

Woburn to Wakefield Line Project

Town of Winchester Board of Selectmen

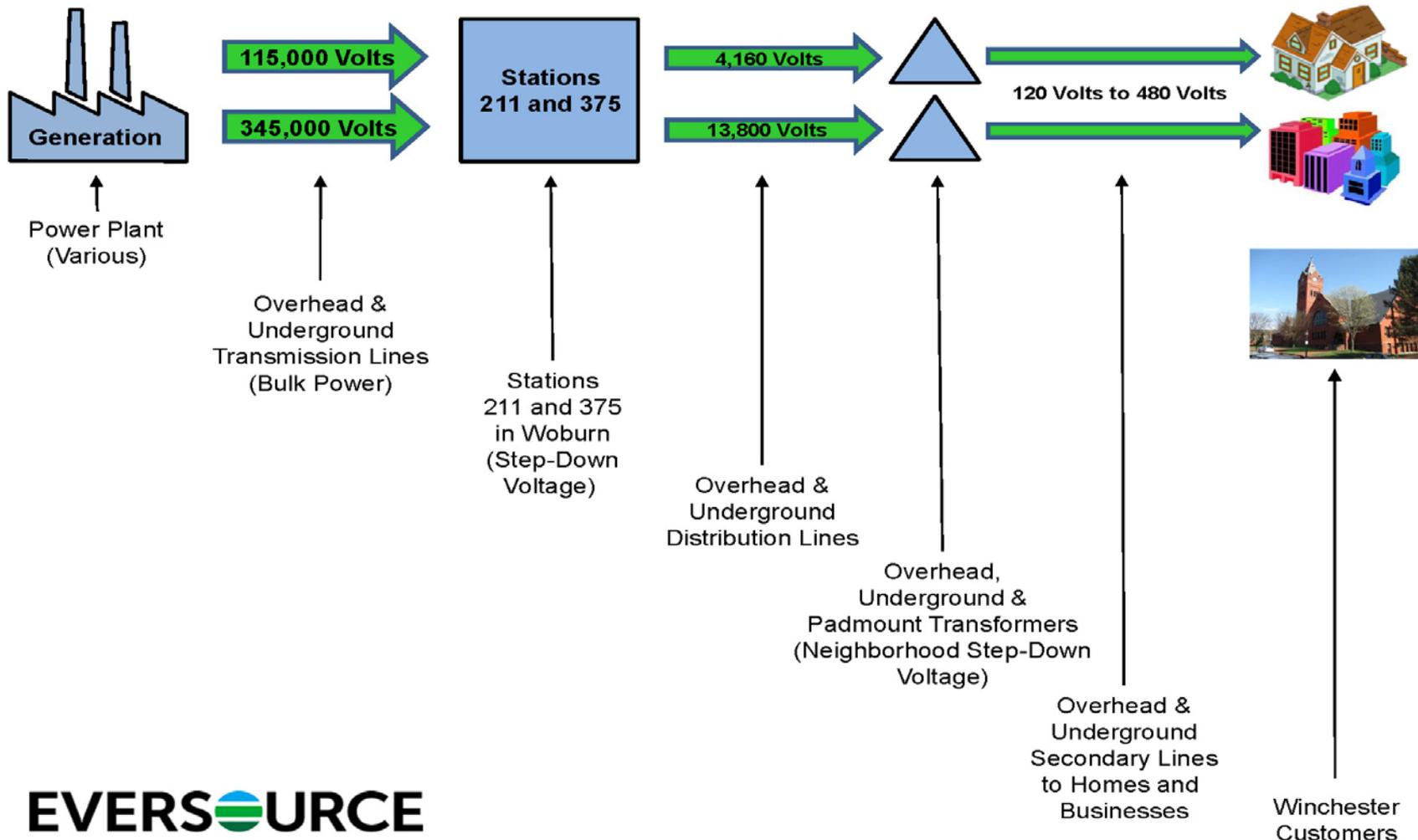
Lincoln School Auditorium

January 27, 2016

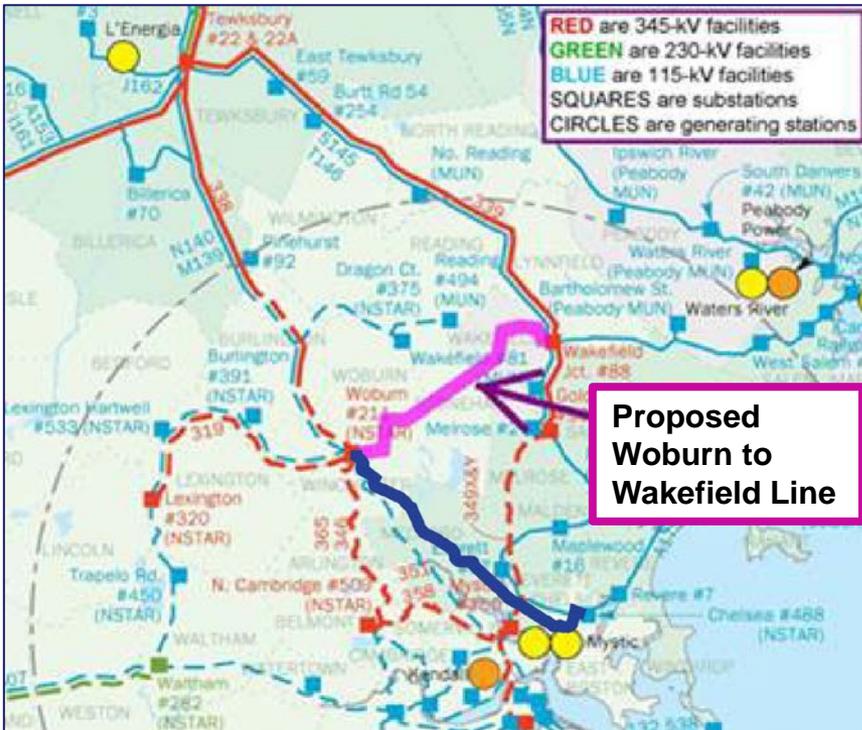


- Electric Transmission vs. Distribution
- Projects Need
- Benefits of the Project
- Woburn to Wakefield Line Project
 - Overview & Maps
 - Analysis of Route Alternatives
 - Construction Process
 - Proposed manhole locations
 - Cross section of cable installation and splice box/manholes
 - Overall Schedule
- Managing Impacts During Construction
- Electric and Magnetic Fields (EMF)
- Proactive Project Outreach
- Project Contacts

Typical Electrical Delivery System to Winchester



- The Independent System Operator for New England (ISO-NE), an independent corporation regulated by the Federal Energy Regulatory Commission (FERC), coordinates the operation of the electric transmission system in New England.
- ISO-NE identified inadequate transmission resources to serve the Greater Boston area, including potential overloads to the existing 115-kV and 345-kV systems serving this area.
- The Woburn to Wakefield Line Project is part of a suite of Projects designed to meet growing customer electricity demands and maintain system reliability in the Greater Boston and surrounding area.
- These new Projects were selected by ISO-New England as part of the “preferred solution” to solve this need.



- Improves reliable electric service throughout the greater Boston area.
- Reduces energy costs because the new transmission capacity allows lower cost generation from outside the area to serve the capacity needed within the area.
- Creates economic benefit in the area during construction: direct (construction jobs) and indirect (hotels, restaurants, etc.).
- Produces significant new property tax revenue for the towns in which the new facilities are located.

- Proposed new 345-kilovolt (kV) underground transmission line.
- Connects the Eversource Woburn Substation in Woburn with the National Grid Wakefield Junction Substation in Wakefield.
- Approximately 8.4 miles through Woburn (1.4 mi), Winchester (1.6 mi), Stoneham (1.8 mi), and Wakefield (3.6 mi).
- Includes improvements within the existing Woburn and Wakefield Junction substation properties.
- Coordinating closely with towns in planning, construction and restoration phases.

Woburn to Wakefield Line Project Preferred and Notice Alternative Routes



Woburn to Wakefield Line Project: Analysis of Route Alternatives

Sixteen individual criteria were used in the analysis of potential Project routes, along with input from municipalities and state agencies. These criteria include analytical criteria to determine the Project's impacts on the natural and human environments as well as constructability.

- Residential land use
- Industrial and commercial land use
- "Sensitive receptors"
- Public transit facilities
- Historic resources
- Potential for traffic congestion
- High impact crossings
- Public shade trees
- Wetlands
- Environmental & Water Resources
- Potential for subsurface contamination
- Length
- Street width
- Utility density
- Angles in streets (for constructability)
- Trenchless crossings

Preferred Routes were selected by the Companies based on the results of the route screening analysis and with input from the municipalities along the route, as well as state agencies, special interest groups, and other stakeholders.

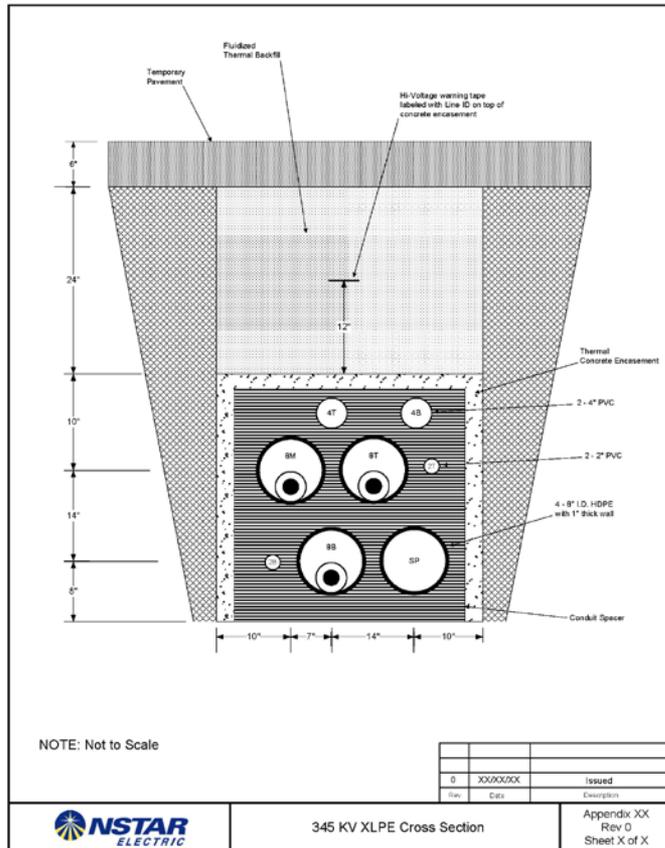
Woburn to Wakefield Construction Process



- Splice Vault/Manhole installation
- Trench excavation, conduit installation, backfill and temporary paving.
- River and railroad crossings
- Install cables between each manhole.
- Cable splicing and testing in manholes.
- Final pavement and other Project restorations completed per municipal town agreements.
- Construction at substations concurrent with cable construction.

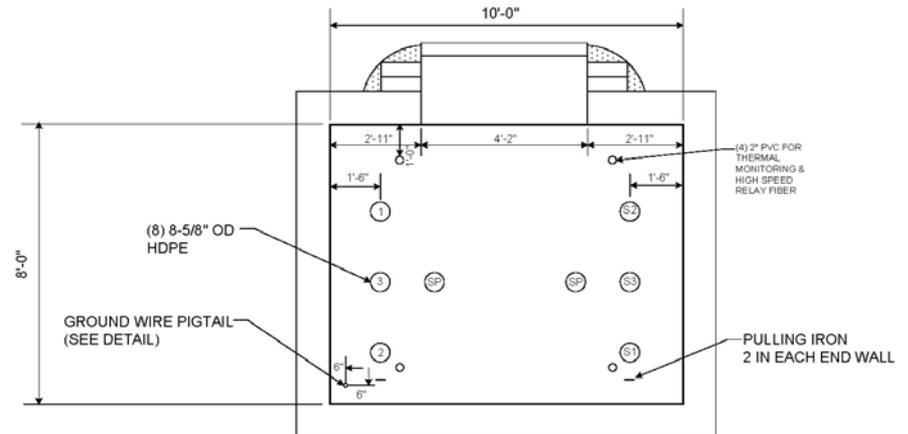
Woburn to Wakefield Typical Cross-Sections

Cable Installation



3' x 3' along entire route

Splice Vault/Manhole



Woburn to Wakefield Project

Overall Schedule

- Regional Public Open Houses to seek community input:
 - ✓ Woburn – April 27
 - ✓ Stoneham – April 28 and May 18
 - ✓ Winchester – April 29
 - ✓ Wakefield – April 30
- Massachusetts Energy Facility Siting Board (EFSB) Petition: Filed Sept 25, 2015
- EFSB Public Hearing: Held November 18, 2015
- EFSB Evidentiary hearings: expected in March, 2016 *
- EFSB Decision: anticipated around 1st Quarter 2017 *
- Start of Construction (pending EFSB approval): 2017 **
- Estimated Project In-Service Date: 2018 **

* Date to be determined by the EFSB

** Pending EFSB approval

- Traffic Management
 - ✓ Traffic Management Plan to be developed jointly with municipalities.
 - ✓ Police details paid by Project
 - ✓ Maintaining access
 - ✓ Hours of Construction
 - ✓ Maintain pedestrian safety
- Eversource and National Grid will communicate and work closely with neighbors and businesses in the communities throughout the process by providing:
 - ✓ Door-to-door outreach
 - ✓ Informational mailings via town certified abutting property owner list
 - ✓ Project website with progress updates
 - ✓ Project hotline and e-mail



MUTCD TEMPORARY TRAFFIC CONTROL ROAD SIGNS

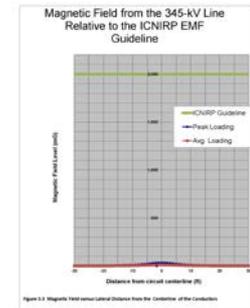
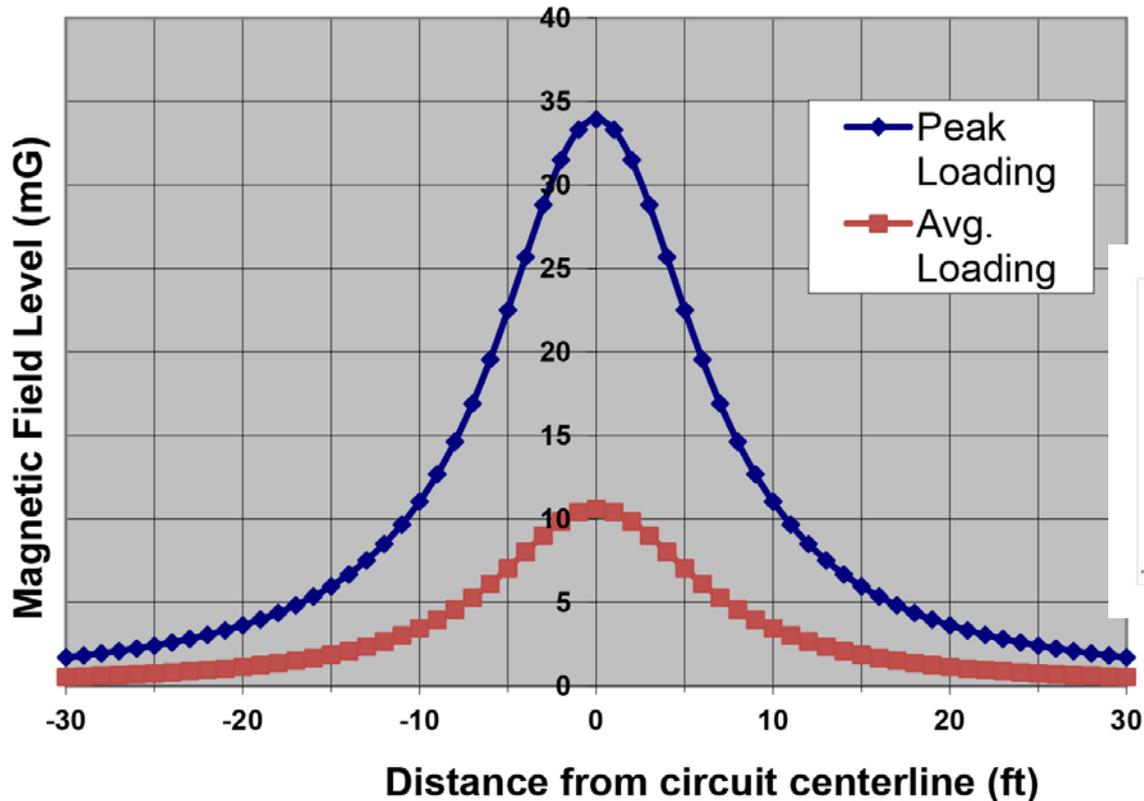
REVISIONS DURING CONSTRUCTION					
NO.	DATE	BY	CHK	APP	APP
1	10-29-13				
2	10-29-13				
3	10-29-13				
4	10-01-13				

Northeast Utilities Service Co.
CONNECTICUT LIGHT & POWER COMPANY
LINE 1151 SOUTH END - GLENBROOK
115-kV UNDERGROUND TRANSMISSION LINE
TRAFFIC CONTROL GENERAL NOTES
STAMFORD, CONNECTICUT

SCALE: 1" = 100'
DATE: 06-21-2013
DRAWN BY: D
CHECKED BY: J
DATE: 06-21-2013
PROJECT NO: 23370P1
SHEET NO: 01515-70001PG01

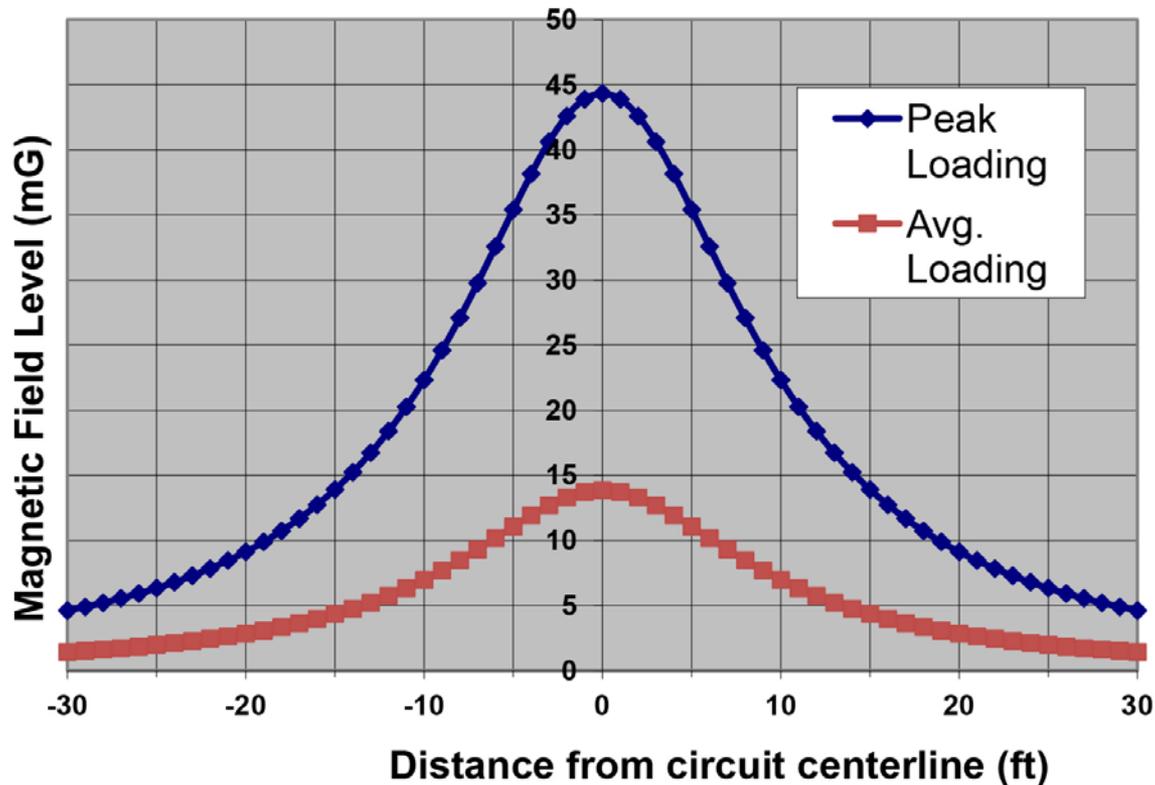
- As the proposed transmission lines are underground, the ground and cable sheath will shield the electric field completely. Magnetic fields are not shielded by the earth or by most materials, but they rapidly decrease in magnitude with increasing distance from the source.
- To help put the exposure in context, residents are exposed to magnetic fields from a variety of everyday sources, including household appliances such as microwave ovens when warming their morning coffee, refrigerators, electric can openers, hair dryers, etc. While these everyday exposures are well within recommended ranges, the level of magnetic fields is often much stronger than the level from transmission lines. Electric and magnetic fields associated with this transmission project are well below established, scientifically based limits on EMF exposure.
- As a matter of course, Eversource and National Grid design its new transmission facilities to mitigate the potential for EMF exposure. For this Project, the projected EMF levels, as analyzed and corroborated by an independent industry expert, fall well below the accepted health guidelines for magnetic field exposure.
- Effects on Electronics: no interference is expected with the normal operation of any sensitive electronic device. For example, the threshold value for potential interference with implanted cardiac pacemakers, a typical device having very sensitive electronics, is 1,000 mG – a threshold far higher than expected for this Project.

Underground Transmission Cables (Lines)

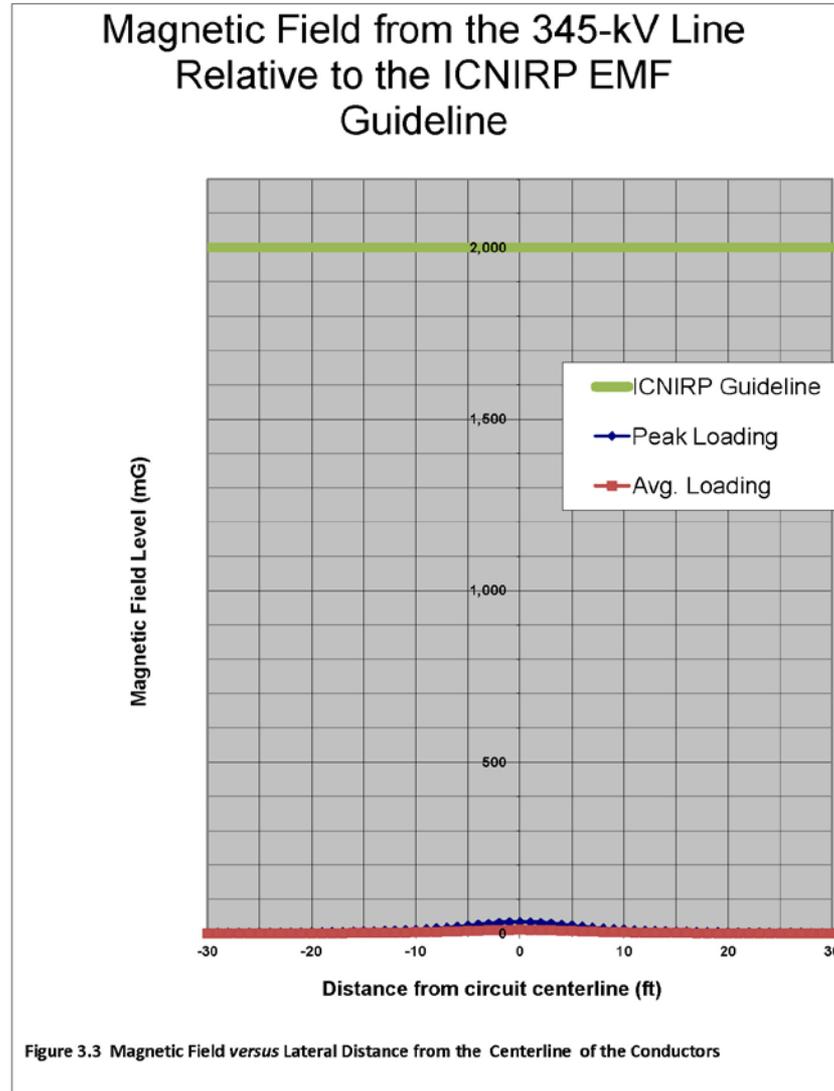


International Commission on Non-Ionizing Radiation Protection (ICNIRP) health-based guideline for the magnetic field level, below which no adverse health effects are expected, is 2000 mG continuous exposure for the general public – far below the expected maximum level as a result of the project.

Splice Vault/Manhole



International Commission on Non-Ionizing Radiation Protection (ICNIRP) health-based guideline for the magnetic field level, below which no adverse health effects are expected, is 2000 mG continuous exposure for the general public – far below the expected maximum level as a result of the project.



ALTERNATING CURRENT (AC) COMMON SOURCES OF MAGNETIC FIELD

- AC magnetic fields are common, and we encounter them everyday from a variety of sources.
- Magnetic fields are created when current passes through a wire such as those in your home and within appliances.
- Magnetic fields close to appliances can be higher than those from other sources including power lines.
- The magnetic field strength of an appliance or other source does not depend on how large, complex or noisy the source is.
- Magnetic field strength drops with distance from the source.

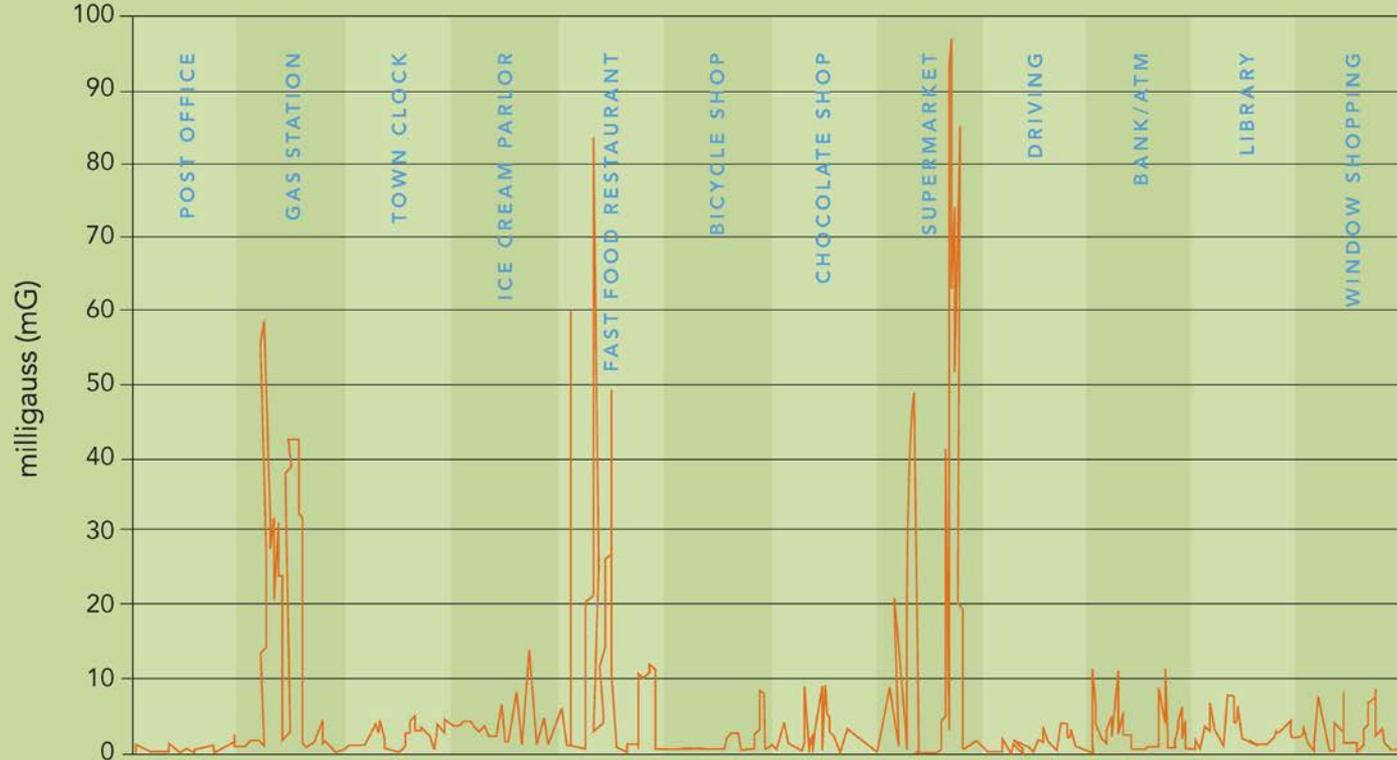
*Milligauss (mG) is the measurement used to indicate magnetic field strength.
Sources: 1. EMF in Your Environment, U.S. Environmental Protection Agency, 1992
2. EPRI Appliance Measurement Study, Report # 1020862, March 2010
3. Exponent Inc.

MAGNETIC FIELD SOURCES

		mG* at Typical User Distance
	Computers, Laptop	0 - 0.1
	LCD Televisions	0 - 0.6
	AC Adapters	0 - 0.8
	Vacuum Cleaners	0.1 - 23.1
	Coffee Grinders	0.8 - 40.9
	Copy Machine	1.0 - 90
	Gas Station	2 - 50
	Microwave Ovens	2 - 200
	Electric Toothbrushes	3.6 - 742
	Supermarket	5.0 - 100
	Electric Leaf Blowers	28.3 - 61.5
	Power Tools, Coded	46.8 - 123
	Massagers/Massage Chairs	214 - 500

MAGNETIC FIELDS ARE FOUND EVERYWHERE Exposures Measured in a Typical New England Town

We all pass through magnetic fields of varying strength every day.



Massachusetts

- Lower SEMA (Southeastern Massachusetts)
- Boston-Stoughton
- Greater Springfield Reliability Project
- Interstate Reliability Project (Note: 3 state Project in CT, RI, and MA)

Connecticut

- Greater Springfield Reliability Project
- Middletown-Norwalk (joint with United Illuminating)

New Hampshire

- Merrimack Valley Reliability Project

Rhode Island

- Rhode Island Reliability Project

Stakeholders

- Municipal officials
- State and federal elected officials and regulators
- Regional Planners
- Property owners and tenants
- Businesses
- Community Groups

Project Communication for Municipalities

- Briefings and Presentations
- E-mail updates

Public

- Door to door outreach
- News Releases/Media Advisories
- Informational mailings
- Dedicated 1-800# and email address
- Door hangers
- Project Website



Welcome

Need &
Benefits

Siting
Process

Project
Pages



Electricity 101

Newsroom

Connect
with Us

Email Us
844-646-8427

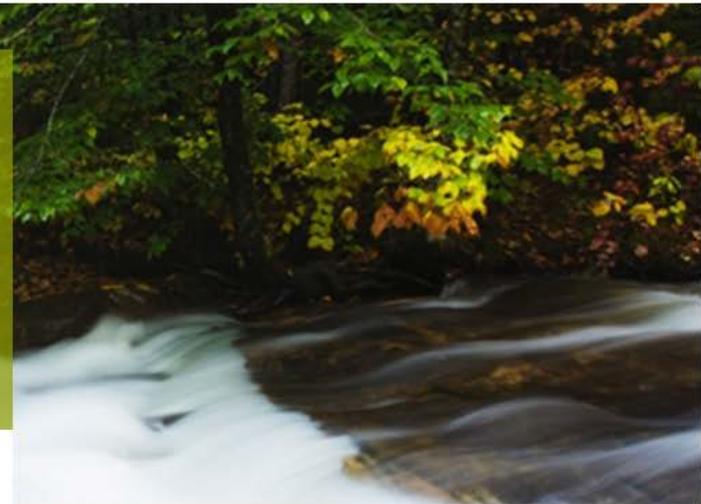
A strong electrical transmission system is vital to our region's safety, security, and economic prosperity. National Grid and Eversource are combining our decades of experience and commitment to customers to bring you the most cost-effective and readily implementable solution.

The proposed projects will meet system reliability needs and support current and future economic growth in Massachusetts and New Hampshire.

Solution Overview

Chosen by ISO New England (ISO-NE), the area's independent power system operator, as the preferred solution to address identified transmission reliability needs, the [Greater Boston and New Hampshire Solution](#) will use existing rights-of-way and roadways to minimize impact on our customers and provide the region with reliable power for years to come.

The Solution comprises various projects, each with individual merit, that will together meet the region's needs and improve the transmission grid. We look forward to putting our proven energy solutions to work for you!



Helpful Links

[Frequently Asked Questions >](#)

[National Grid Website](#)

[Eversource Website](#)

Project Hotline: **1-844-646-8427**

Project Website: **www.MA-NHSolution.com**

Project E-mail: **Info@MA-NHSolution.com**

1/25/2016

Woburn to Wakefield Line Project - The Greater Boston Solution

nationalgrid **EVERSOURCE**

The Greater Boston and New Hampshire Solution

Welcome	Need & Benefits	Siting Process	Project Pages	▼ Electricity 101	Newsroom	Connect with Us	Email Us 844-848-8427
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Woburn to Wakefield Line Project

A strong electrical transmission system is vital to our region's safety and economic prosperity. To improve reliability and address growing electricity demands identified by ISO-NE, National Grid and Eversource have teamed up to implement the Greater Boston and New Hampshire Solution, comprised of various projects in Massachusetts and New Hampshire.

One of the proposed projects is the Woburn to Wakefield Line, a new 345-kilovolt (kV) underground transmission line that will connect Eversource's Woburn Substation and National Grid's Wakefield Junction Substation in Wakefield. The proposed line will extend approximately 8.5 miles between two existing substations, passing through Woburn, Winchester, Stoneham, and Wakefield, MA. The project also includes improvements within the existing fence lines of the Woburn and Wakefield Substations.

Construction is expected to begin in 2017, with a projected in-service date of 2018.

A detailed routing analysis is underway to determine the preferred and alternative route options.

For more information about the Woburn to Wakefield Line Project, please view our [project overview sheet](#).

For a full listing of past events and public outreach, click [here](#).

Massachusetts Energy Facilities Siting Board Filings

To view the MA EFSB's file room docket for this proceeding, please click [HERE](#) and enter "EFSB15-04" in the "Docket Number" box at the top left of the page. You can also find links to each of the individual filing documents by clicking [HERE](#).



Helpful Links

[Frequently Asked Questions >](#)

[National Grid Website](#)

[Eversource Website](#)

EFSB File Information