the Town through the 1800's.

Currently residential development is scattered throughout the community, and occupies approximately 45% of the community's land area; industrial and commercial lands combined occupy approximately 6% of Bow's land area, primarily located along Route 3A (Bow Master Plan, 2004). Of the developed area in Town, property type is approximately 68% residential, 13% commercial and 19% public utility, current use, or other; approximately 95% of residential housing is single family (NHES).

Land Use Planning

The Bow Master Plan identifies scenic views on page 99, including views of the White Mountains from the Wood Hill, Picked Hill and Brown Hill areas. Residents value the rural character throughout town. Land use, conservation, housing and transportation goals strive to create a community with more compact development, and pedestrian and bicycle-friendly roads while utilizing natural resources as development buffers. The Master Plan encourages commercial and industrial growth in the southern area of town east of Interstate-93.

The Zoning Ordinance maintains nine districts and three overlay districts; overlay districts identify and protect natural resources.

Physical Characteristics

The Merrimack River defines the northern half of the eastern town border. The topography in town is generally hilly, with some higher elevations located in the southern and western portions of town. Steep slopes are primarily located in the central portion of the northern border, and along a ridgeline towards the southern town border; the Town Master Plan contains a map identifying these regions.

TABLE 6-4: BOW SCENIC RESOURCES

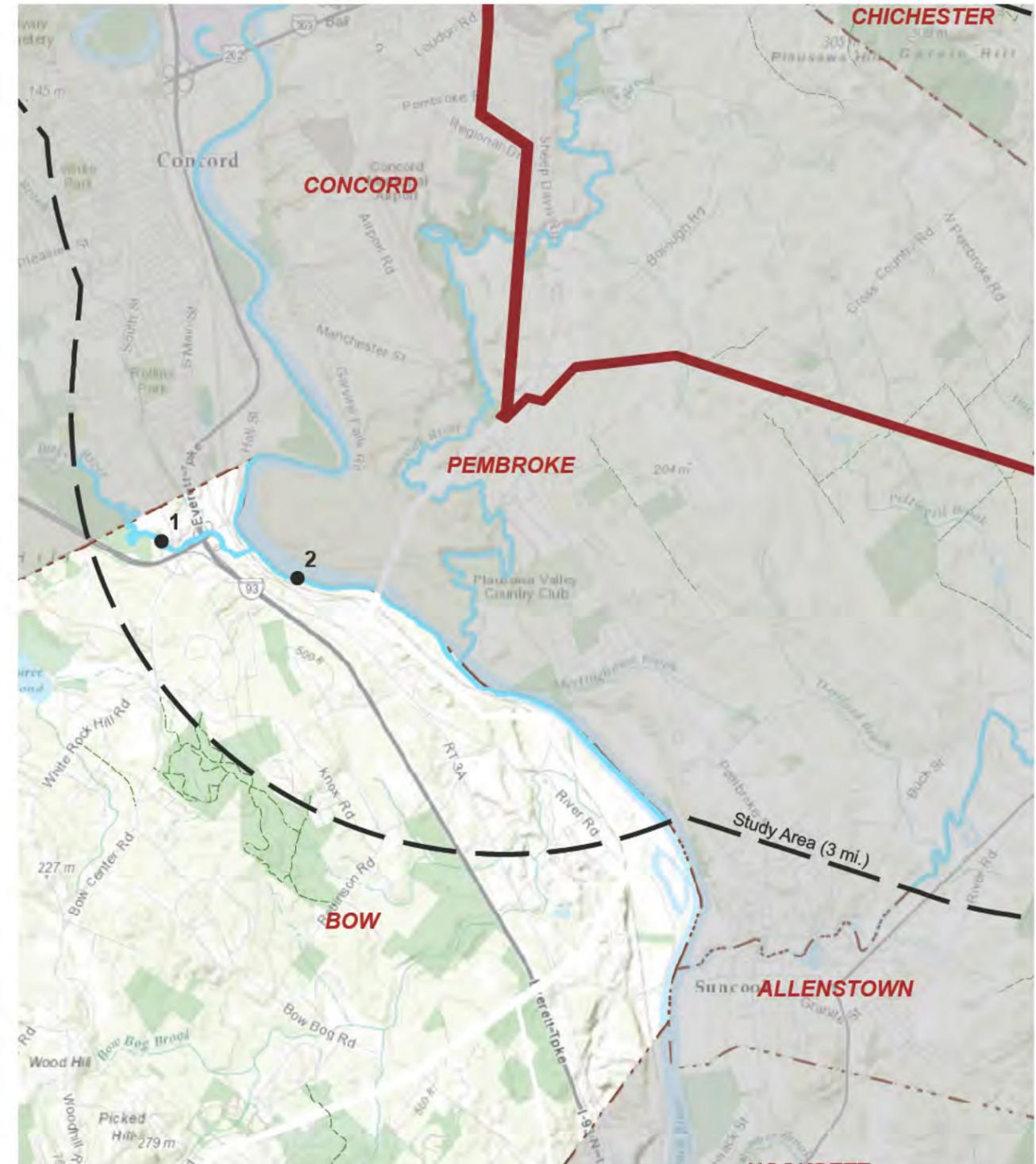
#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Turkey River	River not designated in NH Rivers Management Program	30	State	2.5 mi	LOW	NO		
2	Merrimack River	Upper Merrimack River is designated in the NH River Management Program	2 / 4	State	1.7 mi	MEDIUM	NO		

STATE/REGIONAL SOURCES:

(2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm

(4) Map of Designated Rivers in the New Hampshire River Protection Program, Department of Environmental Services: <http://des.nh.gov/organization/divisions/water/wmb/rivers/designriv.htm>

(30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014



CHICHESTER DESCRIPTION

Land Area: 21.2 square miles (NHES)

Inland Water: 0.1 square miles (NHES)

Population: 2,544 residents (NHES)

Population Density: 120.1 persons/square mi (NHES)

Town Location: Chichester is located in Merrimack County, and is bounded by Loudon to the north, Pittsfield and Epsom to the east, Pembroke and Concord to the south, and Loudon to the east.

Study Area: The study area is located on the southwest side of Chichester. It covers 17.69% of the total land area (2,411 acres).

Cultural Development Patterns

Chichester was isolated until the late 1700's. The railroad, mills, and factories of the mid to late 1800's supported a strong local economy. The population decreased during the early 1900's. The town population has been gradually increasing since after World War II. Currently, commercial and industrial properties are primarily located along U.S. Route 4. Residential development is scattered throughout town, with some dense residential development located along Route 28, west of the Suncook River. Of the developed area in Chichester, property type is approximately 82% residential, 16% commercial and 2% public utility, current use, or other; approximately 87% of residential housing is single family (NHES).

Land Use Planning

Citizens of Chichester value the rural character and natural resources within town, and seek to preserve it while keeping pace with regional growth. Chichester's Master Plan describes the five zoning districts which are based on soil type. The Conservation-Open Space-Steeplands District contains 1,592 acres, most of which are at a high risk of erosion. This district is located throughout town, but is primarily located near Plausawa Hill and Garvin Hill. Four areas containing dense concentrations of Natural Resources are identified in Section III (1) of the Master Plan. Land use recommendations within the Master Plan seek to preserve open space and relax lot restrictions to concentrate new development in already developed locations.

Physical Characteristics

The Suncook River forms the northeastern town boundary, and flows along most of the town's eastern border. The topography of the land is typically flat to hilly, with elevations located within the southwestern portion of town. Garvin Hill and a portion of Plausawa Hill reach elevations of approximately 1,000 feet. The Master Plan states that approximately 85 percent of town is either forested or used for agriculture.

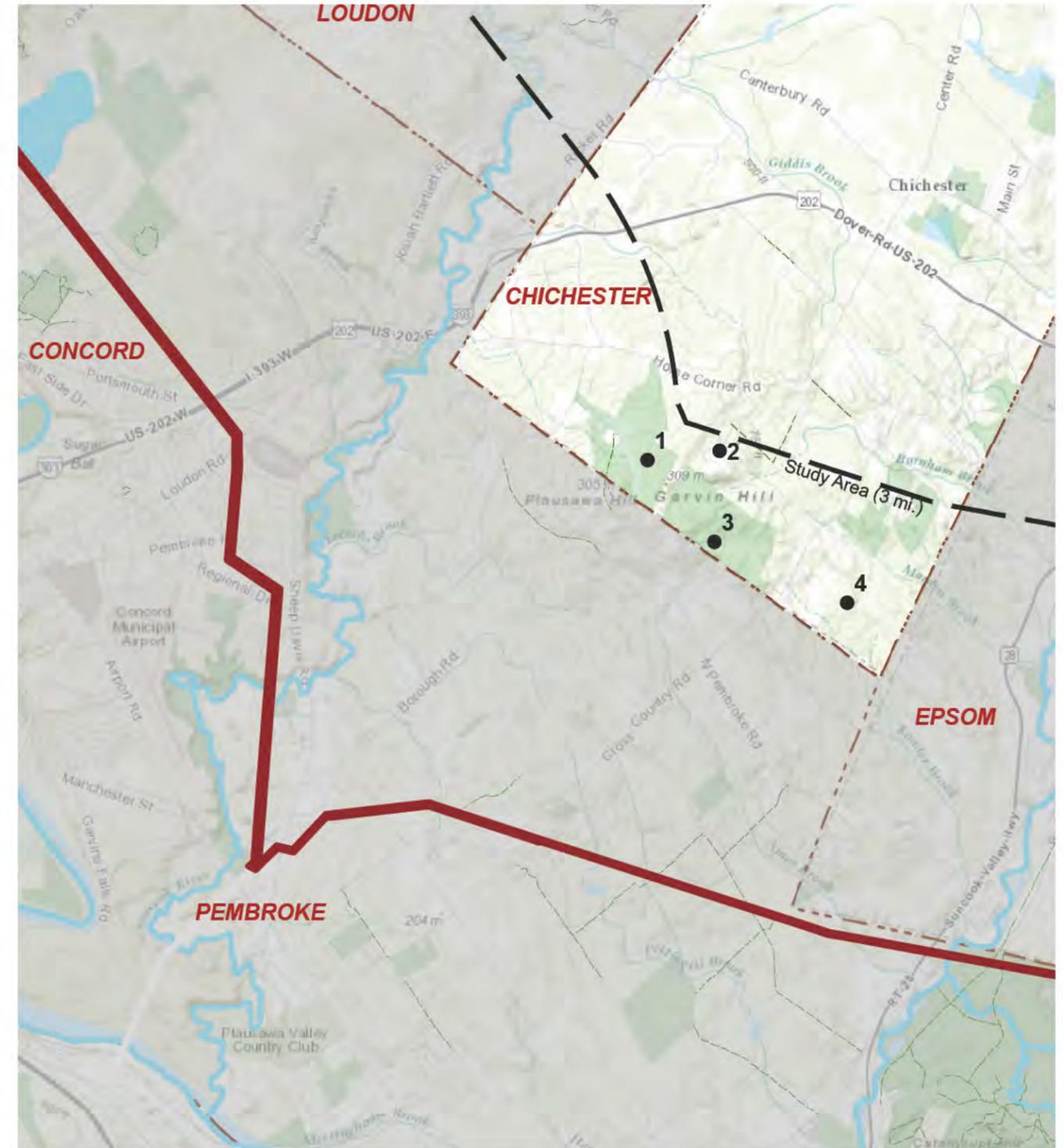
TABLE 6-5: CHICHESTER SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	West Road/ Drinon Conservation Land	Locally designated Scenic Road	A	Town of Chichester	2.7 mi	LOW	YES		
2	Garvin Hill Road	Town voted Scenic Road.	A	Town of Chichester	2.8 mi	LOW	NO		
3	Spaulding Lot	Town Forest.	A	Town of Chichester	2.2 mi	LOW	NO		
4	State Snowmobile Trail 15	State-wide Snowmobile trail.	3	Various	2.1 mi	LOW	NO		

LOCAL/STATE/REGIONAL SOURCES:

(3) New Hampshire Snowmobile Association Map, 2014

(A) Town of Chichester Scenic Resources Map by Society for the Protection of New Hampshire Forests, July 2003



EPSOM DESCRIPTION

Land Area: 34.5 square miles (NHES)

Inland Water: 0.1 square miles (NHES)

Population: 4,571 residents (NHES)

Population Density: 132.6 persons/square mi (NHES)

Town Location: Epsom is located in Merrimack County, and is positioned south of Chichester and Pittsfield, adjacent to Northwood and Deerfield to the east, and Pembroke and Allenstown to the southwest.

Study Area: The study area is located on the southern portion of Epsom. It covers 38.85% of the total land area (8,607 acres).

Physical Characteristics

Steep slopes are located through town, with many elevations over 700 feet, and primarily located south of Route 4. The Suncook River flows through the western half of town. Fort Mountain and Nats Mountain, located near the southern town border, measure more than 1,100 feet in elevation.

Cultural Development Patterns

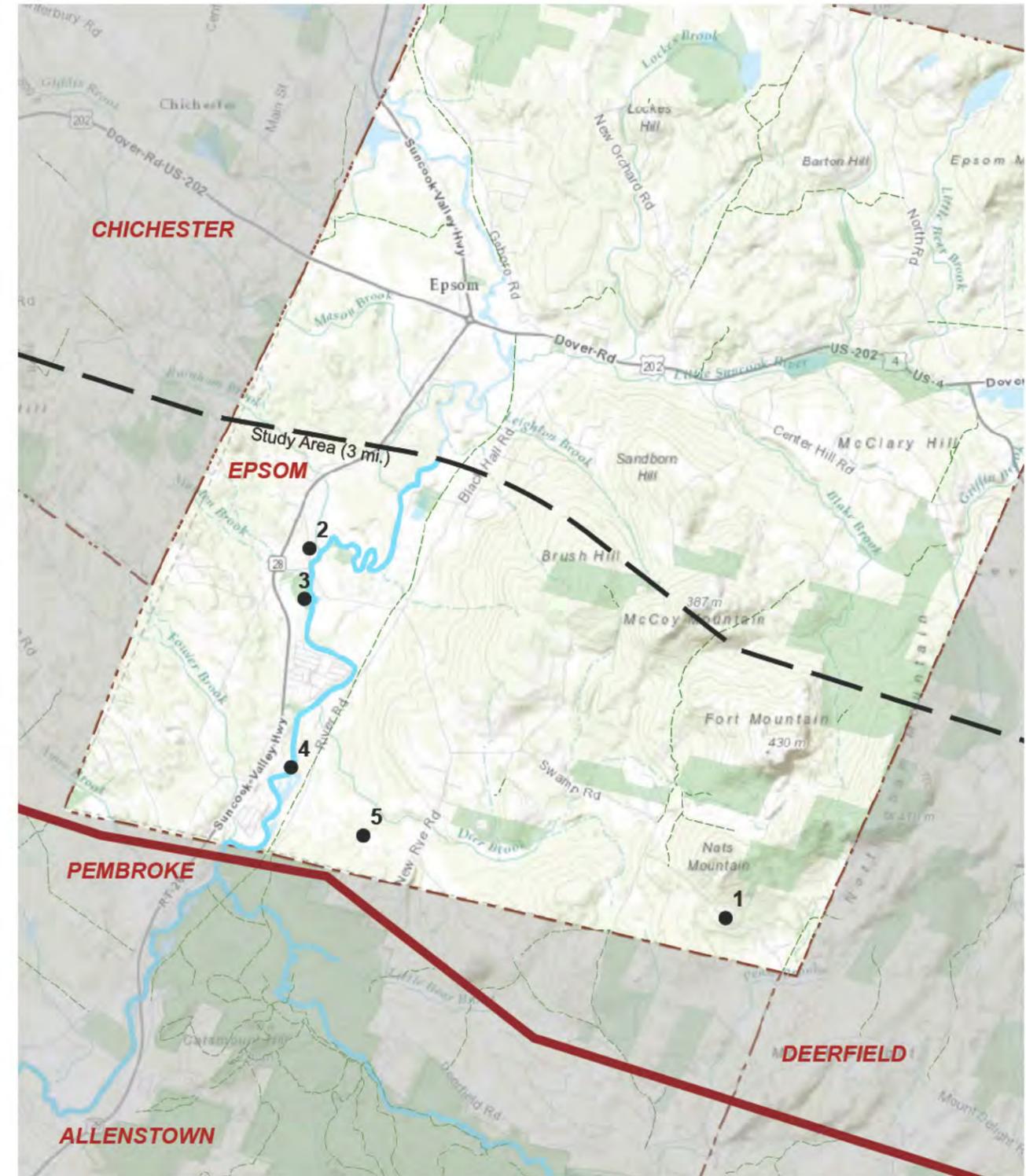
In 1765 the population in Epsom was approximately 250 individuals who were primarily farmers and hunters/trappers. The population increased as mills developed along the Suncook and Little Suncook Rivers. Population decreased substantially from 1850 to 1930 due to mill closures, war and the Great Depression. The population has been steadily increasing since then.

Commercial development is historically and currently concentrated along Routes 4 and 28. Of the developed area in Town, property type is approximately 78% residential, 19% commercial and 3% public utility, current use, or other; approximately 45% of residential housing is single family (NHES).

Land Use Planning

Approximately 5.7 percent of the Town's land is zoned for commercial use, but much of it is unsuitable to development due to wetlands, floodplains or conservation land. Dominant current land use throughout town is approximately 74 percent vacant land, 14 percent residential and 6 percent agricultural.

Future land use goals included in the plan strive to preserve the community's rural character while providing expansion of the commercial tax base and housing options. The Town wants to revise land use controls and ordinances for growing communities based on sound planning principles for orderly development.



EPSOM SCENIC RESOURCES

TABLE 6-6 EPSOM SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Mt. Delight Road	Recommended as potential local scenic road in 2010 Master Plan.	A	Town of Epsom	1.0 mi S from Town boundary	LOW	NO		
2	Mill House Road	Recommended as potential local scenic road in 2010 Master Plan.	A	Town of Epsom	2.5mi from intersection w Rt. 28	LOW	NO		
3	Webster Park	Town park with wooded conditions.	A	Town of Epsom	0.4 mi	LOW	NO		
4	Suncook River	River not designated in NH Rivers Management Program. VIA in Pembroke.	B / 2	State	0.7 mi	LOW	YES	MEDIUM	LOW-MEDIUM
5	State Snowmobile Trail 360	State-wide Snowmobile trail.	3	Various	0.4 mi	LOW	NO		

LOCAL/STATE/REGIONAL SOURCES:

- (2) New Hampshire Fish and Game Department Table of Public-access boating and fishing sites in New Hampshire: http://www.wildlife.state.nh.us/Outdoor_Recreation/access_sites_table.htm
- (3) New Hampshire Snowmobile Association Map, 2014
- (A) Town of Epsom Master Plan, 2010

NORTHWOOD DESCRIPTION

Land Area: 28.1 square miles (NHES)

Inland Water: 2.1 square miles (NHES)

Population: 4,253 residents (NHES)

Population Density: 151.2 persons/square mi (NHES)

Town Location: Northwood is located in Rockingham County, and is located south of Pittsfield and Strafford, west of Barrington and Nottingham, and east of Epsom and Deerfield.

Study Area: The study area is located on the southeast area of Northwood. It covers 10.74% of the total land area (2,078 acres).

Physical Characteristics

Two inland water bodies are located near the southwestern town boundary; the town contains nine lakes and ponds. The Lamprey River is centrally located in the southern portion of town, within a large forested area. The topography in town is hilly, with steep slopes located in the southern and northwestern portions of town. The highest point of land is Saddleback Mountain, measuring approximately 1,184 feet above sea level (Master Plan, 2004).

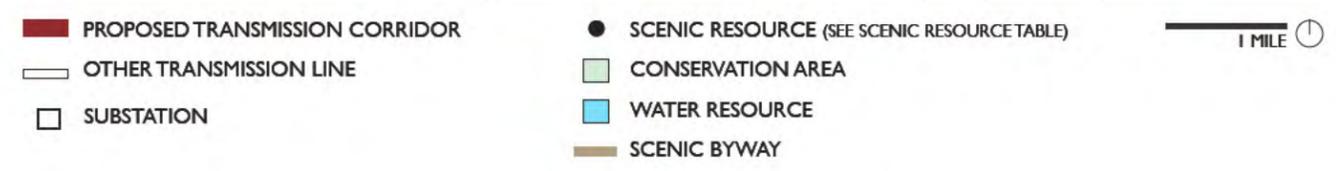
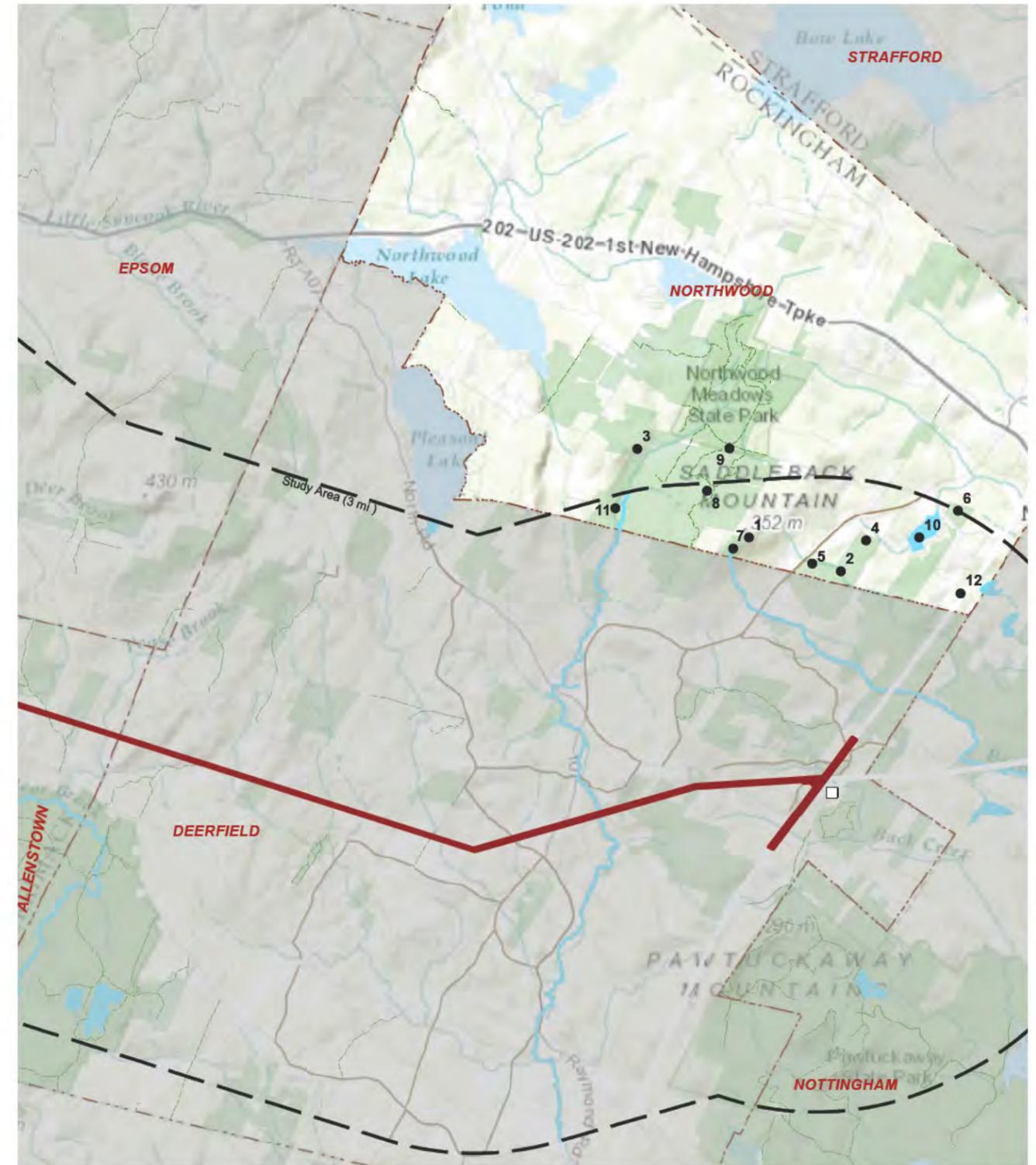
Cultural Development Patterns

Northwood incorporated in 1773 when it separated from Nottingham. The First New Hampshire Turnpike was constructed around 1800 to connect Portsmouth to Concord. This transportation corridor provided boarding, feeding and antiquing establishments, and is currently known as Route 4.

Historical and current economic development is centered along Route 4; the remainder of Town remains primarily rural in character. Of the developed area in Town, property type is approximately 85% residential, 14% commercial and 1% public utility, current use, or other; approximately 81% of residential housing is single family (NHES).

Land Use Planning

Future land use within town focuses on establishing a balance between development, recreation, and preservation of resources and land. Northwood is a member of the Bear-Paw Regional Greenway. The Town hopes to strengthen growth located in the village areas, such as East Northwood, at the Ridge, and in Northwood Narrows by retaining, expanding, and attracting desirable businesses. The town is zoned residential; commercial facilities must go through a site plan evaluation.



NORTHWOOD SCENIC RESOURCES

TABLE 6-7: NORTHWOOD SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Saddleback Mountain	Mountain peak is not accessible by trail. On private land.	A	University of New Hampshire (private)	2.6 mi	LOW	NO		
2	Woodman State Forest	State Forest. Includes Dole Marsh and pond.	6	State	1.7 mi	MEDIUM	NO		
3	Forest Peters Wildlife Management Area	Conservation land maintained as a Wildlife Management Area. Includes Lamprey River.	6 / A	NH Fish & Game Dept.	2.8 mi	LOW	NO		
4	Woodman Marsh WMA	Conservation land maintained as a Wildlife Management Area adjacent to Bean River.	6	NH Fish & Game Dept.	2.3 mi	LOW	NO		
5	Dole Marsh WMA	Conservation land maintained as a Wildlife Management Area	6	NH Fish & Game Dept.	2.0 mi	LOW	NO		
6	School Lot Town Forest	Town forest. No trail access.	A	Town of Northwood	2.9 mi	LOW	NO		
7	Deslaurier Lot	Town Forest at base of Saddleback Mountain	A	Town of Northwood	2.2 mi	LOW	NO		
8	Parsonage Lot	Town Forest adjacent to Northwood Meadows State Park.	A	Town of Northwood	2.4 mi	LOW	NO		
9	Northwood Meadows State Park	State Park	1 / B	State	2.7 mi	HIGH	NO		
10	Lucas Pond	Waterbody with limited public access	30	State	2.5 mi	LOW	NO		
11	Lamprey River	Designated in the NH Rivers Management Program. Designated National Wild and Scenic River Lee to Durham (downstream from this area). No access in Deerfield. VIA in Deerfield.	4	NH Dept. of Environmental Services	2.7 mi	MEDIUM	NO		
12	State Snowmobile Trail 17	State-wide Snowmobile trail.	3	Various	2.4 mi	LOW	NO		

STATE/REGIONAL SOURCES:

(1) NH State Park Listing: www.nhstateparks.org/

(6) State Lands Administered by State of NH Department of Resources and Economic Development and the NH Fish and Game Department, July 2007

(30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014

LOCAL SOURCES:

(A) Town of Northwood Master Plan, 2004

(B) Northwood Meadows Area Trails Map, November 2012

NOTTINGHAM DESCRIPTION

Land Area: 46.5 square miles (NHES)

Inland Water: 1.9 square miles (NHES)

Population: 4,822 (NHES)

Population Density: 103.7 persons/square mile (NHES)

Town Location: Nottingham is located in Rockingham County, and is positioned south of Northwood and Barrington, and adjacent to Lee to the east, Epping to the south and Deerfield and Raymond to the west.

Study Area: The nearest point of the transmission line corridor is located at the end of the transmission corridor at the Deerfield Substation in Deerfield, approximately 0.5 mile west of the Nottingham town boundary.

Physical Characteristics

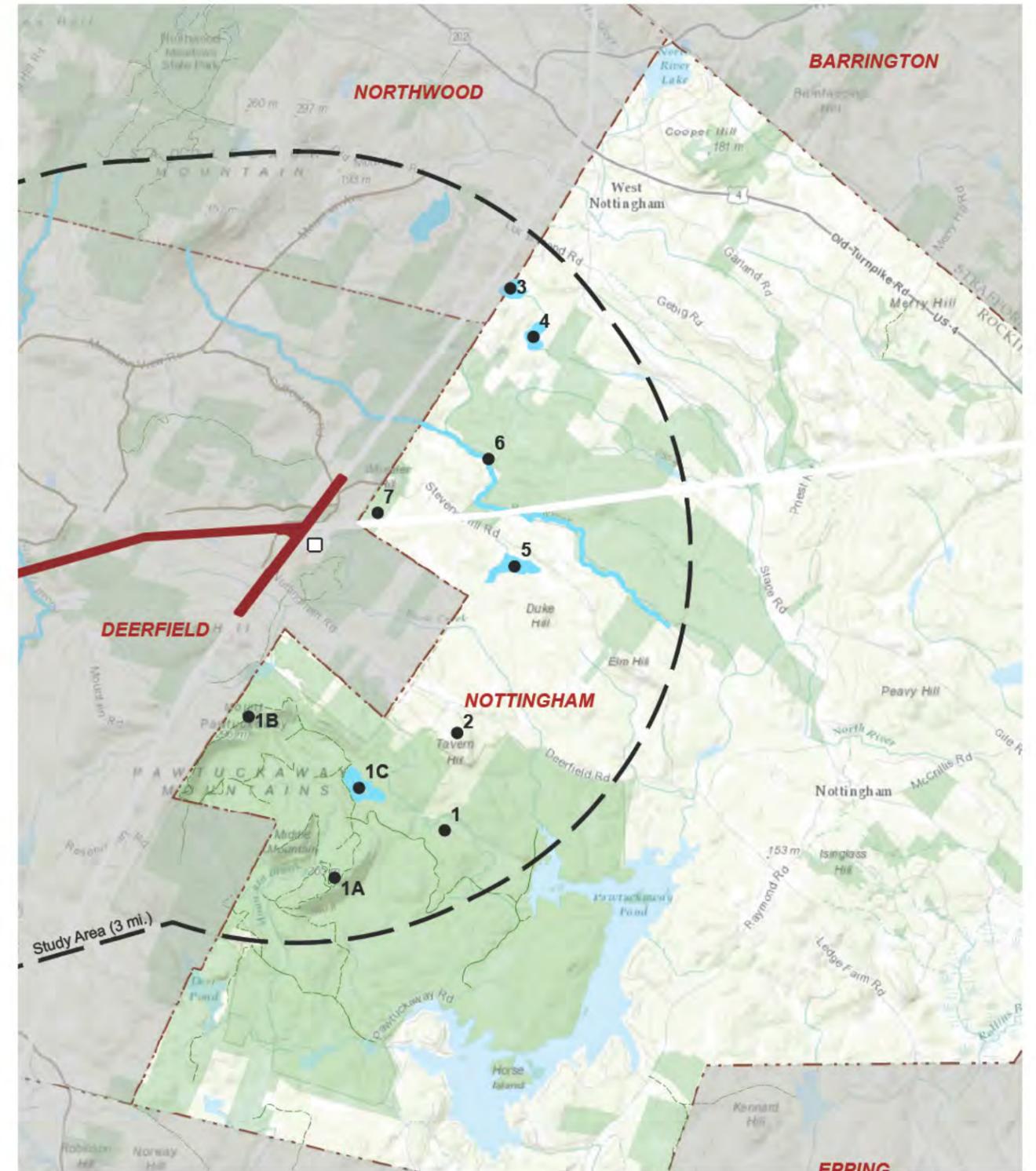
The topography in town is hilly, with steep slopes primarily located in the western portion of town near Mount Pawtuckaway and in the north western portion of town in Mulligan Forest. Peaks near Mount Pawtuckaway reach elevations of approximately 908 feet (nhstateparks.org). The town is rural and approximately 73% forested (Master Plan). The North River is located in the northern corner of town, the Little River runs through the eastern corner of town, and Pawtuckaway Lake is located to the east of the mountain.

Cultural Development Patterns

The early settlement of Nottingham first occurred in 1724 in the area now known as Nottingham Square. Small family farmers devoted to livestock dotted the town, supplemented by local lumbering, manufacturing, and saw mills. Nottingham continues to be a residential community with rural, scattered residential development and commercial development located in the central portion of town along Route 152. Of the developed area in Town, property type is approximately 97% residential, 1.5% commercial and 1.5% public utility, current use, or other; approximately 94% of residential housing is single family (NHES).

Land Use Planning

Historically farming occupied much of the developed land in town; since 1950, there has been a 50% decrease to an estimated 770 acres. Forest management contributed approximately \$10,000 from the value of the timber tax to the town in 2009, demonstrating the importance of resource. Development within the last 50 years has been primarily residential. The town reorganized the Zoning Ordinance in 2011 to manage development. Three primary zones exist, as well as three overlay districts designed to protect environmental resources (Nottingham Master Plan).



NOTTINGHAM SCENIC RESOURCES

TABLE 6-8: NOTTINGHAM SCENIC RESOURCES

#	SCENIC RESOURCE	DESCRIPTION	SOURCE	OWNERSHIP	DISTANCE TO CORRIDOR	CULTURAL VALUE	POSSIBLE VISIBILITY	VISUAL QUALITY	SCENIC SIGNIFICANCE
1	Pawtuckaway State Park	State Park. Actively used for bouldering, hiking, camping, swimming, boating, fishing. Majority of resources are located in Nottingham, small portion is in Deerfield.	1	State	1.0 mi	HIGH	YES	HIGH	HIGH
1A	Fire Tower	Standing active fire tower accessible by trail on South Mountain.	1	State	2.9 mi	HIGH	NO	MEDIUM	MEDIUM-HIGH
1B	North Mountain Trail - Overlook	North Mountain Trail runs from Boulder Fields to North Mountain Peak (1011').	1	State	1.6 mi	HIGH	NO	MEDIUM	MEDIUM-HIGH
1C	Round Pond	Public Waterbody within a State Park	1 / 30	State	1.9 mi	HIGH	NO		
2	Tavern Hill	Identified as a scenic vista in Nottingham Master Plan.	A	Town of Nottingham	2.1 mi	LOW	NO		
3	Demeritt Pond	Waterbody with limited public access	30	State	2.5 mi	MEDIUM	NO		
4	Kenison Pond	Waterbody with limited public access	30	State	2.3 mi	MEDIUM	NO		
5	Quincy Pond	Waterbody with limited public access	30	State	1.5 mi	LOW	NO		
6	Bean River	River not designated in NH Rivers Management Program.	30	State	1.6 mi	LOW	NO		
7	Curry Conservation Easement	Conservation Easement		Town of Nottingham	0.8 mi	LOW	YES		

YELLOW ROWS: Resources described in this town section with possible VIEWS of the corridor and at least a MEDIUM Cultural Value Rating

STATE/REGIONAL SOURCES:

(1) NH State Park Listing: www.nhstateparks.org/

(30) Official List of Public Waters by New Hampshire Department of Environmental Services Water Division, January 17, 2014

LOCAL SOURCES:

(A) Town of Nottingham Master Plan, 2004

PAWTUCKAWAY STATE PARK (I) NOTTINGHAM

OVERALL VISUAL IMPACT **LOW**

Pawtuckaway State Park is 5,500 acres in size. The majority of the park is located in Nottingham (5,021 acres), with a western section in Deerfield (479 acres). Approximately 3,030 acres of the park are located within three miles of the NPT corridor.

The park makes up approximately 17% of Nottingham's total land area (2011 Master Plan, 3-1). While most of the land in Pawtuckaway is relatively flat, there are three distinctive peaks on the west side of the park: North Mountain (el. 1,011), Middle Mountain (el. 800), and South Mountain (el. 908). One of Pawtuckaway's distinctive features is a circular formation of steep hills called a ring-dike found in the western portion of the park. This unusual geologic feature is the remnants of an ancient volcano.

The Park contains a diverse mix of wetland and upland plant communities; the dominant one being a hemlock-beach-oak-pine forest (NH Natural Heritage Brochure). Much of the land within the rings was cleared for pastureland in the late 1700s but was later abandoned by the mid 1800s and is now reforested. Remnants of old cellar holes and cemeteries are still present and contribute to the story of Pawtuckaway. (NH Natural Heritage Bureau brochure: North Mountain at Pawtuckaway State Park).

The park features a variety of recreational and scenic attractions (see park map) including:

- Several miles of hiking trails with scenic overlooks.
- An active fire tower on South Mountain.
- Mountain bike trails.
- Wetlands and ponds that create opportunities for wildlife viewing.
- A boulder field (glacial erratics) frequently used by rock climbers.
- Pawtuckaway Lake (784 acres), which offers a variety of fishing and boating opportunities. The majority of visitor activity occurs around the lake.
- A swimming beach and a large campground on the lake (192 wooded sites open from Memorial Day thru Columbus Day. (Pawtuckaway State Park website).
- Hunting is allowed in the park in late fall.

Existing Transmission Corridor

The transmission corridor that will be used for the NPT line is located in a 200-foot right of way and has two 115-kV transmission lines supported by wooden monopole structures ranging in height from 61 feet to 102 feet. The Deerfield Substation is located at the intersection of this corridor and a second, more visible corridor.

Changes within Existing Transmission Corridor

The existing 115-kV line on the north side of the corridor will remain in place. The southerly 115-kV line will be

relocated closer to the middle of the corridor on galvanized steel monopole structures that will range in height from 84 feet to 97 feet in the vicinity of the substation.

The 345-kV line will be located on the south side of the corridor and 35 feet from the edge of the right-of-way. The galvanized steel lattice structures will range in height from 80 feet to 140 feet in the immediate vicinity of the Deerfield substation. Up to 40 feet of additional clearing will be required in places on the south side of the corridor in order to install the 345-kV line.

Pawtuckaway State Park Visual Impact Assessment

There are two sites within the State Park that have potential views of the proposed NPT corridor: the North Mountain Overlook and the Pawtuckaway Fire Tower. The visibility of the corridor from each site differs. The North Mountain Overlook will have a more distinct view of the NPT project by virtue of its proximity to the transmission corridor and the Deerfield Substation. The Pawtuckaway Fire tower is a greater distance from the corridor and views of the corridor are partially blocked by topography. Individual VIAs are provided for each location.

Overall Visual Impact on Pawtuckaway State Park: LOW

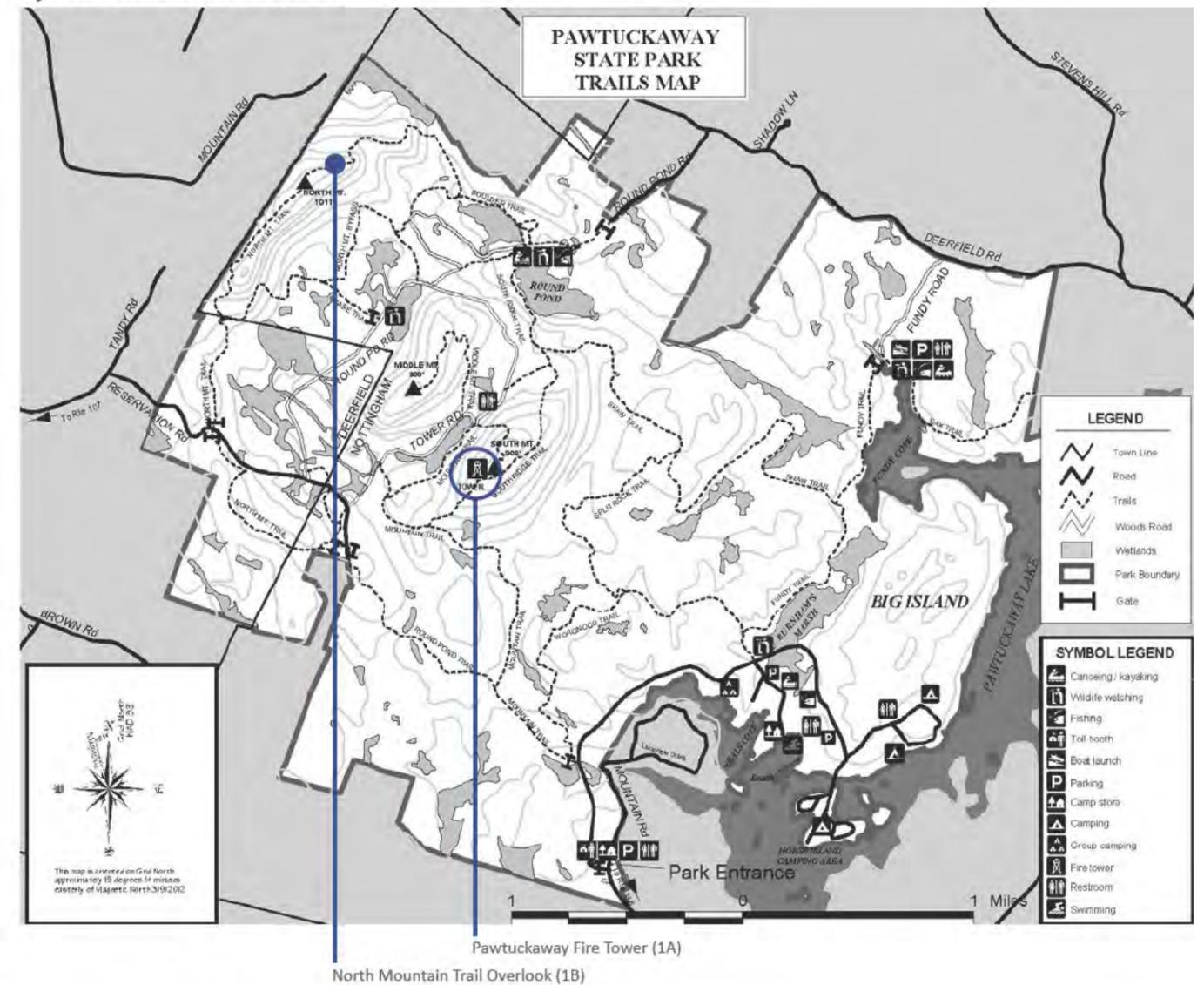
The construction of a new 345-kV transmission line, reconstruction of an existing 115-kV line, and expansion of the Deerfield substation will have a low visual impact on Pawtuckaway State Park as a whole and should not result in a substantial change in the way people now use or enjoy the facilities at the park.

- The visual changes to the landscape will only be seen from two locations in the State Park; there will be no visual impact on the majority of the park.
- The visual impacts are relatively minor and will be seen in the context of existing transmission structures and the Deerfield substation.
- The presence of the transmission structures and conductors will not change the inherent character of the State Park.



Rocky stream draining into Round Pond. There will be no visibility of the project from this vantage point.

NPT CORRIDOR (NOT ON MAP)



Fog rolling over Round Pond. Pawtuckaway State Park is known for its variety of recreational, geologic, and scenic features. There will be no visibility of the project from this vantage point.

PAWTUCKAWAY FIRE TOWER (1A) NOTTINGHAM

OVERALL VISUAL IMPACT **LOW**

The fire tower on South Mountain (elevation 908 feet) near the middle of the park was constructed in 1913. At the time it was the first steel fire tower in New Hampshire. In 1976, the cab was replaced, raising the tower by 10 feet (Forest Fire Lookout Association). Today it is one of 15 fire lookout towers that are maintained and operated from early spring to late fall by the NH Division of Forests and Lands. The tower is accessible from Mountain Trail, a 2.5 mile hike to the summit. The view from the top provides a panorama of the park and the landscape beyond (Pawtuckaway State Park Hiking Information).

The transmission corridors and substation that are visible from the North Mountain Overlook are also visible from the fire tower. However, the utility infrastructure is less visible than the view from the overlook because a) the view is partially blocked by Middle Mountain and North Mountain and b) the fire tower is almost twice as far from the substation (2.7 miles).

Cultural Value: High

State Park with a diverse number of recreational facilities and activities, and accessible State-owned fire tower.



Pawtuckaway Fire Tower. The project is not visible from this vantage point.

Visual Quality: Medium

The view from the fire tower looks out over a landscape that is typical of southern New Hampshire, with low to moderate wooded peaks in the background. Signs of development include a few homes, roads, and transmission lines. The majority of the landscape is forested, with a few openings resulting from agriculture and timber harvesting.

Scenic Significance: Medium-High

VISUAL IMPACT ASSESSMENT

Visual Effect: Low

- Middle Mountain and North Mountain block visibility to most of the corridor.
- At a distance of 2.5+ miles, the new transmission structures will be seen as very small objects in the visible landscape.
- The substation will not be visible from the fire tower.

User Groups: Hikers and visitors to the fire tower.

User Expectation: High

- Pawtuckaway State Park is well known for its scenic quality, diversity of recreation opportunities, and unique landscape characteristics. Visitors who climb to the top of the fire tower expect to see an impressive panoramic view of the landscape.

Extent, Nature, and Duration of Public Use: Medium

- The fire tower is prominently featured in promotional material for the State Park and is expected to receive a moderate amount of visitation during the time it is open.
- Visitors at the top of the fire tower are there for the primary purpose of experiencing a 360 degree view of the landscape. The scenic quality of the view is inherent to the user experience.
- Users experience a view of the landscape for a relatively short period time.

Overall Visual Impact: Low

The construction of a new transmission line and reconstruction of an existing line will have a low overall visual impact on the views from the Pawtuckaway State Park Fire Tower. NPT should not result in a substantial change in the way people now use or enjoy the fire tower.

- The proposed transmission structures will be seen as very small objects in less than 3% of the 360-degree view.
- The presence of the transmission structures and conductors will not change the inherent character of the scenic resource.
- People who currently visit the fire tower will still be able to enjoy these pursuits.



View from top of South Mountain at base of Fire Tower, facing northeast overlooking North Mountain. There will be no visibility of the project from this vantage point. Middle Mountain in the midground and vegetation in the immediate foreground screen views of the structures.



Trail signage leading to Fire Tower. There will be no visibility of the project from this vantage point.



Northeast view from lattice steel fire tower facing Middle Mountain and North Mountain. The tops of structures will be visible at a distance of 2.7 miles on the right side of the photo. Topography in the midground screen views of structures in the middle of the photo.



Panoramic view facing north from fire tower facing Middle Mountain and North Mountain. The tops of structures will be visible at a distance of 2.7 miles on the north side of North Mountain.

NORTH MOUNTAIN OVERLOOK (1B) NOTTINGHAM

OVERALL VISUAL IMPACT **LOW-MEDIUM**

The North Mountain Trail is accessed from the Round Pond Road entrance at the northern end of the park. The overlook is one of several points of interest in the western part of Pawtuckaway. En route, the trail passes Round Pond, the boulder field at the base of North Mountain, and a diverse plant community. There are two viewpoints at the rocky summit:

- The first faces southeast over the State Park, affording views of Round Pond and the north side of Middle Mountain. An abandoned communications structure at the summit is one of the few signs of development within view. There are no views of the existing transmission corridor that is northwest and north of the park.
- The second viewpoint is located down a narrow path from the summit of North Mountain, approximately 10 feet lower in elevation than the peak. This overlook, which faces north toward Deerfield, has not been managed recently; several trees below the overlook now block the lower portion of the view. Dead Pond is visible in the foreground. The topography of the wooded landscape is gently undulating with more pronounced hills in the distance. Signs of development include occasional homes, two prominent transmission corridors, and the Deerfield substation, approximately 1.5 miles from the overlook.

Existing Transmission Corridor and Substation

Two separate transmission corridors converge at the Deerfield Substation, creating the most distinctive man-made feature in the landscape when seen from the North Mountain Overlook. The most visible corridor, which will not be affected by the NPT project, is 225± feet wide, with two H-frame transmission lines running in a northeast-southwest direction. The line terminates at the Deerfield substation.

The second transmission corridor, which will be used for the NPT line, is located in a 200-foot right of way width and runs in an east-west direction, perpendicular to the view from North Mountain Overlook. This corridor has two existing 115-kV transmission lines supported by wooden monopole structures ranging in height from 61 feet to 102 feet. The existing structures, conductors, and cleared corridor are not visible from the North Mountain Overlook.

The Deerfield Substation is located at the intersection of the two corridors. The substation currently covers an area of approximately 8 acres and is recognizable by its contrast in color, line, and texture. The top of structures and infrastructure located within Deerfield Substation are currently visible from the North Mountain Overlook.

Changes within Existing Transmission Corridor

The existing 115-kV line on the north side of the corridor will remain in place. The southerly 115-kV line will be



Signage at base of North Mountain Trail.



There are periodic views of the surrounding landscape from the trail.



Landscape character of North Mountain Trail.



Viewer expectation is diminished by the presence of abandoned structure at the North Mountain Summit

Sequential trail features along North Mountain Trail. The transmission line is not visible from the above viewpoints.

relocated closer to the middle of the corridor on galvanized steel monopole structures that will range in height from 84 feet to 97 feet in the vicinity of the substation.

The 345-kV line will be located on the south side of the corridor and 35 feet from the edge of the right-of-way. The galvanized steel lattice structures will range in height from 80 feet to 140 feet in the immediate vicinity of the Deerfield substation. Up to 40 feet of additional clearing will be required in places on the south side of the corridor in order to install the 345-kV line.

Deerfield Substation Expansion

An area adjacent to the existing substation will be developed for the SVC and capacitor bank. The new fenced area will be approximately 3.7 acres. A 140-foot wide cleared corridor will also be created to tie the proposed 345-kV line into the substation.

Cultural Value: High

Pawtuckaway is an actively used State Park with a number of recreational facilities and activities. The second viewpoint on North Mountain where the NPT project may be visible is on a relatively minor trail leading from the summit.

Visual Quality: Medium

The view from the lower summit of North Mountain looks out over a landscape that is typical of southern New Hampshire, with Dead Pond in the foreground and low to moderate size wooded peaks in the background. The majority of the landscape is forested, with a few openings resulting from agriculture and timber harvesting. The view includes some signs of development, most notably the existing transmission lines and Deerfield substation.

Scenic Significance: Medium-High

VISUAL IMPACT ASSESSMENT

Visual Effect: Low

- The new structures will be located in the more distant of the two existing corridors that are visible. From this viewpoint four 345-kV lattice structures will be visible west of the substation. At a distance of 1.5+ miles, these structures will be perceived as relatively small objects in the visible landscape.
- Lighting will change the visual presence of the structures, conductors, and the substation. When back-lit, the structures, conductors, and substation will be less prominent since they will appear as dark objects set against a dark wooded backdrop. When they are in direct sun, they may have considerable contrast with the surrounding forestland.
- The additional clearing for the substation and 345-kV line will tie into the substation thus creating a larger opening in the forest, which will increase the contrast in color. The substation will be apparent, but will be subordinate to the other natural features in the landscape.
- The proposed 345-kV structures and substation expansion will be seen in a view that already contains transmission lines and the original substation. There will be minimal expansion in the HFOV from the NPT project.

Mitigation

- Maintaining existing vegetation in the vicinity of the substation.

User Groups: Hikers and some mountain bikers (advanced skill).

User Expectation: High

- Pawtuckaway State Park is well known for its scenic quality, diversity of recreational opportunities, and unique landscape characteristics.
- User expectations are heightened by the aesthetic quality of the boulder field and Round Pond at the base of North Mountain.
- Viewer expectation is diminished by existing development: an abandoned communication structure, roadways, rural homes, and existing transmission lines.

Extent, Nature, and Duration of Public Use: Medium

- The parking area and trails throughout the park in general are well maintained and marked with good signage.
- The northerly viewpoint is not well managed for visibility, which may indicate reduced numbers of visitors. Vegetation limits the horizontal field of view.
- The resource provides an opportunity for users to hike forested trails and experience views of the rolling southern New Hampshire landscape. Viewers are expected to spend a few minutes at the overlook before continuing on the trail.

Overall Visual Impact: Low-Medium

The construction of a new transmission line, reconstruction of an existing line, and expansion of the Deerfield substation will have a low-medium overall visual impact on the view from the North Mountain Trail. NPT should not result in a substantial change in the way people now use or enjoy the trail or this part of Pawtuckaway State Park.

- The proposed transmission structures will not change the inherent character of North Mountain Trail or the view from the peak.
- People who currently use the trail will still be able to enjoy these pursuits.

NORTH MOUNTAIN OVERLOOK (1B)
NOTTINGHAM



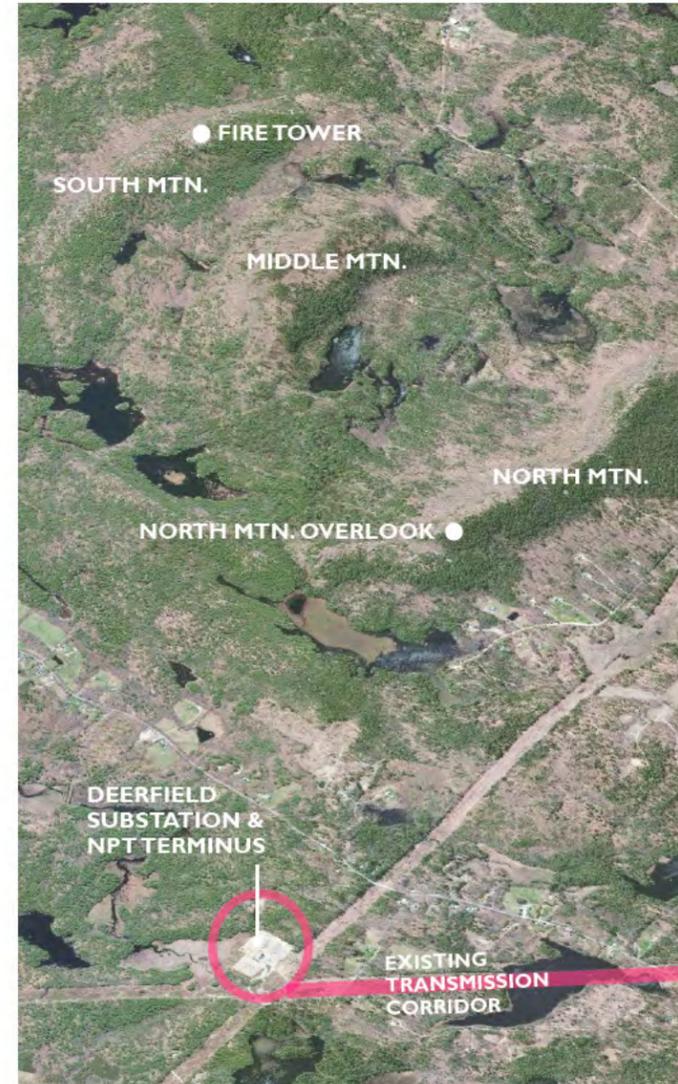
Panoramic view from the summit of North Mountain, which does not have a view of the project. View faces southeast over Pawtuckaway State Park. Round Pond is visible in the left of photo; Middle Mountain is seen in the middle of the photo.



Trail leading down from North Mountain Peak to viewing area pictured in adjacent photo.



Location with north facing view to existing transmission corridor and Deerfield Substation.



Birdseye view facing south over Deerfield Substation, and two viewpoints in Pawtuckaway State Park.



Enlarged view facing north from the summit of North Mountain. Deerfield Substation and two existing transmission corridors are visible at distance of 1.5 miles. See Photosimulation.

Nottingham Works Cited:

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NH Department of Resources and Economic Development Division of Parks and Recreation. Pawtuckaway State Park Hiking Information. PDF File.

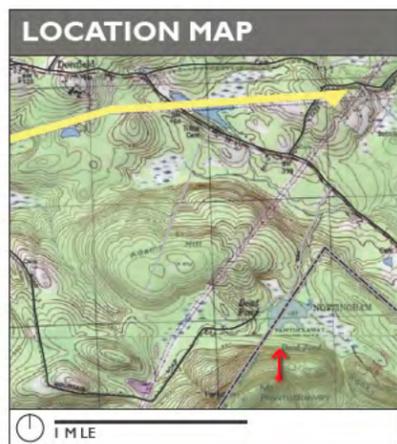
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NORTH MOUNTAIN OVERLOOK - PAWTUCKAWAY STATE PARK, NOTTINGHAM

EXISTING CONDITIONS PANORAMA



TECHNICAL INFORMATION

TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Steel Monopole and Wood Monopole	Galvanized Steel Monopole to replace Wood Monopole
Height range of visible 115-kV structures	74.5 - 83.5 feet	52 to 84 feet	
345-kV structure type	N/A	Galvanized Steel Lattice	
Height range of visible 345-kV structures	N/A	80 - 140 feet	
Right-of-way width	200 feet + Deerfield Substation	200 feet + Deerfield Substation	

PHOTOGRAPH	Date and time: 11/25/2014 at 11:05am	Location: 43.121853° N, -71.193385° W	Viewing Direction: North
	Distance to visible structures: 1.20 to 1.45 miles	Number of transmission structures visible in the photosimulation: 4 + Deerfield Substation	
	Camera Focal length (50mm equivalent): 35mm	Camera Make/Model: Nikon D300	Photo Source: TJD&A

NOTES

GENERAL NOTES

Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.

PHOTOSIMULATION PRODUCTION

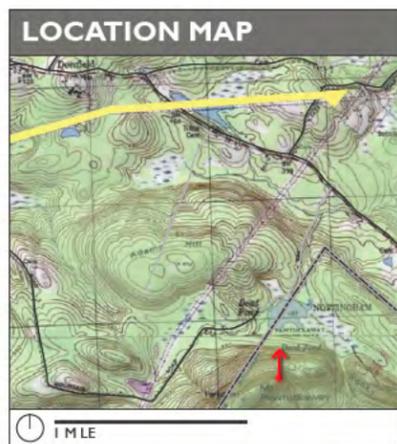
By Terrence J. DeWan & Associates. Published July 23, 2015.

VIEW DESCRIPTION

View from North Mountain Trail in Pawtuckaway State Park toward Deerfield Substation. Viewpoint is located to the north of the North Mountain Summit. Project corridor intersects with another transmission corridor and terminates at the Deerfield Substation.

NORTH MOUNTAIN OVERLOOK - PAWTUCKAWAY STATE PARK, NOTTINGHAM

PHOTOSIMULATION: PANORAMA



TECHNICAL INFORMATION

TRANSMISSION LINE		EXISTING	PROPOSED
	115-kV structure type	Steel Monopole and Wood Monopole	Galvanized Steel Monopole to replace Wood Monopole
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Height range of visible 345-kV structures	N/A	80 - 140 feet	
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View from North Mountain Trail in Pawtuckaway State Park toward Deerfield Substation. Viewpoint is located to the north of the North Mountain Summit. Project corridor intersects with another transmission corridor and terminates at the Deerfield Substation.

NORTH MOUNTAIN OVERLOOK - PAWTUCKAWAY STATE PARK, NOTTINGHAM
EXISTING CONDITIONS NORMAL VIEW



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

NORTH MOUNTAIN OVERLOOK - PAWTUCKAWAY STATE PARK, NOTTINGHAM

PROPOSED CONDITIONS NORMAL VIEW



VIEW NOTE

When printed on 11x17" paper, viewer should hold this image approximately 17" from eye to replicate actual view.

CONCLUSION

Site 301.08 Criteria Relative to Findings of Unreasonable Adverse Effects.

(a) In determining whether a proposed energy facility will have an unreasonable adverse effect on aesthetics, the committee shall consider:

1. The existing character of the area of potential effect in the host community and communities abutting or in the vicinity of the proposed facility.
2. The significance of affected scenic resources and their distance from the proposed facility.
3. The extent, nature, and duration of public uses of affected scenic resources.
4. The scope and scale of the change in the landscape visible from affected scenic resources.
5. The evaluation of the overall visual impacts of the facility as described in the visual impact assessment submitted by the applicant and other relevant evidence submitted pursuant to Site 202.24.
6. Whether the proposed facility would be a dominant feature of a landscape in which existing human development is not already a prominent feature as viewed from affected scenic resources.
7. Whether the visibility of the proposed facility would offend the sensibilities of a reasonable person during daytime or nighttime periods.
8. The effectiveness of the best practical measures planned by the applicant to avoid, minimize, or mitigate unreasonable adverse effects on aesthetics.

CONCLUSION

The proposed Northern Pass Transmission project will not have an unreasonable adverse effect on aesthetics. This conclusion is based upon an evaluation of the following criteria.

Site 301.08 Criteria Relative to Findings of Unreasonable Adverse Effects.

(a) In determining whether a proposed energy facility will have an unreasonable adverse effect on aesthetics, the committee shall consider:

1. The existing character of the area of potential effect in the host community and communities abutting or in the vicinity of the proposed facility.

The introductions to each of the six subareas that comprise the 192-mile Northern Pass Transmission route and the descriptions of each of the 31 host communities and the 25 communities that area adjacent to the host communities describe the existing character of the area of potential effect. This includes an overview of the landforms, water bodies, vegetation, and cultural patterns that characterize the communities that may be affected by the proposed corridor.

For Subareas 1, 2, 4, 5, and 6 this area extends out three miles on either side of the proposed transmission corridor. For Subarea 3 – the underground route in the vicinity of the White Mountains – the area of potential effect extends out ¼ mile on either side of the proposed corridor.

The scenic character of the land that is traversed by the transmission line is as varied as the State of New Hampshire:

- Subarea 1 extends for 51.54 miles in the northernmost part of the project. It is defined by its low, forested mountains; broad river valleys; an abundance of rivers, streams, lakes, and ponds; and a diversity of small villages that are connected by state roads and rivers.
- Subarea 2 extends for 29.05 miles through the foothills of the White Mountains, with well-defined rolling hills and relatively low mountains; broad river valleys; an abundance of rivers, streams, lakes, and ponds; extensive areas of wetlands and bogs; and villages and towns that are connected by state roads and rivers.

- Subarea 3 extends for 52.28 miles in the middle of the NPT project. Its scenic character is defined by the presence of the White Mountains and White Mountain National Forest, numerous rivers, and broad plains. Interstate 93 is the major north-south transportation corridor.
- Subarea 4 extends for 25.89 miles south of the White Mountains and follows the Pemigewasset River. Its scenic character is defined by rolling to hilly wooded terrain, a few ponds and lakes, and two dams / impoundments on the Pemigewasset. Development typically follows the river and is served by a network of state roads and Interstate 93.
- Subarea 5 extends for 15.58 miles. It follows the Merrimack River and parallels Interstate 93 throughout most of its length. Its scenic character is defined by low rolling hills with several small ponds and areas of wetlands. The greatest concentration of development along the project route is found on both sides of the Merrimack River in Concord.
- Subarea 6 extends for 17.56 miles in the southernmost part of the project. It is defined by its rolling hills and broad plains, and an abundance of rivers, streams, and small ponds. Its defining feature is the Merrimack River, and the development corridor that parallels it and Interstate 93.

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

Approximately 525 scenic resources within the area of potential effect were identified during the course of the visual impact assessment. Of these resources approximately 14% were determined to be of medium or higher scenic significance (a measure of both cultural value and visual quality) and were further evaluated for possible visual impacts.

It is significant to note the number and variety of scenic resources of state-wide or greater significance within the 3-mile study area that will not have views of the project. These include: Lake Francis in Pittsburg/Clarksville; The Balsams Resort and Dixville Notch State Park in Dixville; Christine Lake in Stark; White Mountain National Forest; Connecticut River Scenic Byway; the trails within the Pondicherry Unit of the Silvio O. Conte National Fish and Wildlife Refuge in Whitefield; Little Squam Lake in Ashland; the Daniel Webster Birthplace in Franklin; Colonial Village Green and Canterbury Shaker Village in Canterbury; and the State Capital in Concord.

The horizontal distance from the NPT transmission corridor to the scenic resources that were evaluated varies throughout the project area. The majority of resources are located 1 to 3 miles from the corridor. A table is provided for each community that describes the distance to the corridor, measured at the place where the viewpoint evaluated in the VIA is nearest the corridor.

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

A wide variety of public uses occur throughout the area of potential affect. These include backcountry hiking, picnicking, swimming, bird watching, hunting, fishing, ice fishing, ice-skating, boating, rafting, sightseeing, snowmobiling, ATV riding, golfing, cross-country skiing, bouldering, mountain biking, and cycling. While there is a considerable amount of public use throughout the project area, there is not a lot of specific data on use patterns, with the exception of some of the state parks and other larger recreation areas.

The VIA's description regarding the extent, nature, and duration of public use is derived from personal observation, on-line resources, tour guides, promotional material, corridor management plans, town master plans, conversations with park personnel, and other primary and secondary sources of information.

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

The Northern Pass Transmission project will result in a visible change to the landscape. The following is a summary of the scope and scale of the visible project elements:

New Transmission Corridor

The 32.1 miles of new DC transmission corridor at the northern end of Subarea 1 will create a 120-foot wide clearing, primarily in privately owned commercial forestland. The new clearing will be visible from a limited number of public viewpoints, due to the topography, existing roadside vegetation, and limited number of public roads in the area. See Subarea 1 for a description of the places where the corridor may be visible.

Existing Transmission Corridor

South and west of Bickford Mountain in Dummer, the NPT project will be located in an existing transmission corridor (or within public road right-of-way for the underground section) until its terminus at the Deerfield Substation. The width of the existing corridor varies from 150 to over 300 feet in width. With two exceptions (in Pembroke and Whitefield), no additional land will be required for the installation of the NPT project. Throughout much of the route, additional vegetation clearing (typically between 25 and 40 feet) will be required within the ROW to accommodate the new line and to provide the clearances required by the National Electrical Safety Code for electrical transmission lines.

Proposed Transmission Structures

The NPT project will introduce new transmission structures to transmit the 320-kV DC electrical power from the Canadian border to the Franklin Converter Terminal, with the exception of the three segments that will be located underground. At the Franklin Terminal the electricity is converted to 345-kV AC and transmitted on new structures to the Deerfield Substation.

The most commonly used design in Subareas 1, 2, and 4 will be a galvanized steel lattice structure that will typically be between 75 to 85 feet in height. In Subarea 5 the most commonly used design will be weathering steel H-frame and 3-pole structures. In Subarea 6 the structures will primarily be weathering steel H-frame structures, weathering steel monopole structures, and galvanized steel lattice structures. Taller structures will be used in specific locations to cross roads, rivers, and other power lines; to account for changes in topography; and to provide the clearances required by the National Electrical Safety Code for electrical transmission lines. The most frequent spacing between structures ranges from approximately 500 to 700 feet.

In many locations, the line will be supported by weathering steel monopole structures. See 8. Mitigation Measures below for a description of the use of weathering steel monopoles.

CONCLUSION

Existing Transmission Structures

The existing corridor typically contains one or two 115-kV transmission lines supported on wooden H-frame or wooden monopole structures. In many areas the 115-kV line will be relocated within the corridor to accommodate the new transmission line and will be supported on steel monopole structures typically between 75 to 90 feet in height. All new 115-kV structures will be of the same material (either galvanized steel or weathering steel) as the proposed NPT structures in the same corridor to maintain continuity in color and texture.

Conductors and Shield Wires

The arms of the structures on both the proposed 320-kV DC line and the 345-kV AC line support insulator strings and bundled conductors. The relocated 115-kV line will also have arms that support insulator strings and conductors. Both will have thinner overhead shield wires attached to the top of the structures.

Underground Sections

The installation of the line in the three underground sections will have little to no visual effect on the landscape. Following construction, the existing roadway will be repaved using the same surface material in most locations. The major evidence of the route will be sections of the road that will be removed and restored once the line is installed (where the line is in an existing road right-of-way).

The visual impact will be similar in nature to any typical road utility project, with special care taken to avoid effects on specific resources. For example, in Plymouth, the route will pass under the roundabout at Plymouth State University. Following the installation, the area will be restored to pre-construction conditions, including the replacement of decorative pavers used for the turning circle and crosswalk.

Where the line is located off the road (in Subarea 1), the underground transmission corridor will be mowed periodically to prevent the growth of trees over the line.

Transition Stations, Converter Terminal, and Substations

NPT construction activities within the corridor include the installation of six transition stations where the line enters/ emerges from underground locations, a new converter terminal where the electricity is converted from DC to AC, and alterations to the existing substation in Deerfield.

The transition stations will be similar to the small substations that are commonly found throughout this part of New Hampshire, with visible electrical equipment surrounded by chain link fence, located off main highways adjacent to existing transmission corridors, and screened with vegetation. The visible components will include a galvanized steel dead-end structure, typically 95 feet in height, a control house, and electrical equipment standing 7 to 8 feet in height, enclosed by an 8-foot chain link fence. The enclosed area will be approximately 80 by 130 feet. The total area cleared for the transition station and gravel access area will be approximately 0.5 acre. Additional native landscaping will be installed where necessary to screen the views from public roadways.

The Converter Terminal in Franklin is located in a large, heavily wooded site. The approximately 10-acre facility will consist of galvanized steel dead-end structures, a converter building approximately 60 feet in height, and electrical equipment enclosed by a chain link fence. The facility is surrounded by forestland, which will prevent it from being seen from public roadways or the Daniel Webster Farm.

The existing substation in Deerfield will be enlarged by less than 4 acres to accommodate the NPT project. The facility is buffered by existing forestland, which will minimize its visibility from the surrounding community.

The Scobie Pond substation in Londonderry will also be upgraded as part of the Project. Existing vegetation in the vicinity of the substation will screen it from the surrounding area, including Scobie Pond, which is 0.25 mile to the north. Several of the transmission structures between the Deerfield and the Scobie Pond substation will be replaced with similar structures that are 5 to 10 feet taller as part of the Project. A VIA was not performed for the Scobie Pond substation upgrade since no scenic resources would be affected.

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

The Summary of Visual Impacts Table in Appendix C indicates the scenic significance and overall visual impact on the scenic resources with at least a medium scenic significance rating that were evaluated in each of the Subareas. The overall visual impact is derived from the assessment of visual effect and the possible effects on user groups, as determined by the VIA.

The visual impact assessment (VIA) conducted for each of the scenic resources that may have views of the project indicates that the visual impacts of the NPT project range from low to medium. None of the overall visual impacts were found to be greater than medium.

The viewshed analysis presented in Appendix A illustrates that the possible visibility of the NPT project is very similar to the visibility of the existing 115-kV transmission line in Subareas 2, 4, 5, and 6. The photosimulations illustrate that structures beyond three miles are difficult to discern as individual objects in the landscape, especially when they are seen in context with the existing transmission structures.

The viewshed analysis, supplemented by cross sectional analysis and computer modeling, demonstrates the effectiveness of existing vegetation and topographic features in screening the proposed transmission structures from view.

LINEAR SCENIC RESOURCES

The VIA also evaluated the potential visual impact on linear scenic resources throughout the 192-mile project area. Detail descriptions for each of these resources are found in the VIA.

SCENIC BYWAYS

The NPT project will be visible from the following designated scenic byways (national and state), primarily in the northern half of the project:

- Connecticut River Scenic Byway (National)
- Moose Path Scenic Byway
- Woodland Heritage Scenic Byway
- Mt. Prospect Auto Road (Weeks State Park)
- Presidential Range Trail
- River Heritage Trail
- Lakes Region Tour Scenic Byway
- Canterbury Shaker Village Byway
- Upper Lamprey Scenic Byway

In general, the NPT project will have a low overall visual impact on the scenic byways. Individual VIAs provide an assessment of the impacts on specific points where the project intersects or is visible from these byways.

The cumulative time that the transmission structures may be in view from the byways is generally less than a minute. This represents a small fraction of time that motorists will have visual contact with the NPT project over a typical day's drive. In many locations the NPT project will be seen as an incremental change in a landscape that has already been affected by a 115-kV transmission line. In most locations, views of the structures from scenic byways are not in the immediate foreground of the view.

Weathering steel structures are being proposed at all locations where the transmission corridor crosses or may be visible from the scenic byway to minimize the contrast in form and color. By locating the project underground, direct visual impacts are avoided on the Connecticut River Scenic Byway.

CONCLUSION

RIVERS

Androscoggin River. The NPT project is located within one mile of the Androscoggin River in Dummer at the Pontook Reservoir. The project does not cross the river. Weathering steel monopole structures will be used where the project will be seen from the reservoir to minimize contrasts in color and form. The overall visual impact on the river and the reservoir will be medium.

Upper Ammonoosuc River. The NPT corridor will cross the Upper Ammonoosuc River at one point in Stark. The river is part of the Northern Forest Canoe Trail, and is best run in late April or May when water levels are high. The visual impact on the river will be localized, due to the meandering nature of the channel and the riparian vegetation along its bank. The overall visual impact to the river at the point of crossing will be medium.

Ammonoosuc River. The NPT corridor crosses the Ammonoosuc River at one location in Bethlehem, at a point adjacent to Route 116 and a railroad line. The overall visual impact on the river will be low-medium.

Pemigewasset River. The transmission corridor crosses the river in four separate locations and is visible from the Franklin Falls Dam; all these locations are separated by at least five miles. The crossings all occur within established transmission corridors that will not be widened. No new river crossings are required.

Meanders in the river, which are characteristic of the Pemigewasset River in this part of the state, limit the distance that the new structures and conductors will be visible. The views of the NPT project will affect a very small percentage of the overall length of the river.

The cumulative visual effect on the Pemigewasset River as a whole will be low. The new structures will have a minor effect on the experience of being on the river and should not result in a substantial change in the way people now use or enjoy the Pemigewasset.

Upper Merrimack River. The project intersects the Upper Merrimack River at one location in Franklin south of the converter terminal, where the overall visual impact will be low-medium. In addition to the crossing, there may be occasional views of the project at distances of 1.0 to 1.5 miles from some locations between Canterbury and Boscaawen. The project will affect less than 1% of the total length of the byway. The cumulative visual impact on the 117-mile long river will be low.

Lamprey River. The project crosses the Lamprey River at one location in a low-density residential subdivision in Deerfield, at which point it is considered a third or fourth order stream. The NPT project will be seen as an incremental change to the existing 115-kV transmission lines that now cross the river. The overall visual impact on the river at this point will be low-medium.

Suncook River. The project crosses the Suncook River at one location in Pembroke/Allenstown, where the meanders limit the amount of time the structures will be visible. The river runs through populated areas where paddlers and other recreational users are already accustomed to transmission lines

and other forms of human development. The overall visual impact to the river at the point of crossing will be medium.

Soucook River. The NPT project crosses the Soucook River at one location in Concord/Pembroke, where the meanders limit the amount of time the structures will be visible. At this point the river runs through a commercial/industrial section of the city, with steep, often-eroded banks. The river is not known for its visual qualities, and the additional transmission line will have a low overall visual impact.

Weathering steel monopoles are being proposed at all locations where the transmission corridor crosses or may be visible from rivers to minimize the contrast in form and color. The incremental presence of the NPT project should not have an effect on the way people now use or enjoy the rivers.

STATE-WIDE PEDESTRIAN AND MULTI-USE TRAILS

Northern Rail Trail. The trail is a 48-mile multi-use recreational trail in Franklin. The trail intersects the transmission corridor at the Webster Substation near Webster Lake and at the Merrimack River. The 600 feet of the trail crossed by the transmission corridor at the two locations represent approximately 0.2% of the total length of the Rail Trail. The Project will have a low cumulative visual impact on the Trail.

Cohos Trail. The NPT corridor will intersect the Cohos Trail at 3 aboveground locations (the route is being refined and some on-road sections are being eliminated). The Trail also follows the underground section of the NPT project for 1.75 miles along Bear Rock Road in Stewartstown, starting west of the transition station. The three corridor crossings occur either on rural or woods roads or in forestland, where visibility is limited to foreground viewing distances. Where the transmission line is visible the overall visual impact will be low-medium.

The overall visual impact on the trail as a whole will be low. The total length of the trail located within the above-ground project corridor is 415 feet, which is a small fraction of its overall length. There are very limited places on the trail where there will be views of the transmission line.

6. Whether the proposed facility would be a dominant feature of a landscape in which existing human development is not already a prominent feature as viewed from affected scenic resources.

There are no scenic resources where the NPT project will be a dominant feature in the landscape where existing human development is not already a prominent feature. Most of the scenic resources where the transmission line will be visible also have other forms of human development, many of which are prominently visible in the landscape.

The NPT project will typically be seen in landscapes that have been affected by other forms of human development. Examples include views of:

- wind turbines (e.g., Route 145 and Millsfield Pond in Millsfield, Little Dummer Pond in Dummer)
- transmission lines (Big Dummer Pond in Dummer, North Percy Peak and Victor Head Cliff in Nash Stream Forest, Weeks State Park in Lancaster, Slim Baker Recreation Area in Bristol, Pemigewasset River impoundment in Bristol, Turtle Pond in Concord, Bear Brook State Park in Allenstown)
- railroad lines (Ammonoosuc River in Bethlehem)
- local distribution lines (e.g., Pontook Reservoir)
- hydro generating facilities (Androscoggin River and Pontook Reservoir in Dummer)
- power plants and substations (Franklin Falls Dam in Franklin, The Rocks estate in Bethlehem, Pawtuckaway State Park in Nottingham)
- waterfront camps and shoreline development (Pemigewasset Impoundment in Bristol, Webster Lake in Franklin).

7. Whether the visibility of the proposed facility would offend the sensibilities of a reasonable person during daytime or nighttime periods.

There are many places throughout the route of the NPT project where the transmission structures, conductors, and other components will be visible and may be considered an adverse visual effect. However, there are no locations where the visibility of the NPT will offend the sensibilities of a reasonable person during daytime or nighttime periods. This conclusion is based upon the following considerations:

- The NPT project will be visible from a very limited number of scenic resources or other public viewpoints.
- There are very few locations where the project will be seen in the foreground (within ¼ mile) of scenic resources.
- The VIA demonstrates that the NPT project will not have a high overall visual impact on any of the scenic resources within three miles of the route.
- As noted above, most of the scenic resources where the transmission line will be visible also have other forms of human development, many of which are prominently visible in the landscape.

CONCLUSION

8. The effectiveness of the best practical measures planned by the applicant to avoid, minimize, or mitigate unreasonable adverse effects on aesthetics.

The planning and design process for the NPT project incorporates many measures that are designed to avoid, minimize, or mitigate adverse effects on aesthetics.

Underground Sections

Three sections of the project, totally approximately 60 miles, will be located underground:

Approximately 3,700 feet (0.7 mile) of the transmission corridor will be located underground in Pittsburg and Clarksville where the NPT project crosses the Connecticut River and U.S. Route 3 (designated as the Connecticut River Scenic Byway, a National scenic byway).

An additional 7.5 miles of the NPT project will be located underground, starting on the west side of Route 145 (designated as both the Connecticut River Scenic Byway and the Moose Path Scenic Byway) and ending in Stewartstown off of Heath Road.

Subarea 3 (52 miles) will be located underground between Bethlehem and Bridgewater. Locating the line underground out of White Mountain National Forest avoids potential visual effects on a number of scenic/recreational resources, including Tripoli Road; Kinsman Trail; Kinsman Ridge; views from the summits of Mt. Liberty, Mt. Pemigewasset, South Kinsman, Bald Peak, and Mt. Lafayette; and the Appalachian National Scenic Trail and other significant hiking trails. Locating the line underground also eliminates possible visual impacts to Interstate 93. It also reduces the impact on the Rocks Estate and Baker Pond in Bethlehem.

These are significant mitigation measures that are responsive to the concerns expressed by many environmental groups and others who recognize the White Mountains as a treasured and iconic part of the New England landscape. Using existing road rights-of-way for most of the underground sections minimize the need for new cleared transmission corridors.

Co-Location With Existing 115-kV Transmission Lines

The use of the existing corridor south of Dummer eliminates the need for a new corridor for the majority of the line and avoids the possible visual effects that a new line would have on the surrounding landscape.

By following the existing transmission corridor, the project follows the topography and avoids major mountains and prominent hills to minimize its visibility from surrounding viewpoints. In most situations the line is located on side slopes and/or at the base of mountains where transmission structures will be seen against a wooded backdrop and will not appear to break the horizon.

Siting

Where possible, new transmission structures have been located in proximity to existing structures to maintain the same spacing and avoid irregular linear patterns that can be caused by adjacent conductors being out of synch with each other.

Matching Structure Materials

The materials used for both the relocated 115-kV structures and the proposed transmission structures will be matched to minimize contrasts in color and texture and contribute to a sense of visual continuity within the corridor

Weathering Steel Structures

Weathering steel monopole and H-frame structures are generally darker in color and have a hue that is more commonly found in the landscape, resulting in a decrease in color contrasts with the surrounding landscape. Monopole and H-Frame structures are also simpler in appearance than the lattice structures, which reduce the contrast in form. Monopole and H-frame structures are also considerably thinner than lattice structures (i.e., they occupy a smaller horizontal field of view) so they will appear less dominant than lattice structures. Weathering steel structures will be used in several locations to minimize visual impacts.

Transition Stations, Converter Terminal, and Substations

The transition stations will be set back from public roads and screened by existing and/or new vegetation. The converter terminal in Franklin will be located in a forested landscape that will screen the facility from nearby scenic resources (Merrimack River, Daniel Webster Farm, and Northern Rail Trail). The upgrades at the substations will expand the existing facilities in areas that will not affect scenic resources. The substations will be landscaped to buffer them from public roads.

CONCLUSION

The presence of the transmission structures, conductors, cleared corridor, converter terminal, substations, transition stations, and other project components within the viewshed of the scenic resources along the proposed corridor will not have a noticeable effect on the public's continued use and enjoyment of the scenic resources. There is no basis to conclude that people will not continue to drive the scenic byways, visit the parks, swim at the beaches, canoe and kayak the rivers, fish in the lakes, and hike the trails – in a manner that they have for decades – due to the presence of the project.

Human development, including large-scale buildings and other structures, is a fact of life in our organized society. People come to New Hampshire to enjoy its intrinsic scenic qualities, and there is nothing that will be atypical about the type of visual impact the project will have. Consequently, based on the totality of our analysis, it is our opinion that NPT will not create an unreasonable adverse effect on aesthetics.

APPENDICES

APPENDIX A VIEWSHED MAPPING

APPENDIX B SUMMARY OF VISUAL IMPACTS

APPENDIX C SOURCE LIST

APPENDIX A VIEWSHED MAPPING

INTRODUCTION

A viewshed map is a predictive screening tool used to illustrate where transmission structures may be visible. Viewshed maps are used as an initial step to determine where existing and proposed transmission structures might be visible in the study area, and more specifically, whether they may be visible from certain scenic resources. Such maps are also used to help determine whether the transmission line may not be visible from a scenic resource due to topography, intervening vegetation, or buildings, and therefore may not be affected.

Appendix A presents a series of three types of viewshed maps at a consistent scale for the entire length of the NPT project. There are no viewshed maps for Subarea 3, since this section is entirely underground in existing roadways, i.e., there are no proposed transmission structures.

See the *Viewshed Cross Section* below for further explanation of how a viewshed map functions.

Existing Structure Visibility Map

The first map in the series shows all locations where existing transmission structures may be currently visible within 5 miles on either side of the corridor. A transmission structure will be counted as 'visible' if the computer determines that a single point on the top of the structure would be seen from a point on the ground and not blocked by trees or buildings. This is a very conservative approach to estimating visibility, since structures are generally not visible beyond 3 miles. The map does not make any distinction as to the degree of visibility, as long as just the very top of the structure may be visible. The areas shown in purple should therefore be interpreted with caution.

The areas where existing structures may be visible are shown in shades of purple and are grouped according to the number that may be partially or fully visible: 1-5 structures; 6-10 structures; 11-20 structures; and over 20 structures.

Proposed Structure Visibility Map

The second map in the series shows where transmission structures (both existing 115-kV structures, relocated 115-kV structures, and new NPT structures) may be visible within 5 miles following the

installation of the NPT project. As in the first map, the areas where structures may be visible are shown in shades of purple and are grouped according to the number that may be partially or fully visible: 1-5 structures; 6-10 structures; 11-20 structures; and over 20 structures. Areas shown in purple provide only an indication of possible visibility and do not distinguish degrees of visibility.

In areas where the NPT project is located in an existing transmission corridor, the Proposed Structure Visibility Maps show a composite of the existing and proposed visibility areas. In those areas that are located in a new transmission corridor (i.e., in Subarea 1 north of Bickford Mountain in Dummer), the Proposed Structure Visibility Maps only show where proposed structures would be visible.

Increased Areas of Structure Visibility (Delta)

The third map in the series shows the 'delta' or areas with possible increase in structure visibility. The two colors represent: a) where both the existing transmission structures may be partially or fully visible within 5 miles (colored orange), and b) where the existing, relocated, and proposed NPT transmission structures may be partially or fully visible within 5 miles (colored purple). The map is composed of an overlay of the first two maps.

TECHNICAL METHODOLOGY

The following steps were taken in ESRI ArcMap to develop the viewshed analysis:

Step 1: Develop Digital Surface Model (DSM) and Digital Terrain Model (DTM) files

The viewshed analysis relies on a Digital Terrain Model (DTM) and a Digital Surface Model (DSM) to serve as the foundation of the existing landscape topography and surface vegetation. The two surfaces are modeled using ESRI software to develop the 3D model.

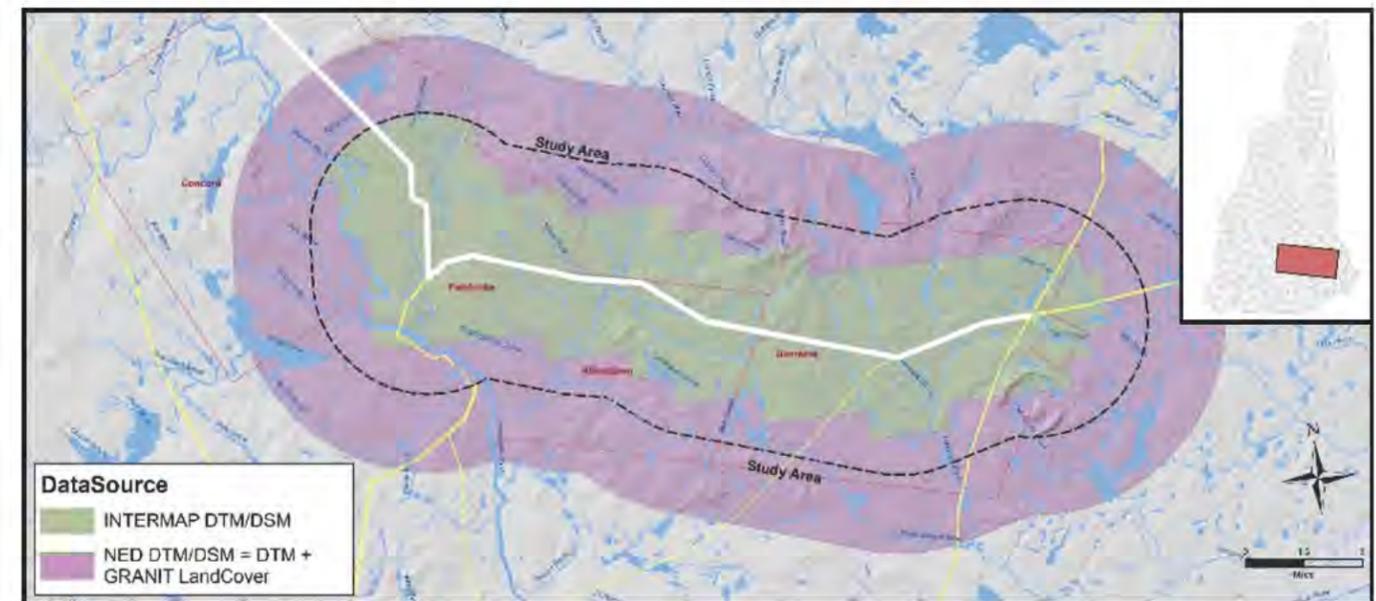
- **Digital Terrain Model (DTM)** is a surface model that represents ground elevation or topography.
- **Digital Surface Model (DSM)** is a surface model that represents the tops of buildings and vegetation (elements on the surface of the earth that have vertical elevation above the DTM).

In order to develop a DTM and DSM that extends 5 miles on either side of the line, three datasets were used: (1) LiDAR data purchased from InterMap, (2) National Elevation Data (NED), and (3) New Hampshire Land Cover Data Classifications. The InterMap Data is the most accurate data used to model the landscape 2 to 3 miles out from the transmission corridor. The NED and NH Land Cover Data are less accurate and are used to model the landscape beyond the InterMap Data out to 5 miles from the corridor. In the map and section on this page, the InterMap Data is represented by the color green and the NED/NH Landcover Data is represented by the color purple.

InterMap Data. This data is LiDAR derived and was purchased from InterMap (<http://www.intermap.com/data/nextmap>). The DSM data comes from the 1st return LiDAR data and includes the heights of vegetation and buildings. The DTM data comes from editing the DSM to remove vegetation and cultural features to derive natural terrain features. The DTM and DSM data are

developed at a 5 meter raster resolution. Vertical accuracy varies across the surface (from <1 m to > 3 m) and should be reviewed on the provider's website. This data extends 2 to 3 miles on either side of the corridor, covering most of the study area that was analyzed in the VIA, but not covering the full 5-mile area included in the viewshed mapping analysis. The data area is represented in green in the map and cross section below.

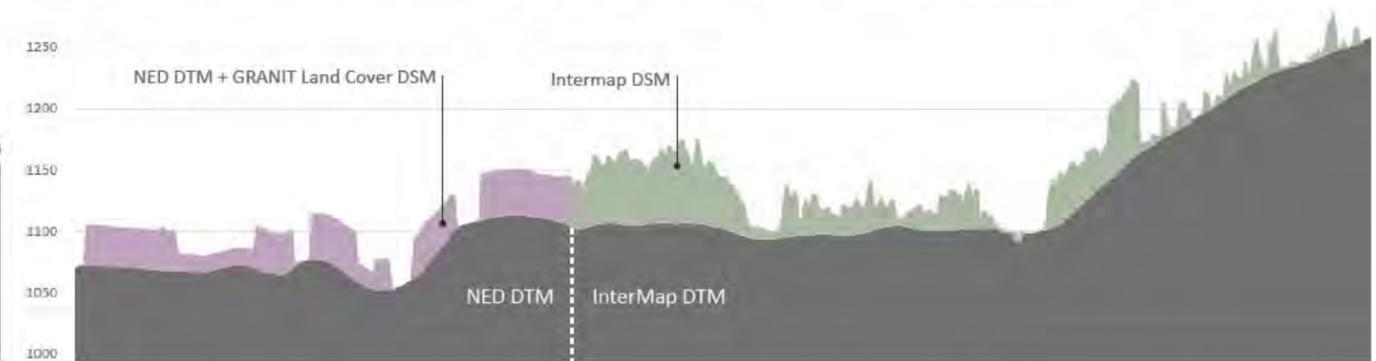
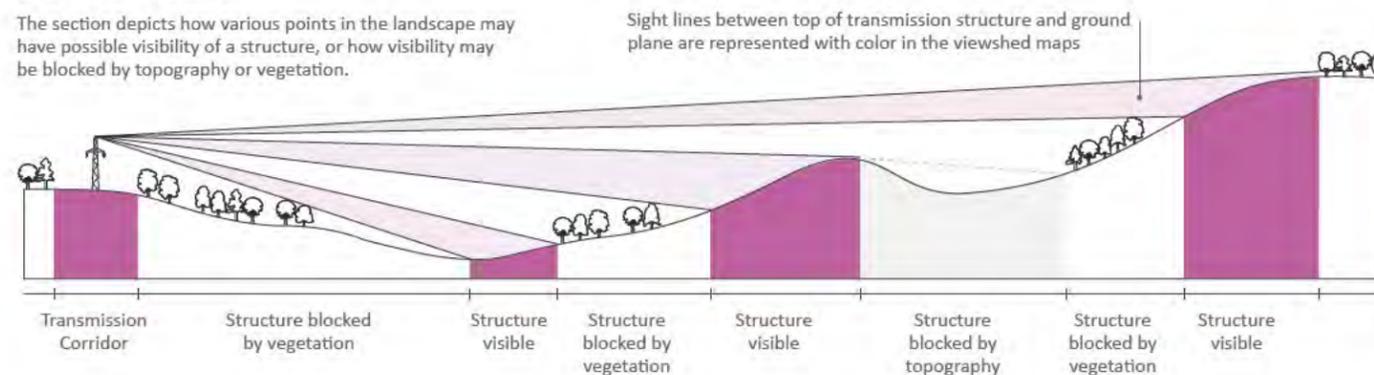
National Elevation Data (NED). The National Elevation Data was acquired from USGS (http://nationalmap.gov/3DEP/3dep_prodserv.html). The NED Data is from the 1/3 arc second seamless coverage. The horizontal placement of points are at 10 meter intervals. To provide a complete dataset out to the five mile buffer, National Elevation Data (NED) was used to develop a DTM in the areas beyond the reach of the InterMap Data. The NED data only covers ground elevation (the DTM) and does not include a DSM. The data area is represented in purple in the map and cross section below.



DATA SET MAP: Subarea 6 shows coverage of InterMap LiDAR Data and NED Data coverage in relation to 3-mile study area and 5-mile viewshed limit.

VIEWSHED CROSS SECTION

The section depicts how various points in the landscape may have possible visibility of a structure, or how visibility may be blocked by topography or vegetation.



DATA SET CROSS SECTION: The section demonstrates difference in data quality between the InterMap data and the NED/GRANIT Data. The InterMap Data provides a more accurate and refined representation of the landscape.

APPENDIX A VIEWSHED MAPPING

New Hampshire Land Cover Data Classifications. The DSM data is generated in the areas where the NED data serves as the DTM (not covered by the InterMap data) using the New Hampshire Land Cover Data Classifications from the state's GRANIT data warehouse. This data classifies the landscape into 18 land cover categories. There are no heights assigned to the land cover categories. In order to assign heights to the land cover to develop a DSM, a landcover height raster was developed using the mean heights for similar land covers in the InterMap data for each subarea. The following steps were taken to develop the DSM data from the NH Land Cover Data:

1. A raster file representing the height above the ground surface for the InterMap data was created by subtracting the DTM from the DSM.
2. The land cover data was overlaid with the InterMap height data in each Subarea to determine the mean height of each land cover in each subarea. The averages were calculated using the Neighborhood Statistics tool in ArcGIS tool. The landcovers data is represented in the *Landcover Average Height Calculated by Subarea Table* (to the right).
3. The landcover for each subarea was reclassified using the average height calculated for each land cover to develop a Landcover height raster.
4. The Landcover height raster was added to the NED DTM to approximate a NED DSM layer for each subarea.

Step 2. Combine Digital Surface Model (DSM) and Digital Terrain Model (DTM) files

The National Elevation Data (NED) DTM and approximated DSM files were mosaicked with the InterMap data DSM and DTM files to create a complete 5 mile buffer beyond the transmission corridors. The *Data Set Cross Section* on the previous page shows the difference in the quality of the two data sets. The purple represents the NED DTM and the DSM generated by mean heights by land cover classification. The green is the InterMap LiDAR data.

Step 3. Develop Visibility Mask

A visibility mask was developed to accurately represent the areas where the DSM (trees and buildings) block visibility from the DTM (ground plane). The visibility mask removes the data from areas where DSM is greater than 5 feet above the DTM. The height of 5 feet was selected because it represents the eye level height of a person. To determine these areas, the DTM was subtracted from the DSM and then reclassified in the following manners:

- Difference between DTM and DSM is < 5 ft = 1
- Difference between DTM and DSM is > 5 ft = No Data

See the *Visibility Mask Cross Section* (to the right) for a visual explanation of where the data is removed to develop the mask.

LANDCOVER AVERAGE HEIGHT CALCULATED BY SUBAREA

ID	LANDCOVER NAME	MEAN HEIGHTS BY SUBAREA				
		SUBAREA 1	SUBAREA 2	SUBAREA 4	SUBAREA 5	SUBAREA 6
110	Developed	30	30	30	30	30
140	Transportation	0	0	0	0	0
211	Row Crops	6	6	6	6	6
212	Hay/Pasture	11	6	13	11	11
221	Orchards	NA	NA	20	20	13
412	Beech/Oak	34	39	48	47	44
414	Paper Birch/Aspen	39	38	48	58	50
419	Other Hardwood	33	34	46	42	45
421	White/Red Pine	37	35	50	47	47
422	Spruce/Fir	32	32	44	38	37
423	Hemlock	34	38	54	57	54
424	Pitch Pine	NA	NA	NA	NA	54
430	Mixed Forest	34	37	53	51	49
500	Water	0	0	0	0	16
610	Forested Wetland	25	24	20	25	25
620	Open Wetland	16	13	23	18	21
710	Disturbed Land	0	0	0	0	0
790	Other Cleared	0	0	0	0	0

Issues of data accuracy: Any viewshed analysis is dependent on the accuracy and currency of the data used to create the analysis. The Intermap data used for the viewshed analysis was compiled from a variety of sources and has varying accuracy. It is also temporally dated (i.e., collected as a snapshot in time). The NED data is at a much coarser scale and the Land Cover data used to estimate heights is over 10 years old. This indicates the viewshed analysis has both positional and temporal accuracy issues. While using the best available information, the viewshed analysis should only be used as a rough guide indicating the general possible visibility in any given area. It should not be used as a definitive guideline for a specific location without further field work.

Step 4: Develop point locations for the Existing and Proposed Structures

- **Existing Transmission Structures** were provided with an elevation and structure height. The elevation and structure height values were added together to create total heights.
- **Proposed Transmission Structures** included all the proposed structures, remaining existing structures, and existing structures which were being relocated. This file was created by adding the appropriate existing structures to the proposed structure file and developing the total height from the elevation and structure height fields.

The elevation of each existing and proposed structure is based on high quality LiDAR data generated to survey the corridor. Due to variations in the data sets, there may be differences between the InterMap Data and the elevation of each structure.

Step 5: Develop Viewshed Analysis

The 5-mile DSM file and the structure data were used to determine the number of structures that may be visible from each raster in the file. The raster size represents a 16.4 foot² or 5 meter² area. The earth curvature was used with a refractivity coefficient of 0.13 and the observer elevation (each of the transmission structures) was derived from the total height field in the proposed structures. An outer radius of 26400 ft (5 miles) was used to limit visibility beyond 5 miles. Each raster file was then clipped to only those areas that intersected the Visibility Mask as these represent locations where a person could be standing and view the tops of the structures.

The viewshed analysis was run twice to compare existing structure visibility to proposed structure visibility:

Existing Viewshed Analysis: This viewshed analysis was run using only the existing transmission structures. The results show areas within a 5-mile radius that have views of the existing transmission structures. See Existing Structure Visibility Maps.

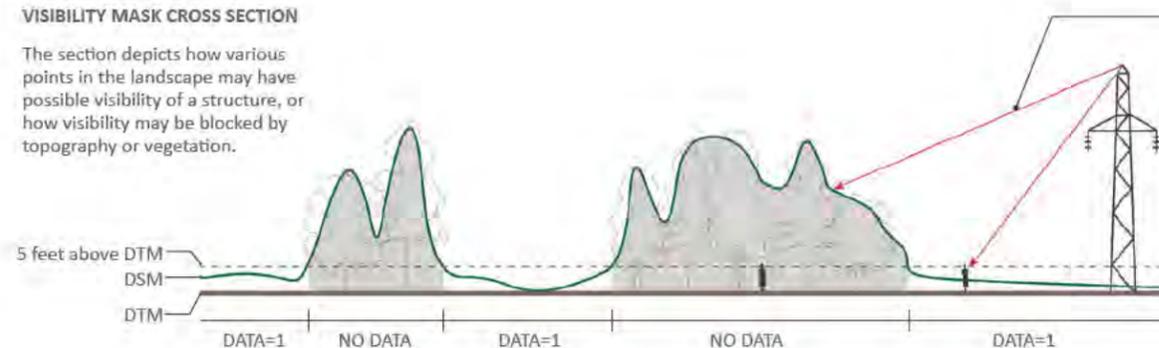
Proposed Viewshed Analysis: This viewshed analysis was run using the existing, relocated, and proposed transmission structures. In this analysis, the corridor right-of-way was removed from the DSM to represent the additional clearing that will occur. The results show areas within a 5-mile radius with views of all structures following the completion of the NPT project.

Step 6: Develop Increased Areas of Structure Visibility Analysis Map (Delta)

The two viewshed analyses produced in Step 5 were overlaid in a single map. The *Existing Structure Viewshed* layer was overlaid on the *Proposed Structure Viewshed* layer. The resulting map shows the areas of increased visibility (i.e., the areas that currently do not have visibility, but will have views of proposed and relocated structures). This analysis is represented in the Increased Area of Structure Visibility Map.

VISIBILITY MASK CROSS SECTION

The section depicts how various points in the landscape may have possible visibility of a structure, or how visibility may be blocked by topography or vegetation.



VISIBILITY

The DSM may be visible from the a structure. However, if the DSM is over 5 feet above the DTM (ground elevation), the DSM will block visibility to a person standing under the DSM (below the canopy). This data is masked to reflect this.

DATA = 1

A person standing at this point may have a view of a structure because there is no tree canopy or building blocking their view. This data remains in the analysis because visibility is possible.

NO DATA

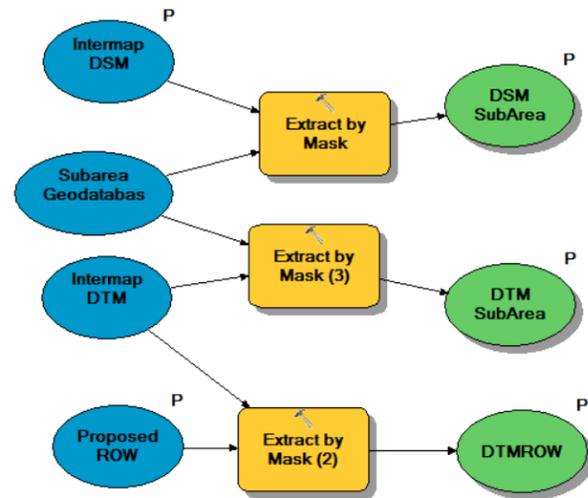
A person standing at this point cannot have a view of a structure because they are under a tree canopy or with/next to a building. This data is removed (or masked) from the analysis because visibility is not possible.

APPENDIX A VIEWSHED MAPPING

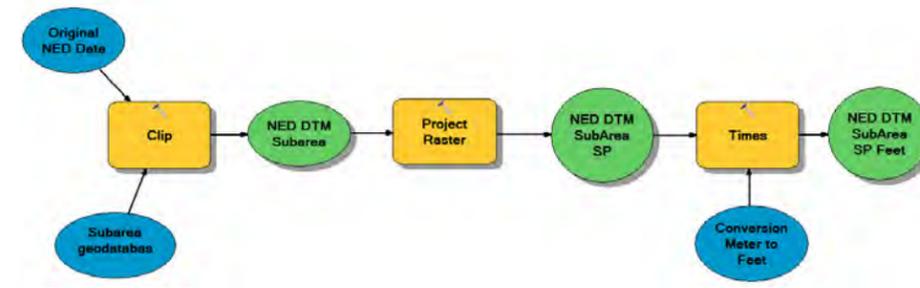
ARCGIS MODELS

The following ArcGIS Models were used to prepare viewshed analysis:

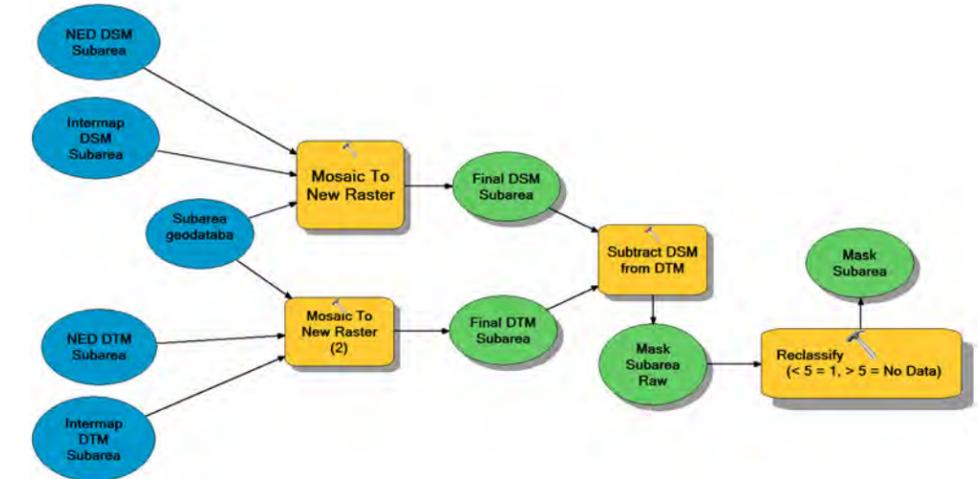
Step 1: Clip InterMap data to each subarea boundary.



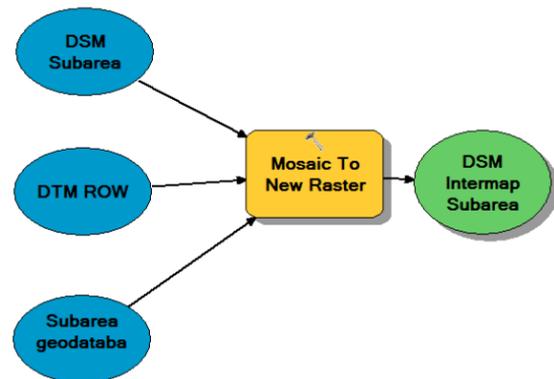
Step 3: Clip NED data to subareas. Convert NED data to same projection as InterMap data and convert heights from meters to feet.



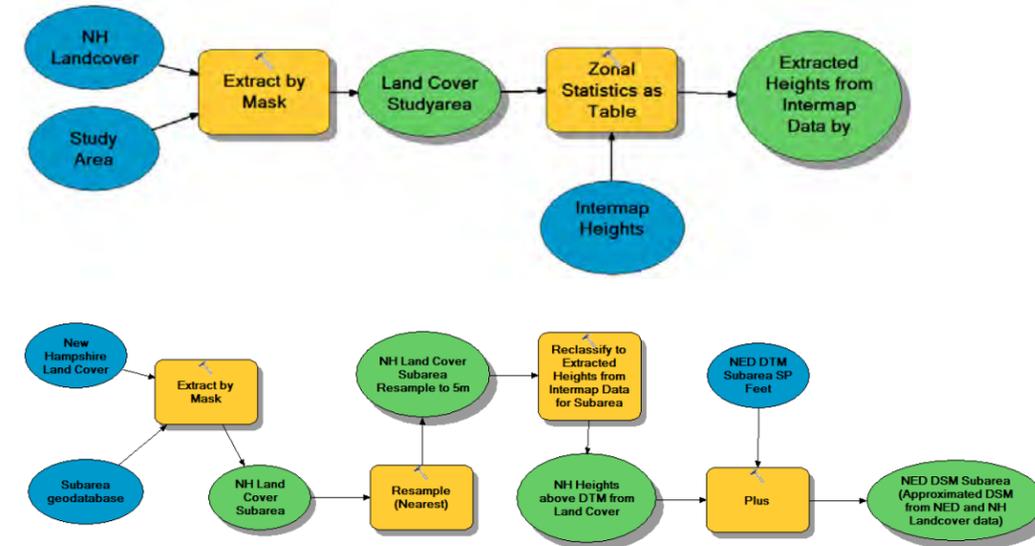
Step 5: Combine the InterMap and NED DSM and DTM files into a final DSM and DTM for each Subarea. Subtract the DTM from the DSM to create the Mask raster used to clip the Viewshed Analysis to area where there are no obstructions.



Step 2: Subtract the cleared right-of-way from the DSM.



Step 4: Clip Landcover data to Subareas. InterMap heights created from subtracting InterMap DTM from InterMap DSM. Use Zonal Statistics to calculate average InterMap Height for each Landcover in each subarea. Then add those heights to the NED DTM to approximate an NED DSM layer for the outer edges of the 5 mile study area.



Step 6: Create viewshed analysis for the existing structures and the final proposed, existing, and relocated structures. Clip viewshed analysis to the areas without vegetation or buildings over 5 feet tall.

