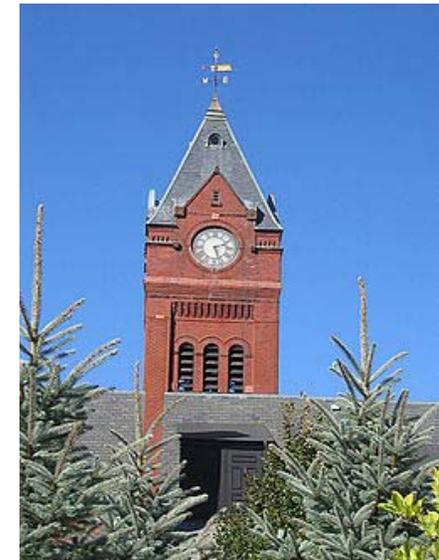


# Mystic to Woburn Line Project

Town of Winchester Board of Selectmen

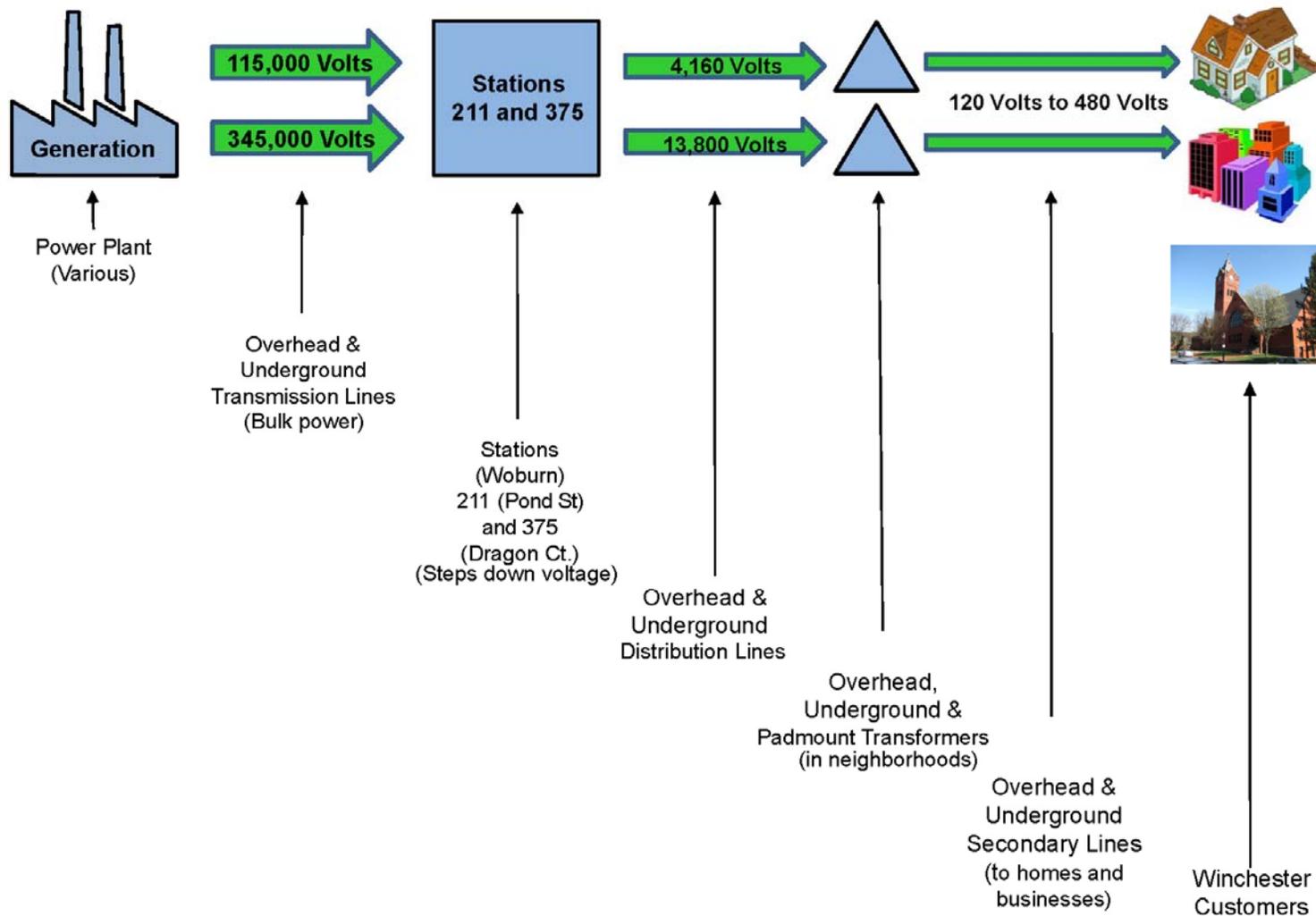
Lincoln School Auditorium

February 11, 2016

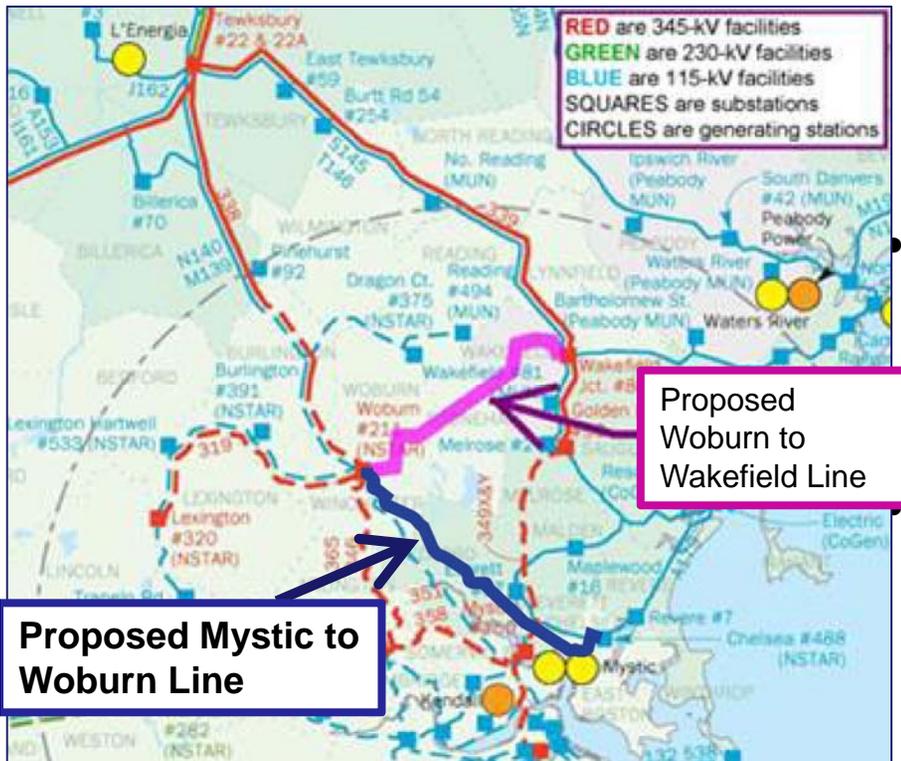


- Electric Transmission vs. Distribution
- Projects Need
- Benefits of the Project
- Mystic to Woburn Line Project
  - Overview & Maps
  - Analysis of Route Alternatives
  - Construction Process
  - Proposed manhole locations
  - Cross section of cable installation and splice box/manholes
  - Overall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

## Typical Electrical Delivery System to Winchester



# Project Need



- 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 Mystic to Woburn 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.

# Benefits of the Project

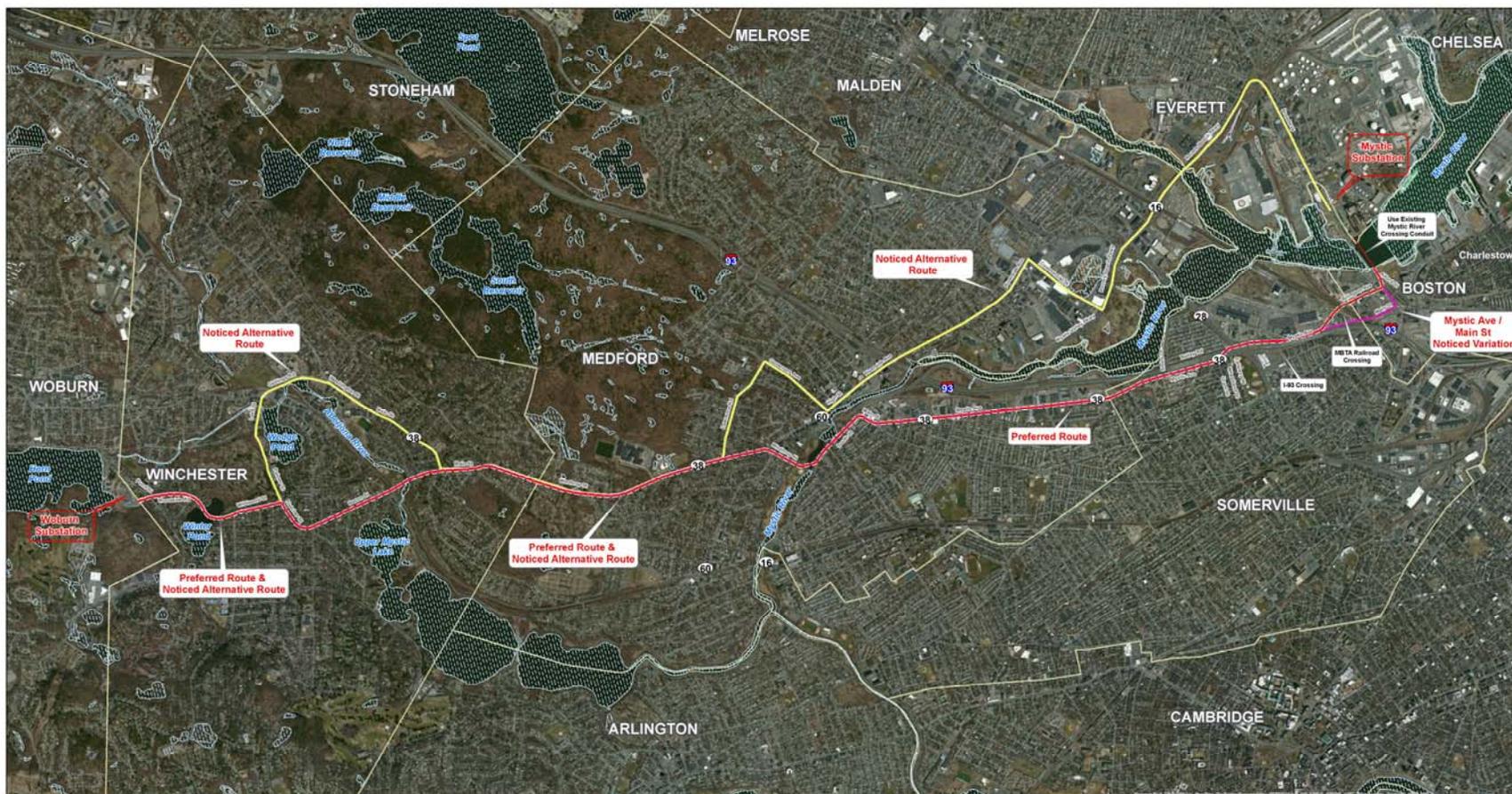
- Improves reliable electric service throughout the greater Boston area.
- Reduces energy costs because the new transmission capacity allows lower cost generation from outside the area to serve the capacity needed within the area.
- Creates economic benefit in the area during construction: direct (construction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

# Mystic to Woburn Line Project



- Proposed new 115-kilovolt (kV) underground transmission line.
- Connects the Eversource Mystic Substation in Everett and the Eversource Woburn Substation in Woburn.
- Approximately 7.2 miles through Boston (0.3 mi), Somerville (1.4 mi), Medford (3.2 mi), Winchester (2.3 mi) and short distances in Everett and Woburn.
- Includes improvements within the existing Woburn and Mystic Substations.
- Initial project investment estimate: approximately \$75 million.
- Coordinating closely with town in planning, construction and restoration phases.

# Mystic to Woburn Line Project Preferred and Notice Alternative Routes



<p><b>INDEX MAP</b></p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: red;">---</span> Preferred Route</li> <li><span style="color: magenta;">---</span> Mystic Ave / Main St Noticed Variation</li> <li><span style="color: yellow;">---</span> Noticed Alternative Route</li> <li><span style="color: red;">---</span> Existing Mystic River Crossing</li> <li><span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> MassDEP Wetlands</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Municipal Boundary</li> </ul>	<p><small>Map Notes: Base map: 2011-2013 Orthophotographs, MassGIS</small></p>	<p><b>New 115 kV Transmission Line Woburn Substation to Mystic Substation</b></p> <p><b>Figure 6-3 Preferred Route and Noticed Alternative Overview Map</b></p>	<p><b>EVERSOURCE</b> ENERGY</p> <p><b>POWER ENGINEERS</b> Environmental Services Div.     <b>Tighe &amp; Bond</b></p> <p>May 2015</p>
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# Mystic to Woburn Line Project Winchester



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# Mystic to Woburn 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 Company 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.

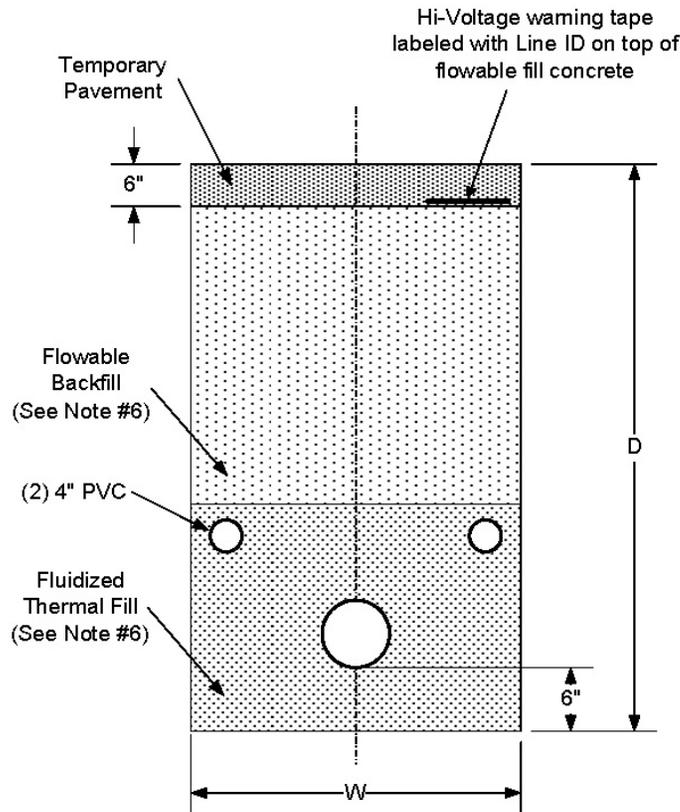
# Mystic to Woburn Construction Process



- Splice Vault/Manhole installation (approx. 10'x9.5'x24' long)
- 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.

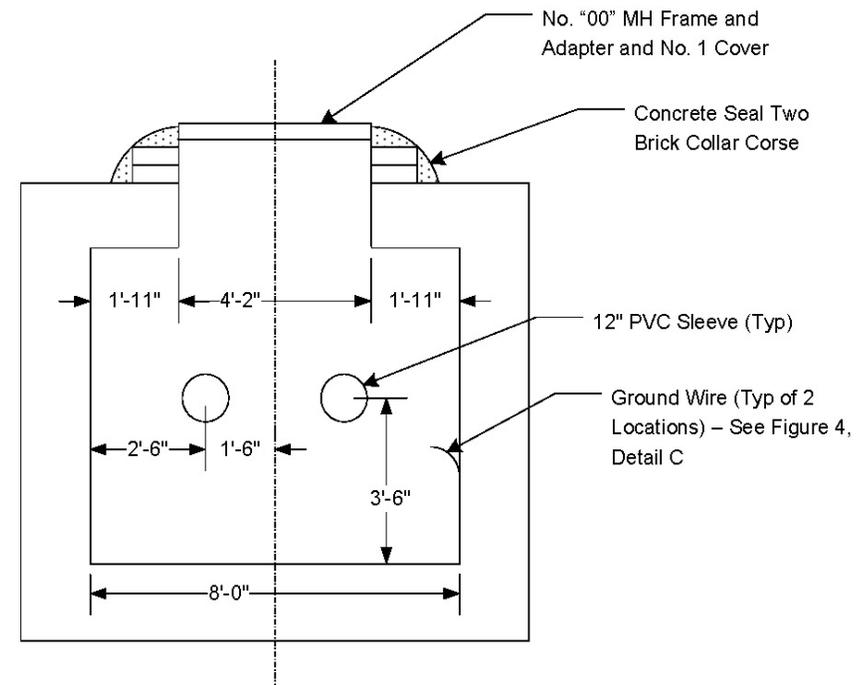
# Mystic to Woburn Typical Cross-Sections

## Typical Cable Installation



2' wide x 5' tall for Project route

## Splice Vault/Manhole



10' x 9.5' x 24' long approximately every 2000' along Project route

- Regional Public Open Houses to seek community input:
  - ✓ Woburn – April 27, 2015
  - ✓ Winchester – April 29, 2015
  - ✓ Somerville – May 4, 2015
  - ✓ Medford – May 11, 2015
- Massachusetts Energy Facility Siting Board (EFSB) Petition: Filed May 20, 2015
- EFSB Public Hearing: July 15, 2015 in Medford
- EFSB Evidentiary hearings: beginning January 20, 2016
- EFSB Decision: anticipated around 1<sup>st</sup> 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

# Managing Impacts During Construction

- 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 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	ISSUED FOR REVIEW	BY	TR	LH
1	10-29-13	ISSUED FOR REVIEW	DMF	TB	LH
2	10-29-13	ISSUED FOR REVIEW	DMF	TB	LH
3	10-29-13	ISSUED FOR REVIEW	DMF	TB	LH
4	10-31-13	ISSUED FOR REVIEW	DMF	TB	LH

**Northeast Utilities Service Co.**  
CONNECTICUT LIGHT & POWER COMPANY

LINE 1151 SOUTH END - GLENBROOK  
115-kV UNDERGROUND TRANSMISSION LINE  
TRAFFIC CONTROL GENERAL NOTES  
STAMFORD, CONNECTICUT

DATE	DMF	TBD	APP	LH	APP
06-21-2013	06-21-2013	06-21-2013	06-21-2013		
SCALE	1" = 100'	DATE	2-1-2	AC	23370P1
DATE	00-01-2013	DATE	01515-70001PG01		

## Electric and Magnetic Field (EMF)

- As the proposed transmission lines are underground, the ground will shield the electric field completely. Magnetic fields are not shielded by the earth, but 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 and electronics. While these everyday exposures are well within the allowed range (0-2000 mG), the level of magnetic fields is often much stronger than the level from transmission lines. Magnetic fields associated with this transmission project are well below established, scientifically based limits on 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.

## 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.

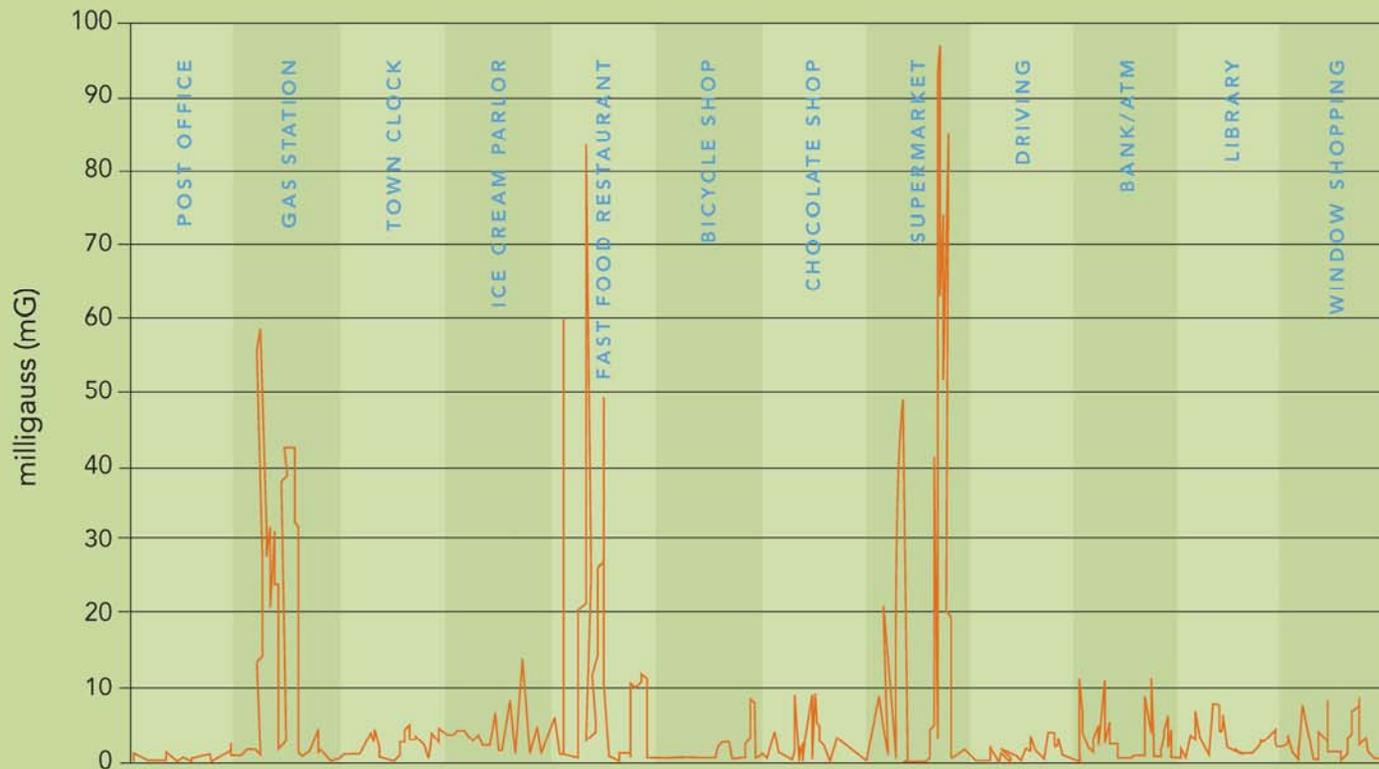
\*Milligauss (mG) is the measurement used to indicate magnetic field strength.  
Sources: 1. EMF in Your Environment, U.S. Environmental Protection Agency, 1992.  
2. EPRI Appliance Measurement Study, Report # 1020862, March 2010  
3. Exponent Inc.

### 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, Corded	46.8 - 123
	Massagers/Massage Chairs	214 - 500

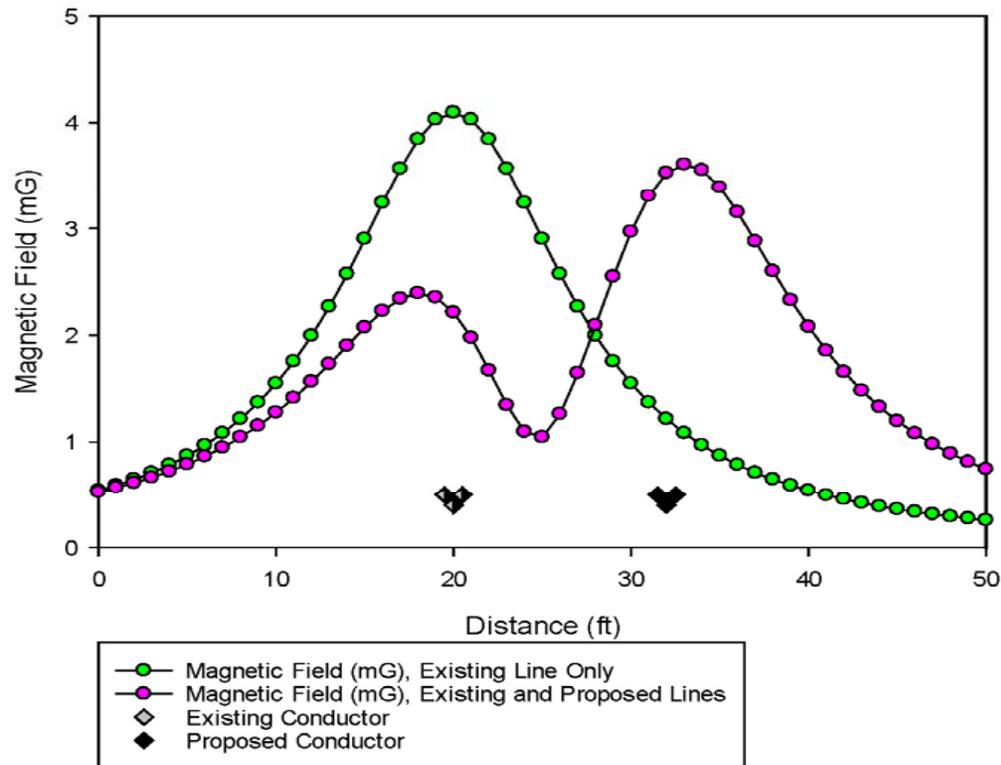
## MAGNETIC FIELDS ARE FOUND EVERYWHERE Exposures Measured in a Typical New England Town

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



## Underground Transmission Cables (Lines)

2018 Peak Loading, Existing vs. Proposed Configurations



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.

# Proactive Project Outreach

## 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



# Project Contacts



The Greater Boston and New Hampshire Solution

Welcome

Need & Benefits

Siting Process

Project Pages



Electricity 101

Newsroom

Connect with Us

Email Us  
844-646-8427

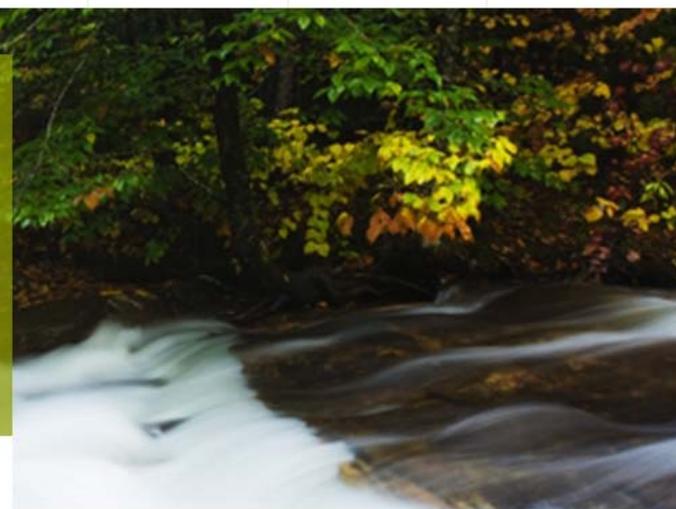
A strong electrical transmission system is vital to our region's safety, security, and economic prosperity. National Grid and Eversource are combining our decades of experience and commitment to customers to bring you the most cost-effective and readily implementable solution.

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](http://www.MA-NHSolution.com)**

Project E-mail: **[Info@MA-NHSolution.com](mailto:Info@MA-NHSolution.com)**



### Mystic to Woburn 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 Mystic to Woburn Line, a new 115-kilovolt (kV) underground transmission line that will connect the Mystic Substation in Everett and the Woburn Substation, both operated by Eversource. The proposed line will extend approximately 8 miles between the two substations and will pass through Everett, Boston (Charlestown), Somerville, Medford, Winchester, and Woburn. The proposed project also includes improvements within the existing fence lines of the Woburn and Mystic Substations.

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

For more information about the Mystic to Woburn 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 "EFSB15-03" 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](#). Filings, individual documents are available below.

For more information about the Mystic to Woburn Line Project, please view our [project overview sheet](#), or watch the Project video below, presented at the Public Open Houses in late April and early May 2015.



#### Helpful Links

[Frequently Asked Questions >](#)

[National Grid Website](#)

[Eversource Website](#)

[Click here for EFSB Project Information](#)