THE STATE OF NEW HAMPSHIRE

BEFORE THE

SITE EVALUATION COMMITTEE

DOCKET NO. 2015-04

PRE-FILED DIRECT TESTIMONY OF DAVID RAPHAEL

APPLICATION OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE D/B/A EVERSOURCE ENERGY FOR A CERTIFICATE OF SITE AND FACILITY FOR CONSTRUCTION OF A NEW 115 kV TRANSMISSION LINE

THE SEACOAST RELIABILITY PROJECT

April 12, 2016

Qualifications and Purpose of Testimony

Q. Please state your name, title, and business address.

A. My name is David Raphael, and I am a Professional Landscape Architect and Planner as well as Lecturer in the School of Natural Resources at the University of Vermont. I am the Principal and owner of LandWorks, a multi-disciplinary planning, design, and communications firm based in Middlebury, Vermont. My business address is 228 Maple Street, Suite 32, Middlebury, Vermont 05753.

Q. Briefly summarize your educational background and work experience.

A. I am a graduate, with honors, of Tufts University and the School of the Museum of Fine Arts in Boston, where I studied English, ecology and graphic design. I attended Harvard University Graduate School of Design with a Crocker Scholarship and graduated with a Masters in Landscape Architecture. I also attended the Dartmouth College Outward Bound program.

I began my career as landscape architect and planner working for the State of Massachusetts Department of Environmental Management. I founded LandWorks in 1986 and have served both public and private sector clients, primarily in Vermont, but also in other parts of the Northeast. My firm's areas of expertise include visual, aesthetic and environmental assessment, site and master planning, graphic communications and GIS mapping, permit planning, participatory and community planning, downtown revitalization, open space and conservation planning, zoning ordinance and design review development, landscape architecture and environmental design.

LandWorks has extensive experience with regard to visual assessment and environmental impact. We have been a consultant in this capacity for the Vermont Department of Public Service, the Maine Department of Environmental Protection and several private and public sector clients in Vermont, New Hampshire, New York, and Maine for over 25 years. We have evaluated the aesthetic and environmental impact of utility scale transmission lines and corridors; transmission structures; telecommunication facilities; solar farms; biomass facilities; hydropower; and, wind energy development.

I have also been an Associate Professor in the Graduate Program in Urban and Environmental Policy at Tufts University, on the faculty of Middlebury College, and am

currently a Lecturer in the University of Vermont Rubenstein School of Environment and Natural Resources, where I have been teaching courses in aesthetics, environmental design, and landscape architecture since 1982.

I have served as a member of the Design Issues Study Committee appointed by the Vermont Secretary of the Agency of Natural Resources, an initiative which clarified the application of the Quechee Analysis for aesthetics and which resulted in the publication of *Vermont's Scenic Landscapes: A Guide for Growth and Protection*. I also helped to author a revision to the Electric Power Research Institute ("EPRI") Transmission Line Reference Book -115-345kV Compact Line Design, Chapter 9. Most recently, I have conducted workshops and delivered presentation on aesthetics and scenic resource management for the Northern New England Chapter of the American Planning Association.

Additionally, I have served as Chair of my town's Development Review Board and Planning Commission, a position I have held for over 25 years. I am also the Chair of the Vermont Urban and Community Forestry Council and I am a Trustee of the Lake Champlain Land Trust.

Additional detail regarding my education, background and experience is contained in my *curriculum vitae*, which is attached hereto as Attachment A.

Q. Have you previously testified before the Site Evaluation Committee?

A. Yes. I have provided testimony and testified before the SEC with regard to the Antrim Wind Project, Dockets 2014-05 and I have also submitted pre-filed testimony in Docket 2015-02. I have also presented testimony in Vermont before the Public Service Board, ACT 250 District Commission, Superior Court, and Environmental Court. I have also provided testimony to the Land Use Regulatory Commission ("LURC") and Department of Environmental Protection ("DEP") in Maine. Additional detail regarding my previous testimony is included in my curriculum vitae, which is attached hereto as Attachment A.

Q. What is your role in the Project?

A. Public Service Company of New Hampshire d/b/a Eversource Energy ("PSNH") retained LandWorks to conduct a visual assessment of the Seacoast Reliability Project (the "Project" or "SRP") and evaluate its potential effect upon regional aesthetics.

Q. What is the purpose of your testimony?

A. My testimony addresses the potential visual effect of the Project and summarizes the Visual Assessment ("VA") prepared by LandWorks. *See* Appendix 32. I also offer the opinion that the Project will not have an unreasonable adverse effect on aesthetics.

Q. Please describe the physical attributes of the Project.

A. PSNH is proposing to construct a new 115 kilovolt (kV) transmission line between its existing Madbury and Portsmouth substations to enhance the electric reliability in the seacoast region. SRP is located in the Towns of Madbury, Durham and Newington as well as the City of Portsmouth, in Strafford and Rockingham Counties, New Hampshire. The Project is approximately 12.9 miles long, including a 1.1 mile crossing under Little Bay. The entire line will be constructed within and along existing electrical transmission corridors, with minor adjustments to right-of-way widths in several locations. The right-of-way ("ROW") ranges from 50-300 feet wide, but is predominantly 100 feet wide. For most of the length of the ROW, a mowed corridor approximately 60 feet in width has been maintained by PSNH in support of the existing electric distribution line. The edges of the ROW are unmaintained and frequently support forest (20 feet on either side), which will need to be cleared for the SRP. The cable crossing proposed in Little Bay will be constructed within a mapped cable area approximately 1,000 feet wide. The majority of the Project will be constructed on overhead structures between 30 and 105 feet in height. The line will transition to underground/underwater in two separate stretches along the route: approximately 0.4 miles in Durham through the UNH campus and 1.4 miles from Durham across Little Bay into Newington.

For additional details on the location and description of the transmission line, please see section 301.03 (h)(1) of the Application.

Q. Please describe the visual assessment that you conducted for the Project, including the geographic scope of the area studied.

A. LandWorks employs a multi-step approach for determining whether a project will have an unreasonable adverse effect on aesthetics consistent with the provisions of the New Hampshire ("NH") Statute RSA 162-H. This comprehensive

analysis includes: 1) identifying scenic resources within the study area and specifically the area of potential visual impact as defined in the new rules adopted by the SEC, 2) determining the visual sensitivity of those scenic resources, 3) evaluating the visual change the proposed project may have on those scenic resources, and 4) how that change may affect the experience of a typical viewer. These findings are weighed in concert with other relevant factors such as the regional context of the project area and its significance within the state of New Hampshire, the efficacy and application of mitigation measures and the overall visibility and visual effects of the project as a whole. Taken together, these analyses and considerations yield the overall conclusion and determination of a project's potential effect on the scenic resources within the study area. For the purposes of this VA, the geographic scope, or study area includes a 10 mile linear corridor on either side of the Project's center line for an overall 20 mile corridor. Thus, the VA corridor runs parallel to the transmission line.

Q. Please describe the methodology used in conducting the visual assessment analysis.

A. LandWorks has employed a comprehensive, systematic and detailed methodology designed to determine whether the Project will have an unreasonable adverse effect on aesthetics pursuant to NH RSA 162-H. This is a methodology that we have developed specifically for transmission projects and have refined over 20 years of experience in assessing the aesthetics of transmission projects in the Northeast. The methodology is an amalgamation of a number of established processes which include, but are not limited to, those developed by the Bureau of Land Management's ("BLM") *Visual Resource Management* ("VRM"), the United States Forest Service's ("USFS") Scenery Management System ("SMS") outlined in *Landscape Aesthetics*, and the Federal Highway Administration's ("FHWA") *Visual Impact Assessment for Highway Projects* ("FHWA-VIA").

The LandWorks VA outlines a comprehensive approach with unambiguous definitions, explicit thresholds and measurable results that are easy to understand and follow. It provides a consistent, well-defined, step-by-step process by which to distinctly 1) identify scenic resources within the study area; 2) determine the level of sensitivity of a resource, 3) the degree of visual change the Project may have to a sensitive resource, 4)

the effect that visibility may have on the typical viewer, and 5) an overall conclusion on whether the Project has an unreasonable adverse effect on aesthetics given the visual change and other mitigating factors. See Section 2 in LandWorks' VA for a full, detailed description of the methodology.

Q. What criteria did you consider when conducting your visual assessment?

A. LandWorks reviewed a multitude of sources and VA criteria to help develop the methodology. There are many resources and approaches that have been developed across the United States and elsewhere for conducting a VA. No one method has risen to the top as the preeminent source. However, as mentioned in the previous response, there are several established and respected processes that are frequently identified in academic publications and professional VA's that are noted above. The BLM Visual Resource Management ("VRM") and the USFS SMS were used as primary sources in the development of the methodology for this VA. The FHWA-VIA was used minimally, as it evolved largely out of the USFS VRM, which was later replaced by the SMS, and many of the concepts overlap between the two. LandWorks also drew upon our many years of experience in conducting VA's for large-scale utility projects in the Northeast to help supplement our methodology. Many of these states, such as New York, Maine and Vermont, have developed review policies for determining aesthetic impact. None of these approaches or methodologies is applied in their entirety to the SRP due to the specificity of each for their particular use. There are however, some commonalities or shared criteria in all the approaches. All characterize the landscape's existing visual condition, which establishes a point of comparison for any proposed changes; all define the geographic scope or area to be studied; all conduct a viewshed analysis, site visits and/or visual simulations; all identify sensitive receptors or locations and the attributes that determine their visual quality or value; and, all establish a method for understanding the effect the proposed change may have on the landscape. These are the baseline criteria that LandWorks considered when conducting the VA for the Seacoast Reliability Project.

Q. What Project Study Area did you analyze?

A. LandWorks determined that the area with the greatest potential for visual impact was within a 6 mile corridor running parallel to the Project's center line – 3 miles

on each side of the center line. This determination is based on a number of precedents and standards for the visual assessment of transmission projects established in other projects in New England. It is reinforced by the fact that beyond 3 miles the visibility and potential for visual impact from transmission structures diminishes significantly. Within the 6 mile corridor all scenic resources were identified regardless of visibility. Beyond 6 miles and within the 20 mile width of the overall corridor study area, only resources with potential project visibility were identified and analyzed. This work was all derived from a computer-based visibility analysis.

Q. What are the existing conditions within the Project Study Area?

A. Once the geographic scope (or Project Study Area) is determined, a comprehensive inventory of all scenic resources is conducted. Data is obtained from local town plans and regional documents, online media sources, local, state, national, and organizational websites, reference books on geology/physiography/ecology, topographic maps, aerial photography, road atlases, tourism brochures and guidebooks, and field observation. The scenic resources inventoried typically include those designated by local, regional, state and/or national authorities or inventories, and that have a scenic value or purpose associated with them and where public access is established. The LandWorks' VA includes a distinct list of national, state and local resources that are typically identified, such as National Parks, State Parks, State Scenic Byways, local parks, or local scenic roads (See Section 2.C.1. of the LandWorks' VA for a complete listing).

Given its proximity to the coastline, the Project Study Area is within one of the more developed areas of the state. The region has a highly developed infrastructure with interstate and rail corridors, electric and utility transmission corridors, a major airport, as well as a seaport. The Atlantic Ocean has a significant moderating effect on the climate of this part of the state, and this region's geomorphological, vegetative, hydrological, and climate patterns are often very different from the others throughout the state. The Great Bay Estuary and its corresponding rivers and wetlands are among the most prominent landscape features. The topography is generally very low and flat, which accommodates the fairly dense network of roads and development density, with its settled towns and developed areas. There is little in the way of timber harvesting or major forest resources given the more fragmented nature of properties and the road networks that demarcate

wooded areas. What agricultural land uses exist are typically a remnant from an earlier period of agriculture that has been eclipsed by the spread of suburban land uses, and are small in scale. The retention and restoration of some wooded areas has been coupled with a predominantly rural and suburban-type (subdivision) residential land use and landscape pattern.

Q. What is a viewshed analysis?

A. A viewshed analysis is a common function of most Geographic Information Systems ("GIS") software (e.g. GRASS, ArcGIS) that is used to determine how visible a proposed project might be in the landscape. A viewshed analysis is typically prepared using the elevation values of a digital elevation model ("DEM")—a digital representation of the ground surface, or topography—and a file containing the point or points you want to analyze (i.e. structures). Due to the coarseness of the data inputs, a viewshed analysis is used mainly as a point of departure for helping to identify areas with potential visibility of a project. See Section 2.D.1 of LandWorks' Visual Assessment for more detailed information on viewshed analyses.

The viewshed analysis for the Project was conducted for the Project Study Area, namely, the Project corridor and 10 miles to each side of the Project structures, for an overall linear Project study area that is 20 miles wide (excluding Maine), running the full length of the 12.9 mile Project.

Q. Please describe the viewshed maps and their relationship to the viewshed analysis.

A. A viewshed map illustrates all the areas that are potentially visible from a particular viewing location (or locations) within a given area (e.g. 10-miles). It is the visual representation of the viewshed analysis, i.e. it shows the computed output of the viewshed analysis using a digital elevation model (DEM). Due to the coarseness and uncertainty of the quality of the input data, viewshed maps cannot be exclusively relied upon to represent what will actually be seen on the ground from a specific location (i.e. the view from someone's second story bedroom window).

While viewsheds can indicate how many structures may be seen from a location (i.e. 3 structures will be visible), they can not specify how much will be visible (just the top of a structure or the entire structure), which one will be visible (when there are

multiple observation points), or perspective (how big or small it will appear in the landscape). Viewshed maps can show with some certainty that, due to topography or intervening vegetation, some places will have no views of a project and therefore will not be affected. Because other cultural features such as buildings, structures and other site-specific vegetation are not included in the basic DEM, viewsheds typically overstate potential visibility (e.g. there are areas that depict visibility of structures when in fact they may not be visible due to existing on ground screening like a tree or a building).

Therefore, viewshed analyses provide the first step in ruling out those areas with no visibility, and identifying what areas *might* have visibility. Additional visual studies (e.g. visual simulations, line-of-sight sections, 3D modeling, field analysis) are critical in understanding the details and context of a view from any location, and more reliable in determining actual visibility from any one location. See Section 2.D.1 of LandWorks' VA for more detailed information on viewshed mapping and viewshed analyses.

Q. What are distance zones and why are they important?

A. Distance zones are used in the LandWorks' VA as one factor for helping to determine the effect of the Project's visibility. The National Forest's Handbook on Scenery Management ("Handbook"), which is based on years of research and work in the National Forest and is relied on as a basis for VA by professional and regulatory review bodies, sets forth the use of distance zones for "classification, analysis, and simplification of inventory data." These distance zones (foreground, middleground, and background) are related to the types of objects and level of detail that are typically perceptible in the landscape at these distances under ideal viewing conditions, and can be used to define the geographic scope of a project. The Handbook indicates that with increased distance the "concern" level for visual impact or impacts to overall scenic integrity lessens (National Forest's Handbook on Scenery Management, p. 4-11). BLM and FHWA also use or refer to distance zones in their respective visual impact assessment methodologies for understanding the visual impact of a proposed project. See Section 2.F.1.B(1) of LandWorks' VA for additional information on distance zones.

Q. What are photosimulations and why are they important?

A. Photosimulations, or visual simulations, provide a photo-realistic perspective view of proposed project elements in the landscape, thereby allowing people

to visualize how a project might look from a particular vantage point. Visual simulations are useful in terms of revealing the nature and extent of potential visibility of a project from key vantage points, providing more accurate and refined information than a viewshed analysis or 3D model can provide. They often reveal how topography and vegetation can absorb, limit, or block views of a project, sometimes in surprising ways. Visual simulations are used in the LandWork's VA to better understand the presence the Project might have within the context of the existing landscape.

Q. How were sites selected for photosimulations?

A. Photosimulations were prepared for resources rated with a moderate-high or high sensitivity, which had the potential to be significantly affected by the visual change that could result if the Project is constructed, and additional analysis is necessary. No additional evaluation is conducted for resources that emerge with a 'Low' to 'Moderate' rating because the visibility of the Project is not considered significant. Photosimulations were also prepared from a sample of private property observation points within the area of potential visual impact.

Photosimulations represent one or more of the following features: 1) a point within an area of the resource identified by the viewshed analysis that has the highest range of structures potentially visible, 2) a point where the highest amount of use is anticipated from the resource, or 3) a point where access to the resource is most easily or likely achieved.

Q. Please provide a general overview of the Project components of the proposed transmission line that were important to you from a visual assessment perspective.

A. The key components that we review include 1) the overall Project area and context – land use and landscape conditions; 2) structure type, height and placement, as well as structure finish (i.e. whether it is galvanized or weathering steel or wood); 3) corridor location and width relative to specific landscape types, land uses and development elements; and 4) the conductors and their visibility.

We also consider the planning process undertaken by PSNH with local community input, and mitigation measures that have been proposed both by the utility and changes implemented in response to interactions with local constituencies.

Q. Please discuss the fieldwork you undertook for this assessment and describe what you or your team visited while conducting your Visual Impact Assessment?

A. Once a desktop scenic resource inventory was complete, a number of field visits were conducted by LandWorks staff. LandWorks used viewshed maps, topographic maps, aerial photography, field guides, books, brochures, pamphlets, websites, local information sources and the New Hampshire Atlas & Gazetteer to provide information regarding access to the sites, and to orient and determine visibility in the field. Field visits were conducted on a variety of days throughout the different seasons, which included May 30, 2014, July 18, 2014, August 13, 2014, November 21, 2014, January 20, 2015, March 10, 2015, May 29, 2015, July 31, 2015, and February 5, 2016. Although the VA ultimately identifies only 30 resources as having potential visibility (see Tables 2 and 3 of the LandWorks VA), over 100 scenic resources were visited. During the field visits, a variety of digital photographs are taken to: 1) provide information on area context, 2) provide information on resource quality, 3) illustrate scenic views, 4) demonstrate intervening vegetation or lack of visibility, 4) document existing structures, land uses, and other cultural modifications, and 5) for the purpose of developing visual simulations.

Q. Please describe how your VA analyzed scenic resources.

A. Once potentially sensitive scenic resources are identified, each is analyzed through a step-by-step screening process to determine the resource's sensitivity to change, the visual effect of that change, and how that change will affect the experience of the typical viewer. Based on the approach outlined in the LandWorks VA, we identified 177 scenic resources within the 6-mile corridor, of which only 26 have the potential to see the Project. In the overall 20 mile wide corridor and within those identified areas of potential visual effect, only 3 additional scenic resources were identified as having potential project visibility, for a combined total of 30 resources with potential visibility. These 30 were confirmed through viewshed mapping, 3D modeling, and/or field review. Every one of these 30 sites was visited and photographed (and many more that were determined to not have visibility), and several sites were visited on more than 1 occasion (such as UNH Campus, Great Bay Wildlife Sanctuary and Little Bay Road). The sites were fully field checked, explored, and investigated to review their scenic quality,

understand their cultural value, and appraise their extent of visibility (using viewshed mapping and 3D analysis as a basis): water bodies were kayaked, trails were hiked, and scenic viewsheds were observed. Our analysis determined that of these 30 scenic resources with potential visibility, only 9 would be sensitive to visual change given their level of scenic quality (the character and features of a resource that make it scenic) and cultural designation (how a resource has been valued by the public through official designation [e.g. conserved] or via promotion).

The visual change to each of these 9 resources was then fully examined based on three specific categories with well-defined thresholds for low, moderate, and high. The criteria for visual effect in LandWorks' VA include measurable, consistent, and established techniques for determining if a project will be highly visible or dominant. These include 1) scale and spatial presence, 2) prominence, and 3) compatibility. The scores for all 3 of these categories are combined to determine each resources overall visual effect rating. Based on this step of the review only 1 of the 9 scenic resources, Little Bay Road was determined to have moderate-high visual effect. Note that this rating does not necessarily translate into high viewer effect, which is covered in the next step of the analysis process, nor does this determination imply that there will necessarily be a substantive visual impact if the Project is built. That conclusion comes at the end of the analysis process.

The LandWorks VA also includes a detailed assessment for determining what the Project's effect will be on the typical viewer from a scenic resource with higher visual effect. This is considered to be the "viewer effect" as articulated in the methodology. The considerations used in the analysis are well established in both the BLM VRM and the USFS SMS, as well as the USFS Recreation Opportunity Spectrum ("ROS"). This last piece of the screening process indicates that the effect to a typical viewer visiting Little Bay Road would be low-moderate.

The final piece of the LandWorks' VA provides an overall conclusion on whether the Project has an unreasonable adverse effect on aesthetics given the visual change and other mitigating factors. It considers the suitability of the Project site; the landscape character of the region and the Project's place in that landscape; local conditions in the

immediate vicinity of the Project and the potential visual effects of the Project within that context; and the efficacy of the applicant's mitigation measures.

Q. Please describe any measures employed by the Project to avoid, minimize, or mitigate potential impacts to aesthetics.

A. A number of measures have been employed to avoid, minimize, or mitigate potential impacts to aesthetics, which directly result from numerous discussions with the host communities and historic resource experts in combination with our input as aesthetic experts. There were several locations, in Durham and Newington, where Landworks recommended lower or different types of structures would be a better fit and less obtrusive in the landscape. In Durham, LandWorks looked very closely at the visual context for the Main Street crossing of the Project and considered a number of avoidance and minimization options. LandWorks reviewed the placement, height and type of structures for this crossing, and also considered undergrounding, the approach that was eventually adopted.

In consultation with the Town and UNH, PSNH has altered its design and committed to burying the line underground in the vicinity of Main Street in Durham and the new UNH football stadium. Burying the line for this section of the corridor addresses visibility concerns raised by the Town and UNH.

On either side of Main Street, where the line re-emerges above ground, LandWorks explored structure color as a minimization measure and concluded that dark colored weatherized steel structures, instead of galvanized steel structures (which blend best with sky backgrounds) was appropriate given the wooded backdrop. Dark colored structures are visually absorbed by the darker background of woodland both in summer and winter conditions.

Throughout Durham the structure design and placement was modified on a section by section basis, to respect local input and to minimize the visual presence of the corridor and its associated elements – reducing structure heights, clearing widths and fine-tuning structure placement to reduce visibility. Thus, from the Durham substation to the Packers Falls substation a single pole structure with the 34.5kV underbuild was employed. In the next section, between structures F107-57 and F107-61, H-frame structures are proposed to lower structure heights and consequently the visibility of the

structures above the treeline. The resulting configuration also moved the structures away from Route 108, reducing the presence and visibility of the Project in this location. As the Project proceeds through Durham, the neighborhoods east of Route 108 were also reviewed. PSNH worked with local residents to select a final design that uses a monopole with a double circuit design. The final selection of structure locations was also altered, where feasible, to reduce potential visual impacts of the Project from residential properties.

Another location where LandWorks has recommended avoidance and minimization measures is at the crossing of Little Bay. On the Durham side, PSNH purchased land to relocate the transition structure, where the line transitions from overhead to underground/underwater cable, away from the water's edge to significantly reduce visibility from the Bay. On the Newington side, the undergrounding of the cable in Gundalow Landing reduces visibility. Plantings in this area may also to buffer the structure on the east side of Little Bay Road. This would mitigate views from Little Bay Road and Gundalow Landing. It is my understanding, however, that there may be some technical limitations on the size, type, and location of vegetation that may be planted in this area due to the underground facilities and overhead clearance concerns.

In Newington and in the vicinity of Nimble Hill Road, the Pickering and Frink Farms, and the Hannah Lane residential neighborhood, LandWorks worked with PSNH to modify structure types and placement options for sections of the corridor considered to be visually sensitive. This effort resulted in the use of H-frames for structures in this area and the removal of the existing distribution line. The H-frames were recommended here because they have a lower profile than the taller single pole structures. The structures were spaced further apart to the extent feasible to minimize impacts to the visual integrity of open spaces adjacent to or viewed from the farms.

Also in Newington, for the section between Woodbury Road and the Spaulding Turnpike, where the corridor is located in extensive parking lots in the vicinity of the Crossings at Fox Run, LandWorks explored using galvanized steel structures. Appropriate minimization measures are achieved through by using dark weathering steel structures, which match existing structures in the corridor.

It is also LandWorks understanding that PSNH will meet with individual property owners post-construction, where appropriate, to discuss the potential for additional mitigation measures, such as screening. Natural low-growing vegetation that exists along the corridor and at crossings will be retained where possible. Low-growing vegetation buffers can be an effective and can be managed so as to not present any safety, access, or reliability concerns. Natural re-growth of low-growing vegetation occurs quickly and, in most instances, can be more effective than new landscape plantings.

Finally, it is important to note that the location of the transmission line within the existing PSNH utility corridor is a key minimization measure. The use of this corridor eliminates the need for a totally new corridor and all the potential visual, cultural, environmental effects and costs that are typically associated with the development of a new ROW.

Q. What conclusions can be drawn about the potential visual impact of the Project?

A. The Project will not have an unreasonable adverse effect on aesthetics. While the height of structures associated with the Project are higher than what is currently present in the ROW, the overall visibility of the proposed structures and their effect on the various resources and vantage points we evaluated is not substantive enough to alter the use and enjoyment of such resources. There are a limited number of locations where the Project will be visible from what might be considered sensitive resources, such as Little Bay Road that is a designated scenic road in Newington or Little Bay and Great Bay.

The Project will be minimally visible from most of Little Bay Road where the corridor is parallel to the road running east-west. Existing hedgerows block most of the views and the corridor will not be noticeable unless one is looking for it through opening in the hedgerow at driveways. At the point where the corridor crosses Nimble Hill Road, the possibility for short duration visibility near to the Frink Farm has been minimized by using an H-frame structure. Should property rights be acquired such that the Project can be placed underground across the Frink Farm and the Hannah Lane neighborhood, the Nimble Hill Road crossing will be entirely buried. Views of the Project from town facilities will be minimal, if at all. There will be no Project visibility from the Meeting

House; any views if possible along this portion of Nimble Hill Road will not compromise the use or experience of town facilities.

On the west side of Little Bay in Durham the transition structures to the underwater cable section will be visible from the water, but are well over 2,000 feet from the boat channel where most people would be viewing. With the purchase of property on the west shore, the visual impact is further minimized as the structure were able to be moved from the water's edge to approximately 360 feet back from the shoreline. The analysis conducted from the water, and using the simulation, indicated that visibility would be transitory and mitigated by the fact that the surrounding vegetation was as high if not higher than the structures themselves. The set back of the transition structure from the shoreline helps screen them to the north and the south by land and intervening vegetation. This is not a pristine or overly scenic portion of Little Bay. Thus, the view of this facility would have a lower visual effect.

The view of the Project from those nearby portions of Great Bay, and the National Wildlife Refuge, is qualified by the fact that the structures will barely be visible above the tree line and will not be prominent, or draw the eye. The intactness of the landscape and shoreline will not be compromised by the presence of the Project.

We evaluated over 180 different resources within the study area of potential visual effect and of these only 30 locations had potential visibility. Of these, only 9 were deemed to be sensitive. We conducted detailed, systematic analyses based on actual on-site in the field reviews for these 9 locations, developed visual simulations for a number of them and found that only one – Little Bay Road – had a moderate- high visual effect. This factor alone is indicative of the lack of overall visual impact from the proposed Project.

The Project's overall effect on the UNH campus, in particular, is mitigated by the context and presence of surrounding elements – the existing corridor is adjacent to several large parking lots, local distribution lines, and more utilitarian campus uses such as physical plant and utility buildings and yards, and thus can accommodate the new structures. In the most sensitive location, the crossing of Main Street, the 0.4 mile burial will eliminate the Project from view in an area where there is significant pedestrian and

vehicular circulation. This particular mitigation measure is a meaningful and effective step to reduce, if not eliminate, any adverse visual effects in this particular location.

The overarching factor for the SRP is that it is being proposed for a developed, well settled urban and suburban environment that can, for most of the alignment, visually accept and absorb in a reasonable manner the visual change associated with the new structures being proposed. The Project is located within an existing PSNH utility corridor where infrastructure has been present and experienced over a long period of time. Research substantiates that such factors tend to reduce the potential for visual impact and that viewers are more accepting of the changes associated with projects in these types of settings. Additionally, the Project has limited overall visibility and consequent visual impacts to the public vantage points and resources identified in the Project's area of potential visual impact. In those locations where visual sensitivity was a stated concern, and public input was noted, mitigation measures have addressed and resolved those concerns. This resulted in a Project design that lowered structure heights and used undergrounding in two locations, including the underground section through Beswick and Gundalow Landing.

Thus, in consideration of the proposed avoidance, minimization and mitigation considerations discussed above, it is my opinion that the Project will be constructed without creating unacceptable visibility changes over existing conditions and consequent associated impacts. This Project will be reasonably compatible with existing conditions and will not create unreasonable adverse effects on aesthetics.

Q. Does this conclude your testimony?

A. Yes, it does.