STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

In re The Narragansett Electric Company	:	
d/b/a National Grid	:	Docket No. SB-2008-02
(Rhode Island Reliability Project)	:	

Joint Testimony of

John D. Hecklau

Jo Anne C. Gagliano

Eric M. Mainzer

On behalf of

The Narragansett Electric Company
d/b/a National Grid

June 29, 2009

PREFILED TESTIMONY OF JOHN D. HECKLAU,

JO ANNE C. GAGLIANO AND ERIC M. MAINZER

Q. Mr. Hecklau, please state your name and business address.

A. My name is John D. Hecklau. My business address is 217 Montgomery Street, Suite 1000, Syracuse, New York 13202.

Q. Mr. Hecklau, by whom are you employed and in what position?

A. I am the Environmental Division Manager with Environmental Design & Research, P.C. (EDR).

Q. Do Ms. Gagliano and Mr. Mainzer also work for EDR?

A. Yes, Ms. Gagliano is the President of EDR and is a registered landscape architect, and Mr. Mainzer is a Senior Visualization Specialist.

Q. What is EDR?

A. EDR is a design and planning firm with offices in Syracuse, Rochester, and Buffalo, New York. Founded in 1979, EDR is committed to providing fitting and innovative design and planning services to communities, institutions, corporations, developers and private individuals throughout the Northeast. Over the years, EDR has developed a wide range of experience and specialized expertise in land planning, community design, site design, environmental management, and visual impact assessment. EDR's multidisciplinary staff of landscape architects, civil engineers, ecologists, land surveyors, planners and computer specialists work with clients to craft creative approaches to project design and implementation.

Q. Mr. Hecklau, what are your responsibilities with EDR?

A. As Environmental Division Manager, I oversee all of EDR's permitting, environmental inventory and management projects. I am responsible for visual impact analysis, resource management planning, environmental impact analysis, wildlife management and recreation planning on behalf of EDR's clients. I have extensive experience reviewing environmental impacts, including visual impacts. I have worked on numerous electric power development and transmission line projects in which I have been responsible for conducting/coordinating the visibility analysis and the visual/aesthetic impact assessments.

Q. Mr. Hecklau, please describe your education, training and experience.

A. I hold a Master of Science degree in Environmental and Forest Biology, specializing in Wildlife Biology, from the State University of New York, College of Environmental Science & Forestry. I hold a Bachelor of Arts degree in Biology from Middlebury College. I am a Certified Wildlife Biologist. I have more than 10 years of experience conducting visual impact assessments. Examples of projects on which I have conducted/coordinated such assessments include the Southern Rhode Island Transmission Project, Howard (NY) Wind Power Project, New York Regional Interconnect (NYRI) Project, Alabama Ledge (NY) Wind Power Project, Jordanville (NY) Wind Power Project, Cohocton (NY) Wind Power Project, Marble River (NY) Wind Power Project, Hardscrabble (NY) Wind Power Project, Statewide (NY) Wireless Network Project, Tompkins County (NY) Public Safety Communications System Project, PG&E Athens (NY) Generating Project, ANP Ramapo (NY) Energy Project, Reliant Astoria (NY)

Repowering Project, Maple Ridge (NY) Wind Power Project, Flat Rock 230 kV Transmission Line Project, TransEnergie Cross Sound (NY and CT) Cable Electric Transmission Project, and Neptune Regional (NY) Transmission System Project.

Q. Mr. Hecklau, does your curriculum vitae, which is attached as Attachment EDR-1, fairly and accurately represent your experience with respect to study and evaluation of visual impacts?

A. Yes, it does.

Q. Ms. Gagliano, what are your responsibilities with EDR?

A. I am President of EDR and a registered Landscape Architect, licensed in New York and Pennsylvania. I am experienced in site design and planning, project management, contract documentation and landscape construction. My project management experience includes various parks and recreation facilities, historic restoration, residential, commercial and visual projects. I have specialized training and expertise in visual resource management.

Q. Ms. Gagliano, please describe your education, training and experience.

A. I hold a Bachelor of Science Degree from Cornell University, specializing in Landscape Architecture, and an Associates Degree of Applied Science in Horticulture and Landscape Planning from the State University of New York, College at Morrisville. I have 20 years of experience as a landscape designer, with 15 of those years as a registered landscape architect and several years of experience conducting rating panel evaluations for visual impact assessments. Examples of projects on which I have conducted such assessments include the Maple Ridge (NY) Wind Power Project,

Madison (NY) Wind Power Project, Fenner (NY) Wind Power Project, Tompkins County (NY) Public Safety Communications System Project, Reliant Energy Astoria (NY) Repowering Project, and ANP Ramapo Energy Project, PG&E-Athens (NY) Generating project, Southern Rhode Island Transmission Line Project, E-183 Transmission Line Relocation Project, and New York Regional Interconnect Project.

Q. Ms. Gagliano, does your curriculum vitae, which is attached as Attachment EDR-2 fairly and accurately represent your experience with respect to study and evaluation of visual impacts?

A. Yes, it does.

Q. Mr. Mainzer, what are your responsibilities as a senior computer visualization specialist with EDR?

A. As a Senior Visualization Specialist, I am responsible for the preparation and/or review of all 3-D modeling and 2-D graphics developed by EDR in support of visual assessments. Specifically, these graphics include photo simulations, video simulations, line of sight cross-sections, and viewshed mapping. I am also responsible for the verification of accuracy in all analyses and supporting graphics included in EDR's visual documents.

Q. Mr. Mainzer, please describe your education, training and experience.

A. I hold a Masters Degree in Landscape Architecture from The Pennsylvania State University, specializing in visualization and design. I also have a Bachelor Degree of Landscape Architecture from The Pennsylvania State University. I have 12 years of experience as a computer visualization specialist. Examples of projects on which I have

conducted/coordinated such assessments include the PG& E Athens (NY) Power Project, and ANP Ramapo (NY) Energy Project, Madison (NY) Wind Power Project, Jamestown (NY) Board of Public Utilities Power Plant and Operations Center, Fenner (NY) Wind Power Project, Maple Ridge (NY) Wind Power Project, Dairy Hills (NY) Wind Farm, Marble River (NY) Wind Farm, Cohocton (NY) Wind Power Project, Hardscrabble (NY) Wind Power Project, and Jordanville (NY) Wind Power Project.

Q. Mr. Mainzer, does your curriculum vitae, which is attached as Attachment EDR-3 fairly and accurately represent your experience with respect to study and evaluation of visual impacts?

A. Yes, it does.

Q. Mr. Hecklau, have you previously testified before state permitting agencies?

A. Yes, I provided visual testimony on the Southern Rhode Island Transmission Project (Docket No. SB-2005-01), and have testified before numerous permitting agencies and boards in New York State. I provided visual testimony to the New York State (NYS) Public Service Commission on the Ramapo and Astoria Generating Projects and on the Flat Rock Transmission Line Project. A listing of additional projects is included in my curriculum vitae which is attached hereto as Attachment EDR-1.

Q. Ms. Gagliano, have you previously testified before state permitting agencies?

A. Yes, I have provided visual testimony to the NYS Public Service Commission on the Astoria Generating Project and the New York Regional Interconnect Project. In addition, I have conducted visual impact assessments that have been submitted to, and approved by various lead agencies during the New York State Environmental Quality Review (SEQR)

process on numerous projects. A listing of these projects is included in my curriculum vitae which is attached hereto as Attachment EDR-2.

Q. Mr. Mainzer, have you previously testified before state permitting agencies?

A. No. However, I have provided technical support on EDR visual impact assessment reports that have been the subject of testimony under Article X and Article VII of the New York State Public Service Law. I have also provided similar support on assessments that have been submitted to, and approved by various lead agencies during the New York State Environmental Quality Review (SEQR) process. A listing of these projects is included in my curriculum vitae which is attached hereto as Attachment EDR-3.

Q. Are you familiar with National Grid's Rhode Island Reliability Project (the "Project")?

A. Yes, we have been engaged by National Grid to assess the visual impact of the Project.

Q. What is the scope of your testimony in this proceeding?

A. In our testimony we will summarize the Visual Impact Assessment ("VIA") which we prepared for the Project. Our assessment was filed by National Grid with its application to the EFSB and is Exhibit National Grid-4 in this proceeding. We will also address the visual ramifications of minor Project design changes that have occurred since completion of the VIA, as well as the visual issues raised by the City of Warwick Planning Department and the Statewide Planning Program in their June 11, 2009 advisory opinions to the EFSB.

Q. Please describe the methodology for conducting an assessment of visual impacts.

A. A VIA is used to determine the extent of potential Project visibility and to assess the significance of visual impacts associated with a Project using an accepted impact

assessment methodology. On this project, EDR used standard analyses of potential project visibility, and evaluated visual impact using a rating system based on methodology developed by the U.S. Department of Interior Bureau of Land Management (BLM). The VIA prepared for the Rhode Island Reliability Project includes identification of visually sensitive resources, characterization of landscape similarity zones, identification of viewer groups, viewshed mapping, line of sight cross-sections, confirmatory visual assessment fieldwork, visual simulations, visual impact analysis, and assessment of the need for visual impact mitigation.

The VIA methodology used on this Project provides a comprehensive and quantitative means of evaluating existing visual character and aesthetic quality and the ability of a landscape to accommodate visual change. Visual simulations with and without Project conditions have been used to determine changes in visual resources and the acceptability or compatibility of the visual impacts.

Q. What is the extent of the defined study area that was evaluated in your analysis?

A. The Study area for the VIA consisted of a 1-mile-wide corridor on either side of the proposed 359 345 kV Transmission Line, between the West Farnum Substation in North Smithfield and the Kent County Substation in Warwick, Rhode Island. This corridor is approximately 21.4 miles long and includes a total of approximately 29,500 acres.

Q. Please describe the contents of the VIA.

A. The VIA for the proposed Rhode Island Reliability Project addresses:

1. Visually sensitive sites and intensive land uses within the study area;
2. Landscape Similarity Zones within the study area;

3. Viewer groups within the study area;
4. Visibility of the existing and proposed 345 kV transmission lines within the study area;
5. Appearance of the proposed 345 kV and 115 kV transmission lines, upon completion of the Project based on photographic simulations;
6. The nature and degree of visual change resulting from the construction of the Project; and
7. The need for mitigation and the feasibility of mitigation alternatives.

Q. Please describe the specific analytical techniques utilized in the VIA.

A. The VIA for the proposed Rhode Island Reliability Project includes:

a. The identification of visually sensitive resources within a 1-mile radius of the transmission line corridor. Visually sensitive resources include registered historic resources, RIHPHC candidate sites, recreational/natural areas, scenic areas, and areas of intense land use. Landscape character within the study area was also defined, based on the existing pattern of land cover (as indicated in the U.S. Geological Survey [USGS] National Land Cover Dataset [NLCD]), land use, and user activity. This analysis resulted in the definition of five distinct landscape similarity zones (LSZ) within the study area. LSZ's are areas of similar landscape/aesthetic character based upon patterns of landform, vegetation, water resources, land use, and user activity.

b. Specific user groups within the study area were identified to evaluate viewer sensitivity and assure the selection of appropriate representative viewpoints

during the visual impact evaluation.

c. To evaluate potential Project visibility, a viewshed analysis was performed for the existing and proposed 345 kV transmission lines. The viewshed analysis utilized USGS digital elevation model (DEM) data, the height of the existing and proposed structures, and a computer program (ArcView® with the Spatial Analyst extension) to determine locations where the Project would be potentially visible (ignoring the screening effect of vegetation and structures).

d. To more accurately account for the screening effect of forest vegetation, a vegetation viewshed analysis was also prepared for the proposed 345 kV structures. The vegetation viewshed analysis involved creation of a vegetation layer based on the location of mapped forest vegetation as indicated in the USGS NLCD, with an assumed elevation of 40 feet. This layer was added to the digital elevation model to produce a base layer for the viewshed analysis, as described above. Once the viewshed analysis was completed, the areas covered by the forest vegetation layer were designated as “not visible” on the resulting data layer to reflect the fact that views from within forested areas will be screened.

e. To further illustrate the screening effect of vegetation and structures within the study area, four line-of-sight cross sections (ranging from 3.0 to 5.25-miles long) were cut through the visual study area. Cross-section locations were selected to allow evaluation of potential Project visibility from sensitive sites such as trails, water bodies, historic sites, residential areas, recreational areas, and other areas of intense land use.

f. To more accurately evaluate potential visibility of the proposed Project, areas within a 1-mile radius of the line were visited in the field. Photo documentation of potential Project visibility was obtained from 148 representative viewpoints within the study area. The existing transmission lines were used as locational and scale references.

g. From the 148 viewpoints documented during field review, photos from 11 viewpoints were selected for use in the development of visual simulations. Viewpoints were selected because they provided open views of Project components, and were representative of the viewer/user groups and LSZ's within the study area that are most likely to have views of the proposed Project.

h. To illustrate the anticipated visual changes associated with the proposed Project, digital models of the proposed facilities were prepared based on engineering plans provided by National Grid and Power Engineers, Inc. The models were used to create realistic photographic simulations of the completed Project (new 345 kV 359 Transmission Line and reconfigured 115 kV S-171 and T-172 Lines) from each of the selected viewpoints using AutoCAD® and 3D Studio Max® software.

i. The visual impact assessment methodology utilized on this Project involved completion of a simple visual contrast rating form based on methods developed by the U.S. Department of the Interior BLM. The form provides for the description of existing scenic quality, viewer sensitivity, and variable effects such as viewing angles and atmospheric conditions, in addition to the actual rating of contrast between the proposed Project and the existing view. The procedure

involves using a numerical contrast rating system to compare representative views with, and without, the proposed Project in place and quantifying visual impact. A panel of three landscape architects (one from EDR's staff and two independent) evaluated the visual impact of the proposed Project using the simplified BLM methodology. The VIA evaluation involved viewing and rating 11"x17" color prints of the views from the selected representative viewpoints. Each panel member's ratings were compiled as an average for each viewpoint used to determine if visual mitigation was warranted.

Q. What conclusions did you reach as a result of the analyses conducted in the VIA?

A. In the VIA we concluded that the proposed Project will result in a limited increase in visibility when compared to the visibility of the existing transmission lines. However, it is likely to have an effect on the visual/aesthetic character of some near foreground views within the study area.

Our specific conclusions, which are contained on pp. 48-49 of the VIA, are as follows:

- Topographic viewshed analysis indicates that the area of potential visibility for the proposed 345 kV structures total approximately 5% more than that of the existing 345 kV structures within the 1-mile radius study area.
- Vegetation viewshed analysis, which considers the screening effect of mapped forest vegetation, indicates that only 29% of the study area should have potential views of the proposed 345 kV structures.
- Line-of-sight cross section analysis indicates that existing vegetation, structures and topography will be effective in screening views of the proposed 345 kV

structures from most areas within and adjacent to the study area (including visually sensitive sites). Visibility along selected lines of sight was typically restricted to very limited areas, generally directly adjacent to the existing transmission corridor.

- Field review confirmed the results of the cross section analysis and revealed that views of the existing lines are largely restricted to road crossings, open lawns/fields and some newer residential subdivisions within 1,000 feet of the existing transmission corridor.
- Visual simulations of the Project show an increase in scale, visual weight and skyline clutter with the proposed Project components in place. However, these changes do not typically result in a significant increase in visual contrast or reduction in the original level of scenic quality, due to the presence of the existing transmission lines. The largest impact occurs in those instances where the effectiveness of foreground screening is reduced due to the height of the proposed structures or where tree removal will occur at the southern end of the right-of-way (ROW).
- The visual contrast ratings conducted by a panel of landscape architects indicated that adverse visual impacts of the proposed Project should generally be minimal to moderate. This is largely attributable to the occurrence of the Project within an existing transmission corridor, and hence the lower scenic quality of the existing views and limited visual contrast with the existing landscape. The perceived

impact to land use was most notable in views that included the presence of residential structures or evidence of residential or recreational use.

Q. Did you make recommendations as part of the VIA?

A. Yes. Although the level of visual contrast documented by the VIA was generally in the range of minimal to moderate, recommendations that would further reduce the visual impact of the Project were provided by the rating panel. The recommendations, contained on p. 50 of the VIA, are as follows:

- In selected locations where lack of existing foreground vegetation increases the visibility of the proposed and/or existing lines, the feasibility of screen plantings should be evaluated. Evergreen plantings were suggested by the panel in their evaluation of several of the simulations. Screen plantings have the greatest mitigation value in off-ROW situations where the line is proximate to viewers, opportunities for plantings exist, and these plantings have the potential to grow tall enough to fully screen the transmission line structures. Plantings would also be beneficial where close-range views of the bases of the proposed structures or open views of the cleared ROW could be effectively screened. However, plantings on the ROW (e.g., at road crossings) would have to be evaluated in terms of their compatibility with ROW maintenance/line clearance requirements. Even if allowable, such on-ROW plantings would have limited screening value, as they would have to utilize relatively low growing species.
- The rating panel also suggested that the new transmission structures would appear more orderly and unified, if they could be consolidated (i.e., combining two single

circuit lines on a double circuit structure) or consistent in style/design (e.g., all H-frames or all with identical davit arm configurations). However, according to National Grid, combining the existing single circuit lines on double circuit structures would not meet electrical reliability planning criteria, and therefore would not be allowed. National Grid also indicated that unifying the style of the new structures, to either match the existing H-frame structures or consistently use davit arms on alternate sides of the towers, could not be accomplished within the confines of the existing cleared ROW. Acquiring and clearing additional ROW to pursue this alternative would likely have additional visual impacts that would off-set or exceed any aesthetic benefits achieved.

Q. Have any Project design changes occurred since completion of the VIA that could alter the results of that study.

A. Yes. On May 13, 2009 EDR was informed that certain design changes had been made to the S171 and T172 115 kV lines on the Rhode Island Reliability Project. These changes were relatively minor, but did involve some modification to proposed structure heights, locations and/or configurations in several areas.

Q. How were the potential effects of these changes on Project visibility and visual impact evaluated?

A. To determine the extent of these changes and how they might affect the appearance and visual impact of the Project, EDR reviewed a revised structure list, provided by Power Engineers, Inc., which identified all structures that had changed since preparation of the VIA. This review revealed that some structural changes might be visible in five of the 11

simulations prepared for the VIA. Consequently, simulations from these viewpoints (Viewpoints 52, 83, 88, 102, and 114) were modified to accurately illustrate the current Project design. The revised simulations were then re-evaluated by the same panel of landscape architects that conducted the original evaluation in the VIA. Because there was no significant change to the location and height of the proposed 345 kV structures, no revision of the viewshed or line-of-sight analyses included in the VIA (which were based on these taller structures) was considered necessary.

Q. What were the results of the re-evaluation conducted by the panel?

A. For each of the viewpoints where Project changes might be visible, 11x17 inch color prints were provided to the rating panel members, along with their previously completed rating forms. The original and revised simulations were then reviewed by the panel members, and any changes in visual impact noted. Two of the rating panel members indicated no change to their previous evaluation for any of the affected viewpoints. The third panel member indicated the same for four of the five viewpoints, but noted a reduction in contrast in the revised simulation from Viewpoint 83. Reduction in the visibility of overhead conductors against the sky (which resulted from a correction to the line weight rather than proposed design changes) was noted by this rater as the primary reason for a reduction in visual contrast in this view. These results indicate that modifications to the design of the proposed Project will not alter the conclusions of the VIA.

Revised simulations and results of this re-evaluation are presented in a VIA Addendum letter which is attached hereto as Attachment EDR-4.

Q. Have you made any other changes to the figures in the VIA or VIA Addendum?

A. Yes. We have corrected the locations indicated on the title blocks for Viewpoints 52, 101, and 102. Viewpoint 52, which was previously indicated as being in Smithfield, is now indicated as being in Johnston, and Viewpoints 101 and 102, which were previously indicated as being in the Village of Westcott, are now indicated as being in West Warwick.

Q. Have you reviewed the City of Warwick Planning Board advisory opinion?

A. Yes. The relevant findings presented in this advisory opinion are that the proposed Project structures "result in extreme visual impacts, are aesthetically unacceptable and are not consistent with the Warwick Comprehensive Plan." The lack of "appropriate setbacks, buffers and screening" between the Project and certain adjacent land uses is noted in multiple instances.

Q. How would you respond to this statement?

A. The VIA prepared for the Project concludes that the Project will have an aesthetic impact on surrounding residential land uses and viewers. However this impact is relatively local, in that viewpoints beyond one-quarter mile from the line will rarely include open views of the proposed Project. As demonstrated in the photolog and field notes included in Appendices B and C of the VIA, views toward the line are blocked by intervening trees in most locations. Open views are largely restricted to existing road crossings and sites within 1,000 feet of the line where open lawn or recent clearing for residential development provides open views. Of the 11 simulations prepared for this Project, only one was over one-quarter mile from the Project centerline (Viewpoint 101 at 1,500 feet or

0.28 mile), and eight (72 percent) were at distances of 500 feet or less. Thus only a very small portion of the visual study area will experience the types of impacts represented by the simulations.

While the panel evaluation included in the VIA indicated some level of increased contrast from all of the selected viewpoints, to a large extent the Project's visual impact from these viewpoints was mitigated by the presence of the existing transmission lines and cleared ROW. As such, the statement by the Warwick Planning Board is not supported by the results of the VIA. Siting the Project within an existing transmission corridor minimizes the need for additional ROW clearing, and significantly reduces the Project's contrast with existing land use and impact on base line scenic quality. Adverse impact was generally confined to near foreground views where existing screening was lacking. However, the composite score assigned by the rating panel did not exceed 2.44 (moderate), on a scale of 0 (insignificant) to 4 (strong), for any of the viewpoints evaluated. This scoring does not support the Warwick Planning Board's characterization of the Project's visual impact as "extreme".

Comments from the rating panel were consistent with this advisory opinion in their recommended use of screening to mitigate visual impacts. As discussed previously in this testimony, the feasibility and effectiveness of vegetative screening (primarily in off-ROW settings) should be evaluated.

Q. Have you reviewed the Statewide Planning Program advisory opinion?

A. Yes. In its evaluation of the proposed Project's consistency with the State Guide Plan, this advisory opinion states "the most significant long term impact of the Project will be

the lasting visual mark it leaves on the landscape". This impact is primarily attributed to the increased height and number of proposed transmission structures. The value of vegetative screening as a mitigation measure is considered to be limited, and an evaluation of design alternatives (including alternative structure height, quantity, and placement, as well as partial burial) is recommended to determine if additional means of mitigating visual impacts are feasible.

Q. How do you respond to this advisory opinion?

A. As stated above, an adverse visual impact is acknowledged in the VIA. However, this impact is limited in its geographic extent and significance due to 1) the abundant forest vegetation within the study area, which will provide screening in most locations, and 2) location of the Project within an existing transmission corridor, which limits the need for ROW clearing and minimizes Project contrast with existing land use. Topographic viewshed analysis of the existing and proposed 345 kV structures indicate, that despite the increased height and number of structures, potential increases in visibility within the study area are in the range of 5%. Rating panel evaluation of simulations from the most open, near foreground viewpoints available indicate that visual contrast of the Project with the existing conditions would generally not exceed a moderate level.

Further evaluation of design alternatives to identify additional means of mitigating visual impacts is appropriate, and consistent with recommendations included in the VIA. However, it should be noted that all design mitigation alternatives will require tradeoffs. Fewer structures generally will require greater structure height. Shorter structures will generally increase the number of structures required and decrease the height of vegetation

that can remain on the ROW. Alternate structure design/configuration could require a wider ROW, which would reduce separation distances and screening from adjacent land uses. Even undergrounding, while it may eliminate structure visibility, could have adverse visual impact if it requires significant vegetation removal or the siting and construction of transition stations in the Project area.

Q. Does this complete your testimony?

A. Yes it does.

ATTACHMENTS

EDR-1	Curriculum vitae of John D. Hecklau
EDR-2	Curriculum vitae of Jo Anne C. Gagliano
EDR-3	Curriculum vitae of Eric M. Mainzer
EDR-4	VIA Addendum Letter of June 25, 2009