STATE OF NEW HAMPSHIRE

BEFORE THE

NEW HAMPSHIRE SITE EVALUATION COMMITTEE

DOCKET NO. 2015-06

SUPPLEMENTAL PRE-FILED DIRECT TESTIMONY OF CARL MARTLAND

ON BEHALF OF

NORTH COUNTRY SCENIC BYWAYS COUNCIL

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

MARCH 24, 2017

State your name and affiliation.

Carl Martland, Chair, North Country Scenic Byways Council.

Did you submit pre-filed testimony?

Yes.

Did you appear in Concord to respond to questions from NPT, the Public Counsel?

Yes, for two hours on January 27, 2016.

Why are you submitting supplemental testimony?

I would like to respond in more depth to the following questions asked by NPT lawyers and Counsel for the Public that I was unable to answer completely on January 27th:

1. NPT asked me to comment on Mr. DeWan's analysis of visual impacts of the proposed project. I was unable to respond because I had not then reviewed his testimony.
2. NPT asked me if Mr. DeWan had overlooked any scenic resources that would be affected by the proposed NPT project. I was unable to respond because I had not then reviewed his testimony.
3. Public Counsel asked whether I could support my statement in my pre-filed testimony that the proposed project would "destroy the scenic beauty of thousands of potential home-sites in or near the proposed route." Because of the setting, I was then able to reply only in general terms.
4. Public Counsel asked me to clarify my objections to the methodology used in the draft EIS to quantify the overall visual impact of the NPT project on viewsheds and roads in the North Country. Because of the setting, I was then able to reply only in general terms.
5. Public Counsel asked me to supply information about state and federal expenditures on Scenic and Cultural Byways in the North Country. I replied in general terms, but did not have any details with me at that time.

Let's take these questions one at a time, beginning with the questions concerning Terrence DeWan's testimony. Have you read his testimony?

I read the sections related to his visual impact assessment (VIA) methodology and his VIA for Subareas 1 and 2.

Do you have any general comments on Mr. DeWan's testimony?

Yes. There are three major problems with his testimony concerning the visual impacts of the proposed NPT project on northern NH:

1. He did not consider the visual impact of the proposed NPT project on natural and cultural landscapes.
2. He frequently underestimated the potential visual impacts of the project.
3. His visual impact analysis failed to include any locations within 800 feet of a proposed structure.

On January 27th, NPT lawyers asked if Mr. DeWan had left out any locations that should have been included in his analysis. Can you answer that question today?

Yes. He should have shown the effects of the proposed NPT project on the natural and cultural landscapes of northern NH, which include but are not limited to the following:

1. The region in Pittsburg that was once known as the Indian Stream Republic.
2. Ben Young Hill, NH 145 in Clarksville.

3. North Hill Road in Clarksville and Stewartstown.
4. The traditional agricultural district near Bear Rock Road, Heath Road, and Harvey Swell Road in Stewartstown and Colebrook.
5. Kelly Brook Road in Stark and Dummer.
6. The area by Pike Pond in Stark.
7. The agricultural area along the North Side Road in Stark.
8. The traditional agricultural district along North Road, Grange Road and Lost Nation Road in Lancaster.

Why are these landscapes important? First, discuss the importance of the natural landscapes.

This region includes vast areas of natural landscapes that are traversed by few roads and little affected by modern development. It is the beauty and isolation of these areas that attract visitors to the region, that make vacation homes a major portion of residences, and that lead many people to retire in this region.

Why are cultural landscapes important?

The areas crossed by the proposed Northern Pass Route in northern New Hampshire in many cases retain the appearance and appeal of 19th century agricultural development. The on-going Section 106 process for the proposed Northern Pass project has identified a number of areas within one mile of the proposed NPT project that may qualify for designation as state or national historic districts. [1] The National Trust for Historic Preservation has identified the cultural landscapes of northern New Hampshire as a "national treasure," demonstrating that these landscapes are not just important at the local or state level, they are important at a national level.

What is the relevance of these cultural and natural landscapes to the region's Byways?

Together they contribute to the beauty of the region that is the chief attraction of the Scenic and Cultural Byways. A chief mission of the North Country Byways Council is to promote the use, enjoyment and preservation of the scenic and cultural resources found along the Byways.

Have you prepared any presentations that illustrate the effects of the proposed NPT project on natural and cultural landscapes?

Yes. I have prepared two presentations that include descriptions and photographs of the areas that will be affected by the proposed NPT project. I have provided these to NPT in response to their data requests, and I have also attached them to this supplemental testimony:

- "Impact of Northern Pass on North Country Scenic and Cultural Byways," April 13, 2016 (#11 Impact of NP on Byways Pittsburg to Stark 13 April 2016.pdf)
- "The Proposed NPT Project Will Have an Adverse Impact on Views in Locations with Iconic Scenic or Cultural Significance," December 7, 2016 (#6 NPT Impact on NC Byways).

Can you provide some additional information related to the eight natural and cultural landscapes that you have identified?

[1] The Section 106 process supplements the Environmental Impact Assessment by identifying properties that are or could be eligible for listing on the National Register of Historic Places. The consultants for the Section 106 process have prepared what are known as Project Area Forms (PAFs) that include a description of the regions affected by NPT, including maps documenting visual impacts and lists of sites and areas that might qualify for the National Register. The PAFs for the North Country include tables that identify a number of landscapes in the North Country that might meet the qualifications for a Historic District Area. .

As I stated above, the proposed project would create massive industrial infrastructure in locations that today are free of any kind of industrial development. Here are some details concerning the impact of the proposed NP project on the eight landscapes that I have identified:

1. The highly scenic and historic region known as the Indian Stream Republic would be traversed by the proposed NPT project in Pittsburg east of the Canadian border. The steel lattice towers would cross Hall Stream Road, and they would be visible from open farms and fields in this part of Pittsburg. The SEC visited this area in March 2017, and NP representatives showed their photo-simulation of a steel lattice tower that would be right next to the road. However, DeWan did not include this photo-simulation in his testimony.

2. Ben Young Hill, NH 145 in Clarksville. DeWan identified Young Cemetery and Ben Young Hill as "notable points of interest in this section of Route 145." His VIA examines the visual effects at Young Cemetery, where views of the proposed NPT project are restricted, but essentially ignores the nearby views from Ben Young Hill, where up to 20 structures would be visible.

3. The North Hill Road Rural Historic District in Clarksville and Stewartstown is a highly scenic, traditional agricultural district identified by Section 106 consultants. Although the line would be buried along North Hill Road, many towers would be visible from open fields and hillsides along these roads.

4. The traditional agricultural district near Bear Rock Road, Heath Road, and Harvey Swell Road in Stewartstown and Colebrook is another highly scenic area that would be disturbed by views of the proposed towers. The Cohos Trail, which is listed as a potential Historic District Area, goes through this area. [This area is close to the location on Diamond Pond Road that was included in the NPT's visual impact assessment.]

5. The Kelly Brook Road Rural Historic District is another highly scenic, traditional agricultural district in Stark and Dummer that was identified by the Section 106 consultants.

6. The area by Pike Pond in Stark has long been a site of vacation homes; this is another area that the Section 106 consultants identified as a possible Historic District.

7. The highly scenic, open fields along the North Side Road in Stark. The proposed structures would go right across the roads and through the fields, creating an unreasonably adverse impact on the views from the road.

8. The highly scenic, traditional agricultural district along North Road, Grange Road and Lost Nation Road in Lancaster that the Section 106 consultants have identified as a potential Historic District Area. The proposed structures would go right across the roads and fields in this region, creating unreasonably adverse impacts on views from these roads.

Overhead structures of the proposed NPT project would go right through most of these areas, and rows of overhead structures would be visible in the foreground in all of these areas. The visual impacts would be unreasonably adverse for anyone walking, bicycling, or driving along the Scenic and Cultural Byways and local roads in these areas. The visual impacts would also seem unreasonably adverse for anyone considering renting or buying a vacation home or a retirement home.

Did you identify any problems with the scenic and cultural resources that were rated by DeWan?

The assessments of cultural value and scenic impact were too low for many of the areas identified by NPT, including, but not limited to the following:

1. Moose Path Trail (NH 145) in Clarksville. As noted above, the VIA examines the visual effects at Young Cemetery, where views are restricted, but essentially ignores the views from Ben Young Hill, where up to 20 structures would be visible. The scenic significance and overall visual impacts from Ben Young Hill should be "medium-high" or "high".

2. Where the proposed overhead lines would cross the Moose Path Trail (NH 26) in Millsfield. DeWan rates the overall visual impact as "low", despite his photo showing that the project will cross NH 26 right where there is a view of Dixville Peak in the direct view of the driver – an industrial frame for an area that DeWan rates as having "high visual quality".

3. Signal Mountain Fire Tower. All of the VIA ratings are too low for this site:

    a. The visual effect of a string of 24 steel lattice towers slicing through an otherwise totally natural area is more than "medium". This view is similar to KOP LI-5 in the draft EIS, the view from S. Kinsman toward Bog Pond, where a string of 34 towers is visible, the closest of which is 1.2 miles away. LI-5 was rated "strong (adverse and possibly unreasonably adverse)", and the similar view from Signal Mountain Fire Tower would also be "strong – possibly unreasonably adverse".

    b. User expectations are "high", not "low". If someone is willing to spend the time and effort required to climb to this fire tower on this wooded summit, where the fire tower affords the only view, then it is safe to assume that their expectations are "high." If someone looked at DeWan's photos of magnificent scenery in every direction from the fire tower, their expectations would also be high when deciding to take a hike up Signal Mountain.

    c. While few people may make the effort to reach this scenic location, once they arrive they will stay for a long time to enjoy the views. DeWan rates the "nature, extent and duration of public use" as low, because very few people visit this spot. "Medium" would be a better assumption, as the extraordinary quality of the view and the ability to spend considerable time at the summit would offset the small number of visitors.

    d. The overall visual impact should be at least "medium", not "low-medium".

4. Big Dummer Pond. DeWan rates user expectations as low, as it is remote, in a commercial forest, and within sight of wind turbines that are visible from portions of the access roads and the pond. His overall rating is "medium", but it should be at least "medium-high".

    a. Visual impact is more than "Medium". The photo simulation for this area is the most egregious of all the simulations in DeWan's report for areas 1 & 2, as there are steel lattice structures going up a ridge line against the sky. This may be a logging area, but NPT's photos highlight what is a beautiful vista across Big Dummer Pond. No industrial structures are visible and no evidence of logging disrupts the view.

    b. As with Signal Mountain Fire Tower, someone making the effort to reach this remote location will likely have "high" expectations for what they will find at the end of their trip.

    c. The pictures provided by DeWan document the beauty of the area, as little or no evidence of commercial logging operations is visible.

    d. This is a rare instance in which DeWan acknowledges the relevance of access roads and views from ponds. He does not include the visual effects of the proposed NPT structures on access roads when conducting his VIAs for Coleman State Park, Christine Lake, or Forest Lake State Park. If existing structures on access roads affect user expectation at their

destination, then putting the proposed NPT lines across and along access roads should be acknowledged as a problem in all such situations.

5. Christine Lake, Stark. Visitors to Christine Lake will have to pass under the power lines a short distance before reaching the parking lot by the beach. If they have a canoe, they will have a fine view of the new structures once they get out on the lake. Nevertheless, DeWan rates the overall visual impact as "none", because the towers would not be visible from the parking lot. This undeserved rating is especially egregious, since in his conclusions, DeWan uses Christine Lake as an example of a scenic resource where the overall visual impact would be "none".

6. Woodland Heritage Scenic Byway (NH 110) in Stark. The overall visual impact is rated "low-medium" because the visual effect would be low. DeWan discounts the views of the towers at the crossing, because they would be 100 and 350 feet away, and he discounts the intermittent views of towers while driving along the byway.

    a. The views of the towers where they cross the road would be "unreasonably adverse" using the methodology of the draft EIS.

    b. Byway users will stop to see the famous covered bridge, and many will cross through the bridge to explore the agricultural landscapes on the North Side Road or to head up to Christine Lake, the Kaufmann Forest, the Percy Summer Club, or the Percy Peaks trailhead. All of these visitors would have to pass under the lines, both coming and going, and they would have many views of the towers both along the local roads and at their destination.

    c. The visual effects of the NPT project are very large for the town of Stark; this village is the highlight of the NH 110 portion of the Woodland Heritage Scenic Byway; and the covered bridge is one of the most-photographed scenes in New Hampshire. User expectations for visitors to Stark are "high" rather than "medium", and the visual impact of the proposed project on the byway and cultural landscapes of Stark is also "high" rather than "medium". The overall visual impact of the project on this portion of the byway is not "low-medium", but at least "medium-high".

7. Presidential Trail Scenic Byway Overlook (US 2, Lancaster). DeWan's overall rating is "low-medium" because he rates the visual effect as "low". At this point, where there are wonderful views of the mountains, four or five monopoles would be visible at distances of 0.19 to 0.26 miles, whereas the existing structures are hidden below the tree line. A short distance down US 2, motorists would drive under the lines. Anyone driving along US 2 would have multiple views of the towers as they approached the overlook. The visual effect for this portion of the byway is not "low", but "medium", which would make the overall visual impact "medium" rather than "low-medium."

8. Weeks State Park. DeWan's assumptions are questionable for each element of his VIA. The overall visual impact is at least "medium" rather than "low".

    a. Visual effect: DeWan's rating is "low", based on his photo simulation. The draft EIS had a photo simulation from the same spot, namely the East Overlook, and they rated the impact as "moderate - likely to be considered adverse by a casual observer." The fact that the plan now calls for monopoles rather than steel lattice towers would diminish the visual effect slightly, but not enough to reduce the rating from "moderate" to "weak" (the draft EIS rated the view as 23, and the range for moderate was 18-26. Thus the draft EIS was closer to "Strong" than to "Weak".)

    b. User expectation: people go to this state park primarily for the views, and their expectations are high. DeWan describes East Overlook as "a viewing location that already has

considerable evidence of human development, including the existing transmission corridor, roadways, and commercial and residential development." Actually, in his photo of this view, the view is dominated by mountains and forests, and the evidence of human development is a few scattered fields and the distant small town of Lancaster. In his methodology, DeWan actually gives up to 5 points for interesting development; a purely natural scene gets 0 points on that portion of his visual quality scale. In my opinion, the views of Jefferson and of various fields if anything add to rather that detract from the view and from expectations. I therefore would rate user-expectations as nothing less than "high".

c. Extent nature and duration of public use: DeWan rates this as medium, which to me is an astounding assertion. Some people travel the Mountain Road in part to see the historic sites, but most come to enjoy the views from the overlooks, the tower, and the summit. People spend time at the overlooks and the summits precisely to look at the views. I have even met people who climb the Mountain Road more than once a week throughout the year.

9. Forest Lake State Park: the overall visual impact is at least "medium", not "low".

   a. As with Big Dummer Pond and Christine Lake, DeWan downplays the importance of views to boaters. He notes the residential properties on the side of the Lake, but only because "view expectation will be moderated by the residential development along the shoreline of the lake." He does not discuss how the proposed project would affect the views from those lakeshore residential properties.

   b. As with the view from the East Overlook in Weeks State Park, he does not consider this type of human development to be an asset that his methodology indicates should enhance the quality of the view.

   c. DeWan states that the tops of monopoles will be visible at a distance of 1.3 miles, but the White Mountain PAF (map E) shows that up to five towers will be visible at distances of only 0.3 to 1.0 miles from the lake and along the shore of the lake where the residences are located.

10. The Presidential Range Trail Scenic Byway (US 302 in Bethlehem). DeWan identifies three scenic resources near the place where the proposed project crosses the byway: the byway itself, Baker Pond, and the Rocks Estate. His overall rating for the Rocks Estate is only "low-medium", despite the high cultural significance and visual quality of this site. His visual effect rating for Baker Pond is only "medium" because he asserts that trees and an existing building will block most of the 95-foot tall transition station from view. He ignores the fact that byway users who stop to enjoy the view over Baker Pond will have to look directly at the 95-foot tall transition station when they turn around to get back in their cars, and he does not provide an overall rating for this section of the byway where the overall visual impact to a casual observer would certainly be "high".

Do you have any comments on the photo simulations included in DeWan's report?

My main comment concerns the selection of Key Observation Points (KOP) rather than the technical merits of the simulations. The KOP analysis failed to include sufficient examples to illustrate the entire range of visual impacts that would result from the proposed Northern Pass Project.

Can you give an example of something that was left out?

DeWan did not include a single simulation of any structure that would be visible from a distance of less than 1,000 feet.

Why is that an important omission?

It is the close observations of structures that are most egregious, and there will be close observations of structures along roughly 75 miles of right-of-way in the North Country from Pittsburg to Bethlehem.

What are some other omissions?

The major omissions can be summarized as follows:

1. No simulation of a transition station near a road crossing.

2. No simulation of any tower or monopole at or near a road crossing.

3. No simulation of a row of towers or monopoles crossing a field in an important cultural landscape.

4. No simulation of views of towers from a trail crossing.

5. No simulations of towers from existing or potential home sites that would be less than 1000 feet from the center line of the ROW.

6. No simulations facing down the new ROW in a scenic, natural area from a distance of less than a half-mile.

Did the draft EIS provide simulations of what the project would look like in these types of settings?

Yes. In my pre-filed testimony, I have already included a list of the KOP simulations conducted for the draft EIS.

How do the KOPs selected for US DOE in the draft EIS compare to the KOPs selected by DeWan for NPT?

DeWan's choice of Key Observation Points is notably different from those selected by VIA experts for the analysis published in the draft EIS for the NPT project, as shown in Table 3. In this table, I have shown the number of sites, not the number of simulations, as DeWan in some locations had multiple simulations of much the same view. The two studies had about the same number of photo simulations, but nearly half of the simulations in the draft EIS were for distances less than 800 feet, whereas DeWan did not have a single such simulation. The draft EIS had only four simulations for distances greater than 1,800 feet, whereas DeWan had ten. DeWan's choice of KOPs makes it appear that the proposed project will nowhere have much of a visual impact.

Table 3 Comparison of KOPs selected for NPT and for US DOE

Distance to Nearest Structure	DeWan (NPT)	Draft EIS (US DOE)
0 to 200 feet	0	2
200 to 800 feet	0	5
800 to 1,800 feet	1	4
1,801 to 4,500 feet	5	0
4,501 feet to two miles	8	3
Greater than two miles	2	1
Total	16	15

Did you compile a list of the KOPs that DeWan used for the northern portion of the proposed NPT project?

Yes. See Table 4.

Table 4 Characteristics of KOPs in DeWan's VIA for the Proposed NPT Project

		Steel Lattice	Mono-poles	Trans. Station	Against Skyline	Closest	Farthest
A	**Sub-Area 1, Pittsburg to Stark**						
1	Moose Path/Ct. River Scenic Byway (Rt. 145) - North of Young Cemetery		5		3	0.38	1.01
2	Moose Path/Ct. River Scenic Byway (Rt. 145) - Underground Road Crossing		3	1	2	0.48	0.96
3	Diamond Pond Road		5			0.91	1.15
4	Little Diamond Pond, Coleman State Park		8		8	1.69	2.12
5	Coleman State Park Entrance		4			1.42	1.75
6	Millsfield Pond	2				1.06	1.3
7	Moose Path Scenic Byway, Millsfield	6				0.98	1.58
8	Signal Mountain Fire Tower,Millsfield	24				1.39	4.69
9	Big Dummer Pond, Dummer	8			2	0.52	1.35
10	Pontook Reservoir/Moose Path Scenic Byway (Rt. 16), Dummer	6				2.15	2.53
11	Woodland Heritage Scenic Byway (Rt. 110), Stark (facing northwest)	2	3		2 mono	0.48	0.48
12	Woodland Heritage Scenic Byway (Rt. 110), Stark (facing north)	5				0.47	0.48
13	Victor Head Cliff, Nash Stream Forest	22 total				1.45	3.49
14	Milan Hill State Park	1				4.67	4.67
B	**Sub-Area 2 Northumberland to Bethlehem (NH 302)**						
1	Presidential Range Trail Scenic Byway (Rt. 2) Overlook, Lancaster, facing east		4			0.19	0.26
2	Presidential Range Trail Scenic Byway (Rt. 2) Overlook, Lancaster,facing southeast along Rt. 2		5			0.26	0.36
3	Weeks State Park, east overlook facing east		8			1.14	1.23
4	Weeks State Park, east overlook facing southeast		19			1.23	3.09
5	Mountain View Grand Hotel		6			1.37	1.52
6	Burns Pond, Whitefield, facing southwest		11		3	0.64	2.02
7	Burns Pond, Whitefield, facing west		3			0.54	0.56
8	The Rocks Estate, Bethlehem	8	7			0.49	2.26

Are you aware of any photo simulations that DeWan chose not to include in his report?

Yes. DeWan had access to photo simulations for at least one location where a steel lattice tower would be located at a roadside, namely the site on Hall Stream Road in Pittsburg that was visited by the SEC in March 2016. He also had access to the photo simulations and methodologies used in the draft EIS. As an expert in VIA, he was certainly aware of the principle that the KOP analysis should cover the range of visual impacts that would be caused by the project. Failing to include any simulations of views from less than 1,000 feet is a serious short-coming of his analysis.

Why do you say that failing to include any simulations of views from less than 1,000 feet is a serious short-coming?

Because of these omissions, DeWan's KOP analysis provides a totally misleading impression of the aesthetic impacts of the project. The experts who conducted the VIA for the draft EIS included photo simulations of one or more examples of each type of view left out of DeWan's KOP analysis. In every instance where structures were visible from less than 800 feet, the experts working for DOE rated the visual impact as "severe – unreasonably adverse". In all instances where structures were visible 800 to 1,800 feet away, the visual impacts were likely to be "strong – adverse and possibly unreasonably adverse depending upon the setting." These are the kinds of views that would distress anyone living, walking, jogging, bicycling, canoeing, riding or considering to rent, build or buy property near the proposed structures of the NPT project.

Have you prepared a presentation to illustrate the rankings used in the VIA for the draft EIS?

Yes. I prepared a presentation entitled "Simulated Views of HVDC Structures from Various Key Observation Points" and dated 12/7/16. This document presents 13 photo simulations from the draft EIS in order of increasing severity. I provided a copy of this presentation to NPT (#3 Simulated Views of HVDC Structures.pdf), and I have attached a copy to this supplemental testimony.

Now let's consider the questions asked by Mr. Roth, counsel for the public. Why do you say that the proposed project would "destroy the scenic beauty of thousands of potential home-sites in or near the proposed route?"

In the North Country, the proposed project would place tall overhead structures along 38 miles of new right-of-way in Coos County. The experts who conducted a visual impact assessment for the draft EIS of the NPT project showed photo simulations that, taken together, indicate that unobstructed views of the project from less than 800 feet would be rated "severe" and deemed "unreasonably adverse" by a casual observer. Views from 800 to 1,800 feet would like be rated "strong" and deemed "adverse and possibly unreasonably adverse" by a casual observer. Someone deciding to build or buy a home can hardly be considered a casual observer, so they would likely deem any views within 1,800 feet to be unreasonably adverse.

There would be more than 16 thousand acres of land within 1,800 feet of the centerline of the 38 miles of the new right-of-way for overhead lines in Coos Country.[2] If a typical home site is 1 to 10 acres, then clearly there are thousands of potential home sites that could be affected just along this 38-mile section of the proposed route. The same logic could be applied to that portion of the route where new overhead lines would be added to an existing corridor in areas where there is still open space available for development. In developed areas, the unreasonably adverse impact of the project would affect the values of existing homes as well as the potential for development of new home-sites.

[2] An acre is 43,560 square feet, and there would be 722 million square feet of land within 1800 feet of the center-line of 38 miles of new right-of-way (1,800 feet on each side x 2 sides x 5280 feet/mile x 38 miles = 722 million). Thus, there would be more than 16 thousand acres (722 million sq. ft. / 43,560 sq. ft. per acre = 16,582 acres) of land within 1,800 feet of the center line of the new overhead right-of-way.

On to the next question asked by the Counsel for the Public. How can you clarify your objections to the methodology used in the draft EIS to quantify the overall visual impact of the NPT project on viewsheds and roads in the North Country?

Using an average value for the scenic impact ignores the fact that the viewshed expands when a new row of tall structures is constructed. In an earlier comment submitted to the SEC, I suggested using an aggregate measure that multiplied the average scenic rating by the area of the viewshed so as to reflect both the increase in average intensity of visual impacts and the increase in the area over which transmission lines and structures would be visible.

Table 1 provides an example that compares the two approaches, using data from the draft EIS for the NPT project for the North Country. According to the draft EIS, the average visual magnitude would increase 45% from 1.11 to 1.61, which might seem to be a large increase. However, the viewshed of the transmission lines would increase by 165% from 20 to 53 square miles. Taking both factors into consideration, as I have suggested, the aggregate visual magnitude would increase by 284%, which I believe to be a better reflection of the visual impact of the proposed project in this area.

Table 1 Visual Impact of Alternatives 1 and 2 in the draft EIS

		Alternative 1 No Northern Pass	**Alternative 2 Proposed Project**	**Increase**
	Viewshed Measures			
1	Land area of Viewshed	20 sq. mi.	53 sq. mi.	165%
2	Average Visual Magnitude	1.11 (very low to low)	1.61 (very low to low)	45%
3	Aggregate Visual Magnitude (Sq. mi. of viewshed x average visual magnitude)	20 * 1.11 = 22.2	53*1.61 = 85.3	284%

Source of data: Draft EIS Table 4-68 and pp. 4-93 to 4-96

Another approach that reaches the same conclusion would be to consider the overall impact on views and aesthetics within the viewshed of the proposed project. The average impact for the proposed project would still be 1.61 for its 53 square mile viewshed. However, the average impact for the base case would be much less when averaged over that same 53 square mile area:

- Average visual impact in the 20 square-mile viewshed of the existing transmission lines and structures: 1.11
- Average visual impact of existing transmission lines and structures in the 33 square-mile viewshed where structures would only be visible if the NPT project were constructed: 0 (it is zero because no structures are visible today)
- Average visual impact of the existing transmission lines and structures for the entire 53 square-miles: 0.42 (the weighted average of 1.11 for 20 sq. miles and zero for 33 sq. miles)
- Increase in average visual impact from 0.42 today to 1.61 if the proposed NPT project were constructre: 284% (the same as shown in the above table)

This discussion may make it easier to understand why I advocate using an aggregate measure rather than just looking at the increase in the average visual magnitude.

Did you apply a similar approach to the impact of the proposed project on roads?

Yes. Table 2 shows the relevant information for roads. Once again, the increase in the region affected is much greater than the increase in the average visual magnitude. The aggregate measure shows an increase of 145%, which is far greater than the 18% increase in average visual impact.

Table 2 Visual Impact of Alternatives 1 and 2 on Roads in the draft EIS

		Alternative 1 No Northern Pass	Alternative 2 Proposed Project	Increase
	Road Measures			Increase
1	Miles of Roads	21	45	114%
2	Average Visual Magnitude	2.18 (low)	2.49 (low to moderate)	18%
3	Aggregate Visual Magnitude	21*2.18 = 46	45*2.49 = 112	145%

Source of data: Draft EIS Table 4-69, pp. 4-94 to 4-96, and p. 4-117

Now consider the average impact for the base case when average over the 45 miles of roads affected by the project:

- Average visual impact in the 21 miles of road within the viewshed of existing project: 2.18
- Average visual impact in the 24 miles of road where structures would only be visible if the NPT project were constructed: 0 (it is zero because no structures are visible today)
- Average visual impact for the entire 45 miles of roads: 1.02 [the weighted average of 2.18 for 21 miles and zero for the other 24 miles = (2.18*21 + 0*24)/45 = 1.02]
- Increase in average visual impact from 1.02 to 2.49: 145% (the same as shown in the above table)

The Counsel for the Public also asked about the extent of federal funding for Byways in northern New Hampshire. What information can you provide?

From 1992 to 2012, Federal Highway Administration funded 86 projects in NH as part of the National Scenic and Cultural Byways Program. Of the total investment of $11.3 million in NH, just over half was spent on 35 projects in the North Country. There were several types of projects funded in the North Country:

- Planning (10%)
- Information centers (24%)
- Overlooks and Pulloffs (50%)
- Bridges, boardwalks and trails (16%)

Why is this information relevant to the proposed NPT project?

The federal support for the Byways indicates a long-term commitment to improving Byways in NH and throughout the country. The initial establishment of the program recognized the importance of promoting and preserving the scenic and cultural resources that justify designation of special roads as Byways.

Do you have anything further to add?

The following four presentations, which I referenced above, should be considered part of my supplemental pre-filed testimony:

- "Impact of Northern Pass on North Country Scenic and Cultural Byways," April 13, 2016 (#11 Impact of NP on Byways Pittsburg to Stark 13 April 2016.pdf)
- "The Proposed NPT Project Will Have an Adverse Impact on Views in Locations with Iconic Scenic or Cultural Significance," December 7, 2016 (#6 NPT Impact on NC Byways.pdf).
- "Simulated Views of HVDC Structures from Various Key Observation Points," December 7, 2016 (#3 Simulated Views of HVDC Structures.pdf).

The Proposed NPT Project Will Have an Adverse Impact on Views in Locations with Iconic Scenic or Cultural Significance:

Selected Examples

Carl D. Martland

Chair, North Country Scenic Byways Committee

NPT Photo simulation of Proposed NPT crossing of Hall River Road in Clarksville

(This area is part of the culturally significant region that once declared itself the “Indian Stream Republic” in order to avoid dual taxation from US and Canada)

Views of massive tower next to road would be deemed “Unreasonably Adverse” using the methodology from the draft EIS for proposed NPT project (Compare KOP BT-1)

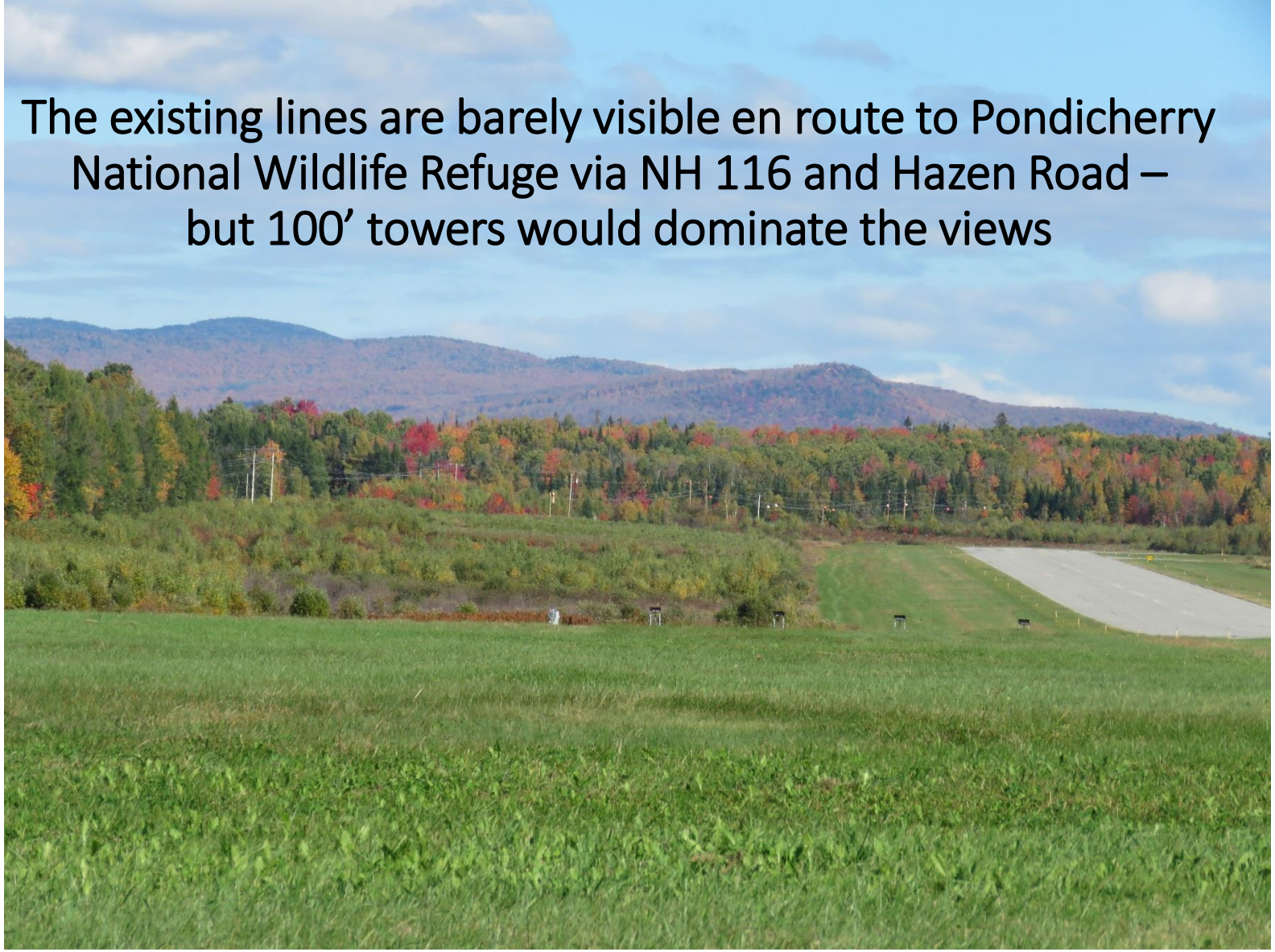
Photo taken of NPT simulation on 3/17/16 while on bus trip with SEC through Coos County

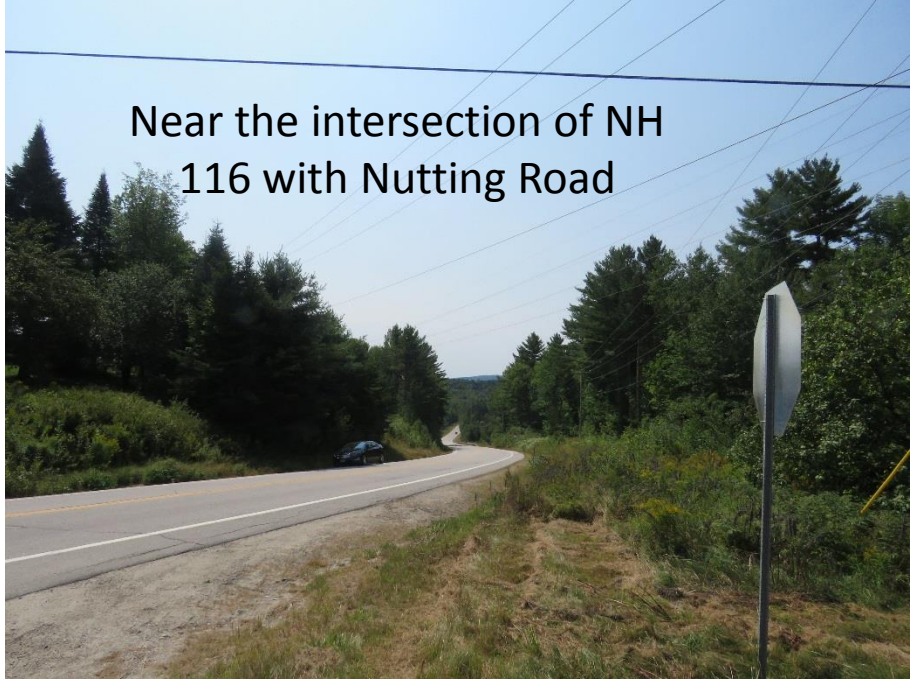
View of proposed transmission lines from NH 145, Clarksville (Moose Path Trail)

View of several towers crossing a ridge at a distance of less than a half mile would be deemed “adverse” and maybe “unreasonably adverse” using methodology in draft EIS for NPT (compare KOP WD-3)

Photo taken of NPT simulation on 3/17/16 while on bus trip with SEC through Coos County

The existing lines are barely visible en route to Pondicherry National Wildlife Refuge via NH 116 and Hazen Road – but 100’ towers would dominate the views





Near the intersection of NH 116 with Nutting Road

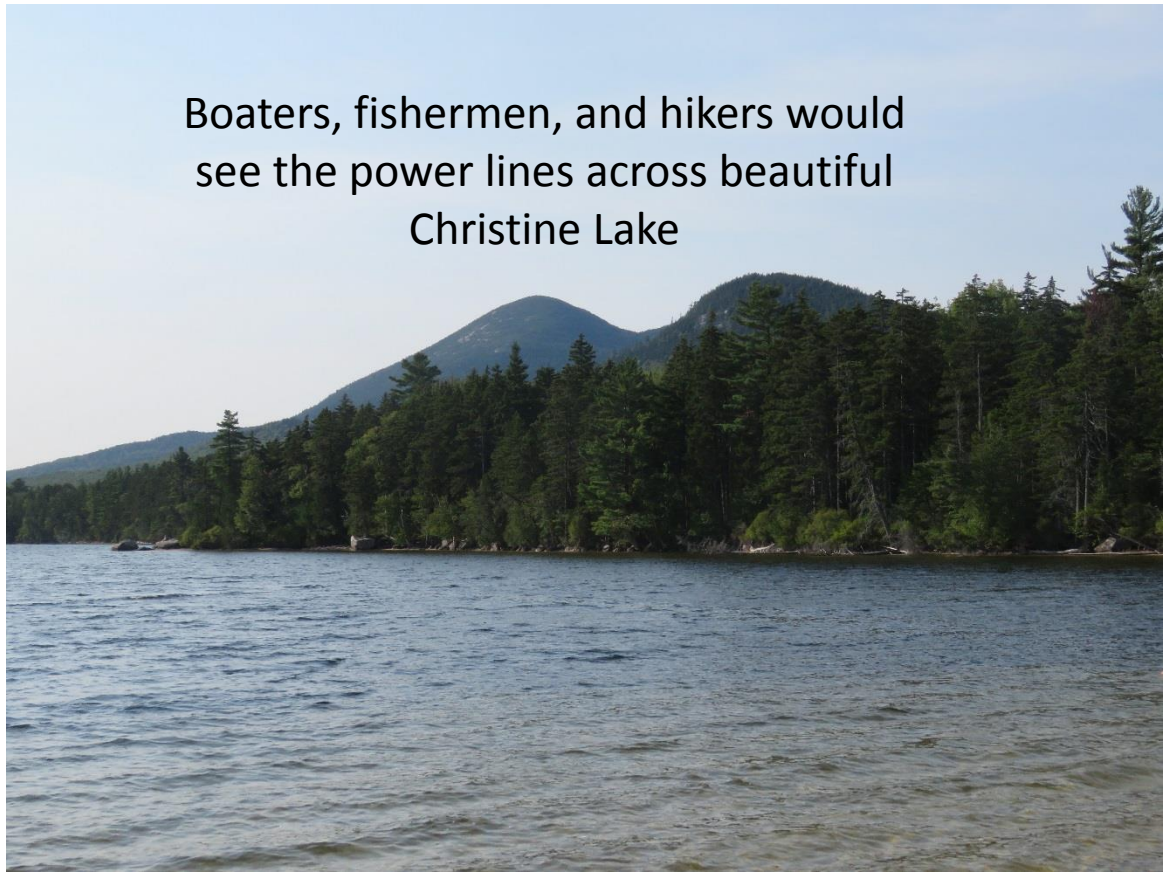
Near the intersection of NH 116 with Hazen Road, which provides access to the airport and to the National Wildlife Refuge

The Existing Eversource ROW Crosses all Major Roads Heading to the Historic Center of Whitefield and Forest Lake State Park

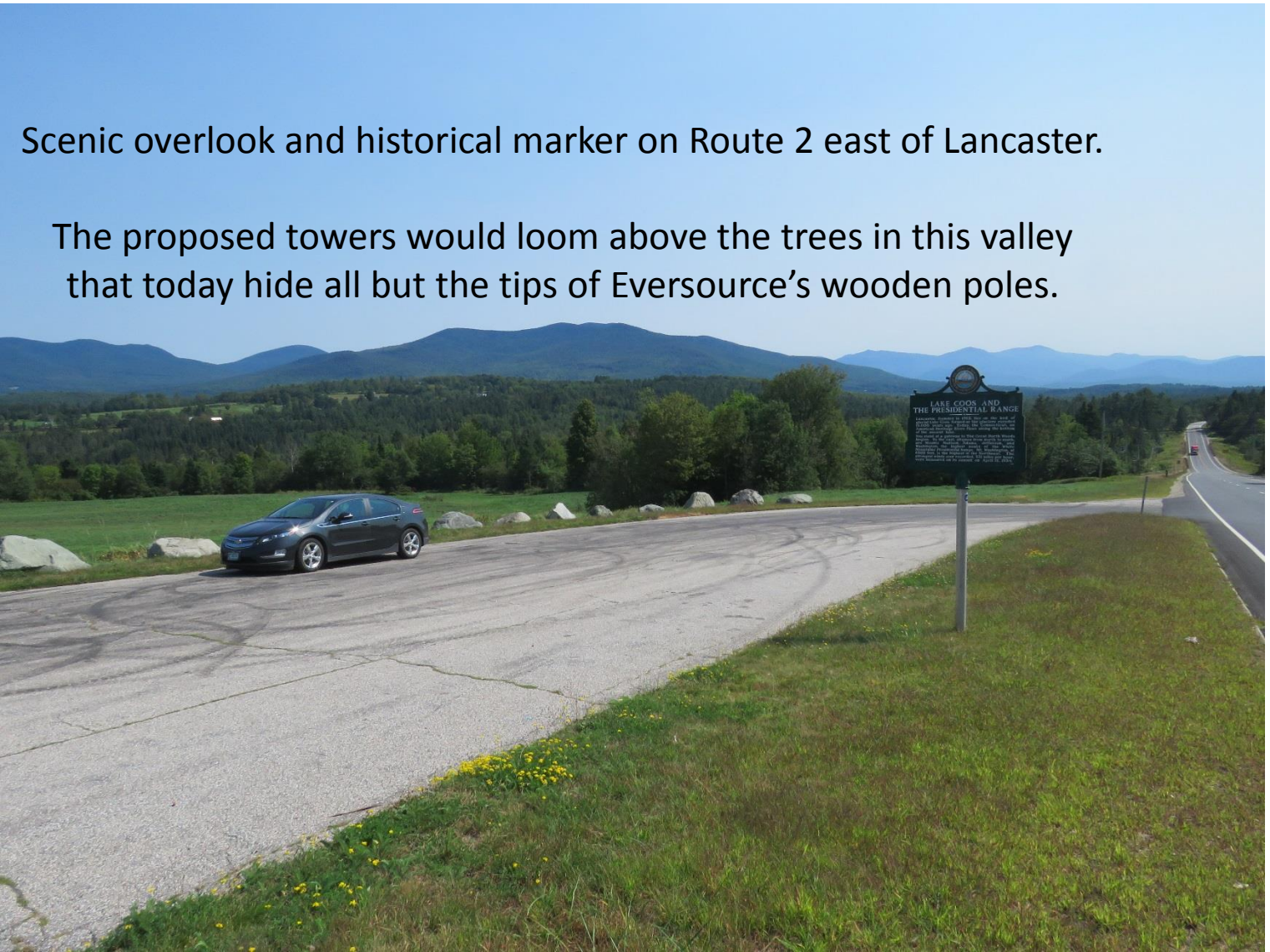
The Proposed NPT Lines would be visible from the Woodland Heritage Byway when approaching historic Stark from either the east or west

Residents, ATV riders and other sightseers would see massive towers crossing the fields and farms on Northside Road in Stark

Boaters, fishermen, and hikers would see the power lines across beautiful Christine Lake



Towers would mar the approaches to the historic center of Lancaster and despoil scenic vistas along local scenic roads in Lost Nation



Scenic overlook and historical marker on Route 2 east of Lancaster.

The proposed towers would loom above the trees in this valley that today hide all but the tips of Eversource's wooden poles.

Heading from Lancaster town center toward Lost Nation

Historic Lancaster

Mt. Prospect's East Overlook

The proposed NPT towers would cross the valley approximately a mile from this site. According to KOP LA-2, the visual impact would be "adverse."

NPT would like to build a massive transition station where the current ROW crosses US 302 in Bethlehem

The foliage views will not be neatly framed by massive lattice towers, and the huge transition station will be totally out of sync with the scenery across the pond on the other side of the road.

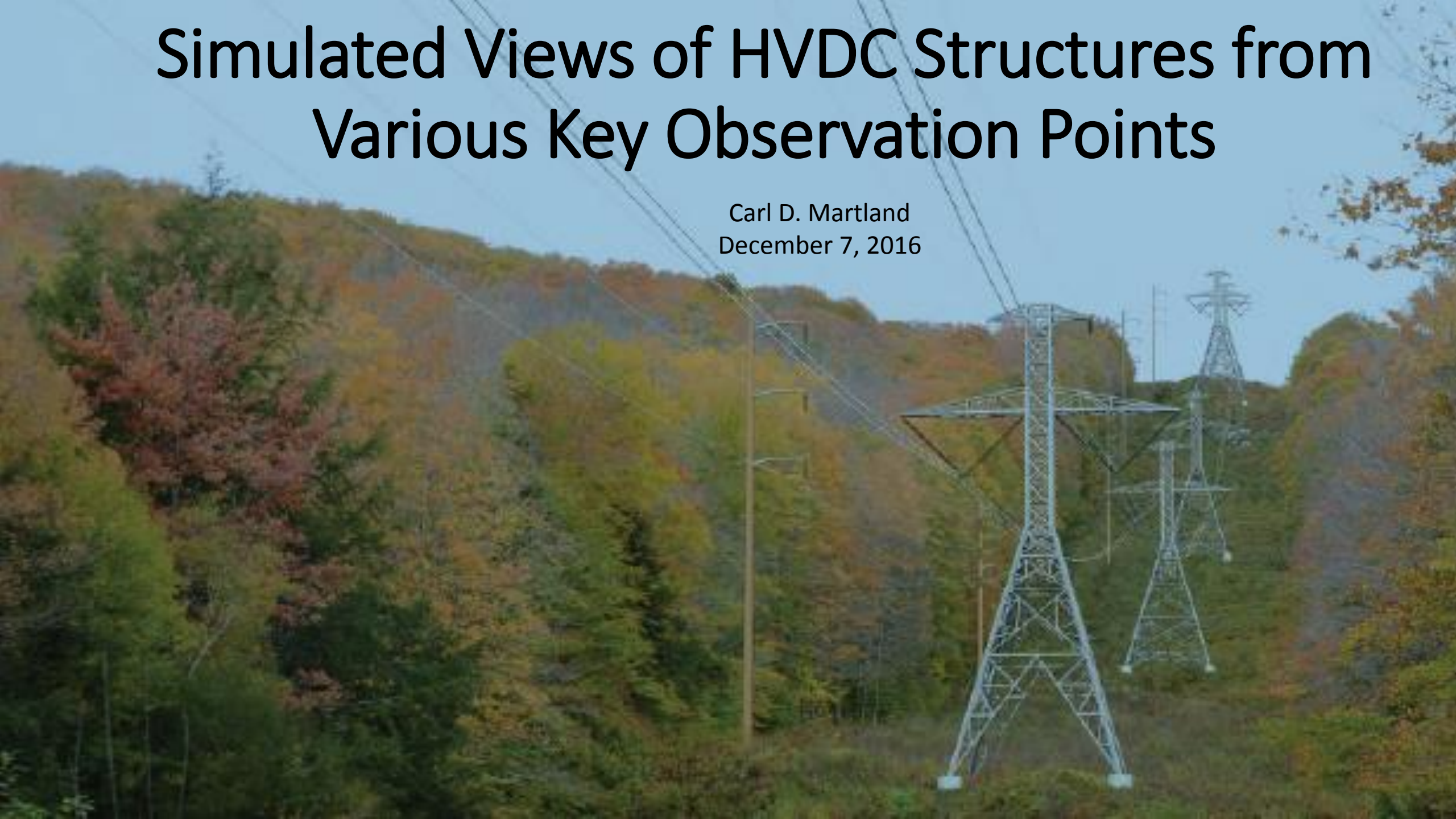
Nation Grid HVDC Lines Phase II
Crossing River Heritage Trail (Route 25)

Views to west, south, and north show lack of development in area where three rows of towers dominate what would otherwise be attractive local views.

Scenic Byways & NH Tourism

Simulated Views of HVDC Structures from Various Key Observation Points

Carl D. Martland
December 7, 2016



Using KOP Analysis as a Guide to Judging the Impact of HVDC Structures

- Consultants for US Department of Energy took photographs of views from “Key Observation Points” that would be affected by the proposed construction of Northern Pass.
- Experts in visual impact analysis used these photographs to determine the extent to which the proposed HVDC structures would affect observers.
- Experts rated impacts on a range varying from “negligible” to “severe”

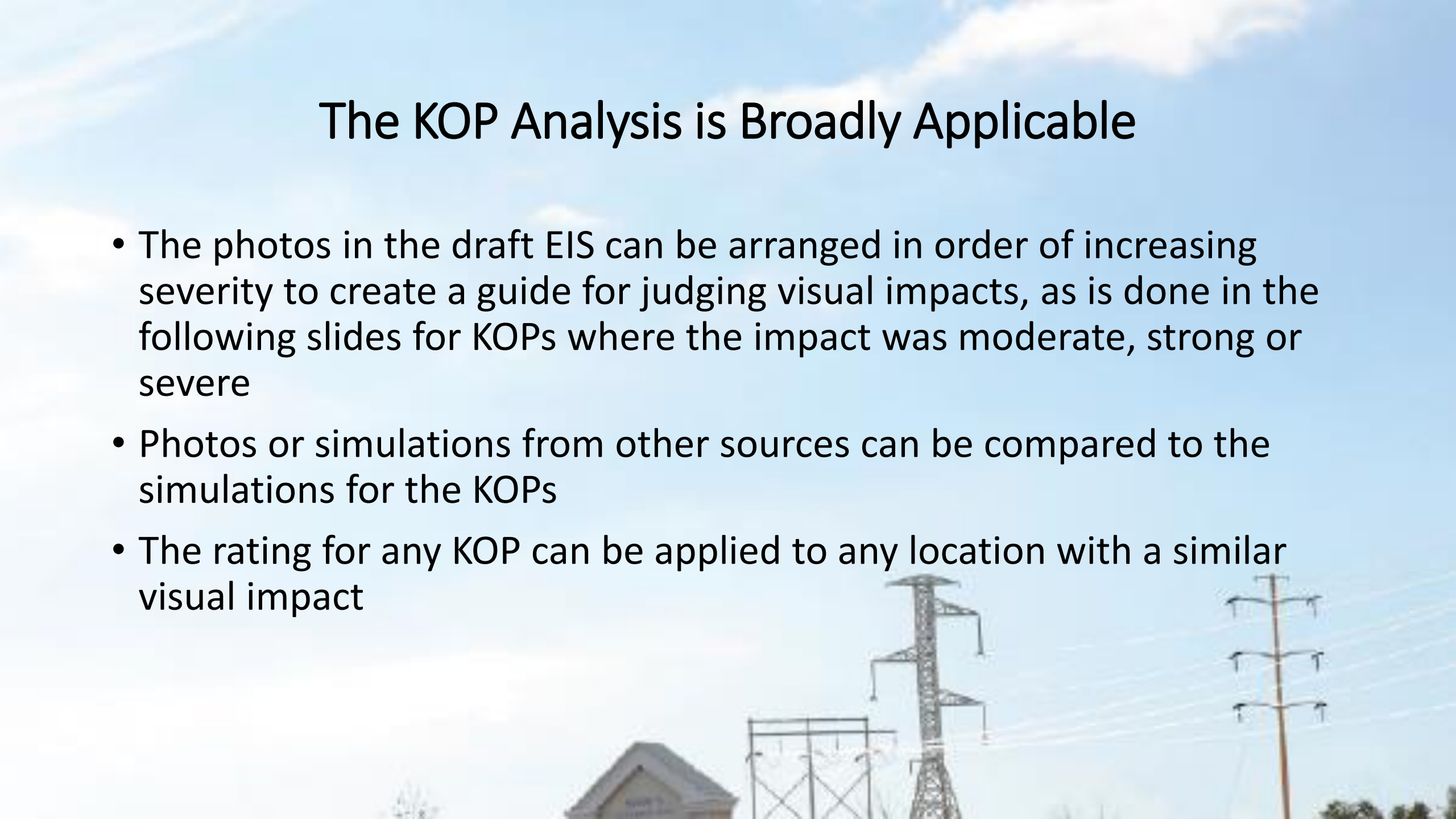
Results of the KOP Analyses

Visual changes were described in terms related to the experience of a "casual observer":

- Negligible: probably not noticed by a casual observer
- Weak: noticeable, but not likely considered to be important
- Moderate: clearly noticeable; likely considered adverse
- Strong: large visual impact is adverse and may be considered unreasonable depending upon the sensitivity of the setting
- Severe: very large visual impact is likely to be considered unreasonably adverse

The KOP Analysis is Broadly Applicable

- The photos in the draft EIS can be arranged in order of increasing severity to create a guide for judging visual impacts, as is done in the following slides for KOPs where the impact was moderate, strong or severe
- Photos or simulations from other sources can be compared to the simulations for the KOPs
- The rating for any KOP can be applied to any location with a similar visual impact



LA-2 View from summit to row of towers in valley: Moderate (23)

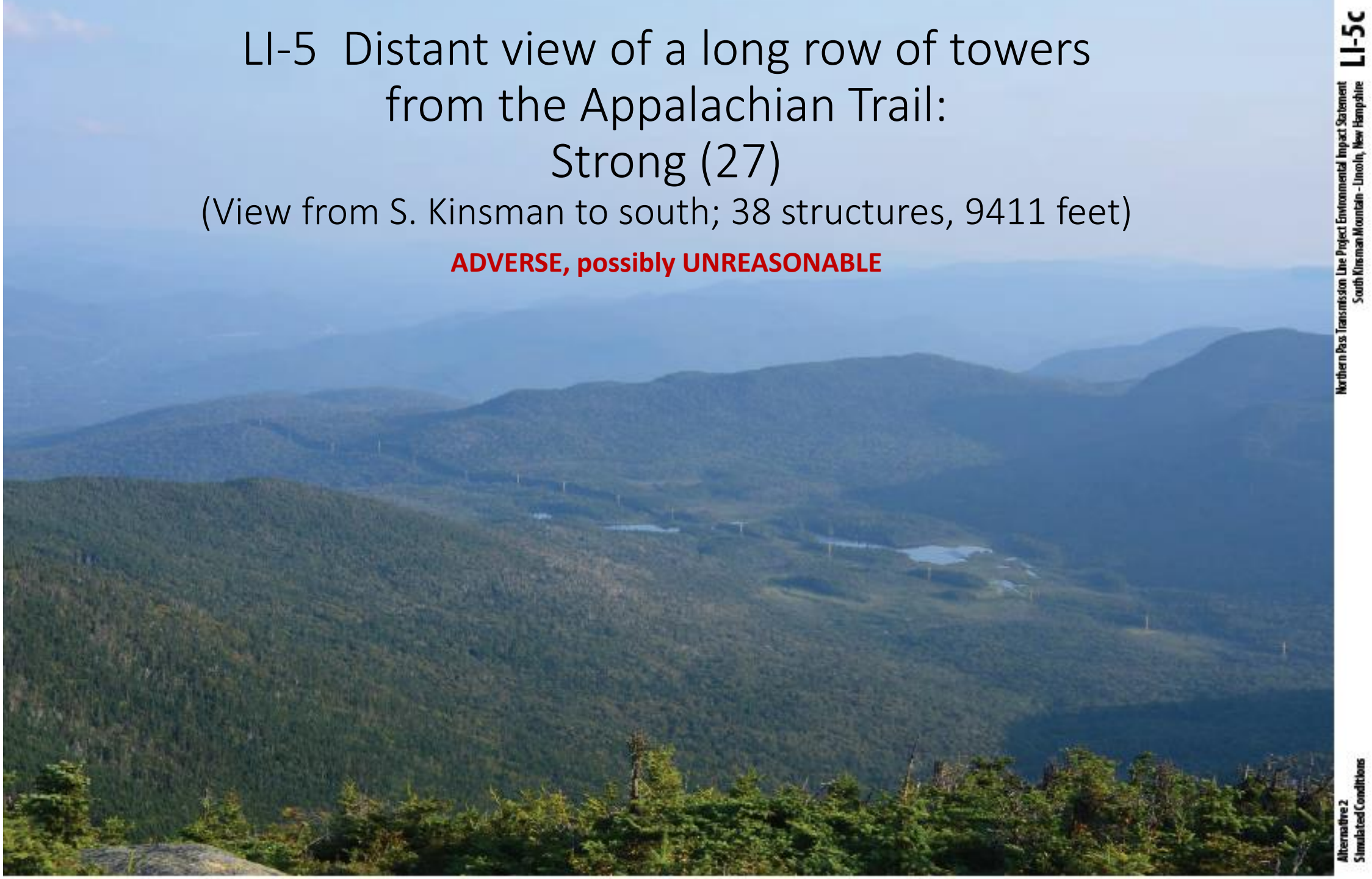
(Weeks State Park - View toward Jefferson: 34 structures, 5981 feet)

ADVERSE

LI-5 Distant view of a long row of towers from the Appalachian Trail: Strong (27)

(View from S. Kinsman to south; 38 structures, 9411 feet)

ADVERSE, possibly UNREASONABLE



CL-1: Transition Station and towers: Strong (29)

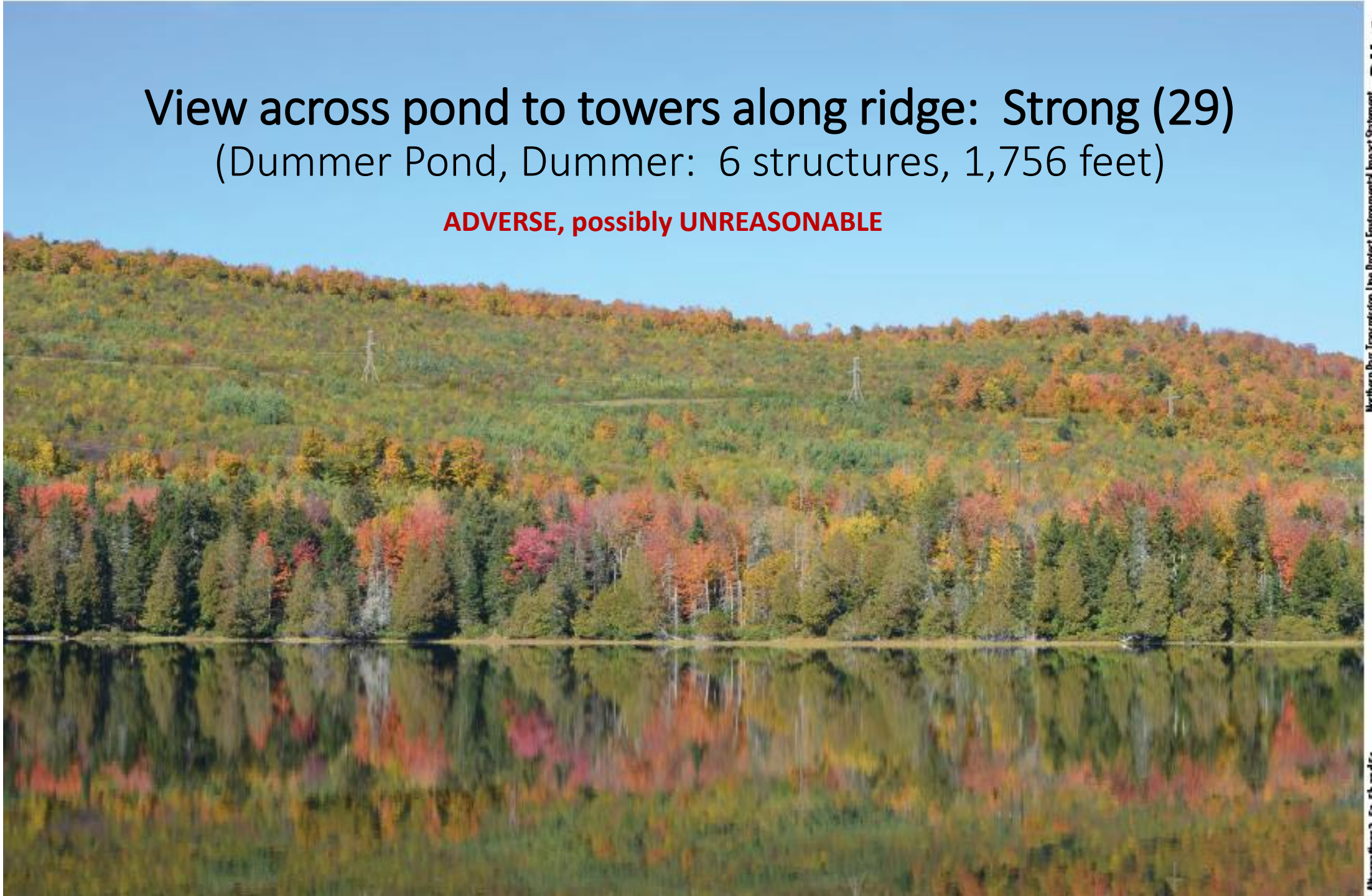
(Clarksville: 5 structures, 1450 feet)

ADVERSE, possibly UNREASONABLE

View across pond to towers along ridge: Strong (29)

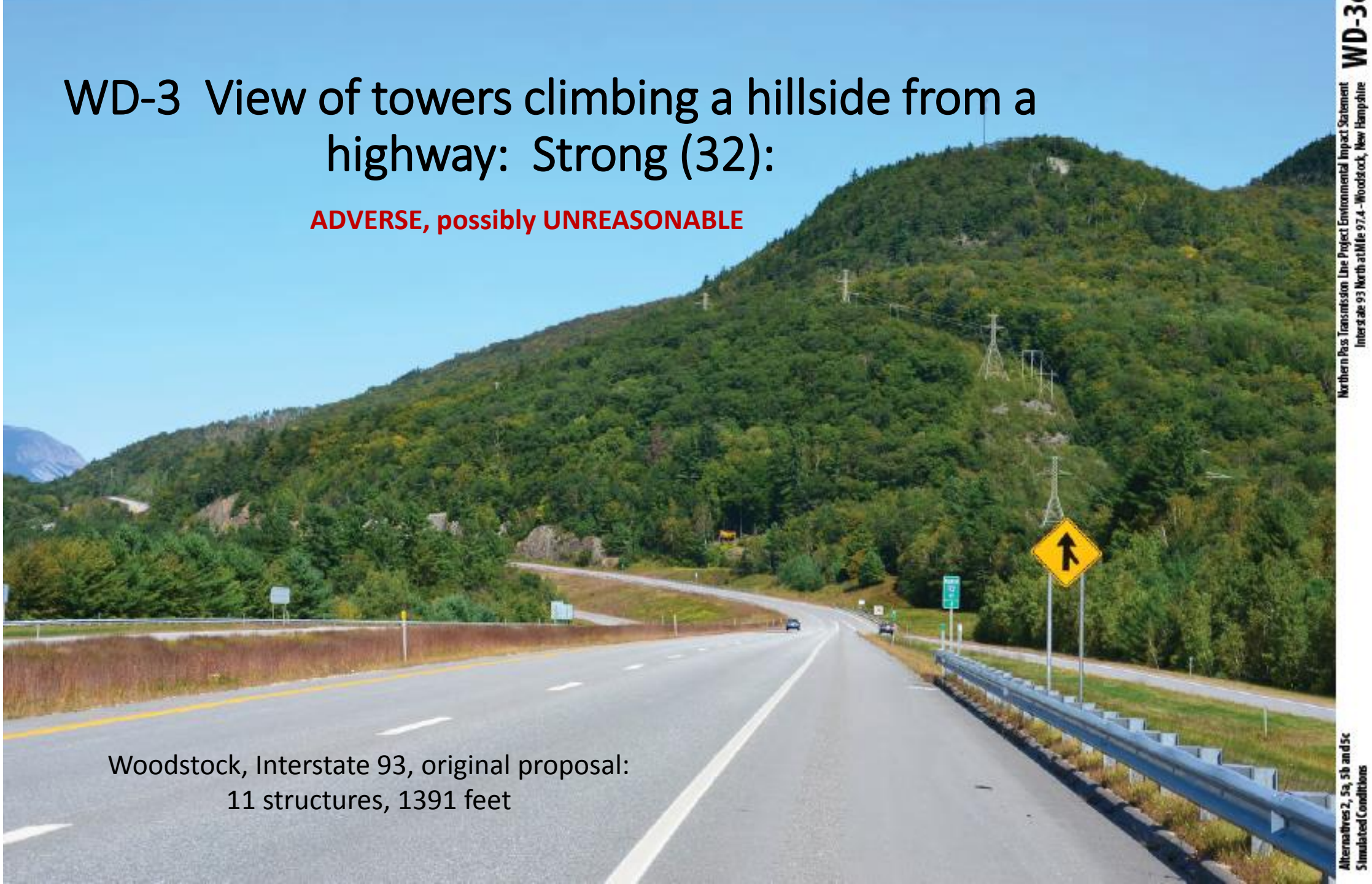
(Dummer Pond, Dummer: 6 structures, 1,756 feet)

ADVERSE, possibly UNREASONABLE



WD-3 View of towers climbing a hillside from a highway: Strong (32):

ADVERSE, possibly UNREASONABLE



Woodstock, Interstate 93, original proposal:
11 structures, 1391 feet

CO-4 Rows of towers viewed across a pond: Strong (33)

(Turtletown Pond, Concord: 13 structures, 1,048 feet)

ADVERSE, possibly UNREASONABLE

UNREASONABLY ADVERSE

EA-3 Looking directly down rows of towers and monopoles: Severe (36)

(Easton, original plan: 25 structures, 126 feet)

CO-1 Towers in Commercial Setting: Severe (36)

(Concord: 7 structures, 749 feet)

UNREASONABLY ADVERSE

Northern Pass Transmission Line Project Environmental Impact Statement
Loudon Road/NH Route 9 - Concord, New Hampshire
CO-1c

Alternatives 2, 5a, 5b and 5c
Simulated Conditions

CA-1 Rows of poles and towers diagonally across a hillside: Severe (37)

(Campton: 12 structures, 649 feet)

UNREASONABLY ADVERSE

BT1 - Steel lattice tower near roadside: Severe (40)

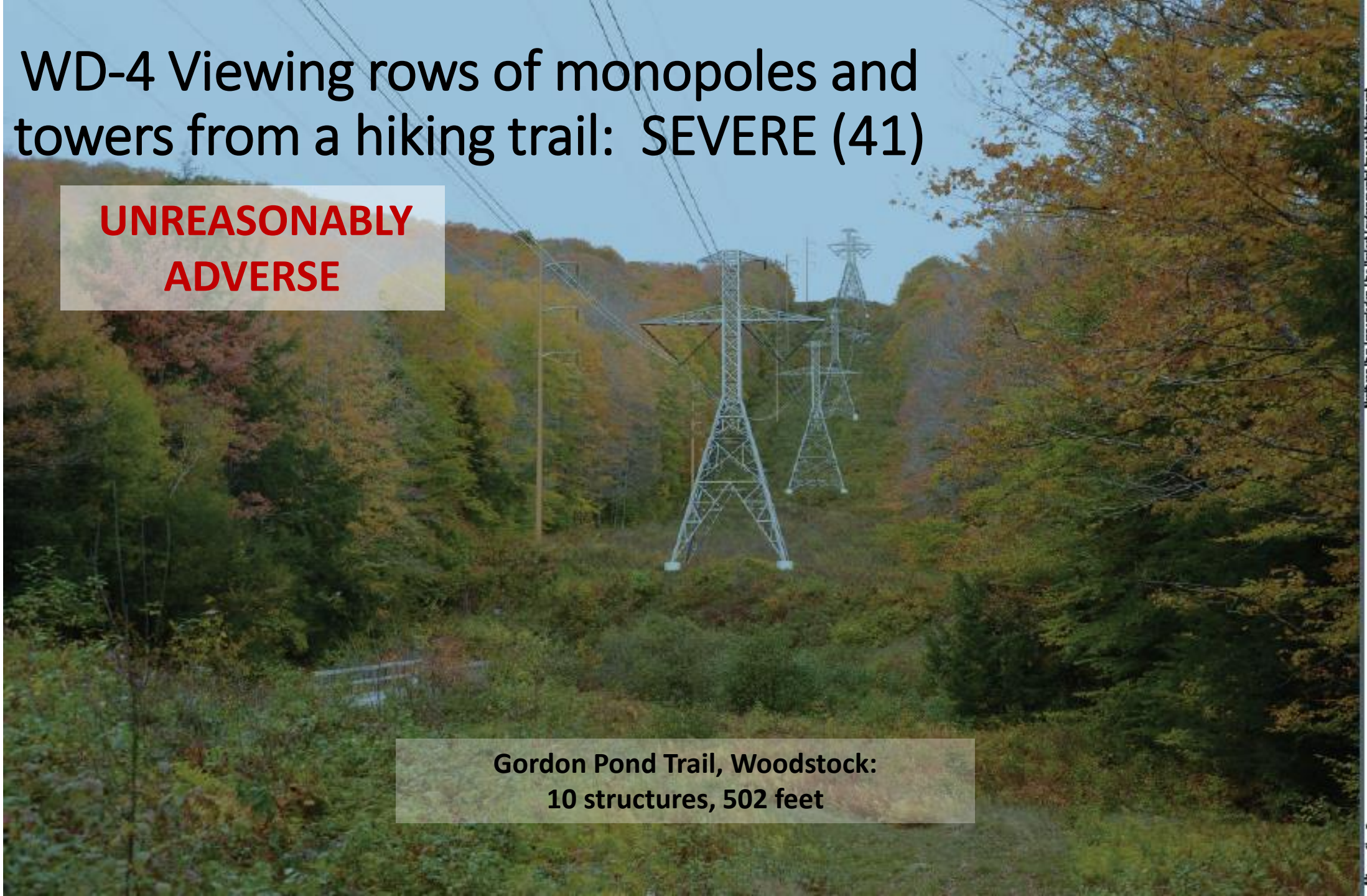
(Bethlehem: 509 feet, 3 structures)

UNREASONABLY ADVERSE

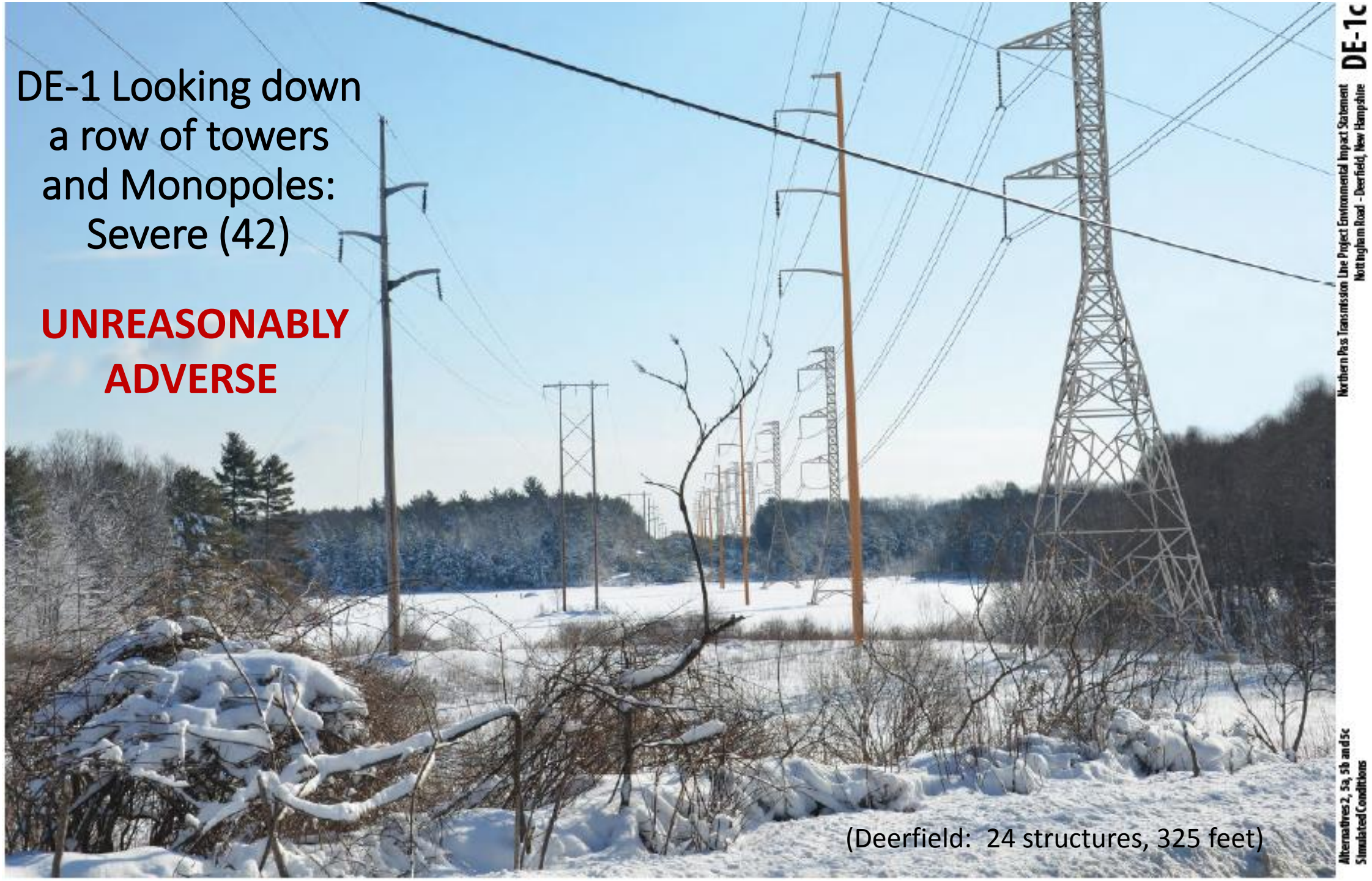
(Rt. 302, Bethlehem, original plan; the new plan calls for a transition station on the other side of the road)

WD-4 Viewing rows of monopoles and towers from a hiking trail: SEVERE (41)

UNREASONABLY ADVERSE



Gordon Pond Trail, Woodstock:
10 structures, 502 feet


DE-1 Looking down a row of towers and Monopoles: Severe (42)
UNREASONABLY ADVERSE
(Deerfield: 24 structures, 325 feet)
Northern Pass Transmission Line Project Environmental Impact Statement
Nottingham Road - Deerfield, New Hampshire
DE-1c
Alternatives 2, 5a, 5b and 5c
Simulated Conditions


LI-4 Trail crosses ROW near tower: Severe (44)
(Appalachian Trail, Kinsman Ridge, Lincoln: 1 structure, 117 feet)
UNREASONABLY ADVERSE
Northern Pass Transmission Line Project Environmental Impact Statement
Appalachian Trail Crossing - Lincoln, New Hampshire
LI-4c
Alternative 2
Simulated Conditions

Conclusions

- Views of towers from less than 800 feet will be considered unreasonably adverse by a casual observer
- Views of towers from less than 2000 feet will be considered adverse, and possibly unreasonably adverse
- Views of towers in sensitive settings from up to two miles could be considered unreasonably adverse
- Vast regions of the North Country are beautiful cultural or natural landscapes that can certainly be considered “sensitive”
- Hikers and other tourists who come to the North Country in order to enjoy the scenery are much more than casual observers!

The proposed NPT Project will have an unreasonably adverse impact on views throughout the north country!

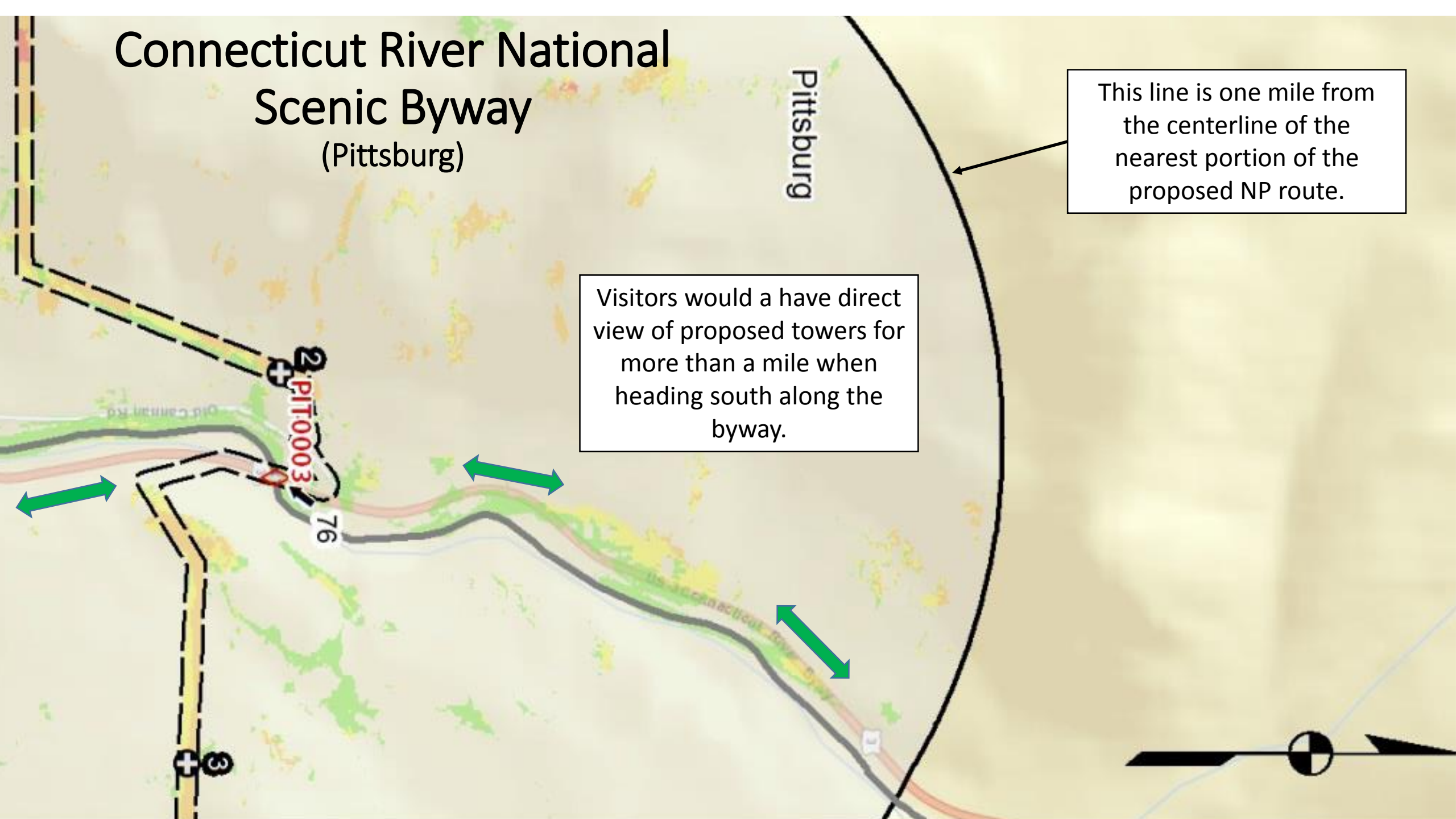
Impact of NP on North Country Scenic & Cultural Byways: Pittsburg to Stark

Carl D. Martland

Chair, NCSBC

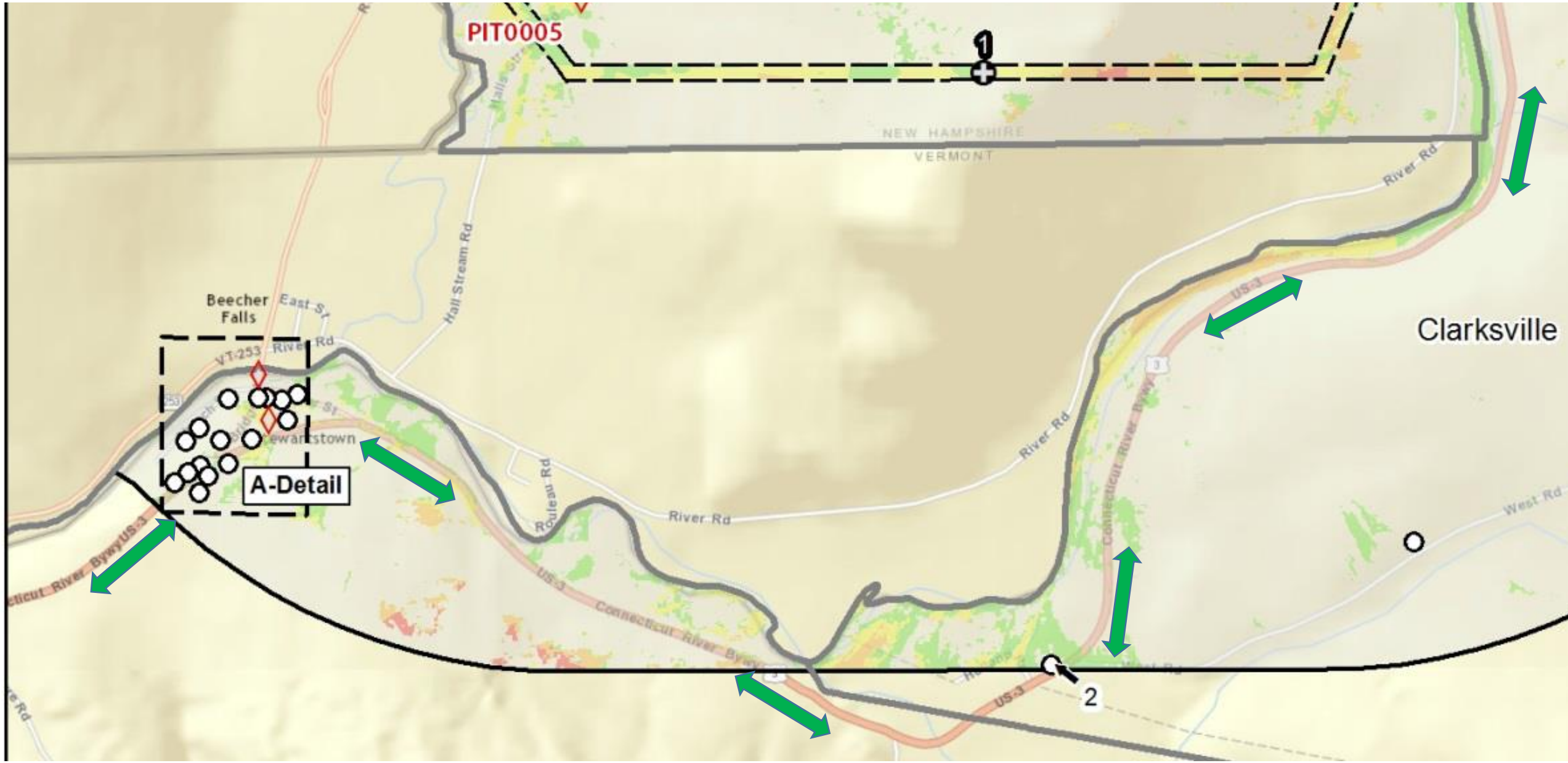
April 13, 2016

Connecticut River National Scenic Byway
(Pittsburg)



Connecticut River National Scenic Byway

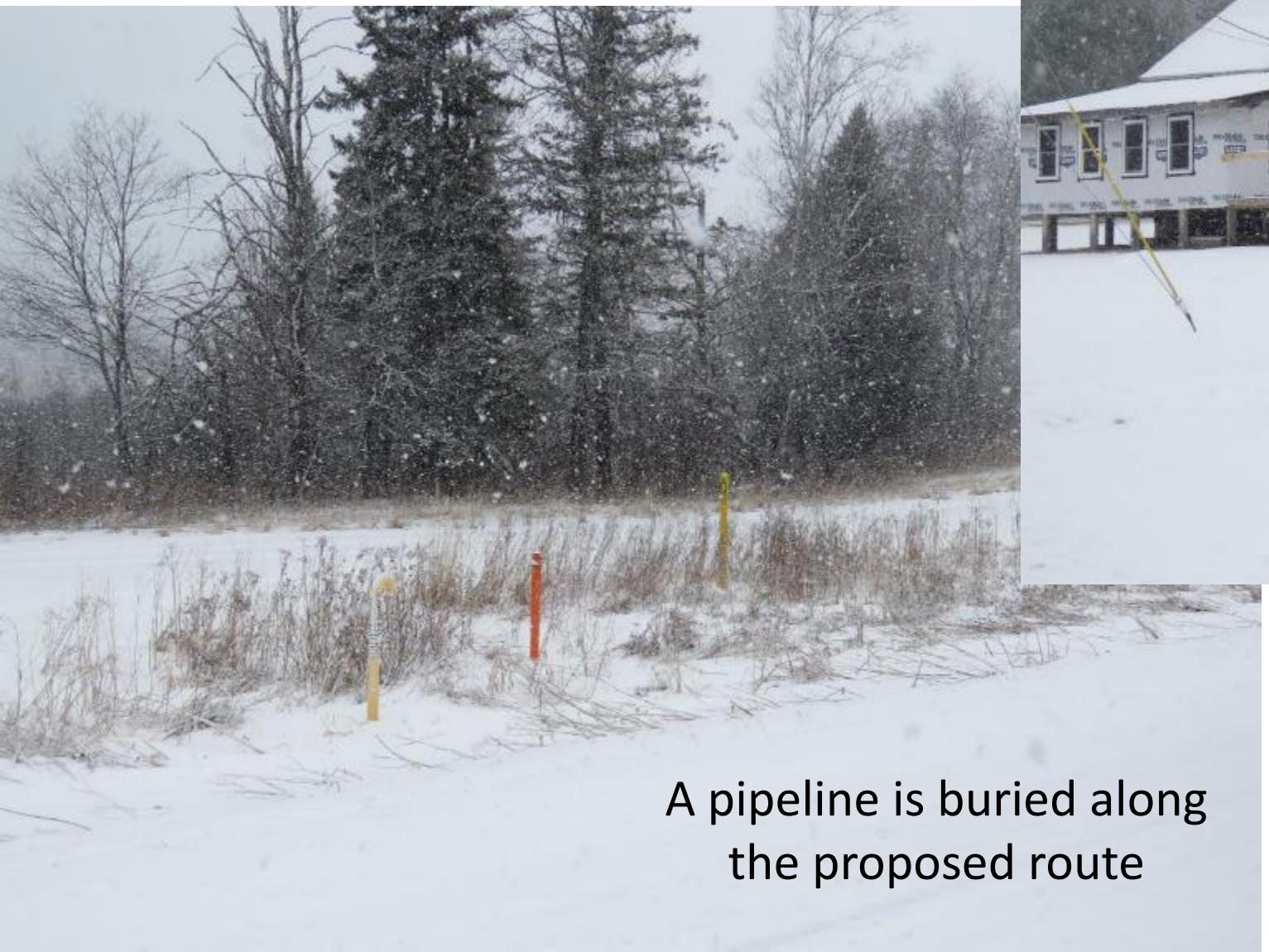
(Beecher Falls, VT and Clarksville, NH)



A Side Trip Off the Connecticut River National Scenic Byway: Riding Through the Indian Stream Republic

Visiting the Proposed NP Border Crossing in Pittsburg with the SEC

March 20, 2016



A pipeline is buried along the proposed route

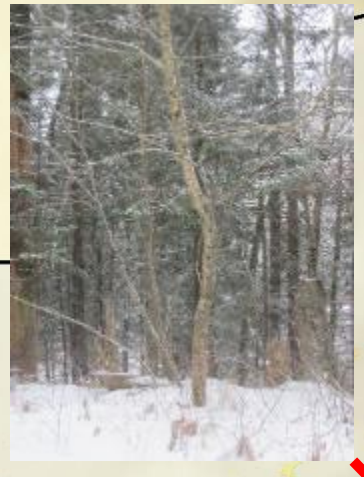
Abutters are not in favor of the project

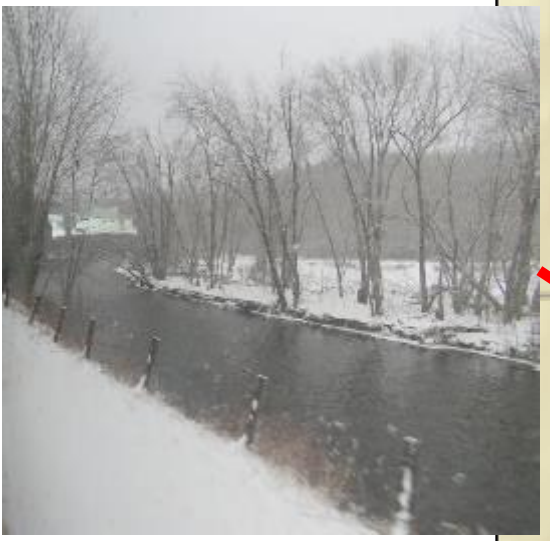
Photo Simulation Presented to SEC by NP

March 7. 2016

Using criteria from the US DOE's draft EIS, the proposed tower would have a "severe, unreasonably adverse" visual impact for anyone living near or traveling under the lines

Pittsburg

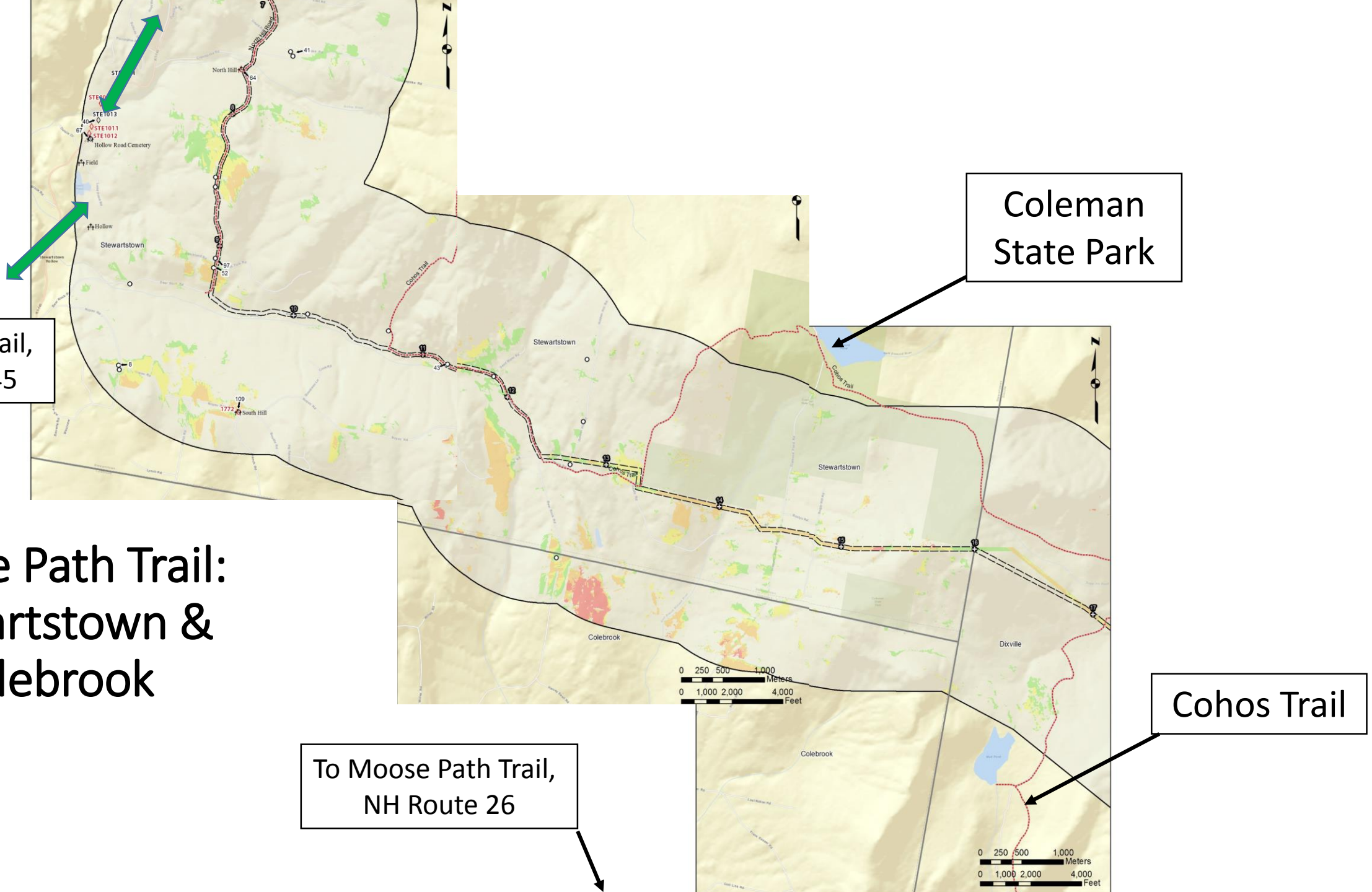




PIT0006
46
PIT0007
PIT0004
106
PIT0005
PIT0003
76
1
2
3
A-Detail
Clarksville
66
2

NP will be visible along a three-mile stretch of the Connecticut River National Scenic Byway

Moose Path Trail: Stewartstown & Colebrook



Stewartstown & Colebrook: Magnificent 19th Century Views Over Historic Farms toward Open Fields and Forested Hillsides

Stewartstown & Colebrook: Outstanding Vistas Attract New Residents

Stewartstown & Coos County: The Cohos Trail Attracts Visitors Year-Round

The Cohos Trail follows Heath Road in Stewartstown, less than 500 feet from the proposed NP transmission lines for a distance of more than a half mile. Photos were taken from the same spot on Heath Road (near NP Mile 13).

Diamond Pond Road, Colebrook

(NP Photo Simulation Presented to SEC, during site visit, March 7, 2016)

Coleman State Park

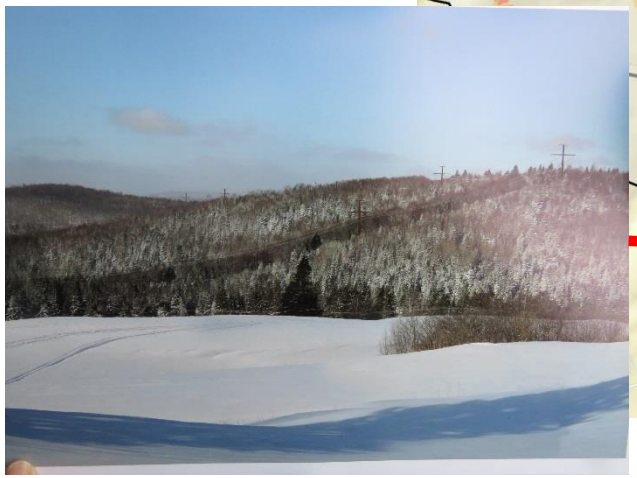
(NP Photo Simulation Presented to SEC, during site visit, March 7, 2016)

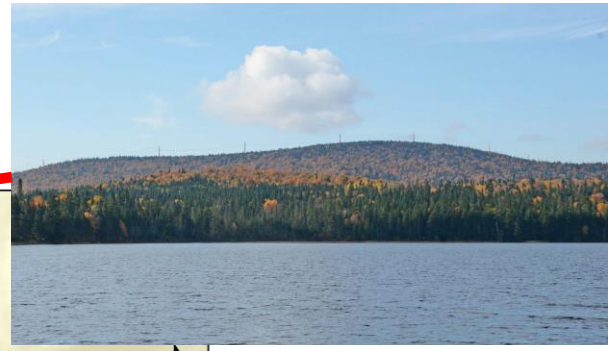
Stewartstown

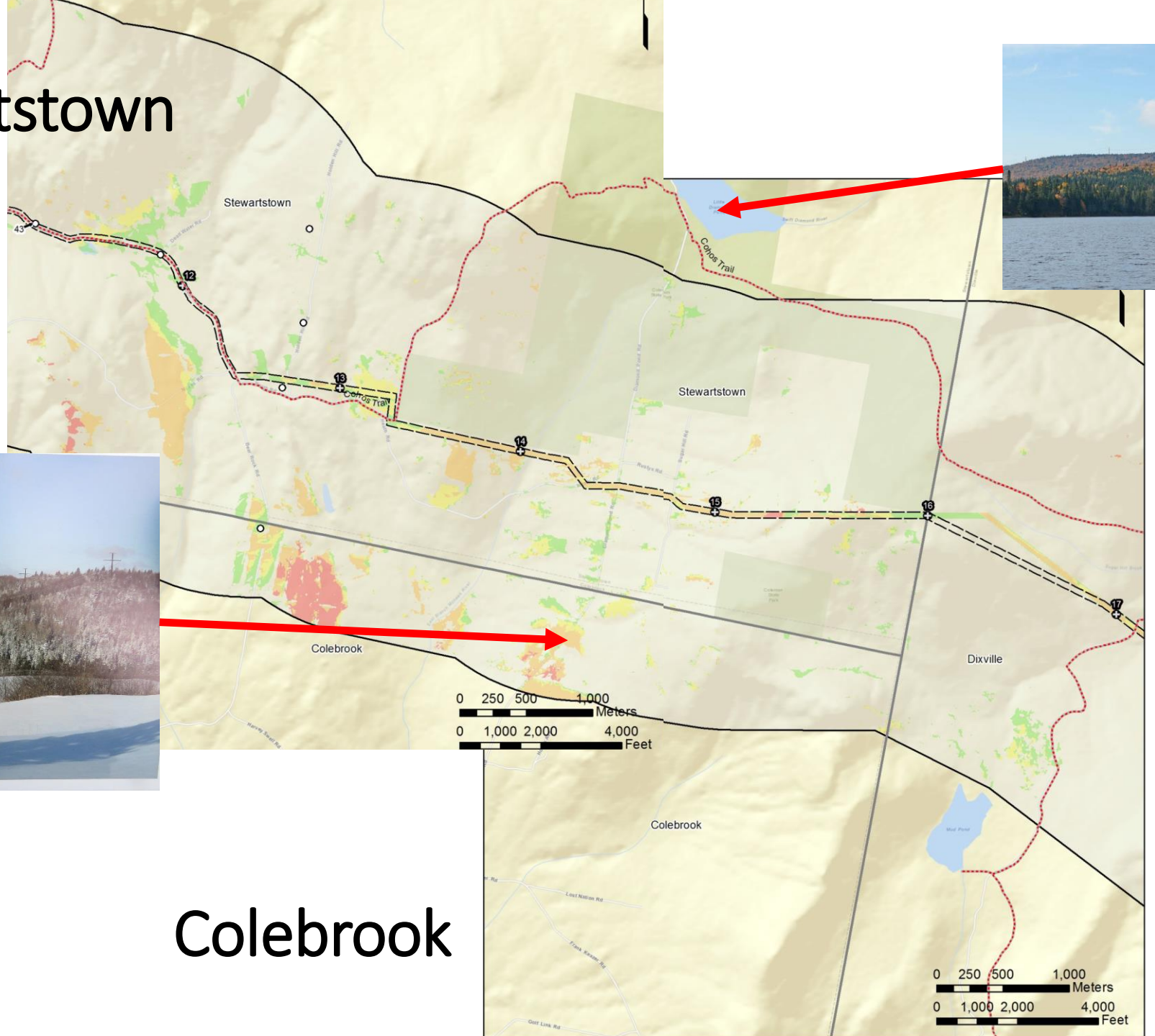
Colebrook

0 250 500 1,000
Meters
0 1,000 2,000 4,000
Feet

Stewartstown



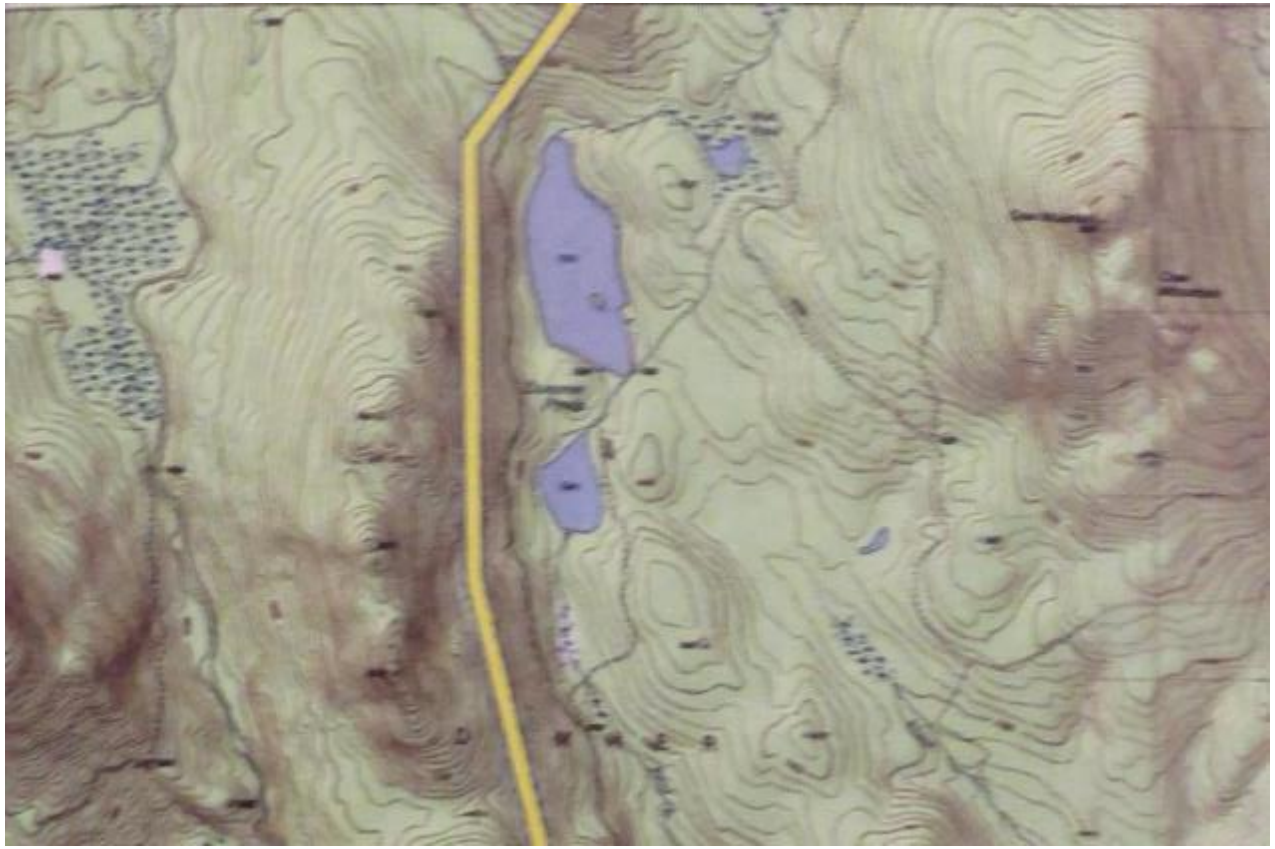




Colebrook

Dummer: the proposed NP towers would destroy the natural vistas from numerous spots along the rivers, lakes, hillsides, ridges, and summits along the proposed new right-of-way through Coos County

Visual Impact map from Section 106 PAF



Topographic map for same section of proposed route

Stark Village:
One of the Most Photographed Sites in NH

Stark: beautiful farmlands on Northside Road

Stark: visitors enjoy Christine Lake, Pike Lake, the Kaufmann Forest and trails to the Percy Peaks

Moose Path Trail in Stark

NP crosses access to Christine Lake, Percy Summer Club, and Percy Peaks hiking trails …
and access to Pike Pond

NP crosses Moose Path Trail (NH 110)

NP crosses fields by Northside Road

Percy Summer Club
Stark
Pike Pond
Percy
Grand Trunk RR
STA0002
STA0012
STA0019
Village Cem
0 250 500 1,000 Meters
0 1,000 2,000 4,000 Feet