

LIST OF TABLES (cont.)

<u>Table No.</u>		<u>Page No.</u>
Table N-3	Summary of Potential Land Use Effects	N-40
Table O-1:	Summary of Magnetic Fields Measured in a Connecticut Town (Bethel)	O-5
Table O-2:	Generation Dispatches and Transfers in MW assumed for Load-Flow Models.....	O-15
Table O-3:	Summary of pre-NEEWS (2012) and post-NEEWS (2017) EMF levels at the edge of the ROW at annual average loading (AAL) - North Bloomfield – Granby Junction – XS-1	O-20
Table O-4:	Measured Electric and Magnetic Fields for North Bloomfield – Granby Junction – XS-2 in the Vicinity of Statutory Facilities and a Residential “Focus Area”	O-23
Table O-5:	Summary of Pre-NEEWS (2012) and Post-NEEWS (2017) EMF levels at the edge of the ROW at annual average loading (AAL) - Granby Junction to CT/MA State Border (XS-2).....	O-30
Table O-6:	Measured electric and Magnetic Fields at ROW edge near Statutory and Potential Residential Areas in the vicinity of Possible Underground Line Variations to XS-2 - Granby Junction to CT/MA State Border.....	O-31
Table O-7:	Summary of pre-NEEWS (2012) and post-NEEWS (2017) magnetic field levels at annual average loading (AAL) – underground variations for part of Granby Junction to CT/MA State Border (XS-2).....	O-38
Table O-8:	Measured Electric and Magnetic Fields at ROW edge of Massachusetts Southern Route Alternative in the vicinity of “focus areas” and ‘statutory’ facilities	O-44
Table O-9:	Summary of Pre-NEEWS (2012) and Post- NEEWS (2017) EMF Levels at the edge of the Right-of-Way at Annual Average Loading (AAL) - Southern Alternative Route for Agawam to Ludlow Line.....	O-49
Table O-10:	Measured Electric and Magnetic Fields for the Manchester to Meekville Junction Circuit Separation Project (XS-21) in the vicinity of ‘Statutory’ Facilities	O-55
Table O-11:	Summary of Pre-NEEWS (2012) and Post-NEEWS (2017) EMF Levels at the edge of the ROW at Annual Average Loading (AAL) - Manchester to Meekville Junction.....	O-58
Table O-12:	Comparison of Base Design and the BMP Alternative Design	O-64
Table O-13:	Comparison of Base Design and Split-Phase Alternative for MMP	O-67
Table Q-1:	List of Federal, State, and Local Agency Consultations	Q-1
Table Q-2:	Possible Permits, Reviews and Approvals for the GSRP and MMP	Q-2
Table R-1:	Cross-Reference Between Council’s Guide and This Application.....	R-1

Appendices

An Appendix containing Confidential Critical Energy Infrastructure Information will be filed separately with the Siting Council. CL&P will seek a protective order restricting access to such information. It is anticipated that the Siting Council will provide a mechanism in the protective order for making the information available to interested parties and intervenors; and that copies of the information will be made available to interested parties and intervenors upon execution of a Non-Disclosure Agreement. The CEII Appendix will contain:

- A. Supplement to Section F – Project Need: (This supplement provides detailed results of power-flow studies identifying specific weaknesses and vulnerabilities in the Bulk Power Supply system.)
- B. Supplement to Section G –System Alternatives: Complete Chapter Six of Report of ICF Resources LLP: Assessment of Non-Transmission Alternatives to the NEEWS Transmission Projects: Greater Springfield Reliability Project, September 2008 (A copy of this report, with redactions to Chapter Six, is included in Vol. 5 of the Application. The full chapter reproduced in the CEII Appendix provides detailed results of power-flow studies identifying specific weaknesses and vulnerabilities in the Bulk Power Supply system.)

VOLUME 2: ENVIRONMENTAL-WETLANDS

- EX. 1: “Inventory and Delineation of Wetlands and Watercourses Along the Connecticut Portion of the Greater Springfield Reliability Project” by ENSR

VOLUME 3: ENVIRONMENTAL-CULTURAL RESOURCES

- EX. 1: Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project
- EX. 2: Historical and Archaeological Assessment Addendum for Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project: Manchester Substation to Meekville Junction Circuit Separation

VOLUME 4: ENVIRONMENTAL

- EX. 1: “Inventory of Potential Breeding Bird Species and Habitats Along the Connecticut Portions of Greater Springfield Reliability Project” by ENSR
- EX. 2: “Inventory of Vernal Pools and Amphibian Breeding Habitats Along the Connecticut Portion of the Greater Springfield Reliability Project” by ENSR
- EX. 3: “Environmental Sound Assessment Study – North Bloomfield Substation” by Burns & McDonnell Engineering Company, Inc.
- EX. 4: Federal, State, and Municipal Agencies Correspondence
 - 1) SHPO Letter to Jeff Borne, NU dated February 8, 2006. Re: Review of CT Archaeological Report.
 - 2) US Fish and Wildlife Services letter to Don Biondi, NU dated May 14, 2008. Re: Request for Data T&E species in Manchester.

- 3) US Fish and Wildlife Services letter to Don Biondi, NU dated Nov 8, 2007. Re: Request for Data on T & E Species.
- 4) CT DEP Bureau of Natural Resources letter to Don Biondi, NU dated March 17, 2008. Re: Natural Diversity Data Base Maps for CT Portion /Plants.
- 5) CT DEP letter to Don Biondi, NU dated March 10, 2008. Re: DEP Natural Diversity Database.
- 6) Town of Bloomfield Inland Wetlands and Watercourses Commission, NU dated August 28, 2008. Re: CL&P Location Review North Bloomfield Substation Expansion.
- 7) Town of Bloomfield Plan and Zoning Commission to Jeff Towle, NU dated September 2, 2008. Re: Proposed North Bloomfield Substation Expansion.
- 8) CT DEP National Diversity Database, NU dated September 15, 2008. Re: Update on the CL&P Greater Springfield Reliability Project Rare Species Surveys.

VOLUME 5: PLANNING

- EX. 1: ISO-NE Southern New England Transmission Reliability, "Report 1 – Need Analysis", January 2008, (Redacted)
- EX. 2: ISO-NE New England East-West Solutions (Formerly Southern New England Transmission Reliability), "Report 2 – Options Analysis", (Redacted) June 2008
- EX. 3: Assessment of Non-Transmission Alternatives to the NEEWS Transmission Projects: Greater Springfield Reliability Project, September 2008 (redacted to secure Critical Energy Infrastructure Information)
- EX. 4: Northeast Utilities "Solution Report for the Springfield Area The Greater Springfield Reliability Project Including The Springfield 115-kV Upgrades". "GSRP Solution Report" as of April 23, 2008 (Redacted July 2008).

VOLUME 6: ENGINEERING

- EX. 1: "Tutorial - Underground Electric Power Transmission Cable Systems" by Cable Consulting International

VOLUME 7: SUBSTATION DRAWINGS

- EX. 1: Proposed North Bloomfield Substation Modifications
Aerial View (Drawing #09082008NB)
General Arrangement (Drawing # 09091708NB)
Conceptual Layout (Drawing # CP-2a)

VOLUME 8: PHOTOGRAPHS

- EX. 1: Photographs Along the Greater Springfield Reliability Project
- EX. 2: Photographs Along the Manchester to Meekville Junction Circuit Separation Project

VOLUME 9: ROUTE MAPS

- EX. 1: Overview of Route on USGS Map
- EX. 2: Aerial Photographs – 400 Scale

VOLUME 10: ROUTE ILLUSTRATION

- EX. 1: Typical Cross Sections and Photo Simulations
- EX.2: Plan & Profile Drawings

VOLUME 11: ROUTE PLANS

- EX. 1: Aerial Photographs – 100 Scale

ATTACHMENT C

DIRECT TESTIMONY OF ROBERT CARBERRY / SCOTT NEWLAND

TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION.....	1
2.0 DESCRIPTION OF PROPOSED GSRP FACILITIES	3
A. The Proposed 345-kV Line from North Bloomfield Substation to the State Border.....	4
B. The Proposed North Bloomfield Substation Additions.....	8
C. Line Construction Process.....	11
D. Appearance of the ROW After Construction of the Line.....	14
E. Cost and Schedule	16
3.0 THE CONNECTICUT PORTION OF THE "SOUTHERN" ALTERNATE TO THE AGAWAM TO LUDLOW NORTHERN ROUTE	17
4.0 UNDERGROUND ALTERNATIVES TO THE NORTH BLOOMFIELD TO AGAWAM ROUTE	20
5.0 ELECTRIC & MAGNETIC FIELDS	29
A. Pre and Post Project EMF Values for Proposed Base Line Construction	33
B. Field Management Design Plan	36
(i) FDMP for North Bloomfield to Agawam ROW	37
(ii) FDMP for Connecticut Portion of Southern Route Alternative	41
C. Analysis of Rebuttable Presumption for Statutory Facilities	44
(i) 345-kV Line Construction on ROW from North Bloomfield to State Border.....	44
(ii) Connecticut Portion of Southern Route Alternative	53
6.0 THE MANCHESTER SUBSTATION TO MEEKVILLE JUNCTION CIRCUIT SEPARATION PROJECT	54
7.0 COMPLIANCE WITH STATUTORY AND BMP REQUIREMENTS.....	59
8.0 SAFETY	60
9.0 MUNICIPAL CONSULTATIONS.....	61
10.0 PUBLIC NOTICES, OUTREACH AND COMMENTS.....	64
12.0 CONCLUSION	68

ATTACHMENT D

DIRECT TESTIMONY OF LOUISE MANGO

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY 1

1. ENVIRONMENTAL DATA COLLECTION APPROACH..... 4

2. ENVIRONMENTAL CRITERIA AND ALTERNATIVES ANALYSES 6

3. ENVIRONMENTAL FEATURES ALONG THE PROPOSED GSRP ROUTE, INCLUDING THE NORTH BLOOMFIELD SUBSTATION 11

4. ENVIRONMENTAL FEATURES ALONG THE MMP ROUTE..... 18

5. POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES 22

6. THE GSRP UNDERGROUND VARIATIONS..... 38

7. THE CONNECTICUT PORTION OF THE “SOUTHERN ROUTE ALTERNATIVE” 43

8. ROLE OF THE DEVELOPMENT AND MANAGEMENT PLAN IN MITIGATING ENVIRONMENTAL EFFECTS..... 47

9. CONCLUSIONS..... 48

ATTACHMENT E
TABLE OF CONTENTS

Page No.

**CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON
THE EXPANDED ENVIRONMENTAL NOTIFICATION FORM – AUGUST 1, 2008 I**

1.0	EXECUTIVE SUMMARY	1-1
1.1	Introduction.....	1-1
1.1.1	Project Need and Benefit.....	1-2
1.2	Summary Project Description.....	1-3
1.3	Summary of Alternatives	1-6
1.4	Changes Since the EENF Filing	1-7
1.5	Summary of Impacts.....	1-7
1.6	Summary of Mitigation Measures	1-9
1.7	Required Permits.....	1-10
2.0	PROJECT DESCRIPTION.....	2-1
2.1	Project Elements	2-1
2.1.1	Existing System Serving Greater Springfield Area	2-1
2.1.2	The Preferred Northern Route (345-kV Loop) – Springfield to North Bloomfield	2-2
2.1.3	Re-Building 115-kV Lines and Distribution Lines.....	2-4
2.1.4	Switching Stations and Substations	2-7
2.2	Construction Methodology	2-24
2.2.1	Overhead Line Construction.....	2-25
2.2.2	Substation and Switching Station Construction.....	2-32
2.3	Construction Timing and Sequence.....	2-35
2.4	Right-of-Way Maintenance	2-36
2.4.1	Vegetation Management.....	2-36
2.4.2	Use of Herbicides.....	2-38
2.4.3	Impacts from Maintenance	2-38
2.5	Easements and Land Acquisition.....	2-39
2.5.1	Existing Substations.....	2-40
2.5.2	New Switching Stations.....	2-40
2.6	Schedule and Costs	2-41
2.6.1	Timetable	2-41
2.6.2	Estimated Costs	2-41
3.0	PROJECT ALTERNATIVES.....	3-1
3.1	Alternatives Analysis in the MEPA Process.....	3-1
3.2	Consideration of Non-Transmission Alternatives.....	3-2
3.2.1	Assessment of Non-Transmission Alternatives	3-3
3.3	Consideration of the Noticed-Alternative Southern Route	3-4
3.3.1	Description of the Noticed-Alternative Southern Route.....	3-4

	3.3.2	Comparison to the Preferred Northern Route	3-7
3.4		Consideration of the Noticed 115-kV Alternatives.....	3-9
	3.4.1	The Physical Configuration of the Proposed and Alternative 115-kV Improvements	3-12
	3.4.2	Alternative Route Sections for Certain 115-kV Improvements.....	3-15
	3.4.3	Methodology for Route Evaluation Criteria and Scoring	3-17
	3.4.4	Summary of Underground 115-kV Line-Route Alternatives	3-19
	3.4.5	Factors for Comparing the Alternative 115-kV Underground Line Routes with the Re-Building/Re-Conductoring of the Existing 115-kV Overhead Lines “in Place”	3-20
	3.4.6	Section by Section Summaries of Criteria Scoring Among Underground Line Routes and Comparisons with 115-kV Overhead Line Routes	3-24
3.5		Conclusion: Superiority of the 115-kV Overhead Routes Based on a Balancing of Impacts, Reliability, and Ability to Meet Need	3-84
3.6		Consideration of Alternative Construction Methodologies	3-85
4.0		EXISTING CONDITIONS	4-1
4.1		Primary Scoped Resources	4-1
	4.1.1	Wetland Protection Act Resource Areas.....	4-1
	4.1.2	Vernal Pools.....	4-10
	4.1.3	Rare Species.....	4-11
	4.1.4	Historic and Archaeological Resources	4-18
4.2		Other Resources	4-20
	4.2.1	Topography, Geology and Soils	4-20
	4.2.2	Plant and Animal Species Habitat	4-23
	4.2.3	Air Quality and Noise	4-24
	4.2.4	Environmental Screening - Potential Contaminated Sites	4-26
	4.2.5	Scenic Qualities, Open Space and Recreational Resources.....	4-35
	4.2.6	Traffic, Transit and Pedestrian and Bicycle Transportation	4-35
5.0		PREFERRED ROUTE IMPACTS	5-1
5.1		Primary Scoped Resources	5-1
	5.1.1	Wetland Protection Act Resource Areas.....	5-1
	5.1.2	Vernal Pools.....	5-10
	5.1.3	Rare Species.....	5-11
	5.1.4	Historic and Archaeological Resources	5-12
5.2		Other Resources	5-13
	5.2.1	Topography, Geology and Soils	5-13
	5.2.2	Plant and Animal Species Habitat	5-13
	5.2.3	Air Quality and Noise	5-14
	5.2.4	MCP-Regulated Sites.....	5-15
	5.2.5	Scenic Qualities, Open Space and Recreational Resources.....	5-16
	5.2.6	Traffic, Transit and Pedestrian and Bicycle Transportation	5-17

6.0	MITIGATION	6-1
6.1	Primary Scoped Resources	6-1
6.1.1	Wetland Protection Act Resource Areas.....	6-1
6.1.2	Vernal Pools.....	6-7
6.1.3	Rare Species.....	6-8
6.1.4	NHESP - Conservation & Management Permit Process	6-9
6.1.5	Historic and Archaeological Resources	6-13
6.2	Other Resources	6-14
6.2.1	Topography, Geology and Soils	6-14
6.2.2	Plant and Animal Species Habitat	6-16
6.2.3	Air Quality and Noise.....	6-17
6.2.4	MCP-Regulated Sites.....	6-17
6.2.5	Scenic Qualities, Open Space and Recreational Resources.....	6-18
6.2.6	Traffic, Transit and Pedestrian and Bicycle Transportation	6-18
7.0	DEMONSTRATION OF STATUTORY AND REGULATORY COMPLIANCE	7-1
7.1	Massachusetts Wetlands Protection Act	7-1
7.1.1	Bordering Vegetated Wetlands.....	7-1
7.1.2	Land Under Waterbodies and Waterways	7-5
7.1.3	Inland Bank.....	7-6
7.1.4	Riverfront Area.....	7-8
7.1.5	Bordering Land Subject to Flooding.....	7-10
7.1.6	Limited Project Provisions.....	7-12
7.1.7	Compliance with the Massachusetts Stormwater Policy	7-13
7.2	Massachusetts Public Waterfront Act.....	7-14
7.3	Water Quality Certification.....	7-17
7.4	Massachusetts Endangered Species Act	7-19
7.5	Archaeological and Historic Preservation	7-19
7.6	Energy Facilities Siting Board Approval	7-20
7.7	Massachusetts Aeronautics Commission (MAC) Review	7-22
7.8	Massachusetts Highway Department Encroachment Permits.....	7-23
7.9	Massachusetts Turnpike Authority Approval for Aerial Crossing	7-23
7.10	Federal Programs	7-23
7.10.1	Army Corps of Engineers	7-23
7.10.2	EPA.....	7-24
7.10.3	FAA	7-24
7.11	Local Programs	7-24
8.0	RESPONSE TO COMMENTS	8-1
8.1	Response to Comments.....	8-1
9.0	DRAFT SECTION 61 FINDINGS	9-1

**CONNECTICUT SITING COUNCIL
Docket 370A
APPLICATION OF THE CONNECTICUT LIGHT AND POWER COMPANY**

**COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD
WESTERN MASSACHUSETTS ELECTRIC COMPANY
EFSB 08-2 / D.P.U. 08-105/08-106**

**SUPPLEMENTAL
Record Evidence Concerning Agawam SS – Ludlow SS Route Selection:
Proposed “Northern Route” and “Southern Route Alternative”**

September 11, 2009

The Applicant, The Connecticut Light & Power Company (“CL&P”), proposes that the following material already in the record of one or both of the above captioned proceedings now pending before the Connecticut Siting Council (“CSC”) and the Massachusetts Energy Facilities Siting Board (“EFSB”) be considered by both agencies in the joint hearings to be held on September 22 and September 23. This designation is an addition to the designation filed with the Connecticut Siting Council on August 20, 2009:

Responses Filed With EFSB Responding to the Following Questions:

Project Approach

EFSB –A-45 Please refer to Exhs. EFSB-A-14, EFSB-A-15, and EFSB-A-16. Please discuss an alternative of using the Southern Route for a single 345 kV line from Ludlow to North Bloomfield with a spur or tap at South Agawam Junction extending to Agawam Station where a 345 kV / 115 kV transformer would be located. Include cost and environmental impacts in the discussion.

Undergrounding

EFSB-U-48 Please refer to the response to EFSB-U-38. If the southern route was selected, would the response change with regard to tree clearing and the lines that would need to remain during construction along the northern route?

Land Use

EFSB-LU-31 Please refer to the response to EFSB-LU-29. Please provide copies of the final MOUs when available. Would the MOUs with the five communities differ if the southern route is selected for the 345 kV line, since the northern route would still have the 115 kV upgrades?

EFSB-LU-32 Please also refer to the three versions of Table 5-5, Table 5-6, Table 5-10, Table 5-11 found in (1) the Petition; (2) Timothy Barton's prefiled testimony; and (3) the response to EFSB-LU-30. Are the versions in EFSB-LU-30 the most accurate accounting of the impacts along the two 345 kV routes, where the 22.9 miles of the northern route is entirely in Massachusetts and the 21 miles of the southern route includes 5.4 miles in Connecticut?

Visual

EFSB-V-61 Please refer to the Petition at 5-40 and the response to EFSB-LU-30. Please explain how the Company has concluded that visual impacts would be greater along the southern route when the southern route has significantly fewer residences and more buffer. Is this conclusion by the Company and the associated higher score for the southern route also dependent on the use of the northern route for the 115 kV upgrades? If the routes are compared solely based on the 345 kV lines, does the Company still conclude that the visual impacts are greater for the southern route? If so, please explain.