MURTHA

ANDREW W. LORD
860.240.6180 DIRECT TELEPHONE
860.240.5723 DIRECT FACSIMILE
ALORD@MURTHALAW.COM

September 11, 2012

VIA HAND DELIERY

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 431; South Norwalk Electric and Water

Dear Ms. Roberts:

I write on behalf of the South Norwalk Electric and Water ("SNEW") of the City of Norwalk to provide you with an original and 20 copies of SNEW's Application for a Certificate of Environmental Compatibility and Public Need (the "Application") for the construction of an electric substation facility at 180 Martin Luther King, Jr., Drive in Norwalk. The substation will improve reliability and increase capacity to serve the growing needs of the SNEW distribution system.

In accordance with Section 16-50l(b) of the Connecticut General Statutes this application package also includes the following documents:

1. an original Affidavit of Service of Application and the list of those served with a copy of the Application;

2. an original Affidavit of Public Notice stating that a notice of the intent to file the Application was published in The Hour on September 7th and 10th, 2012;

3. a bulk filing of four copies of the municipal consultation filing and approval, City of Norwalk Plan of Conservation and Development, Norwalk's Inland Wetlands and Watercourses Regulations and City of Norwalk Planning and Zoning Regulations; and

4. a check in the amount of $18,861.00 for the filing fee, and a check in the amount of $25,000.00 for the Municipal Participation fee.

An electronic copy of the Application will be submitted separately.

Thank you for your consideration of this Application. If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Andrew W. Lord

Enclosures

cc: Mr. John Hiscock
Mr. Scott Whittier
Mr. Christopher Swan

AFFIDAVIT OF SERVICE OF APPLICATION

STATE OF CONNECTICUT)
) ss:
COUNTY OF MIDDLESEX)

Pursuant to Section 16-50/(b) of the Connecticut General Statutes, I hereby certify that on September 11, 2012, I caused a copy of the Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for the construction of an electric substation facility at 180 Martin Luther King, Jr., Drive in Norwalk to be served upon the individuals and agencies set forth on the attached list by certified mail, return receipt requested.

Andrew W. Lord

On this the 11th day of September, 2012, before me, the undersigned officer, personally appeared Andrew W. Lord, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for purposes therein contained.

In Witness Whereof, I hereunto set my hand and official seal.

Commissioner of the Superior Court
~~Notary Public~~
~~My commission expires:~~

Application Service List

Office of the Attorney General	The Honorable George Jepson Attorney General 55 Elm Street Hartford, CT 06106
Department of Energy and Environmental Protection	Daniel C. Etsy, Commissioner Department of Environmental Protection 79 Elm Street Hartford, CT 06106-5127
Department of Public Health	Jewel Mullen, MD, MPH, MPA, Commissioner Department of Public Health 410 Capitol Avenue Hartford, CT 06134
Council on Environmental Equality	Barbara C. Wagner, Chair Council on Environmental Equality 79 Elm Street Hartford, CT 06106-5127
Office of Policy and Management	Benjamin Barnes, Secretary Office of Policy and Management 450 Capitol Avenue Hartford, CT 06106-1379
Department of Economic and Community Development	Catherine Smith, Commissioner Department of Economic and Community Development 505 Hudson Street, Hartford, CT 06106
Department of Agriculture	Steven K. Reviczky, Commissioner Department of Agriculture 165 Capitol Avenue Hartford, CT 06106
Department of Transportation	James P. Redeker, Commissioner Department of Transportation 2800 Berlin Turnpike Newington, CT 06131-7546
Connecticut Energy Advisory Board	Elin Katz, Chairperson Connecticut Energy Advisory Board c/o Jennifer Tokarczyk Office of Consumer Counsel Ten Franklin Square New Britain, CT 06051
FEDERAL AGENCIES	
United States Environmental Protection Agency	Lisa P. Johnson, Regional Administrator United States Environmental Protection Agency, Region I, New England 1 Congress Street, Suite 1100

	Boston, MA 02114-2023
NORWALK: ***Local Agencies***	
Chief Elected Official	Mayor Richard A. Moccia Mayor's Office 125 East Ave. P.O. Box 5125 Norwalk, CT 06856-5125
Conservation Commission	Alexis Cherichetti , Senior Environmental Officer Conservation Office 125 East Ave. Norwalk, CT 06851-5125
Inlands Wetlands Agency	Mr. Matthew Caputo, Chair Inland Wetlands Agency 125 East Avenue Norwalk, CT 06851-5125
Planning and Zoning Commission	Michael B. Greene, Director of Planning and Zoning Planning and Zoning 125 East Ave. Room 223 Norwalk, CT 06856
NORWALK: ***Elected Representatives***	
State Senatorial District	Bob Duff Senate District 25 50 Toilsome Ave Norwalk, CT 06851-2425 <u>Mailed to</u>: The Honorable Bob Duff State Senator, District 25 Legislative Office Building Room 2400 Hartford, CT 06106-1591
State Assembly Districts	Chris Perone House District 137 8 E Rocks Rd Norwalk, CT 06851-2919 <u>Mailed to</u>: The Honorable Chris Perone State Representative, House District 137

	Legislative Office Building Room 4023 Hartford, CT 06106-1591
	Bruce Morris House District 140 17 Sention Ave Norwalk, CT 06850-3207 <u>Mailed to:</u> The Honorable Bruce Morris State Representative, House District 140 Legislative Office Building Room 4030 Hartford, CT 06106-1591
	Terrie Wood House District 141 50 Saint Nicholas Rd Darien, CT 06820-2823 <u>Mailed to</u>: The Honorable Terrie Wood House Republican Office Legislative Office Building Room 4200 Hartford, CT 06106-1591
	Lawrence Cafero Jr. House District 142 6 Weed Ave Norwalk, CT 06850-2224 <u>Mailed to</u>: The Honorable Lawrence Cafero, Jr. House Republication Office Legislative Office Building Room 4200 Hartford, CT 06106-1591
	Gail Lavielle House District 143 109 Hickory Hill Rd Wilton, CT 06897-1135 <u>Mailed to</u>: The Honorable Gail Lavielle House Republican Office, District 143 Legislative Office Building Room 4200

	Hartford, CT 06106-1591

AFFIDAVIT OF PUBLIC NOTICE

I, Andrew W. Lord, Esq., being duly sworn hereby depose and say:

1. I am over the age of eighteen (18) years and understand the obligations of an oath.

2. The following is a true and accurate statement concerning the publication of a legal notice stating the intent of South Norwalk Electric and Water ("SNEW") to file an Application with the Connecticut Siting Council pursuant to Section 16-*50l*(a)(3) of the Connecticut General Statutes on September 11, 2012.

3. A legal notice, as described above, was published in the *The Hour* on September 7 and 10, 2012, and is attached hereto.

Andrew W. Lord, Esq.

STATE OF CONNECTICUT :
: ss. Hartford
COUNTY OF HARTFORD :

Subscribed and sworn to before me this 11th day of September, 2012.

Commissioner of the Superior Court
~~Notary Public~~
~~My Commission Expires~~:

PUBLIC NOTICE

APPLICATION FOR CERTIFCATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED CONCERNING AN ELECTRIC SUBSTATION AND ITS CONNECTION TO AN EXISTING 115 kV TRANSMISSION LINE IN THE CITY OF NORWALK

otice is hereby given pursuant to Chapter 277a, Sections 6-50k et seq. of the Connecticut General Statutes, and egulations pertaining thereby, of an application to be filed n or about September 11, 2012 with the Connecticut Siting ouncil by South Norwalk Electric and Water ("SNEW") (the Applicant"). This Application will seek approval to construct new electric substation and its connection to an existing ansmission line in Norwalk to improve electric service reli-ility for SNEW's customers and to increase SNEW's system apacity to meet forecast load growth in the South Norwalk ea. The proposed site of the facility is at 180 Dr. Martin uther King, Jr. Drive, Norwalk, CT, which is property cur-ntly owned and occupied by SNEW.

ne general public is invited to review the Application, after it filed, during normal business hours at the following busi-ess offices:

onnecticut Siting Council
0 Franklin Square
ew Britain, CT 06051

outh Norwalk Electric and Water
ne State Street
orwalk, CT 06854

orwalk City Hall
25 East Avenue
orwalk, CT 06851

ne Application can also be reviewed at the office of the un-ersigned during normal business hours. All additional in-uiries should be addressed to the undersigned or the Con-ecticut Siting Council, which can be reached at (860) 827-935 or http://www.ct.gov/csc.

SOUTH NORWALK ELECTRIC AND WATER

By: Andrew W. Lord
Murtha Cullina LLP
CityPlace I, 29th Floor
185 Asylum Street
Hartford, CT 06103-3469
(860) 240-6180
Its Attorneys

PUBLISHER'S AFFIDAVIT

STATE OF CONNECTICUT)
ss. Norwalk
COUNTY OF FAIRFIELD)

I, JOCELYN A. BATTISTA, being duly sworn, dispose and say:

1. I am over the age of eighteen (18) and believe in the obligation of an oath;

2. I am the Classified Advertising Supervisor of The Hour Publishing Company, publisher of the following newspapers:

   1) The Hour, a daily newspaper, published in Norwalk, Connecticut;

   2) The Wilton Villager, a weekly newspaper, published in Norwalk, Connecticut; and

   3) The Stamford Times, a weekly newspaper, published in Norwalk, Connecticut.

2. On September 7, 2012 and September 10, 2012 an advertisement placed by Murtha Cullina LLP was published in The Hour.

J. Battista

Jocelyn A. Battista, Classified Advertising Supervisor

Subscribed and sworn to before me this 11th day of September, 2012.

Brett L. Whitton

Brett L. Whitton
Commissioner of the Superior Court

SECOND TAXING DISTRICT/SOUTH NORWALK ELECTRIC AND WATER

75218

OUR REF. NO.	YOUR INVOICE NO.	INVOICE DATE	INVOICE AMOUNT	AMOUNT PAID	DISCOUNT TAKEN	NET CHECK AMOUNT
039259	APPLSUBSTATION	9/4/2012	18,861.00	18,861.00	0.00	18,861.00

75218

SNEW

SECOND TAXING DISTRICT
SOUTH NORWALK ELECTRIC AND WATER
164 WATER STREET
P.O. BOX 468
NORWALK, CT 06856-0468
203-866-4446 EXT:2032

Fairfield County Bank
A Division Of Fairfield County Bank Corp
Norwalk, CT 06850

51-7227-2211

EZShield™ Check Fraud Protection for Business

CHECK DATE	CONTROL NO.	AMOUNT
9/6/2012	075218	$*****18,861.00

PAY Eighteen Thousand Eight Hundred Sixty-One and 00/100---------- US Dollars

Void After 90 Days

TO THE ORDER OF
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051

AUTHORIZED SIGNATURE

Security features. Details on back.

⑈075218⑈ ⑆221172270⑆ 06210576 92⑈

SECOND TAXING DISTRICT/SOUTH NORWALK ELECTRIC AND WATER

75235

OUR REF. NO.	YOUR INVOICE NO.	INVOICE DATE	INVOICE AMOUNT	AMOUNT PAID	DISCOUNT TAKEN	NET CHECK AMOUNT
039264	DEP-APPSUBSTAT	9/4/2012	25,000.00	25,000.00	0.00	25,000.00

75235

SNEW

SECOND TAXING DISTRICT
SOUTH NORWALK ELECTRIC AND WATER
164 WATER STREET
P.O. BOX 468
NORWALK, CT 06856-0468
203-866-4446 EXT:2032

Fairfield County Bank
A Division Of Fairfield County Bank Corp
Norwalk, CT 06850

51-7227-2211

EZShield™ Check Fraud Protection for Business

CHECK DATE	CONTROL NO.	AMOUNT
9/6/2012	075235	$*****25,000.00

PAY Twenty-Five Thousand and 00/100---------- US Dollars

Void After 90 Days

TO THE ORDER OF
TREASURER, STATE OF CONNECTICUT
410 CAPITAL AVE P O BOX 340308
WILLIAM SULLIVAN MS#51WAT
HARTFORD, CT 06134-0308

AUTHORIZED SIGNATURE

Security features. Details on back.

⑈075235⑈ ⑆221172270⑆ 0621057692⑈

SNEW

VOLUME 1

CONNECTICUT SITING COUNCIL APPLICATION
Connecticut General Statutes Section 16-50*l*(a)(1)

For a Certificate of Environmental Compatibility and Public Need

SONO SUBSTATION
Norwalk, Connecticut

September 2012

Submitted to:
Connecticut Siting Council

Submitted by:
South Norwalk Electric and Water
One State Street
Norwalk, Connecticut 06854

APPLICATION OF THE SECOND TAXING DISTRICT OF THE CITY OF NORWALK, SOUTH NORWALK ELECTRIC AND WATER

For a

CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

For an

ELECTRIC SUBSTATION

And its

CONNECTION TO AN EXISTING 115 kV TRANSMISSION LINE

Located at

180 Dr. Martin Luther King Jr. Drive

NORWALK, FAIRFIELD COUNTY, CONNECTICUT

September 2012

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GLOSSARY OF ACRONYMS

Acronym	Definition
AC	Alternating Current
ADT	Average Daily Traffic Volume
ATS	Automatic Transfer Switch
CB	Circuit Breaker
CCVTs	Coupling Capacitor Voltage Transformers
CGS	Connecticut General Statutes
CHC	Connecticut Historical Commission
CL&P	Connecticut Light & Power
CMEEC	Connecticut Municipal Electric Energy Cooperative
ConnDOT	State of Connecticut, Department of Transportation
CONVEX	Connecticut Valley Exchange
CSC	Connecticut Siting Council
CS	Circuit Switchers
dB	Decibel
dBA	Decibel, on the A-weighted scale
DECD	Department of Economic and Community Development
DEEP	State of Connecticut, Department of Energy and Environmental Protection
EMF	Electric and Magnetic Fields
FEMA	Federal Emergency Management Agency
HVAC	Heating Ventilation and Air Conditioning
Hz	Hertz
ISO	Independent System Operator
kV	Kilovolt
MOD	Motor Operated Disconnect
MVA	Mega-volt-amperes
MW	Megawatt
NDDB	Natural Diversity Database
NEMA	National Electric Manufacturer's Association
NEPOOL	New England Power Pool
NIEHS	National Institute of Environmental Health Sciences
NRA	Norwalk Redevelopment Agency
NUSCO	Northeast Utilities Service Company

OPM	Office of Policy and Management
PTF	Pool Transmission Facility
ROW	Right-of-Way
SCADA	Supervisory Control and Data Acquisition
SECP	Soil Erosion Control Plan
SHPO	State Historic Preservation Officer
SNEW	South Norwalk Electric and Water
SPDES	State Pollution Discharge Elimination System
SWRPA	South Western Regional Planning Agency
UI	United Illuminating
UPS	United States Postal Service
USDA NRCS	United States Department of Agriculture, Natural Resources Conservation Service
USGS	United States Geological Survey

CONNECTICUT SITING COUNCIL APPLICATION GUIDELINES CHECKLIST
ELECTRIC SUBSTATION FACILITY
April 2010

This application guide is to assist applicants in filing for a Certificate of Environmental Compatibility and Public Need (Certificate) from the Connecticut Siting Council (Council) for the construction of an electric substation facility. Such facilities are defined in General Statutes § 16-50i (a) (4).

Applicants should consult General Statutes §§ 16-50g through 16-50aa and Sections 16-50j-1 through 16-50z-4 of the Regulations of Connecticut State Agencies to assure complete compliance with the requirements of those sections. Where appropriate, statutory and regulatory references are noted below:

I. Pre-Application Process

A. Municipal Consultation (General Statutes § 16-50l (e))

"...at least 60 days prior to the filing of any application with the Council, the applicant shall consult with the municipality in which the facility may be located and with any adjoining municipality having a boundary not more than 2500 feet from such facility concerning the proposed and alternative sites of the facility. Such consultation with the municipality shall include, but not be limited to good faith efforts to meet with the chief elected official of the municipality. At the time of the consultation, the applicant shall provide the chief elected official with any technical reports concerning the public need, the site selection process and the environmental effects of the proposed facility. The municipality may conduct public hearings and meetings as it deems necessary for it to advise the applicant of its recommendations concerning the proposed facility. Within 60 days of the initial consultation, the municipality shall issue its recommendations to the applicant. No later than 15 days after submitting the application to the Council, the applicant shall provide to the Council all materials provided to the municipality and a summary of the consultations with the municipality including all recommendations issued by the municipality." **Refer to Municipal Consultation Filing in Bulk Filing #1**

"...the applicant shall submit to the Connecticut Energy Advisory Board (CEAB) the same information that it provides to a municipality...on the same day of the consultation with the municipality."

B. Application to Municipal Agencies (General Statutes § 16-50x (d))

Municipal zoning and inland wetland agencies may regulate and restrict the location of an electric substation facility. Such action must be taken within 30 days of application filed with the Council. Orders made by the municipal zoning and inland wetland agencies may be appealed within thirty days by any party or municipality required to be served with a copy of the application.

II. Form of Application (Regs. Conn. State Agencies § 16-50*l*-2)

All applications shall include the following components:

A. The purpose for which the application is being made; **See Section B**

B. The statutory authority for such application; **See Section C**

C. The exact legal name of each person seeking the authorization or relief and the address or principal place of business of each such person. If any applicant is a corporation, trust association, or other organized group, it shall also give the state under the laws of which it was created or organized; **See Section D**

D. The name, title, address, and telephone number of the attorney or other person to whom correspondence or communications in regard to the application are to be addressed. Notice, orders, and other papers may be served upon the person so named, and such service shall be deemed to be service to the applicant; **See Section D**

E. Such information as may be required under the applicable provisions of Section 16-50/ of the Connecticut General Statues;

F. Such information as any department or agency of the state exercising environmental controls may, by regulation, required; and

G. Such information as the applicant may consider relevant.

III. Filing Requirements (Regs., Conn. State Agencies § 16-50j-12)

A. Except as may be otherwise required, at the time applications are filed with the Council, there shall be furnished to the Council an original and 20 copies. All filings from the applicant, parties, or intervenors must consist of an original and 20 copies, labeled with the docket number, properly collated and paginated, and bound. An electronic version of all filings, as appropriate, should be provided.

B. Bulk filing should be provided of not less than four (4) copies of the applicable town zoning and Inland wetlands regulations (including a map showing the location of inland wetlands if relevant) and plan of development and any other publicly available material in support of the application. These documents shall include effective dates, revision dates, or dates of adoption. If no such dates are available, the document shall include the date the document was obtained.

C. Applications filed for the purpose of any proceeding before the Council shall be printed or typewritten on paper cut or folded to letter size, 8 1/2 by 11 inches. Width of margins shall be not less than one inch. The impression shall be on only one side of the papers, unless printed, and shall be double spaced, except that quotations in excess of five typewritten lines shall be single spaced and indented. Mimeographed, multigraphed, photoduplicated, or the like copies will be accepted as typewritten, provided all copies are clear and permanently legible. In accordance with the State Solid Waste Management Plan, all filings should be submitted on recyclable paper, primarily regular weight white office paper. Applicants should avoid using heavy stock paper, colored paper, and metal or plastic binders and separators.

D. Every original shall be signed by the applicant or by one or more attorneys in their individual names on behalf of the applicant. All applications shall be filed at the office of the Council, Ten Franklin Square, New Britain, Connecticut 06051. Service of all documents and other papers filed as applications, briefs, and exhibits, but not limited to those categories, shall be by personal delivery or by first class mail to the Council and all parties and intervenors to the proceeding, unless service has been waived.

E. Any exhibits, sworn written testimony, data, models, illustrations, and all other materials that the applicant deems necessary or desirable to support the granting of the application shall be attached to the application. In addition, annexed materials shall include such exhibits, sworn written testimony, and other data that any statute or regulations may require. The applicant may request that administrative notice be taken of and refer in the application to portions of other Council docket records and generic hearings or statements prepared by the Council as a result of generic hearings. All documents, including but not limited to maps, shall include effective dates, revision dates, or dates of adoption. If no such dates are available the document shall include the date the document was obtained. Maps must include a key table(s) and a matching source list/table, appropriately organized.

F. Applicants may present material in a sequence and format most appropriate for the particular proposal. To allow timely Council review, include with the application a copy of this form with page references for each item required in Section VI below.

G. Potential applicants are urged to carefully review Connecticut General Statutes §§ 16-50*l*(e), 16-50i and 16a-7c to determine whether the proposed project falls within the Connecticut Energy Advisory Board (CEAB) "request-for-proposal" process.

IV. Application Filing Fees (Conn. Gen. Stat. §16-50*l*(a); Conn. Gen. State. §4-189j; Regs., Conn. State Agencies §16-50v-1a)

Conn. Gen. Stat. §16-50*l*(a) mandates a municipal participation fee of $25,000 to be deposited in the account established in accordance with Conn. Gen. Stat. §16-50bb.

The filing fee for an application is determined by the following schedule:

Estimated Construction Cost	Fee
Up to $5,000,000	0.05% or $1,250.00, whichever is greater;
Above $5,000,000	0.1% or $25,250.00, whichever is less.

All application fees shall be paid to the Council at the time an application is filed with the Council. Additional assessments may be made for expenses in excess of the filing fee. Fees in excess of the Council's actual costs will be refunded to the applicant.

V. Municipal Participation Account (Conn. Gen. Stat. §16-50bb)

Conn. Gen. Stat. §16-50bb requires that each application be accompanied by a payment in the amount of $25,000 to be deposited in a Municipal Participation Account

within the General Fund to defray expenses incurred by each municipality entitled to receive a copy of the application under Conn. Gen. Stat. §16-50/ that chooses to participate as a party to the certification proceeding. Any moneys remaining at the end of the proceeding shall be refunded to the applicant.

VI. Contents of Application (Conn Gen. Stat. §16-50l(a)(1)(A))

An application for a Certificate for the construction of an electric substation or switchyard shall include the following:

A. An executive summary. A description and the location of the proposed facility, including an artist's rendering and/or narrative describing its appearance. **See Sections A & B**

B. A description of the technical specifications, including but not limited to: **See Sections E, F, and G and Exhibits 1 and 3**
   1. Itemized estimated costs;
   2. Comparative costs of alternatives considered;
   3. Facility service life;
   4. Bus design and specifications;
   5. Overhead take-off design, appearance, and heights, if any;
   6. Length of interconnections to transmission and distribution;
   7. Initial and design voltages and capacities;
   8. Rights-of-way and access-way acquisition;
   9. Transmission connections and distribution feeders; and
   10. Service area.

C. A statement and full explanation of why the proposed facility is needed and how the facility would conform to a long-range plan for the expansion of the electric power grid serving the state and interconnected utility systems that would serve the public need for adequate, reliable, and economic service, including: **See Sections F & G**
   1. A description and documentation of the existing system and its limitations;
   2. Justification of the proposed in-service date;
   3. The estimated length of time the existing system is judged to be adequate with and without the proposed facility;
   4. Identification of system alternatives with the advantages and disadvantages of each;
   5. If applicable, identification of the facility in the forecast of loads and resources pursuant to Connecticut General Statutes §16-50r; and
   6. An impact assessment of any electromagnetic fields to be produced by the proposed transmission line, pursuant to Conn. Gen. Stat. §16-50/(a)(1)(A).

D. A justification for overhead portions, if any, including life cycle cost studies comparing overhead alternatives with underground alternatives.

E. A schedule of dates showing the proposed program of right of way or property acquisition, constructions, completion and operation. **See Sections G & M**

F. A description of the named sites, including: **See Section H and Exhibits 1 & 3**

1. The most recent U.S.G.S. topographic quadrangle map (scale 1 inch = 2,000 feet) marked to show the site of the facility and any significant changes within a one mile radius of the site.

2. A map (scale not less than 1 inch = 200 feet) of the lot or tract on which the facility is proposed to be located showing the acreage and dimensions of such site, the name and location of adjoining public roads or the nearest public road, and the names of abutting owners and the portions of their lands abutting the site and the proximity to the following: **See Section H, Figure H-5 and Table H-2**
    a. Settled areas;
    b. Schools and daycare centers;
    c. Hospitals;
    d. Group homes;
    e. Forests and parks;
    f. Recreational areas;
    g. Seismic areas;
    h. Scenic areas;
    i. Historic areas;
    j. Areas of geologic or archaeological interest;
    k. Areas regulated under the Inland Wetlands and Watercourses Act;
    l. Areas regulated under the Tidal Wetlands Act and Coastal Zone Management Act;
    m. Public water supplies;
    n. Hunting or wildlife management areas; and
    o. Existing transmission lines within one mile of the site.

3. A site plan (scale not less than 1 inch = 40 feet) showing the proposed facility, set back radius, existing and proposed contour elevations, 100 year flood zones, waterways, wetlands, and all associated equipment and structures on the site. **See Exhibit 3**

4. Where relevant, a terrain profile showing the proposed facility and access road with existing and proposed grades; and

5. The most recent aerial photograph (scale not less than 1 inch = 1,000 feet) showing the proposed site, access roads, and all abutting properties. **See Exhibit 1 and Figure H-1**

G. A justification for selection of the proposed site including a comparison with alternative sites which are environmentally, technically, and economically practicable. Include enough information for a complete comparison between the proposed site and any alternative site contemplated. **See Section F**

H. Safety and reliability information, including: **See Sections G & J**
    1. Provisions for emergency operations and shutdowns; and
    2. Fire suppression technology.

I. A description of the effect that the proposed facility would have on the environment, ecology, and scenic, historic, and recreational values, including effects on: **See Section J**

1. Public health and safety;
2. Local, state, and federal land use plans;
3. Existing and future development;
4. Roads;
5. Wetlands;
6. Wildlife and vegetation, including rare and endangered species, and species of special concern, with documentation by the Department of Environmental Protection Natural Diversity Data Base;
7. Water supply areas;
8. Archaeological and historic resources, with documentation by the State Historic Preservation Officer; and
9. Other environmental concerns identified by the applicant, the Council, or any public agency, including but not limited to, where applicable:
    a. Coastal Consistency Analysis
    b. Connecticut Heritage Areas
    c. Ridgeline Protection Zones
    d. Aquifer Protection Zones
    e. DOT Scenic Lands
    f. State Parks and Forests
    g. Agricultural Lands
    h. Wild and Scenic Rivers
    i. Protected Rivers
    j. Endangered, Threatened and Special Concern Species

J. Sight line graphs to the named sites from visually impacted areas such as residential developments, recreational areas, and historic sites; **See Section J and Figure J-1**

K. A statement explaining mitigation measures for the proposed facility including: **See Section K**
    1. Description of proposed site clearing for access road and compound including type of vegetation scheduled for removal and quantity of trees greater than six inches diameter at breast height and involvement with wetlands;
    2. Construction techniques designed specifically to minimize adverse effects on natural areas and sensitive areas;
    3. Special routing or design features made specifically to avoid or minimize adverse effects on natural areas and sensitive areas;
    4. Establishment of vegetation proposed near residential, recreational, and scenic areas; and
    5. Methods for preservation of vegetation for wildlife habitat and screening.

L. Justification that the location of the proposed facility would not pose an undue safety or health hazard to persons or property at the site of the proposed facility including: **See Section L and Exhibit 11**
    1. Measurements of existing electric and magnetic fields (EMF) at site boundaries, and at boundaries of adjacent schools, daycare facilities, playgrounds, and hospitals, with extrapolated calculations of exposure levels during expected normal and peak normal line loading;
    2. Calculations of expected EMF levels at the above-listed locations that would occur during normal and peak normal operation of the facility; and

3. A statement describing consistency with the Council's "Best Management Practices for Electric and Magnetic Fields," as amended, and
4. A description of siting security measures for the proposed facility, consistent with the Council's "White Paper on the Security of Siting Energy Facilities," as amended.
5.

M. A schedule of the proposed program for right-of-way or property acquisition, construction, rehabilitation, testing, and operation. **See Section G & M**

N. A statement of estimated costs for site acquisition, construction, and equipment for a facility at the various proposed sites of the facility, including all candidates referred to in the application; **See Section G**

O. Identification of each federal, state, regional, district, and municipal agency with which proposed route or site reviews have been undertaken or will be undertaken, including a copy of each written agency position on such route or site, and a schedule for obtaining approvals not yet received. **See Section N**

P. Bulk filing of the most recent conservation, inland wetland, zoning, and plan of development documents of the municipality, including a description of the zoning classification of the site and surrounding areas, and a narrative summary of the consistency of the project with the Town's regulations and plans. **See Bulk Filing Binder**

Please note that all documents, including but not limited to maps, must be dated. If the document date is unavailable, the date the document was obtained shall be provided. Maps must include a key table(s) and a matching source list/table, appropriately organized.

VII. Proof of Service (Conn. Gen. Stat. § 16-50/ (b))

Each application shall be accompanied by proof of service of such application on:

A. The chief elected official, the zoning commission, planning commission, the planning and zoning commissions, and the conservation and wetlands commissions of the site municipality and any adjoining municipality having a boundary not more than 2500 feet from the facility;

B. The regional planning agency that encompasses the site municipality;

C. The State Attorney General;

D. Each member of the Legislature whose district is in or is within 2500 feet from the municipality where the facility is proposed;

E. Any federal agency, department, commission or instrumentality which has jurisdiction over the proposed facility; and

F. The state Departments of Environmental Protection, Public Health, Public Utility Control, Economic and Community Development, Agriculture and Transportation; the Council on Environmental Quality; and the Office of Policy and Management.

VIII. Notice to Community Organizers

The applicant shall use reasonable efforts to provide notice of the application on the following:

A. Affected community groups including Chambers of Commerce, land trusts, environmental groups, trail organizations, historic preservation groups, advocacy groups for the protection of Long Island Sound and river protection organizations within the watershed affected by the proposed facility that have been identified by the municipality where the facility is proposed to be located or that have registered with the Council to be provided notice; and

B. Any affected water company that would provide water to, or be within the watershed affected by, the proposed facility.

IX. Public Notice (General Statutes § 16-50*l* (b))

Notice shall be made in accordance with all relevant sections of Conn. Gen. Stat. §16-50*l*(b). The Council's regulations should also be consulted when determining appropriate notice. Notice of the application shall be published at least twice prior to the filing of the application in a newspaper having general circulation in the site municipality or municipalities. The notice shall state the name of the applicant, the date of filing, and a summary of the application. The notice must be published in not less than ten point type.

The Council also advises each applicant that at least ten business days prior to the public hearing such applicant should erect and maintain in a legible condition a sign not less than six feet by four feet upon the site at the entrance to the property from a public road where such facility is to be located. The sign shall set forth the name of the applicant, the type of facility, the public hearing date, and contact information for the Council (Web site and phone number).

X. Notice to Abutting Landowners (Conn. Gen. Stat. § 16-50l (b))

Notice of the application shall be sent by certified or registered mail to all abutting landowners of the proposed and alternative sites of the facility. Notice shall be sent at the same time that notice of the application is given to the general public.

The application shall be accompanied by an affidavit of notice to all abutting landowners and an affidavit of publication each time notice of application is published.

XI. Procedures

A. The Council will review and may reject the application within 30 days if it fails to comply with specific data or exhibit requirements or if the applicant fails to promptly correct deficiencies. (Regs., Conn. State Agencies §§ 16-50l-4 through 16-50l-5)

B. The Council and any party or intervenor to the proceeding may file exhibits and interrogatories requesting supplemental or explanatory materials. All filings will be

subject to cross-examination and the Council's discretion for admission into the record. (General Statutes § 16-50o)

C. A public hearing must be held at a location selected by the Council in the county in which the facility is proposed, with one session held after 6:30 p.m. for the convenience of the public. If the proposed facility is to be located in more than one county, the Council shall fix the location for at least one public hearing session in whichever country it deems appropriate, provided that the Council may hold hearing sessions in more than one county. The Council's record must remain open for 30 days after the close of the hearing. (General Statutes § 16-50m)

D. The Council must render a decision within 180 days of receipt of the application, extendible by 180 days upon consent of applicant. (General Statutes § 16-50p).

A. GENERAL INFORMATION

A.1 Project Summary and Location

The Second Taxing District of the City of Norwalk, Fairfield County, Connecticut, South Norwalk Electric and Water (SNEW) hereby applies to the Connecticut Siting Council (Council, CSC) for a Certificate of Environmental Compatibility and Public Need for the construction and operation of a new electric substation facility. SNEW is a non-profit municipal utility that provides electricity to residents and businesses within the South Norwalk area. The new substation, with the distribution portion owned, controlled, and maintained by SNEW and transmission portion owned, controlled and maintained by The Connecticut Light and Power Company (CL&P), is proposed both to improve electric service reliability for SNEW's customers and to increase SNEW's system capacity to meet forecast load growth in the South Norwalk area.

The proposed Project consists of a 115 kilovolt (kV) to 13.8 kV bulk supply substation that would be directly connected to an existing CL&P 115 kV transmission line. The substation is proposed for location on an approximately 1.07 acre site owned by SNEW, previously referred to as the "St. Ann's Site." The Site includes two adjoining parcels located adjacent to and west of Dr. Martin Luther King, Jr. Drive in the southwestern portion of Norwalk's Second Taxing District. Figure A-1 identifies the general Project location, while Exhibit 1 presents the proposed site in relation to other SNEW facilities in the South Norwalk area.

The proposed Project site is owned by SNEW. SNEW currently uses the northern half of the site for outdoor storage of materials and equipment for its electric distribution system operation. This area is zoned for industrial purposes and abuts the Metro-North/Amtrak rail corridor and existing CL&P electric transmission easement. The southern half of the site was formerly occupied by a

2-story residence and garage that were recently demolished; this portion of the site is zoned Restricted Industrial (RI). The proposed Project will involve the construction and operation of the substation, as well as the establishment of a new interconnection to CL&P's adjacent 115 kV transmission line, and the addition of three steel pole structures in the Metro-North corridor. Figure A-2 provides an artist's rendering of the appearance of the proposed facility. All figures are located at the end of each section of this application, while Exhibits are provided at the end of the application.

This application to the Council includes all of the relevant Project information specified in the Council's *Application Guide for an Electric Substation Facility* (April, 2010). The application specifically:

- Identifies the need for the Project, including a discussion of SNEW's existing system and load data and the history leading to-SNEW's determination that a new substation is required (refer to Sections B and E);
- Describes the alternatives that were analyzed (i.e., no-action, system alternatives, site alternatives, and design alternatives) as part of the Project planning (refer to Sections F);
- Explains the proposed substation facility, including the major substation components, anticipated construction methods, construction schedule, and substation operational procedures (refer to Section G);
- Explains the separate ownership of various substation components by SNEW and CL&P and defines the permanent easement to be granted to CL&P by SNEW to permit CL&P to own, operate and maintain the transmission components of the substation;
- Discusses the existing environmental conditions in the Project area, and describes the potential effects of the Project on the environment and the mitigation measures that SNEW either

has implemented or expects to employ to minimize or avert significant adverse environmental impacts (refer to Sections H, J and K); and

- Identifies communications with public agencies and includes proof of notification to the Mayor of the City of Norwalk, references, and appropriate exhibits (Sections N and P and attachments).

Figure A-1 General Project Location

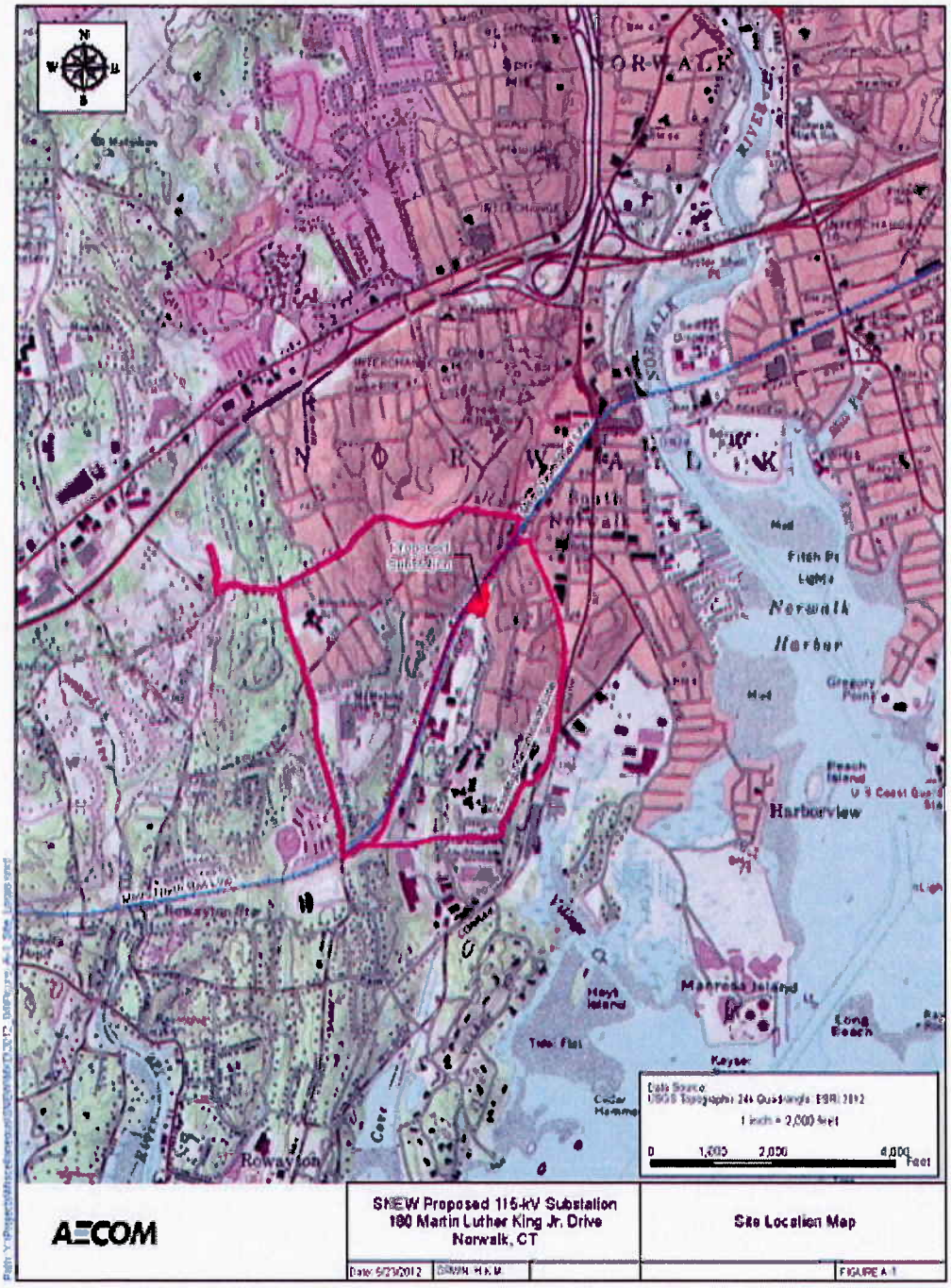


Figure A-2 Visual Rendering of Proposed Substation

B. PURPOSE OF THE APPLICATION

Pursuant to this application, SNEW seeks a Certificate of Environmental Compatibility and Public Need for the construction and operation of the new electric substation facility, including three new transmission line structures required to connect to CL&P's 115 kV transmission line. As discussed in detail in Section E of this application, the new substation is needed to achieve two primary objectives:

- To increase SNEW's system electrical capacity to meet forecast load growth, particularly the demand in the South Norwalk area that is expected to result from the implementation of various urban revitalization plans; and
- To improve electric service reliability for all of SNEW's 6,700 existing customer accounts in the South Norwalk area.

The purpose of the Project is to add capacity in response to the increasing demand for electricity in South Norwalk and its surrounding area and by so doing, improving electric distribution system reliability in the City of Norwalk.

C. STATUTORY AUTHORITY FOR THE APPLICATION

This application and accompanying exhibits are submitted by SNEW pursuant to Connecticut General Statutes Section 16-50k et seq. and Rules of Connecticut State Agencies Section 16-50j-1 et seq.

This filing includes information concerning the Applicant (SNEW), existing conditions at the subject property, and the proposed conditions for construction of the substation, including:

- Its location and design;
- The various alternatives considered to date and the process by which the property was identified and selected;
- The need for its construction and operation;
- Its potential effects on the environment; and
- Mitigation measures proposed by SNEW.

D. LEGAL NAME AND ADDRESS OF APPLICANT

With regard to this application, correspondence and communications, notices, orders and other papers should be addressed to and/or served upon the following:

APPLICANT	ATTORNEY
Mr. John Hiscock, P.E. General Manager South Norwalk Electric and Water One State Street Norwalk, Connecticut 06854 Telephone: 203.866.4446	Andrew W. Lord, Esquire Murtha Cullina City Place I, 185 Asylum Street, 29th Floor Hartford, Connecticut 06103 Telephone: 860.240.6180

E. PROJECT BACKGROUND AND PURPOSE

The need for the proposed electric substation facility is evident from a review of SNEW's existing system capacity and configuration, as well as the projected load growth in SNEW's service territory, as described in the following subsections.

E.1 Description of Existing SNEW Facilities

SNEW is franchised to provide service within Norwalk's Second Taxing District. The District generally includes the South Norwalk area that is bounded by the Norwalk River on the east; Interstate 95 and Connecticut Avenue on the north; Francis Avenue/Arbor Drive/Glasser Street/Bouton Street on the west; and Knapp Street/Neptune Avenue on the south (refer to Figure E-1). SNEW's existing system consists of the following primary components:

- One substation (SNEW 101N otherwise known as 'the State Street Substation').
- Approximately 31 miles of distribution feeders.
- Interconnection to CL&P's Flax Hill 24A substation, via two 27.6 kV CL&P lines that feed into SNEW's State Street substation.
- Two material and equipment storage sites, including the St. Ann's Site and the former Lawrence Street substation property. SNEW owns both sites, which are used for outdoor storage of various materials and equipment used in the utility's system. The Lawrence Street site was previously used as a substation, which has now been decommissioned.

The SNEW system provides electricity to 6,700 customer accounts (meters). As Figure E-1 illustrates, approximately 77% (5,188) of SNEW's customer accounts are residential, whereas

18.4% (1,238) are small commercial users and only 3.2% (214) are medium-large commercial enterprises. The remainder of SNEW's customers (196 accounts, or 1.4%) are municipal, including parking lights, etc.

Exhibit 1 provides a schematic of SNEW's existing electric facilities, which are summarized, as follows.

Existing Substation. SNEW's only existing substation (i.e., the "State Street Substation") was built in the early 1960s and is located adjacent to SNEW's former Generating Station at 1 State Street in South Norwalk (refer Exhibit 1). The State Street Substation consists of four bank transformers:

- Two 27.6 -to -4.16 kV transformers (each with a 5/7 megavolt ampere [MVA] capacity) that feed approximately 54% of SNEW's peak load (11.8 MW) on six 4.16 kV circuits; and
- Two 27.6 -to -13.8 kV transformers (each with a 10/11.2/14 MVA capacity) that feed approximately 46% of SNEW's peak load (10.0 MW) on three 13 .8 kV circuits.

The substation's three 27.6 kV oil circuit breakers, which are rated at 1,200 amperes each, are approximately 47 years old. Many of the high voltage disconnect switches at the substation have been replaced with 1,200 amp switches. However, the remaining original switches date to the installation of the substation and are rated at 600 amps. The outdoor 15 kV switchgear also is at least 40 years old and includes buswork and 10 air circuit breakers rated at 1,200 amps. The indoor switchgear is of the same vintage and includes 20 cubicles that house 18 1,200-amp and three 2,000 amp vacuum-retrofitted air circuit breakers. The 5 kV buses are rated at 2,000 amps.

Distribution System. SNEW's distribution network presently is a hybrid of both 13.8 kV and 4.16 kV lines. The 13.8 kV distribution facilities currently serve SNEW's underground system, which

comprises approximately 33% of SNEW's total load. The 4.16 kV distribution facilities currently serve all of the overhead distribution and the remainder of SNEW's total load.

However, SNEW is in the process of abandoning 4.16 kV as a distribution voltage and converting its entire system to 13.8 kV. Some of this conversion is expected to be completed in 2013 to provide load relief to the T1 transformer at the State Street Substation.

Interconnection to CL&P. SNEW currently receives power through two 27.6 kV CL&P circuits (referred to as Lines 24A31 and 24A32) that originate at CL&P's Flax Hill 24A Substation, which is located on Flax Hill Road in Norwalk, approximately 1 mile west of SNEW's State Street Substation. One of these circuits is primarily overhead and the other primarily underground. Previously, each also served other CL&P customers and substations besides SNEWs State Street facility. During 2011, CL&P completed modifications of its distribution facilities so that these circuits now only serve SNEW's State Street Substation.

The two 27.6 kV lines were constructed approximately 70 years ago. However, various sections have since been upgraded. The capacity ratings for SNEW's use of the circuits are as follows:

CL&P Circuit	Capacity Rating (Amperes)	
	Summer	
	Normal	Emergency
24A31	490	550
24A32	390	520

Material Storage Sites. SNEW has two existing material and equipment storage sites --the St. Ann's property (which SNEW proposes to use for development of the new substation) and the former Lawrence Street substation parcel. Both sites are fenced and are used primarily for storing various types of electrical equipment and supplies utilized in the operation and maintenance of SNEW's system. If the St. Ann's Site is approved for development of the new substation, the materials presently stored on that property will be transferred to the Lawrence Street parcel and SNEWs State Street facilities.

E.2 Project Need – Load Data and Forecasts

SNEW's peak demand, which was recorded in July 2011, was 21.8 MW. Peak winter demand reached approximately 18.4 MW in 2008. Peak loads in both the summer and winter has increased through the 2000s, and are projected to continue to grow over the next 10 years. Table E-1 presents SNEW's 10-year forecast of retail sales, by customer class, energy requirements, and peak demand while Figure E-1 represents the percentages of SNEW customers in each class. The 10-year forecast and anticipated growth are based off of existing customer base. These numbers do not reflect the anticipated growth expected as a result of proposed projects including: Spinnaker Development, 95/7 District and Washington Street Design District. In addition to the above forecast, additional demands of 7-10 MW for 95/7 District and 2 MW for Spinnaker Development are anticipated.

The consideration of the future load growth in South Norwalk is a key concern in SNEWs future system planning. SNEW has met with potential customers and representatives of the City of Norwalk to discuss projects planned for the South Norwalk area and their power needs.

Electric demand in SNEW's South Norwalk service area based on the existing customer load is expected to increase to 25 to 30 MW, primarily as a result of various urban revitalization programs and continued growth in the commercial/office market.

SNEW presently does not have the capacity to reliably serve these planned urban development initiatives, which are endorsed by the City of Norwalk.

E.3 Current System Issues and Concerns

In anticipation of the need to replace its aging substation facility and to provide better power reliability to its existing customers, SNEW has been planning a new substation, with a direct interconnection to CL&P's 115 kV transmission lines, for over a decade. Taking into consideration the increased power demands that will accompany the various urban revitalization projects currently underway or planned in South Norwalk; SNEWs need for a new substation now has become critical.

SNEW's decision to propose the construction and operation of a new substation is based on the evaluation of the following primary issues.

- **System Capacity**. Without the construction of the proposed new substation, it is estimated that the existing SNEW facilities could not accommodate future electrical demand in SNEW's service territory. The new substation will provide 40 MVA base load capacity and 80 MVA redundancy capacity.
- **Reliability of Existing CL&P 27.6 kV Circuits**. At present, SNEW's sole source of outside power depends on the two 27.6 kV circuits that originate at CL&P's Flax Hill Substation. Exhibit 2 summarizes the history (2007 to present) of power outages and bumps in CL&P's 27.6 kV power supply feeders to SNEW.

- **Reliability of Existing State Street Substation**. The long-term reliability of the transformers and other equipment at SNEW's existing substation is questionable, given the overall age of the facility. For example, one of the 13.8 kV transformers recently failed and was out of service for five months, and two separate 13.8 kV transformers failed within two years of each other.

- **Cost Savings**. SNEW presently pays CL&P approximately $750,000 per year for the use of CL&P owned, operated and maintained sub-transmission facilities (voltage less than 69 kV). This local facility charge is defined in the Wholesale Distribution Agreement (WDA) effective December 2, 2010 between CL&P and CMEEC (The Connecticut Municipal Electric Energy Cooperative, SNEW's market participant). This Agreement is a successor to a prior Agreement covering these facilities. A direct interconnection to the 115 kV transmission line would eliminate this cost.

Figure E-1

South Norwalk Electric and Water

Customer Percentages

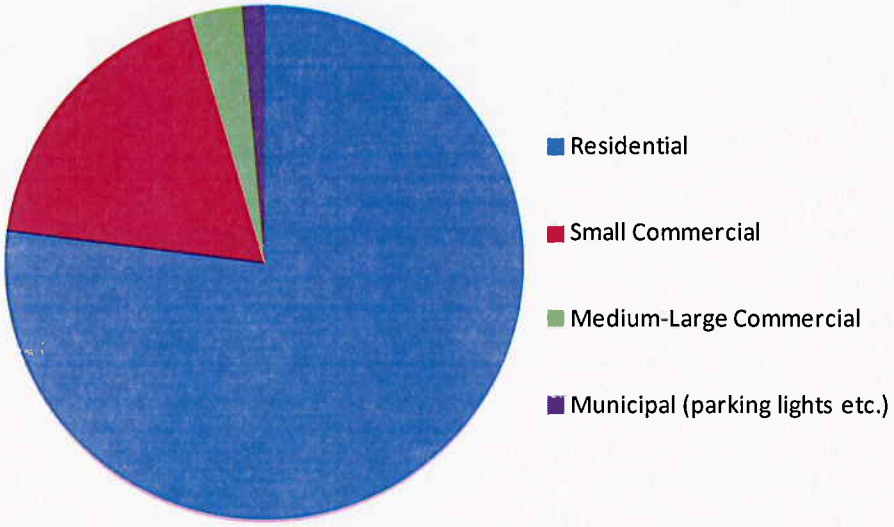


Table E-1

South Norwalk Electric and Water 10-Year Forecast of Retail Sales by Customer Class, Energy Requirements and Peak

Demand

YEAR	Residential Service MWh Sales Rates 10&20	Small General Service MWh Sales Rates 11&12	Medium General Service MWh Sales Rate 13	Large General Service MWh Sales Rate (1)	Other Service Mwh (2)	Total Retail Sales MWh	Total Operation & Line Losses MWh [3]	Total South Norwalk Purchases Mwh [4]	South Norwalk Summer Peak Demand MW	South Norwalk Winter Peak Demand MW	Load Factor %
1992	31,647	24,035	1,459	10,266	1,632	69,039	8,262	77,301	13.96	14.79	59.5
1993	32,865	24,761	1,555	10,923	2,650	72,754	7,476	80,230	15.04	15.11	60.6
1994	33,968	25,051	1,404	10,651	2,845	73,919	7,158	81,077	15.68	16.82	55.0
1995	33,279	24,196	2,663	9,852	2,626	72,616	9,898	82,514	16.97	16.20	55.5
1996	34,504	26,167	3,389	9,578	3,972	77,610	8,048	85,658	15.19	16.45	59.3
1997	34,027	25,220	3,411	10,938	3,626	77,222	9,065	86,287	17.12	15.97	57.5
1998	33,966	25,725	3,823	11,010	3,649	78,173	8,777	86,950	17.93	16.02	55.4
1999	35,710	26,184	3,326	11,568	3,902	80,690	9,345	90,035	18.48	17.46	55.6
2000	36,304	25,714	3,255	12,064	4,051	81,388	9,382	90,770	16.73	17.63	58.6
2001	36,101	27,441	3,395	13,491	4,565	84,993	8,081	93,074	19.11	15.70	55.6
2002	38,515	25,541	3,224	16,104	4,790	88,174	7,181	95,355	19.21	15.82	56.7
2003	38,548	25,859	3,330	16,491	4,557	88,785	7,393	96,178	18.63	17.91	58.9
2004	37,768	26,696	3,334	16,004	5,689	89,491	7,735	97,226	17.58	18.90	58.6
2005	41,275	27,747	3,383	14,803	7,072	94,280	8,257	102,537	19.78	18.47	59.2
2006	38,345	27,665	3,198	13,757	7,165	90,130	8,800	98,930	21.50	16.60	52.5
2007	40,573	28,968	3,119	13,296	7,426	93,382	9,311	102,693	19.92	18.46	58.9
2008	40,424	28,331	2,898	13,537	7,503	92,693	9,230	101,923	19.80	18.43	58.6
2009	39,259	26,855	2,451	12,935	7,054	88,554	9,380	97,934	19.71	18.04	56.7
2010	41,669	28,058	2,606	14,760	7,085	94,178	6,853	101,031	20.96	17.39	55.0
2011	41,247	27,682	2,601	14,264	7,128	92,922	5,392	98,314	21.81	17.67	51.5
2012	42,017	28,344	3,083	12,136	7,286	92,867	6,487	99,355	20.19	18.09	56.0
2013	41,888	28,553	3,112	12,136	7,349	93,038	6,422	99,460	20.43	18.16	55.6
2014	42,128	28,827	3,148	12,136	7,414	93,654	6,366	100,020	20.66	18.36	55.3
2015	42,391	29,043	3,178	12,136	7,475	94,223	6,311	100,534	20.88	18.53	55.0
2016	42,837	29,333	3,216	12,136	7,521	95,043	6,312	101,354	21.09	18.75	54.7
2017	42,915	29,467	3,235	12,136	7,556	95,310	6,191	101,501	21.28	18.87	54.4
2018	43,181	29,672	3,263	12,136	7,590	95,842	6,128	101,970	21.48	19.03	54.2
2019	43,463	29,863	3,289	12,136	7,624	96,375	6,065	102,439	21.68	19.19	53.9
2020	43,788	30,091	3,319	12,136	7,656	96,991	6,097	103,088	21.84	19.33	53.7
2021	43,845	30,160	3,331	12,136	7,682	97,155	5,988	103,143	22.00	19.43	53.5
% Increase 2011-2021	0.61	0.86	2.51	-1.60	0.75	0.45		0.48	0.09	0.95	

[1] Large General Service includes Rates 16, 17, 18 & 19.
[2] "Other" represents Rates 14 & 15.
[3] Represents service use, donations distribution lighting and auxillary lighting as well as line losses.
[4] The figures for "Total South Norwalk Purchases" represent the total Mwh of energy billed to South Norwalk by CMEEC.

F. ALTERNATIVES EVALUATION PROCESS

F.1 Overview

The proposed substation Project, as planned for at the preferred St. Ann's Site, was selected as a result of an alternatives evaluation process that dates to the early 1990s. SNEW identified a long-term need for additional power more than two decades ago, and then considered various options for improving service reliability and expanding capacity within its franchise territory to better serve both its existing customers and future customer base.

This was outlined specifically, as part of Docket No 141 (i.e., the Application of CL&P and the United Illuminating Company for a Certificate of Environmental Compatibility and Public Need for Construction of a 115 kV Electric Transmission Line from Pequonnock Substation in Bridgeport to Ely Avenue Junction in Norwalk), SNEW submitted testimony to the CSC concerning its need for a 115 kV interconnection (April 1991). In direct testimony, SNEW's General Manager noted that the planned 115 kV Pequonnock -Ely Avenue transmission line would provide SNEW with much needed options for supplying future electric demands in the South Norwalk area. Further, the CSC recognized SNEW's need for additional electric supply options, authorizing construction of a 115 kV connection between the 115 kV Pequonnock -Ely Avenue transmission line and SNEW's State Street Substation (Docket No. 141, December 6, 1993).

However, because further analyses revealed a questionable cost-benefit ratio and raised concerns about linking the 115 kV transmission line to the aging State Street substation, plans for the 115 kV interconnection as the CSC authorized in 1993, were never finalized and the interconnection was never constructed. SNEW subsequently continued to assess options for meeting future electric

demands within its service area, especially as new properties (i.e., St. Ann's and Franklin Street Island) were acquired in 1995.

Overall, SNEW's alternatives evaluation was an iterative process whereby the need for additional power capacity/reliability was determined, and then options were systematically identified to address this need. The environmental, engineering, and economic advantages and disadvantages of each option were assessed and comparatively evaluated. The basic alternatives that SNEW considered included:

- **No action alternative**, which would involve maintaining SNEW's existing system, without any increase in capacity or improvements to power reliability;
- **System alternatives**, including options for modifying and expanding SNEW's generation capacity and for obtaining additional electric supply from CL&P;
- **State Street Substation expansion or replacement alternative**, which would require either the expansion of SNEW's only existing substation, or the removal of the existing substation, followed by the construction of a new substation facility on approximately the same site and establishment of an interconnection to CL&P's 115 kV transmission line; and
- **Site alternatives**, including different locations for the construction and operation of a new bulk electric supply substation and interconnection to CL&P's 115 kV transmission line.

The outcome of this alternatives evaluation process was the selection of a preferred option for improving power capacity and reliability within SNEW's service territory. This preferred alternative involves the construction and operation, at the St. Ann's Site, of a new electric substation that will be directly interconnected to the CL&P 115 kV transmission system and will be configured to minimize potential adverse impacts to environmental resources and the public.

F.2 No Action Alternative

Under the No Action Alternative, SNEW would not construct a new bulk supply electric substation or implement other options to improve power reliability and to increase the capacity to accommodate future load growth within its franchise territory. The "no action" alternative will not achieve SNEW's stated objectives for serving either its existing or future customers. In particular, the adoption of this alternative would fail to address the following key concerns:

- System Capacity Issues. SNEWs State Street Substation has a total base capacity of 30 MVA. Thus, the existing SNEW system could not accommodate any new major loads in the South Norwalk area.

- System Configuration Issues. The SNEW system presently includes two distribution voltages -13.8 kV and 4.16 kV. Under the "no action alternative", plans to convert to a single system-wide distribution voltage (13.8 kV), thereby achieving both economic and operational benefits, would not be realized.

- Power Reliability Issues. SNEW currently obtains power from CL&P only via two 27.6 kV circuits (24A31 and 24A32) that originate at CL&P's Flax Hill 24A Substation. The security of SNEW's supply depends primarily on the capacity and the integrity of these two circuits. The outages and momentary interruptions that SNEW customers have experienced in the past as a result of this system (refer to Exhibit 2) could be expected to continue under the "no action alternative").

- Future Growth Issues. SNEW has no present capability for meeting the power demands expected to occur as a result of the planned and ongoing urban revitalization initiatives in South Norwalk, such as the 95/7 and Washington Street Districts and Spinnaker Development. Future load is expected to grow to 25 to 30 MW within the next 10 years.

Moreover, power reliability is of particular concern in future load growth planning because South Norwalk is attempting to attract high-tech commercial and light industry as part of its urban revitalization effort; for such facilities, momentary power interruptions or outages can have substantial effects on work processes. As a result, if a reliable source of power cannot be guaranteed in SNEW's franchise area, businesses may opt to locate elsewhere.

Overall, the "no action alternative" is inconsistent with both SNEW's objectives for the provision of power reliability to its customers and the City of Norwalk's goals for the economic revitalization and growth of portions of South Norwalk.

F.3 System Alternatives

More than 20 years ago, SNEW recognized that increased electric capacity and reliable electric supply would be needed to meet the requirements of its existing and future customers, and began to look at alternative approaches for meeting these objectives.

As described below, SNEW's primary focus with respect to system alternatives has been on the provision of a new interconnection to CL&P's existing facilities. However, SNEW also has been and continues to coordinate with the Connecticut Municipal Electric Energy Cooperative (CMEEC) to evaluate the feasibility of and options for new generation capacity to replace the aging State Street Generating Station. Such evaluations regarding generation options are being conducted separately from the assessment of alternatives to fill the immediate need for a new reliable interconnection to CL&P's existing facilities. As a result, the following discussion addresses system alternatives related to different interconnections with the CL&P system.

For example, as an intervenor in Docket No 141 (i.e., the *Application of CL&P and the United Illuminating Company for a Certificate of Environmental Compatibility and Public Need for*

Construction of a 115 *kV Electric Transmission Line from Pequonnock Substation in Bridgeport to Ely Avenue Junction in Norwalk),* SNEW submitted testimony to the CSC concerning its need for a 115 kV interconnection in order to better supply its customers (April 1991). In direct testimony, SNEWs General Manager noted that CL&P's 115 kV Pequonnock -Ely Avenue transmission line would provide SNEW with much needed options for supplying future electric demands in the South Norwalk area. Recognizing SNEWs need for additional electric supply options, the CSC subsequently authorized construction of a 115 kV connection between the 115 kV Pequonnock - Ely Avenue transmission line and SNEW's State Street Substation (Docket No. 141, December 6, 1993).

However, after the CSC authorization, SNEW's further analyses of the Project revealed a questionable cost-benefit ratio and raised concerns about linking the 115 kV transmission line to the aging and physically small State Street Substation. As a result, plans for the 115 kV interconnection to the State Street Substation were never finalized, and SNEW continued to assess options for meeting future electric demands within its service area.

In the mid-1990s, SNEW discussed various system alternatives with representatives of Northeast Utilities Service Company (NUSCO, a corporation affiliated with CL&P) on behalf of CL&P. CL&P presently supplies SNEW via two 27.6 kV circuits (one predominantly overhead line and one predominantly underground line) that originate at CL&P's Flax Hill Substation and terminate at SNEW's State Street Substation. SNEW is CL&P's largest Stamford/Norwalk area single delivery point customer.

In 1996, SNEW worked extensively with NUSCO to identify and investigate a variety of system alternatives for upgrading service to SNEW (Northeast Utilities Service Company September 1996). These system alternatives can be grouped into four major categories:

- *Construction of two new 27. 6 kV overhead lines to link CL&P with SNEW.* This alternative would involve reconstructing the existing overhead circuits from CL&P's Norwalk 9S Substation, and either isolating or not isolating SNEW from the existing 27 .6 kV bus at the Norwalk 9S Substation. Isolation would improve power reliability by uncoupling the SNEW source from disturbances at other locations on CL&P's 26.7-kV network.

- *Construction of two new 13.8 kV overhead lines to link CL&P with SNEW.* Under this alternative, the new 13.8 kV lines would be built between CL&P's Flax Hill 24A Substation and SNEW's State Street Substation. The new 13.8 kV circuits would either consist of two tree or spacer cable circuits. Under either scenario, the supply to SNEW would still be partially dependent on the Norwalk 9S 27.6 kV bus and the 9S43 line; may be affected by faults on CL&P's 27.6 kV system; and/or exposed to faults on CL&P's 13.8 kV feeders from Flax Hill 24A.

- *Construction of new 27. 6 kV underground cables to SNEW from CL&P.* Under this option, new underground cable would be installed to replace the existing underground cable that links CL&P's Flax Hill Substation to the SNEW State Street facility. A new 115 kV/27.6 kV transformation point would also be created within the CL&P system for SNEW.

- *Construction of new 115 kV transmission lines to SNEW from CL&P.* This alternative would involve supplying SNEW's load via a direct transmission line interconnection (single or double tap) to a new 115 to 27.6 kV bulk substation located near the present site of SNEW's State Street Substation.

NUSCO evaluated these system alternatives in terms of ability to improve power reliability and to increase SNEW's overall capacity (MVA). NUSCO's preferred system option was to replace the 27.6 kV underground cables between Flax Hill 24A and SNEW, and to add a new secure 27.6 kV source at Flax Hill Substation. CL&P determined that this option would significantly improve power reliability, and would provide for a normal load limit of 28.2 MVA. The new bulk substation option also was rated highly in terms of the provision of power reliability, with the potential to improve capacity to a normal load limit of 32 MVA (single tap) or 42 MVA (double tap).

However, all of the system options that were identified in conjunction with NUSCO would be at SNEW's expense, with most requiring SNEW to fund upgrades to CL&P facilities. Moreover, the two existing CL&P circuits that serve SNEW (and the Flax Hill 24A Substation from which they originate) have been historically unreliable, and have been the source of numerous power outages in SNEW's service territory. While upgrading these facilities would improve this situation, SNEW would remain without a backup in the event of a failure on one or both of the circuits.

As a result, SNEW elected to reject NUSCO's proposals for upgrades in favor of an investment in its own new substation that would directly access CL&P's 115 kV transmission system.

SNEW's preference for its own new 115 kV to 13 .8 kV substation is based on the following primary factors:

- *Provision for a reliable bulk power supply.* A new 115 kV bulk substation would provide for a highly reliable power supply to SNEW's system, and would accommodate both SNEWs existing customers and future redevelopment projects in the South Norwalk area.

- *Increased capacity*. A new bulk substation, as proposed by SNEW, would have a base load capacity to 40 MVA and a maximum load of 80 MVA, thereby allowing SNEW to accommodate foreseeable load growth within its service territory.

- *Avoidance of 2% surcharge*. A 2% surcharge is levied through CMEEC (ISO-NE tariff) on SNEW's purchase of power at (kwh's) sub-transmission voltage (i.e., less than 69 kV). This surcharge currently equates to approximately $225,000 annually for SNEW, and would continue if SNEW were to adopt any of NUSCO's recommended system option.

- *Avoidance of a Local Facility Charge*. A Wholesale Distribution Agreement (WDA) effective December 2, 2010 requires SNEW to pay its proportion of the carrying charges for sub-transmission (less 69 kV) facilities, which transmit power to SNEW's State Street Substation. The amount has increased from approximately $60,000 in the late 90s to a projected $750,000 in 2013. The rate will continue to increase as new CL&P equipment and facilities are replaced or depreciated.

- *Consideration of benefits to SNEW rate payers*. The WDA provides a mechanism for SNEW to pay, on an annual basis, the costs of CL&P's distribution facilities used to serve SNEW. Under the WDA, SNEW's ratepayers would pay Federal Energy Regulatory Commission (FERC) approved annual carrying charge rates of approximately 19-23% (reflecting CL&P's costs to build, install, own, operate and maintain the applicable facilities) for the portion of CL&P's distribution facilities used by SNEW.

F.4 Expansion or Replacement of Existing State Street Substation

This alternative would involve either expanding SNEW's existing State Street substation, or removing the existing State Street facility and then developing a new substation on approximately the same site. Either alternative would require an interconnection to CL&P's 115 kV transmission

line in the vicinity of the State Street Substation, similar to the tap that the CSC approved in 1993 as part of Docket No. 141.

Under the first scenario, the existing substation would remain and would be increased in size to accommodate two new transformers. Under the second scenario, the existing substation would have to be dismantled and removed piecemeal while maintaining power to SNEW's existing customers, thus allowing the construction of the new substation on approximately the same site.

Located adjacent to SNEW's generating station, the State Street facility is SNEW's only existing substation. All of SNEW's distribution circuits originate at this facility. The substation, which was constructed approximately 50 years ago, presently consists of two 10 MVA 27.6 kV to -13.8 kV transformers and two 5 MVA 27.6 kV -to 4.16 -kV transformers. The two 27.6 kV CL&P lines that supply the SNEW system (and originate from CL&P's Flax Hill Substation) terminate at the State Street Substation.

This alternative was identified because of the possible economic and environmental benefits associated with developing the new substation facilities within or near the existing "footprint" of SNEW's State Street facilities, thereby avoiding land use conflicts, minimizing site acquisition/preparation costs, and limiting potential environmental issues (e.g., noise, and aesthetics). However, analyses indicate that this option is not viable for a number of reasons, as follows:

- At the State Street location, only a "T" interconnection would be economically viable to link the new substation to CL&P's 115 kV transmission line (refer to same discussion for Franklin Street Island in Section 5.4). This type of interconnection is less preferred than a "loop through", which provides increased reliability and system backup.

- During construction, SNEW would not have the backup equipment and systems that are currently established at the State Street facility. As a result, in the event of an equipment failure, customers would risk potentially lengthy power outages.

- The layout and limited size of the State Street site are not conducive to the development or expansion of the substation. The location of SNEW's existing buildings (i.e., the former generation station and line garage) and four underground diesel and gas storage tanks (two 40,000-gallon tanks for diesel fuel for the generators; one 4,000-gallon tank for gasoline; and one 2,000-gallon diesel tank for SNEW's vehicle fleet), which are located beneath the paved parking and truck turnaround areas, effectively prevent the use of other portions of the site for the development of an expanded substation.

- Because the State Street facility is SNEW's only operating substation, electrical service would have to be maintained, to the extent possible, throughout the period required to remove the old equipment and install the new substation equipment. As a result, work would have to proceed on a "piecemeal" basis, thereby prolonging the construction period.

- Construction costs would increase because of the inherent problems associated with working in an energized substation; most tasks would be more time consuming and the risks to workers would be greater.

- Despite efforts to maintain service, some of the work would require that the substation be de-energized, which would cause power outages that would potentially result in significant inconvenience SNEW customers.

- The existing State Street Substation has two pairs of transformers (one for 13 .8 kV and one for 4.16 kV). The 4.16 kV transformers currently handle the power supplied by SNEW's 4.16 kV generators, which is used by either the power grid or SNEW's customers.

However, because SNEW is in the process of eliminating 4.16 kV as a distribution voltage, plans for the new substation do not call for any 4.16 kV transformers. This alternative is not preferred because of substantial concerns associated with the engineering design, risks to worker safety during construction, and high potential for electrical outages during the substation expansion or replacement period. Moreover, the alternative would not provide SNEW with the flexibility that it seeks from the development of a separate loop through interconnection with CL&P's 115 kV transmission line. As a result, this alternative was discarded in favor of an option involving the development of new substation, separate from the existing State Street facility.

F.5 NEW SUBSTATION SITE ALTERNATIVES

After determining that a new substation was the preferred option for achieving its long-term power supply goals, SNEW conducted an analysis of potential locations for the facility within SNEW's franchise territory. Three potential alternative substation sites were identified based on discussions with SNEW engineering staff and on the review of available baseline information, including aerial photography, zoning maps, tax maps, wetlands and floodplain maps, historic districts/structures, and previous studies conducted for SNEW. A field review of the 3 sites was conducted in 2010. In general, the following evaluation criteria were applied during the site alternatives identification and evaluation process:

- Sites located within SNEW franchise territory.
- Proximity to 115 kV transmission line.
- Proximity to existing SNEW distribution system.

- Properties that are vacant or undeveloped (avoidance of sites where existing structures would have to be demolished and owners/tenants relocated).
- Existing zoning classification that permits electric substation use (avoidance of locations where a substation would be a non-conforming use and a zoning change would be required).
- Properties that are generally within industrially zoned and developed areas, with buffer space or the potential for screening between nearby residential or commercial uses.
- Accessibility of site from existing road system.
- Ability to meet site security needs.
- Properties that are of suitable size to accommodate the substation development (i.e., approximately one acre lot size).
- Suitable site topography (i.e., preference is for sites that are not steeply sloped and that will not require extensive grade changes).
- Suitable subsurface conditions (i.e., avoidance of areas with high groundwater table or unsuitably shallow depth to bedrock; to the extent that this can be determined from maps or visual observations [e.g., of bedrock outcrops] in the field).
- Avoidance of designated wetlands, watercourses, flood zones, and significant natural/cultural resources.
- Site adaptability to accommodate landscaping for screening/aesthetic purposes, if appropriate.

The study revealed that few of the apparently vacant or underdeveloped parcels near the 115 kV transmission line easement would be feasible locations for a new substation (Table F-1). The

varied issues of concern range from incompatible on site or adjacent land use to potential high costs of site acquisition and/or site preparation due to previous uses involving environmental contamination. All but one of the sites were found to have constraints (e.g., incompatible on-site land use, inadequate size, topographic constraints, incompatible adjacent land uses) that precluded them from further consideration as a substation location. Three of the alternatives were considered possible substation sites and were analyzed in greater detail. These included:

- 85 Martin Luther King Jr. Dr. (former Diane Knit property); near the existing State Street substation, this site is suitable for the proposed substation with a mobile substation connection. Clearance space required to a fence line is a substantial obstacle. Additional issues for this site will be the extension of the transmission lines into the proposed area.

To loop the transmission lines into this area, the following would be required:

- Intercepting the existing vertical-construction 115 kV transmission line running parallel to the railroad tracks on the East side of the property is possible, however logistics may be complicated by Franklin Street. To accommodate the looped feed into the substation the following will be required:

- A new single-pole dead-end structure will need to be installed north-east of the Franklin Street and Railroad intersection. The new structure would be installed in-line with the existing 115 kV circuit's centerline. Logistically, Franklin Street and the Franklin Street Railroad crossing may pose some issues with locating this dead-end structure.

- A second new single-pole dead-end structure will need to be installed south-west of the Franklin Street and Railroad intersection. The new structure would be installed in-line with the existing 115 kV circuit's centerline as well. Logistically, Franklin Street and the Franklin Street Railroad crossing may pose some issues with locating this dead-end

structure unless we are allowed to span over the adjacent property on the south side of the proposed property line.

- Two new dead-end structures will need to be installed inside the substation fence to accommodate the looped scheme into the substation. Each of these structures will accept the incoming conductors in vertical configuration and transition them to horizontal configuration so that they can be connected to the proposed line disconnects. Each of the structures will be located adjacent to their corresponding line disconnect switches.

- 1 Bates Court. The second site located on 1 Bates Court is near the railway with access to the transmission line. It is a small rectangular shaped plot; with length but little width, which makes accommodating the substation and transmission equipment with the required clearance and access spaces difficult. From the assessors map boundary, transmission equipment is located on or near a potential fence line. The mobile substation would not fit in the area. This area is also not currently owned by SNEW.

To loop the transmission lines into this area, the following would be required:

- A new single-pole dead-end structure will need to be installed north-east of the proposed substation's property line within the existing ROW. The new structure would be installed in-line with the existing 115 kV circuit's centerline.

- A second new single-pole dead-end structure will also be installed north-east of the proposed substation's property line and in-line with the 115 kV circuit's centerline within the existing ROW. This structure will be located north-east of the above mentioned proposed dead-end structure.

- Two new dead-end structures will need to be installed inside the substation fence to accommodate the looped scheme into the substation. Each of these structures will accept

the incoming conductors (likely in vertical configuration) and transition them to horizontal configuration so that they can be connected to the proposed line disconnects. Each of the structures will be located adjacent to their corresponding line disconnect switches. There are some concerns with clearances on the eastern-most property line on this option as it seems likely that the required dead-end structures inside the station will be very close to the substation fence.

- St. Ann's and adjacent residential property; 180 Martin Luther King Jr. Dr. Among the three sites, St. Ann's emerged as the preferred. The primary factors that led to the selection of this site were:
  - Adjacent to CL&P's 115 kV transmission line.
  - Permits a loop-through interconnection.
  - Located within SNEW's franchise territory, near its distribution network, which can be expanded to connect to the new substation.
  - No site acquisition costs.
  - A portion of the site is relatively level and can accommodate the transformers.
  - Current industrial use and appropriate zoning.
  - Buffer from residential areas (i.e., by Dr. Martin Luther King, Jr. Drive and by Metro North/CL&P corridor).
  - No on-site or nearby biological, surface water, or cultural resources.

F.6 Connecticut Energy Advisory Board

Under Conn. Gen. Stat. § 16-501(a)(2), as an electric substation designed to change or regulate voltage of electricity greater than 69kV, this Project is exempt from the mandatory request for proposal process of the Connecticut Energy Advisory Board (CEAB). Although exempt from this process, the SNEW Substation Project is consistent with CEAB's preferential criteria since it:

- Enhances distribution system reliability, operability and capacity;
- Protects energy resources from physical risk through SNEW's substation security designs and practices;
- Provides long-term benefit;
- Capitalizes on existing infrastructure by locating immediately adjacent to an existing transmission line with adequate capacity (no transmission expansion is needed);
- Meets an identified energy need and is consistent with forecasted resource needs as identified by the Regional System Operator ("ISO-NE") and the Council.

  On February 3, 2012, the ISO-NE submitted a letter to SNEW indicating that after review of the materials "...ISO has determined that implementation of the plan will not have a significant adverse effect upon the reliability or operating characteristics of the Transmission Owner's transmission facilities, the transmission facilities of another Transmission Owner, or the system of a Market Participant."
- Provides local tax revenues; and
- Supports environmental protection, as discussed in Sections H and J of this Application.

Table F-1

Summary Review of Alternative SNEW Substation Site Locations

Site No./Name, Approx. Size, and Zoning	Site Description/Current Land Use	Distance to Existing 115kV Line & SNEW System	Surrounding Land Use and Road Access	Comments
1. 1 Bates Court (Approx. 0.62 acre, Zoning =I) Tax Map 2, Block 53. Lot 5	Consists of a small rectangular shaped plot; with length but little width. Currently there is a small building onsite that is occupied by a small business. The property borders the Metro-North ROW to the east and MLK Jr. Drive to the west.	Adjacent to the existing Metro-North ROW and existing transmission line.	This property is zoned Industrial and is across MLK Jr. Drive from a residential area. The residences sit at the top of a steep rock face and there is deciduous vegetation screening the homes. To the north is the former Diane Knitwear property	The site is not currently owned by SNEW and at <1 acre, the site is too small to accommodate the substation with mobile substation connection. Additional clearance and access issues are present on this property.
2. 85 MLK Drive (Diane Knit) (Approx. 1 acre, Zoning = I) Tax Map 16NW, Block 53, Lot 6	Consists of vacant industrial building that is located adjacent to Franklin Street, Bates Court, Metro-North corridor, and new railroad parking garage (on southbound side of tracks). Across street from (i.e., south of) SNEW substation facilities.	Adjacent to and across Franklin Street from 115 kV line. Unused SNEW buried conduit located adjacent to site.	Via Bates Court and Franklin Street, off of MLK Jr. Drive. Adjacent uses are SNEW, railroad parking garage, and Penmar Industries, Inc. Residential uses are located on the west side of MLK Jr. Drive, at the top of a steep rock face. Deciduous vegetation screens both the rock face and views of the residences from Diane Knit.	Site was historically used for hat and clothing manufacturing. Sanborn maps indicate that building dates to late 19th century. Decades of manufacturing use have resulted in site contamination. Based on a Phase II report prepared for the site, contaminants include mercury, chlorinated solvents, etc.) Presence of old industrial building and contamination raises concerns about environmental cleanup costs and other significant site preparation expenditures. In addition, the site does not abut any transmission easements.

Site No./Name, Approx. Size, and Zoning	Site Description/Current Land Use	Distance to Existing 115kV Line & SNEW System	Surrounding Land Use and Road Access	Comments
3. Adjacent to MetroNorth Parking (Approx. 0.5 acre or less, zoning = SSDD) Tax Map 16NW, Block 55, Lot 28	Site consists of a triangle of wooded property located adjacent to and east of the Metro-North corridor, and southwest of the northbound South Norwalk railroad station. The overflow surface parking lot for daily railroad commuters is located immediately east of the site and Mulvoy Street is located south of the site. The site is wooded; vegetation consists of mature deciduous trees that presently screen the large new parking garage on the west side of the Metro-North lines from the residential areas on the east side of Henry Street. Site appears to slope to the east, from the railroad embankment. Site is part of a fenced area that encompasses the entire east-side paved parking lot	Adjacent to and east of the 115 kV line.	The site abuts the Metro-North tracks on the west, the railroad station paved parking lot on the north and east, and Henry Street Extension and structures along Mulvoy Street on the south. The Columbus Court Condominiums, which consist of relatively new 3-story clapboard buildings surrounded by landscaping and fencing, are located east of the site, across Henry Street Extension. This housing would be directly visible to/from the site. The Columbus Court housing is identified by NRA as 48 units of non-profit, government -assisted, or deed restricted housing. A park/playing fields (baseball diamond, basketball court) for Columbus Elementary School are located adjacent to the Columbus Court Condominiums, southeast of and across Henry Street Extension from the site. Several old commercial structures are located along Mulvoy Street southwest of the site, near the railroad tracks.	Use of this site would remove the vegetative screen that is currently provided by the mature vegetation; this may block views (at least seasonally) from the Columbus Condominiums of not only the railroad parking garage but also the former Diane Knit building. Use of this site could pose issues because of proximity to the playground and the condominiums, aesthetics, and inconsistency with current use as a vegetative buffer. Maps show that an old RR line traverses this area; line was the Wilson Point Branch of Penn Central. Old RR grade may remain. Could present contamination issues. Moreover, portion of site could still be owned by Penn Central.
4. St. Ann's Approx. 1.07 acre, zoning =0 RI) Tax Map 16NW, Block 68, Lot 41	Existing SNEW material storage site adjacent to MLK Jr. Drive and Metro-North corridor. Portions of the site are fenced. Access via two driveways. Site topography is generally flat, sloping to the south. Deciduous screen between site and UPS facility to the south.	Adjacent to 115 kV line	Houses located to east of site on Laura Street, across Dr. MLK Jr. Drive and upslope. However, thick strip of deciduous vegetation screens views of area from these residences. Bouton Street neighborhood is across Metro-North tracks to the west. Area to the south consists of land zoned and used for industrial purposes as UPS distribution facility.	Phase I and II performed on site. SNEW staff indicated site was filled in past to create level surface. Some remediation will be required on southern portion of the site. Immediately adjacent to the transmission easement, zoning is consistent with proposed substation, no residential areas immediately adjacent (across MLK Jr Drive and Metro-North tracks), and favorable access.
5. SNEW	Site of former SNEW substation that has been decommissioned	Approx. 0.6 mile east of	Via Lawrence Street and Woodward	Economically not viable because too

Site No./Name, Approx. Size, and Zoning	Site Description/Current Land Use	Distance to Existing 115kV Line & SNEW System	Surrounding Land Use and Road Access	Comments
Lawrence Street (approx. 0.3 acre zoning = Resid. C) Tax Map 16SE, Block 91, Lot 108	and is being dismantled. L-shaped parcel abuts both St. Lawrence Street and Woodward Avenue.	thel15kV line. -	Avenue. Nearby zoning is residential and industrial. However, areas along Lawrence Street and Woodward Avenue in the immediate vicinity of the site consist of viable residential neighborhood, characterized by detached single-and multi-family (mostly two-family) housing. Site does border LaJoie 's recycling facilities on the west.-	far from 115 k V. In residential neighborhood.

G. DESCRIPTION OF THE PROPOSED FACILITY

G.1 Facility Components

SNEW proposes to construct the new substation on the 1.07-acre St. Ann's Site, which interconnects to CL&P's 115 kV 1890 Line and the Metro-North railroad corridor to the west, and is located adjacent to Dr. Martin Luther King, Jr. Drive on the east. The distribution portion of the substation will be owned, operated and maintained by SNEW. The transmission (PTF) portion of the substation will be owned, operated and maintained by CL&P. Exhibit 3 provides a Boundary and Topographic Survey map of the St. Ann's Site and a proposed line drawing of the proposed substation facility, including proposed equipment locations and grading. In the vicinity of the St. Ann's Site, CL&P's 115 kV transmission line is built on or over Metro-North's railroad structures and conductor facilities.

The substation fence would be set back approximately three feet from the site boundary on the south and part of the east and west boundaries. The nearest equipment will be 30 feet from the eastern property boundary to maximize the distance between the facility and Dr. Martin Luther King, Jr. Drive. On the northern portion of the property, the fence is offset from the property boundary to allow for landscaping adjacent to Martin Luther King, Jr. Drive. The substation facilities will be set back approximately 10 feet from the southern property boundary to allow for a grounding grid and appropriate clearances. These setbacks conform to the City of Norwalk's zoning specifications for front and side lot line setbacks on Restricted Industrial zoned property.

CL&P's existing 1890 Line will be looped into the new substation to provide transmission service. A circuit breaker, which will normally be closed, will separate the existing 1890 Line into two new

circuits. In the event of an outage on either of the new 115 kV circuits, this looped arrangement will allow SNEW to obtain power from the other circuit.

The proposed substation and transmission/distribution line interconnections are designed in accordance with the National Electric Safety Code, and standards of the Institute of Electrical and Electronics Engineers, and the American National Standards Institute. Exhibits 5 and 6 identify the proposed substation development plan and layout, respectively. As these Exhibits illustrate, the substation will consist of the following major components:

SNEW Owned and Operated

- Two 24/32/40 MVA power transformers, with a base rating of 24 MVA and a peak of 40 MVA (fan-cooled). The transformers will be installed on concrete pads. Each transformer will contain approximately 6,000 gallons of insulating oil. To minimize or avert the potential for spills, each transformer will include an oil containment system, consisting of a sump with the capacity to contain 200% of the oil volume. Table G-1 summarizes the characteristics that are expected to typify the transformers that SNEW proposes to install.
- Appropriate circuit breakers, circuit switchers and disconnect switches.
- Connection (i.e., a high voltage tap) for a mobile transformer, in the event that one is ever needed.
- SNEW control house. This fabricated metal building (approximately 25 feet by 20 feet and 15 feet high) will house the distribution substation's relaying, control, metering, substation batteries and chargers and monitoring equipment, including the distribution Supervisory Control and Data Acquisition (SCADA) system. The building also will include heating, ventilation, and air conditioning. The control house will contain the automatic transfer

switch (ATS) for the Alternating Current (AC) power from the two station service transformers.

- A separate building approx. 40 feet by 20 feet and will house the 15 kV metal clad distribution switchgear. The building also will include heating, ventilation, and air conditioning.

CL&P Owned and Operated

- Three new transmission line steel support poles will be installed in the railroad right-of-way (with two adjacent to the site) to alter the existing transmission lines to improve the transmission line alignment prior to the transition to a horizontal configuration in the substation.

- Two new steel A-frame terminal structures will be installed within the new substation. The steel frame terminal structures will complete the transition of the transmission lines from the vertical arrangement in the Connecticut Department of Transportation (ConnDOT) Right-of-Way, to a horizontal arrangement within the new substation. The structures will stand approximately 60-70 feet and support line disconnect and line monitoring and protection equipment.

- CL&P control house will be approximately 36 feet by 24 feet and contain the transmission communication, control, and monitoring and protection systems. A transmission SCADA system for control, status reporting and recording. Power panels for the station AC system and its own DC power system, including DC panels, batteries and charger. The building also will include heating, ventilation, and air conditioning.

The transformers will be connected to CL&P's 115 kV transmission line via high current rated circuit switchers and 115 kV disconnect switches. The power transformers will be provided with

automatic load tap changers to regulate low-side voltages. The low voltage (i.e., 13.8 kV) switchgear will include a circuit breaker for each transformer, a tie circuit breaker (which will normally be open), and distribution circuit breakers.

Should one side of the 115 kV transmission line experience power supply problems, the substation's 115 kV tie circuit breaker will open. Only a momentary outage is expected, until the 115 kV tie circuit breaker is re-closed. If the fault persists and the 115 kV tie breaker cannot be re-closed, then the 13.8 kV tie circuit breaker will close. This process will be performed automatically with relays. Matched equipment on each side of the substation is designed to assure continuity in operations and maintenance procedures. Each transformer is capable of carrying the entire expected substation load of 40 MVA.

SNEW and CL&P have worked together to identify and evaluate options for interconnecting the substation to the 115 kV 1890 Line. The plan for the interconnection includes the following primary components:

For the entry of the 1890W line into the new substation:

- *Install a new steel pole structure,* planned for location approximately 50 feet south of the existing railroad/CL&P Tower #512. The new steel pole will be located on railroad property.
- *Install a new steel pole structure,* planned for location approximately 20 feet south of the existing railroad/CL&P Tower #B513. The new steel pole will be located partially on SNEW property and partially on railroad property (i.e., land owned by the Connecticut Department of Transportation and used by the railroad).
- *Reposition CL&P conductors and shield wire.* The existing CL&P mast is located 11 feet out, on the catenary bridge over the railroad tracks. The new steel pole for the

1890W circuit will be located clear of all railroad conductors and communications cables, with the exception of four railroad power and signal supply conductors. The new steel pole arms will be designed to extend over the tracks to the existing position of the CL&P conductors and shield wire. The CL&P wires will be moved from the mast onto the steel pole arms, and the mast will then be removed. This will allow the railroad conductors to be repositioned on the catenary bridge.

For the entry of the 1890E line into the new substation:

- *Install a new steel pole structure,* to be located approximately 200 feet south of CL&P's existing tower #8-514W.S. This new steel pole is expected to be located partially on railroad property and partially on SNEW property.
- *Modify existing CL&P facilities* to accommodate conductor loops to the new steel pole and the new span into the substation.

In addition to the 115 kV interconnection to the proposed substation, CL&P will provide fiber optic cable, and implement minor modifications to primary and backup protection relays at its Sasco Creek, Glenbrook, and Norwalk Harbor substations. Such work is expected to include minor changes to relay settings, communication cards, and control circuits.

SNEW will extend its existing distribution feeders to connect to the substation. The distribution lines will be installed underground and located in duct banks. New underground distribution duct will be required to link the substation to SNEW's existing distribution system, which is located within Dr. Martin Luther King, Jr. Drive south of the railroad bridge. The existing duct bank ends just at the north end of the parcel. Approximately 200 feet of new duct will be needed for half of the new distribution circuits and approximately 500 feet of new duct will be required for the remaining half of the new circuits.

The level portions of the site not occupied by equipment will be graded and finished with a gravel surface (known as trap rock). Sloped areas will be appropriately stabilized to prevent erosion using BMPs (DEEP Bulletin 34 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control). The entire perimeter of the substation facility will be fenced. Existing vegetation along the southern and northern boundaries of the site will be maintained to the extent practical but some amount of vegetation clearing will be required to construct the substation and maintain equipment clearance distances from overhanging branches and trees. Additional landscaping will occur for screening purposes, particularly along Martin Luther King, Jr. Drive, as appropriate.

Access to the site will be via Martin Luther King, Jr. Drive with two separate driveways and access gates; one to access the area owned and operated by SNEW and the other to access the separate area owned by CL&P. These gates will be located on the eastern portion of the site, and are accessible from Dr. Martin Luther King, Jr. Drive and a short driveway.

The substation equipment and supporting infrastructure would have a service life of approximately 40 years and would be capable of supporting the forecasted increased demand during this time.

G.2 Construction Methods

The construction of the proposed substation will involve several phases. First, the materials and equipment that SNEW presently stores on the site will be removed. Second, various activities will be required to prepare the site for the construction of the substation. Such site preparation work will include grading (import and/or export of existing materials), soil removal of unsuitable or contaminated materials to a pre-determined and licensed disposal facility, and creating temporary access to the site for heavy construction equipment. Finally, the construction of the substation will involve installing the concrete foundations for the transformers; installing the new steel towers, electrical equipment, control houses/switch gear enclosures, and the transformers; interconnecting

the substation to both CL&P's 115 kV lines and SNEW's distribution system; erecting a fence around portions of the site; and landscaping, as appropriate.

Because the construction of the new substation will involve the use of heavy equipment adjacent to the Metro-North railroad corridor, SNEW and CL&P consulted with representatives of Metro-North regarding work activities that have the potential to affect railroad operations. Metro-North indicated that as SNEW's portion of the substation construction work will be located at least 25 feet from the nearest active railroad track, no conflicts with rail operations are anticipated. SNEW will instruct its substation contractor to take particular care to assure that large construction equipment (e.g., crane) is operated safely and does not encroach on Metro-North property. CL&P will continue to coordinate with Metro-North regarding the safety precautions that will be taken during the construction of the 115 kV interconnection to the new SNEW substation, which will entail work within less than 25 feet of an active rail track.

Table G-2 summarizes the impacts that are anticipated as a direct result of construction activities and the measures that SNEW and CL&P expect to implement to minimize adverse effects (refer also to Section K). All of these impacts will be highly localized and limited to the construction period.

The primary components of the construction process are summarized in the following subsections. The actual sequence of construction activities and methods of construction may vary slightly, and will depend on final engineering design and bid specifications for the work, as well as on the field conditions at the time of construction.

G.2.1 Typical Construction Equipment Access and Work Site Preparation

In order to prepare the St. Ann's site for development as a substation, the various materials and equipment presently stored on the site will be removed. The site is already partially fenced and is

accessible via Dr. Martin Luther King, Jr. Drive by the driveway and gate located on the southeastern portion of the property.

It is anticipated that most of the construction vehicles and equipment involved in the substation construction will enter the site through this existing access point. However, a second driveway will be required as part of the substation design and vehicles may also access and leave the site via this second driveway. Additional access may be required, directly from Dr. Martin Luther King, Jr. Drive, for larger construction equipment (e.g., 100-ton capacity crane). Typical construction equipment is expected to include bulldozers, backhoes, man-lift vehicles, compressors, trucks (various sizes), and flat-bed trailers.

A portion of the St. Ann's Site is relatively level and has been previously cleared of vegetation and graded in conjunction with past land uses. As a result, vegetation clearing will mainly be performed on the southern and western portions of the site (adjacent to the railroad/transmission line corridor and United Parcel Service (UPS) site. In this area, the vegetation consists primarily of trees, saplings and shrub species characteristic of urban environments. Where practical, existing vegetation will be left in place, however clearing will be required during construction and to remove any overhanging trees or large branches that represent a potential safety hazard for the substation. The exact clearing limit will be determined during final design; larger trees will be examined individually to determine which specimens need to be removed.

As part of the site preparation work, temporary erosion controls (e.g., silt fence, straw bales) will be installed, as appropriate, on sloped portions of the site where soils disturbed by construction activities may be susceptible to erosion. Such controls will be maintained, as necessary, throughout the construction process. Additional BMPs will be utilized as necessary during all phases of substation construction (DEEP Bulletin 34 2002 Connecticut Guidelines for Soil Erosion

and Sedimentation Control). The primary objective of these controls will be to minimize the potential for off-site erosion.

G.2.2 Foundations

Foundation construction will commence after the completion of rough grading. The foundation installation process typically will involve excavation, form work, use of steel reinforcement, construction of the transformer sumps, and concrete pouring. If larger boulders or bedrock are encountered, controlled blasting may be required. Excess material or material deemed not suitable for compaction, if any, will either be used on-site or disposed of off-site in accordance with applicable requirements.

G.2.3 Bus Structures, Electrical Components, Conduits, and Manholes

After the foundations are installed, construction activities will shift to the erection of structures and equipment, including insulators, buses, disconnect switches, etc. In addition, control and power conduits, manholes, and a ground grid will be installed, along with the power ducts that will link the new substation to SNEWs existing distribution system. When this construction is complete, a layer of trap rock will be placed over the entire area within the substation fence.

G.2.4 Control Houses

The SNEW control house will be a fabricated metal building (approximately 25 feet by 20 feet and 15 feet high) and will house the distribution substation's relaying, control, metering, substation batteries and chargers and monitoring equipment, including the distribution SCADA system. The building also will include heating, ventilation, and air conditioning. The control house will contain the automatic transfer switch (ATS) for the Alternating Current (AC) power from the two station service transformers.

A separate building approximately 40 feet by 20 feet and will house the 15 kV metal clad distribution switchgear and this building will also include heating, ventilation, and air conditioning.

The CL&P control house will be approximately 36 feet by 24 feet and contain the transmission communication, control, and monitoring and protection systems. The house will contain a T-SCADA system for control and events and status reporting and recording. In addition, it will have power panels for the station AC system and its own DC power system, including DC panels, batteries and charger. The building also will include heating, ventilation, and air conditioning. The control house will be powered by two separate electric feeds to ensure no disturbance of electric to the control house.

G.2.5 Transformers

The two transformers will be installed on concrete foundations and connected to the rest of the substation. During installation, the transformers will be filled with insulating fluid. Special fluid-handling equipment will be used to vacuum-fill the transformers; this process typically requires 12-24 hours to complete. Each transformer will include a fluid containment system to minimize the potential for the uncontrolled release of spills. The transformers will be purchased with a noise level below National Electric Manufacturer's Association (NEMA) 55 dB to meet the measured night-time noise levels in the Project area.

G.2.6 Final Wiring and System Testing

The remaining electrical equipment and components will be installed, along with power cables. All of the substation equipment will be commission-tested prior to final connection to the 115 kV transmission line.

G.2.7 Distribution System Interconnection

SNEW will install approximately 200 to 500 feet of new power ducts to connect the substation to the existing SNEW distribution system. The new power ducts will be located within Dr. Martin Luther King, Jr. Drive and will involve the installation of 3/C 500 MCM 37 STR copper compact round cable. The cable will be installed in 5-inch PVC conduit encased in concrete, and buried to a depth of approximately three feet. It is expected that a total of eight conduits will be installed; six of these will be used for underground circuits and two will be maintained as spares for future expansion. The circuits are expected to have a 50% load factor. The second distribution path will be via a new concrete encased PVC conduit duct bank along Ely Ave. The Ely Avenue duct bank will intercept an existing CL&P duct bank into the SNEW State street station.

G.2.8 Transmission Line Interconnections

CL&P will construct three new steel pole structures along the railroad and install the associated conductors and wires needed to connect the new substation via two new circuits. Two new A-frame terminal structures will be installed to transition the transmission lines from two of the new transmission line structures into the substation. These two deadend structures along with one strain structure and two steel A-frame terminals will be designed and constructed as part of this Project to facilitate the construction and connection of the new substation. The specific location of these facilities will be determined during final design.

G.2.9 Site Security and Landscaping

The substation site will be fenced or otherwise enclosed to prevent unauthorized access. The final specifications of the fence will be determined during the final design phase but is expected to be a chain link fence, approximately seven feet high with an additional one-foot of barbed wire on top.

In some areas, vinyl strips will be inserted into the fence as a visual screening from adjacent properties.

After the substation is energized, any remaining construction debris will be collected and removed from the site. The slope on the western portion of the site will be stabilized and a retaining wall will be installed as part of the site development. The specifications of the wall will be determined during final design but block wall construction would be the preferred method, if grading and final design allows. Temporary erosion controls will be maintained until the slope is satisfactorily stabilized by new vegetation.

The existing hedgerow of vegetation (trees and shrubs) along the southern and western boundaries of the site will be maintained to the extent practical. The portion of the substation property that abuts Dr. Martin Luther King, Jr. Drive will be landscaped, as appropriate. Landscape specifications will be identified as part of the final architecture, engineering, and design of the substation.

G.3 Construction Schedule and Planned In-Service Date

The construction of the new substation is expected to require approximately one year to complete. Figure G-1 provides a preliminary schedule for the development of the proposed substation. Assuming that site preparation work at the site begins in November 2012, the substation is expected to be in-service by approximately November 2013.

G.4 Estimated Cost

A workforce of approximately 20 people is expected to be required to develop the new substation. The capital cost for the installation of the new facility is estimated at greater than $18 million. The main elements of the capital cost are identified in Table G-3.

Table G-1

SNEW Power Transformers: Summary of Anticipated Characteristics*

2 Winding Step Down Transformers	
Primary Voltage	115 kV
Secondary voltage	13.8 kV (15 kV Insulation Class Rating)
MVA Rating	24/32/40 OA/FA/FA (oil/fan/plus fan cooled)
Winding Configuration	Δ primary, grounded Y secondary
Auto Load Tap Changer	
Sound	<55 dBA
Impedance	8% p.u.
Height	~220"
Length	~285"
Depth	~2`5"
Weight	156,000 lbs.
Ship Height	~162"
Ship Length	~210"
Ship Depth	~120"
Ship Weight	~145,000 lbs. (no fluids)
Lead Time	~36 weeks
*Based on preliminary data. Transformers for the proposed substation will be selected on detailed engineering criteria and specifications, which will be developed during the design phase of the Project.	

Table G-2

Summary of Anticipated Impacts and Mitigation Measures: SNEW Substation Construction

Potential Construction Impact	Anticipated Mitigation Measures
Minor and short-term increase in traffic movements on Dr. Martin Luther King, Jr. Drive and other local streets during the movement of construction equipment and workers to and from the site.	Because of the limited amount of equipment that will be used on site, over a year-long construction period, no major traffic congestion is expected to result from the Project. Flagmen and police officers will be stationed at the site if required to maneuver large equipment into and out of the site or if deemed necessary due to traffic patterns.
Noise from equipment/vehicle operations and construction activities.	With limited exceptions (e.g., vacuum filling of transformers with insulating fluid, which requires 12-14 continuous hours), construction activities will be performed during the daytime hours, when noise sensitivity is lowest. Construction equipment and vehicles will be equipped with standard mufflers and will be expected to conform to required noise emission criteria. Blasting, if required, also will be performed during daylight hours, and will be conducted in accordance with applicable regulatory requirements.
Fugitive dust emissions from construction activity.	Dust will be controlled by applying water to exposed work areas, if appropriate.
Conflict with Metro-North rail operations.	All of SNEW's substation construction equipment will operate from SNEW's property. As indicated during consultation with Metro-North, no direct conflicts with the operation of the rail lines are anticipated. CL&P's interconnection to the new substation will potentially impact Metro-North and CL&P is expected to continue to consult with railroad officials to develop appropriate mitigating measures for use during construction.

Table G-3

Capital Cost Summary: Proposed SONO Substation

Project Component	Estimated Cost ($)
Engineering / Project Team	$1,005,000
Materials	$5,574,000
Construction	$12,282,000
PROJECT TOTAL	**$18,861,000**

Figure G-1

Project Schedule

Task/Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Design & Engineering	■	■	■	■	■													
Equipment Procurement		■	■	■	■	■	■	■	■	■	■	■	■	■				
Construction						■	■	■	■	■	■	■	■	■	■	■	■	■

H. EXISTING CONDITIONS

This section describes the existing environmental conditions on and in the vicinity of the proposed electrical substation facility site and identifies the potential direct or indirect impacts that the Project will have on the environment, ecology, public health, scenic, historic, and recreational values. To provide a context for the environmental setting within which the Project is proposed, baseline information is also provided, as relevant, concerning SNEW's service area within South Norwalk and for the City of Norwalk in general. Measures that SNEW proposes to mitigate adverse environmental impacts as a result of the substation development also are identified.

H.1 Topography and Soils

The northern portion of the proposed 1.07-acre Project site is relatively flat and exhibits little topographic relief, except for on the western boundary, where the property slopes down to the Metro-North railroad. The elevation of the northern portion of the site is approximately ten feet higher than the southern portion of the site. The western property line also drops approximately 15 feet to the Metro-North/CL&P corridor. Elevations on most of the site average approximately 55 feet above mean sea level. However, abutting the Metro-North railroad corridor and CL&P transmission easement, the property slopes steeply to between 44 and 48 feet (refer to the boundary and topographic survey of the site included in Exhibit 3).

The Project site lies within Connecticut's Western Uplands, in the Connecticut Valley Synclinorium within the Iapetos (Oceanic) geologic terrain. Bedrock within this terrain is mapped as the Trap Falls and Ordovician Granite Gneiss formations, which are characterized by medium-grained schists and foliated granitic gneiss (Rodgers 1985). No bedrock outcrops are evident on the site.

The surficial materials that overlie the bedrock in the Project area are mapped as thin till, which generally is less than 10-15 feet deep and consists of a non-sorted, non-stratified mixture of material in sizes ranging from clay to large boulders (Stone et al. 1992).

Soils on the site have been affected by historical land modifications and urban development activities, including the past use of the site for various buildings, the construction of Dr. Martin Luther King, Jr. Drive in the 1980s, and the reported use of the site for soil storage during the development of the Lowe Street -Dr. Martin Luther King Jr., Drive bridge over the railroad tracks. According to the Fairfield County Soil Survey (USDA 1981), soils on the Project site are classified as Urban Land (found on the majority of the site) and Charlton-Hollis fine sandy loams (on the easternmost portion of the site). Urban Land is a soil unit that includes areas where 85% or more of the surface is covered by urban structures. Urban structures are identified as roads, parking lots, industrial parks, shopping centers, business centers, or other impervious material. Slopes on such Urban Land areas typically range from 0 to 8%, but are dominantly less than 5%. The Charlton-Hollis unit is identified as very rocky fine sandy loams on 15-45% slopes. The slopes associated with this soil type are no longer present on the site, and were likely affected when Ely Avenue was realigned to create Dr. Martin Luther King, Jr. Drive.

H.2 Existing Land Use and Future Development Plans

Municipal Overview. Bordered on the south by Long Island Sound, the City of Norwalk encompasses 22.8 square miles and boasts an extensive 22-mile shoreline. The City, which is located in the South West Regional Planning District, is bounded on the west by the Town of Darien, on the north by the Towns of New Canaan and Wilton, and on the east by the Town of Westport.

Land use patterns in Norwalk generally reflect the City's development history. Overall, the City is characterized by a wide mix of uses, ranging from beaches and parks to heavy industry. A majority of

the property within the Norwalk city limits is in single-family residential land use. Two-family residential, multi-family residential, commercial, and industrial uses are concentrated primarily within the traditional business districts in South Norwalk and in Norwalk Center, as well as along major transportation routes, including Interstate 95/U.S. Route 1, U.S. Route 7, and the Metro-North/Amtrak Rail corridor.

South Norwalk is one of Norwalk's two traditional business districts (the other is Norwalk Center, which is located north of Interstate 95). Existing land uses within South Norwalk generally consist of a mix of retail and commercial office establishments, public uses, industrial development, and both single-and multi-family residences.

Existing Land Use and Zoning. The electrical substation is proposed for development on a 1.07-acre site located in South Norwalk, referred to as the St. Ann's Site. South Norwalk includes the portion of the City of Norwalk that is located south of Interstate 95 and west of the Norwalk River.

The St. Ann's Site is bounded on the north and east by Dr. Martin Luther King, Jr. Drive. The Metro-North railroad tracks and CL&P transmission line easement form the western border of the site, while a UPS facility is located adjacent to the site on the south (refer to Figure H-1, as well as to the representative site photographs in Exhibit 4). SNEW's State Street generating station and associated substation are located approximately 0.3 mile to the north of the proposed site.

SNEW owns the site, having acquired the northern parcel from the City of Norwalk in 1997 and the southern parcel from a private sale in 2009. The structures on the southern parcel were demolished in 2010. SNEW presently uses the northern property for materials and equipment storage.

A list of abutting property owners and the abutter landowner notifications required for this application are included in Exhibit 5.

The north part of the site is partially enclosed within a chain link fence, which includes an electronically controlled gate located on the middle portion of the property. The gate is accessible from Dr. Martin Luther King, Jr. Drive via a short driveway. A second driveway off of Dr. Martin Luther King, Jr. Drive services the southern portion of the site. A municipal streetlight, which is located adjacent to Dr. Martin Luther King, Jr., Drive, provides illumination for security purposes at the site.

The western, northern, and southern boundaries of the proposed substation property are bordered by deciduous vegetation that serves as a screen to limit views to and from the site. The eastern site boundary, which is bordered by a grass strip, is directly visible to those using Dr. Martin Luther King, Jr. Drive.

Figure H-2 identifies the existing zoning classifications both on and immediately surrounding the proposed substation site. As this figure illustrates, the site is zoned RI, Restricted Industrial Zone.

The City of Norwalk Building Zone Regulations (Zoning Code, Article 70, Section 118-711 (A)) specify the following with respect to the RI zone:

"Purpose and intent. It is the purpose of this zone to provide areas exclusively for light industrial manufacturing uses and other compatible uses, including single- and multifamily residential uses with recreational facilities, on a parcel containing 25 acres or more, as well as limited areas of artist workspace, non-accessory office, college or university use, which will contribute to the economic base of the city and which will constitute a harmonious and appropriate part of the physical development of the city. This zone is designed to apply in areas suitable for industrial development and where sufficient space, adequate transportation and compatible utilities are available. The provisions of these regulations are intended to encourage the efficient operation, continuation and expansion of industrial,

research and development and office uses without encroachment from uses which are inappropriate and which could equally well be located elsewhere."

Public utility supply or storage facilities are permitted in a RI zone. The primary zoning in the immediate vicinity of the site consists of the following:

- RI, located generally south of the Project site along the east side of the Metro-North corridor.
- Neighborhood Business (NB), located along Bouton Avenue, west of the Metro-North corridor.
- C Residence (C), located east of the site.
- Industrial No. 1 (I1), located generally southwest of the site along the Metro-North corridor.
- In SNEW's franchise territory, generally along the Metro-North and electric transmission line corridors, there also are various special zoning districts that have been established to promote economic development in Norwalk. These include:
- The SoNo Station Design District (SSDD), which encompasses the area around the South Norwalk Railroad Station and which was established to permit the redevelopment of the railroad station in accordance with specified plans;
- The South Norwalk Business District (SNBD), which includes the area between North Main Street and Martin Luther King Drive and which is intended to permit retail stores, multi-family dwellings, and mixed use development consistent with the urban area;

- The Washington Street Design District (WSDD), which includes the areas along and near Washington Street and which was created to preserve and enhance the historic character of the Washington Street Historic District; and
- The Reed-Putnam Design District (RPDD), which encompasses the area generally between the Norwalk River and West Avenue/North Main Street and which was established to promote the redevelopment or rehabilitation of the district in accordance with the Reed-Putnam Urban Renewal Plan.

Land uses in the immediate vicinity of the site mirror the zoning classifications and consist of a mix of light industrial, commercial, and residential developments. Light industrial uses are concentrated primarily along the Metro-North railroad corridor and the western side of Dr. Martin Luther King, Jr. Drive. The closest industrial use is a large UPS warehouse facility that abuts the south side of the site: however, industrial uses are prevalent adjacent to the Metro-North corridor both northeast and farther southwest of the proposed substation site. Residential uses are located both east and west of, but do not abut, the site

To the east, detached single-and double-family homes front along Laura Street and Ely Avenue. The rear of the residences that front on Laura Street are located approximately 100 feet from the proposed substation site. However, these homes are situated across Dr. Martin Luther King, Jr. Drive, beyond a green strip along the east side of the road, and upslope from the site; dense deciduous vegetation blocks views of the homes from the substation site during a majority of the year.

To the west of the St. Ann's Site, across the Metro-North/CL&P corridor, residential uses are located along Bouton Street. The Bouton Street neighborhood is characterized by a mix of older residential and commercial uses.

Municipal, Regional and State Plans. Various State, regional and municipal plans provide guidance for future land use development in Norwalk. The following describes the future land use categories identified for the proposed substation site.

The *Conservation and Development Policies Plan for Connecticut: 2005-2010* (Office of Policy and Management [OPM] May 2005) identifies the St. Ann's Site as part of a Regional Center, within a designated urban development area. The Plan, which will remain in effect until 2013, defines a Regional Center as an area that encompasses traditional core commercial, industrial, transportation, specialized institutional services, and facilities of inter-town significance. Further, according to the OPM Plan, the State's goal is to concentrate economic development in major urban areas (e.g., within Regional Centers), promoting in particular infill development, community stability, and orderly urban growth. The State's specific action strategy for Regional Centers is to afford them the "highest priority for affirmatively supporting rehabilitation and further development toward revitalization of the economic, social, and physical environment of Regional Centers."

On a regional level, the 2006-2015 Regional Plan of Conservation and Development (South Western Regional Planning Agency, February 2006) identifies the St. Ann's Site as within a Commercial Area, adjacent to the Norwalk City Center. Commercial areas are identified in the regional plan as development zones that are primarily characterized by commercial or commercial/industrial/office uses, although residential uses also may be present.

In addition to Norwalk's zoning and urban redevelopment initiatives, the City's *Plan of Conservation and Development* (July 2008) identifies the proposed substation site as within an area of existing industrial use. The *Plan of Development* proposed land use map shows the St. Ann's Site as within a Restricted Industrial zone, which is also reflected in the present site zoning.

H.3 Socioeconomic Conditions

Population. The sixth largest city in Connecticut, the City of Norwalk had a 2010 population of 83,247 and a population density of 3,651 people per square mile. In comparison, the 2010 Fairfield County and State of Connecticut population densities are substantially lower, at 1,467 and 738, respectively. Norwalk's population density also is the highest in the eight-community South Western Planning Region, which had an average density of 1,621.

Since 1970, Norwalk's population has remained relatively stable at approximately 80,000. Projections from both Connecticut's OPM and the Connecticut Department of Economic and Community Development (DECD) indicate that the City's future population will grow slowly over the next several decades.

DECD estimates indicate that between 2010 and 2015, Norwalk's population is expected to grow by 0.7%, to 86,396. During the same period, the Fairfield County population is expected to increase by 0.2% (from 898,137 in 2010 to 908,999 in 2015), while the State population is projected to grow by 0.2% (from 3,511,137 to 3,545,169) and the population of the South Western Planning Region (of which Norwalk is a part) was predicted to reach approximately 332,944. According to OPM estimates, by 2020, Norwalk's population is expected to increase to 83,810, while Connecticut's population is projected to reach approximately 3.6 million and the South Western Region's population is estimated at approximately 348,000. Table H-1 illustrates the general population trends and projections for Norwalk, the South Western Region, and State.

Recently released U.S. Census data indicates that Connecticut's 2010 population increased to approximately 3.5 million (a 3.3% increase since 2000), whereas Fairfield County's population increased by 1.8%, to 898,137. Fairfield County's growth rate between 2000-2010 substantially exceeded the OPM projections.

Economic Base. Norwalk is strategically situated in southwestern Fairfield County along major rail and highway transportation routes, adjacent to Long Island Sound, less than 40 miles from New York City, and within one of the country's largest and richest consumer markets. The diversity of the City's economic base reflects the importance of this strategic location in attracting both businesses and residents.

Particularly within the last decade, Norwalk's economy has diversified along with that of southwestern Fairfield County. In addition to manufacturing and research industries, the City has attracted corporate development and established a tourist industry with a focus of interest on destinations such as the Maritime Aquarium and the South Norwalk (SoNo) historic area. The City is continuing to promote economic diversification and revitalization through public investments in major projects such as the South Norwalk Transit-Oriented Development, the South Norwalk Intermodal Facility, the Downtown Connectivity Initiative, the Mill Hill Master Plan, as well as investing in small business development and promoting affordable housing.

On a regional level, Norwalk's prime location within Fairfield County and along the southwestern Connecticut "Gold Coast" provides a firm foundation for long-term economic stability. Fairfield County as a whole is experiencing the fastest growth in business establishments of any of the Connecticut counties, with particular increases in the number of new businesses in the service sector. In addition, according to recent data from the Connecticut Department of Labor, one out of every four jobs in the State is located in Fairfield County.

Employment and Income. The City of Norwalk is part of the Bridgeport-Stamford Labor Market Area (LMA), which encompasses the South Western Planning Region. In January 2012, the Connecticut Department of Labor reported a total labor force of approximately 476,374, with an unemployment rate of approximately 7.9%. The LMA's unemployment rate is one of the lowest in the State.

Comparatively, in January 2012, Connecticut had an unemployment rate of approximately 8.5%, while the rate in the United States as a whole was about 8.3% (not seasonally adjusted).

Norwalk has a total resident labor force of approximately 49,284, approximately 17,865 of whom are employed within the City. The remaining City residents in the labor force commute to jobs located in surrounding areas, principally New York, Stamford, and Greenwich.

The estimated 3,200 businesses in the City generate approximately 43,360 jobs. Approximately 41% of these jobs are filled by local residents, with the remainder going to commuters from Bridgeport, Stamford, and Fairfield. The primary employment sectors in the City in 2005 included:

- Services, which accounts for 40.1% of the employment base;
- Trade, (19.7%);
- Manufacturing, (19.7%); and
- Finance, insurance, and real estate (7.3%).

Unemployment in Norwalk has historically been lower than in the State as a whole, and generally comparable to the unemployment rate in the LMA. In recent years, overall unemployment rates have increased substantially because of the weak U.S. economy and decreased employment opportunities in general. This trend is particularly evident in Norwalk and in southwestern Connecticut.

Comparatively, per capita income in the City of Norwalk is lower than that in southwestern Connecticut, but is higher than for Connecticut as a whole. For example, 2010 median household income in the City was reported as $71,877, compared to $77,620 for Fairfield County and $65,686 for Connecticut.

H.4 Transportation

The proposed substation site is adjacent to Dr. Martin Luther King, Jr. Drive, which is a four-lane highway that traverses north-south between North Main Street/West Avenue and Wilson Avenue. Dr. Martin Luther King, Jr. Drive was constructed between the late-1960s and early 1980s, and represents a reconfiguration of portions of Spring Street and Ely Avenue.

Existing access to the substation site is via two short driveways off of Dr. Martin Luther King, Jr. Drive.

The Metro-North Commuter Railroad and Amtrak corridor abuts the St. Ann's site on the west. This primary rail corridor includes multiple tracks and provides both passenger and freight service. The South Norwalk Railroad Station, which was rebuilt in the mid-1990s, is located adjacent to SNEW's generating station, approximately 0.3 mile north of the St. Ann's Site. The railroad station also houses SNEW's administrative offices.

H.5 Biological Resources

The proposed substation site is a developed upland area that is presently used in part as a SNEW materials/equipment storage yard. Because a majority of the site is graveled, the only vegetation is found along the site boundaries. This vegetation consists of a grassy strip along Dr. Martin Luther King, Jr. Drive and deciduous, shrub, and herbaceous vegetation along the other site boundaries. Terrestrial resources are limited to the wildlife species that are common in urban areas and in these vegetation types.

H.6 Wetlands and Watercourses

There are no wetlands or watercourses on the proposed Project site or in the immediate vicinity (Figure H-3). A survey of the site was performed for the presence of wetlands by a certified soils scientist and no wetland areas were located (See Exhibit 6). In addition, soils maps were consulted to determine if hydric soils were identified in the vicinity of the Project. No hydric soils are mapped within ¼ mile of the Project and only one area of hydric soil is mapped within 1/2 mile of the Project (Exhibit 6).

H.7 Rare Species

Review of the CT DEEP Natural Diversity Data Base (NDDB) mapping (updated December 2011) revealed that there are no records of state-listed species on or in the vicinity of the proposed St. Ann's Site (Figure H-3). Further consultation with the NDDB is not required based on the review of the mapping.

H.8 Water Supply Areas

According to the Water Quality Classification Map of the State of Connecticut as classified by the CT DEEP, groundwater within the Subject Property has been designated as GA. The designated use for groundwater within the GA classification is for existing private and potential public drinking water supplies. However, this entire area is connected to the public water supply.

Specifically, this classification includes ground waters within the area of influence of private and potential public water supply wells that are presumed to be suitable for direct human consumption without need for treatment.

The Property is not located within a State designated Aquifer Protection Area according to data obtained from the CT DEEP Geographic Information Systems ("GIS") database. The location of these APAs is determined through preliminary mapping and later final mapping. The mapping is performed by the water companies who own the wells and is subject to approval by the CT DEEP. No high yield public water supply wells are located within the vicinity of the Property.

H.9 Floodplains

The site is not within a 100-year flood hazard zone, as classified by the Federal Emergency Management Agency (FEMA Community Panel Number 090012 0007 C, August 19, 1986) and there are no flood hazard areas on the property.

H.10 Coastal Zone Management Areas

As defined in Conn. Gen. Stat. § 22a-94(a), the Connecticut Coastal Area includes the land and water within numerous town, including the City of Norwalk. A subset of the Coastal Area, called the Coastal Area Management Boundary, represents an area within which activities regulated or conducted by coastal municipalities must be consistent with the Coastal Management Act. The proposed substation property is not located within the Coastal Area Management Boundary, however, as it lies to the west of the existing boundary in the City of Norwalk. Areas to the northeast, east and southeast of the proposed location are within the Coastal Area Management Boundary.

H.11 Scenic Areas and Viewscapes

The substation is proposed to be built within an industrially zoned area of the City of Norwalk, and therefore future development around the Substation is anticipated to be relatively compatible with the Substation. Although much of the property is surrounded by an existing vegetative buffer of

deciduous trees, shrubs and herbaceous vegetation, landscaping proposed by SNEW will mitigate for, to the extent feasible, potential views of the substation by providing vegetative screening. SNEW has prepared a visual simulation of the proposed substation (Refer to Figure A-2 and Exhibit 9) to depict the anticipated appearance of the substation.

There are no documented scenic areas or scenic view-sheds designated within ¼ mile of the proposed substation property. The Merritt Parkway is designated as one of America's byways and cuts through the City of Norwalk. However, the Merritt Parkway is located approximately two miles to the north of the proposed substation. No visual impacts observable from the Merritt Parkway will occur.

H.12 Recreational Areas

There are no recreational areas directly abutting the property or within ¼ miles of the proposed locations, however, four parks are located within ½ mile of the proposed location (Table H-2).

H.13 Lighting

The only existing lighting in the vicinity is associated with Martin Luther King, Jr. Drive. Lamp posts are located along the roadway and light from those lamps provide security lighting to the existing storage area driveway.

H.14 Seismic Areas

Based on review of USGS-National Earthquake Hazard Program maps, the seismic risk in the Project area is indicated as a peak acceleration (percent of gravity [%g]) value of 5 with 10 percent probability of exceedance in 50 years. The Subject Property is located in a lower (probability range) seismic hazard area according to the USGS Earthquake Hazards Program. A seismic hazard map of Connecticut is supplied in Figure H-4.

H.15 Cultural Resources

To assess the land use history (and potential for sensitivity to cultural resources) of the St. Ann's Site, historical records and aerial photographs were reviewed. The review focused on records prior to 1995, when SNEW acquired the property from the City of Norwalk.

A review of historic maps indicates that the proposed substation site has been used for a variety of purposes. The site was modified as a result of these uses, and also was affected by the construction of Dr. Martin Luther King, Jr. Drive.

Maps from 1922 identify the property as vacant. However, by the mid-1930s, a residence appears to have been developed on the site, which abutted and was accessible from Ely Avenue on the east. Subsequently, it was used for a restaurant (i.e., the St. Ann's Club), an automobile repair shop, a gasoline station, and a laboratory. By 1985, the buildings on the northern portion of the site had been demolished and aerial photographs indicate that the property was used for excess soil/equipment storage in conjunction with the construction of Dr. Martin Luther King, Jr. Drive. The construction of Dr. Martin Luther King, Jr. Drive also involved the demolition of residences along the east side of Ely Avenue, as well as the removal of the northern portion of Ely Avenue (which was reconfigured into a dead end street, with a termination located southeast of the St. Ann's Site). The southern portion of the site contained a residence and a garage that were demolished in 2010 and the property is now vacant.

Despite the history of development activities at the property, the State Historic Preservation Office (SHPO) was consulted about the potential for the St. Ann's Site to contain significant historic or archaeological resources. However, the SHPO concluded that the potential for locating cultural resources on the site was low. As a result, the SHPO determined that as it relates to the proposed

substation Project "no historic properties will be affected by this Project."(refer to correspondence from the SHPO in Exhibit 7).

H.16 Noise

A noise study was conducted at the proposed substation location to measure the existing sound levels and determine what impact, if any would be expected from the proposed facility. The surveys occurred on June 28, 2011 and June 29, 2011 and measurements were conducted with a Bruel and Kjaer Instruments Type 2250 sound level analyzer and calibrated before and after use with a Bruel and Kjaer Instruments Type 4231 acoustical calibrator.

The background sound levels measured at the proposed location were dominated by sound produced by local traffic with occasional high level sounds (75 to 80 dBA) from passing trains. The results of the survey indicated that daytime background sound levels ranged between 48 and 50 dBA. During late night and early morning hours, when traffic is at a minimum, background sound levels dropped to between 37 and 38 dBA. The full sound study report is included as Exhibit 10.

H.17 Other Surrounding Features – Sensitive Receptors

Figure H-4 (Sensitive Receptors) depicts the locations of other surrounding features within ¼-mile and ½ mile of the property. The figure shows the location of municipal, state, and federal property, statutory facilities [as defined under Conn. Gen. Stat. § 16-50*l*(a)(1)(A)(iii)]. No statutory facilities [private or public schools [K-12], licensed child day care facilities, licensed youth camps, and public playgrounds] were identified within a ¼-mile radius of the property. A number of facilities were identified within ½ mile of the facility as shown on Figure H-4. Four churches are located within a ¼ mile of the proposed location. A fairly large number of residences are located within ¼-mile of the Property. None of these residences are located immediately adjacent to the site. The closest residence

is located approximately 183 feet to the west of the center point of the substation property, across the Metro-North ROW.

Figure H-1

Aerial Photograph of the Project Area

Figure H-2

Zoning Map of the Project Area

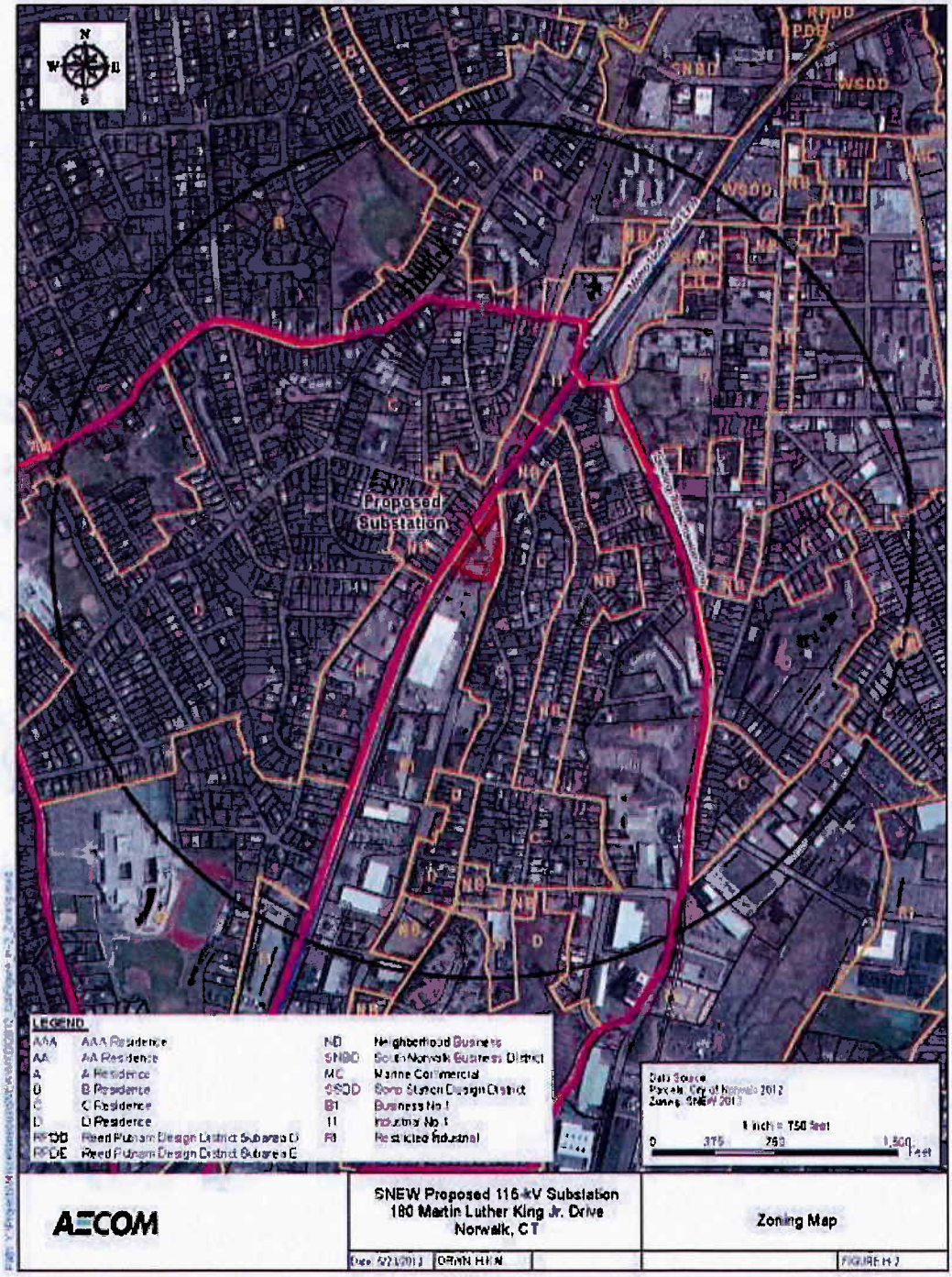


Figure H-3

Wetlands and Rare Species Habitats within ½ mile and one-mile of the Project Site.

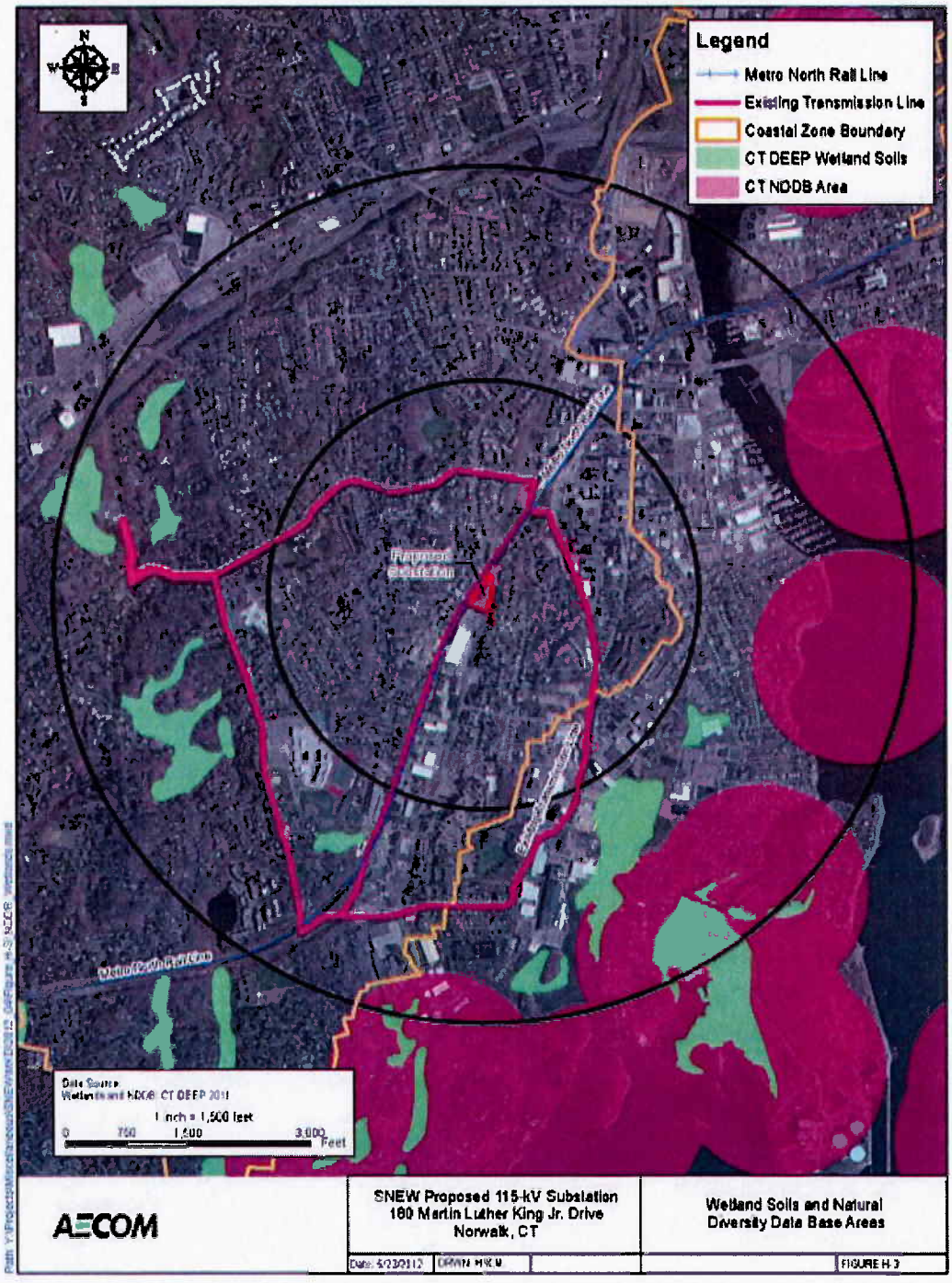


Figure H-4

A seismic hazard map of Connecticut

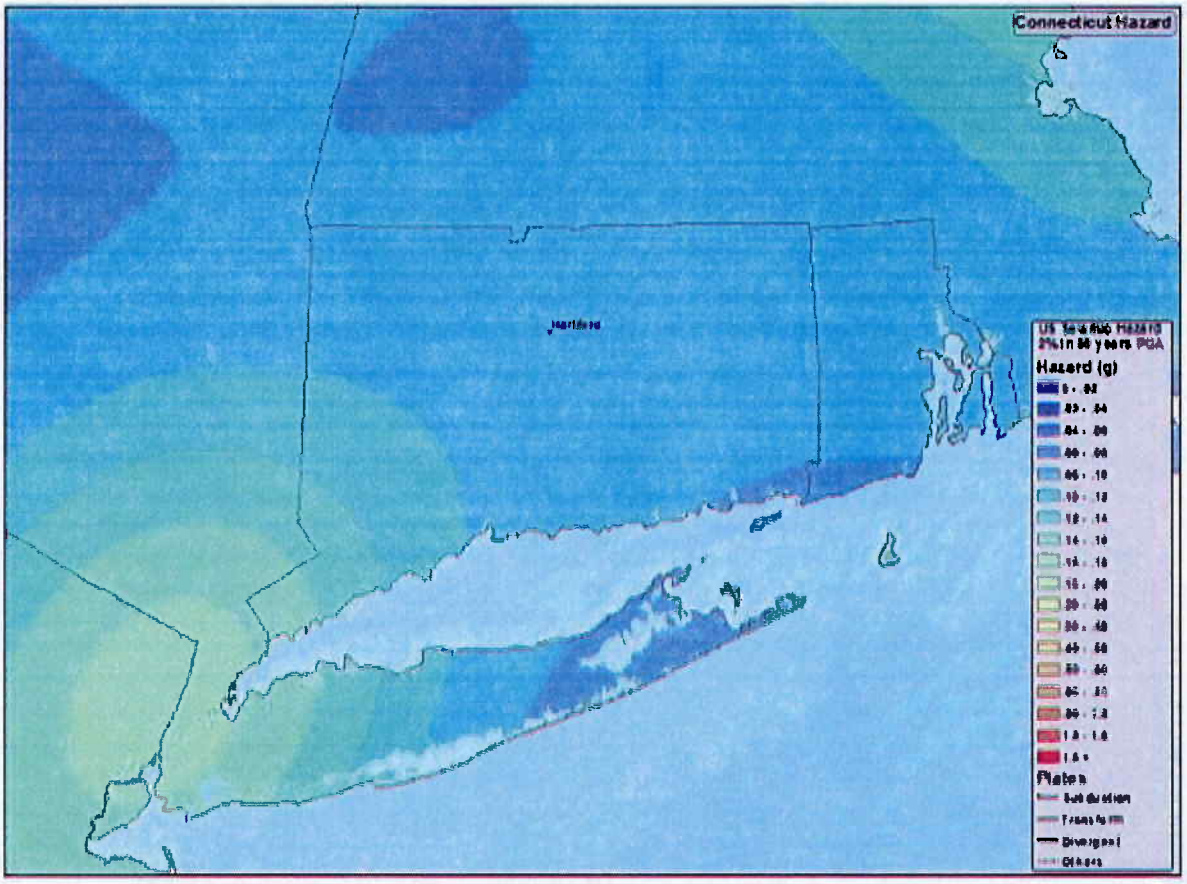


Figure H-5

Sensitive Receptors within ½ and one-mile of the Project Area

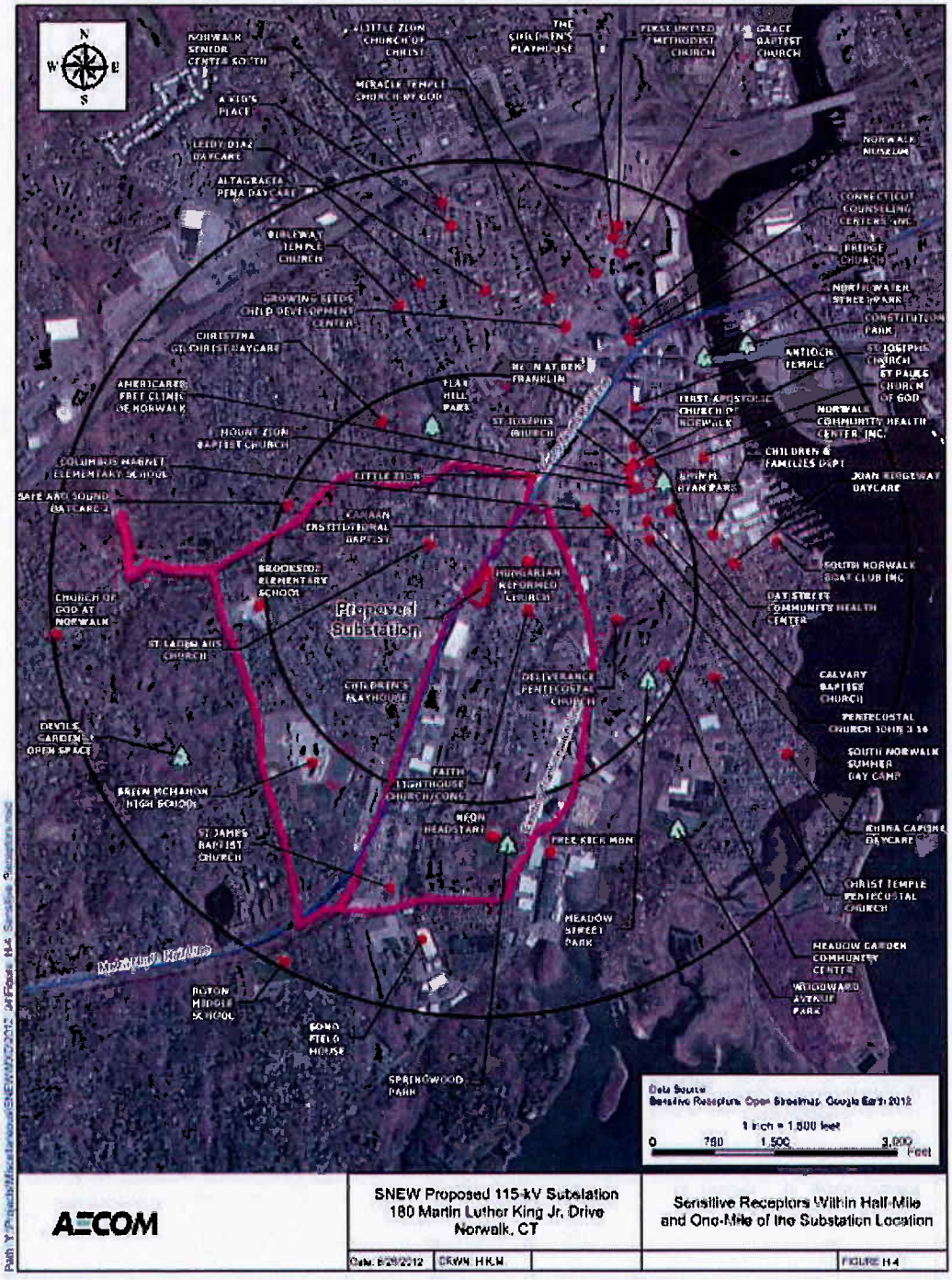


Table H-1

Population and Population Trends by Decade: 1970-2015

City of Norwalk, South Western Planning Region, Fairfield County, and State

Location	Year/Population						
	1970	1980	1990	2000	2004	2010	2015
City of Norwalk	79,288[c]	77,767[c]	78,331[bc]	82,951[bc]	84,107[b]	83,274[b] 85,603[a]	86,396[b]
Fairfield County	792,814	807,143	827,645[b]	882,567[b]	904,001[b]	898,137[b] 916,829[a]	908,999[b]
Region*	333 ,935[c]	325,546[c]	329,935 [c]	353,556[c]	-	356,752[b] 364,519[a]	359,221[b]
State	3,031,709 [a] 3,032,217[c]	3,107,576[ac]	3,287,116 [ac]	3,405,565[ac]	3,507,246[b]	3,574,097[a] 3,511,137[b]	3,545,169[b]

Notes:

a = US Census, 2010
b = OPM, Connecticut Population Projections CERC Town Profiles, 2011
c = CT DECD
* = South Western Planning Region includes Norwalk, Darien, Greenwich, New Canaan, Stamford, Weston, Westport, and Wilton.

Table H-2

Table of Sensitive Features Near the Project Area

Facility Type	Name	Distance from Substation (ft)
Church	Faith Lighthouse Church/Cons	630
Church	Hungarian Reformed Church	677
Church	St Ladislaus Church	858
Church	Iglesia Betania Church	1,373
Church	Little Zion	1,517
Church	Church of God	1,572
Child Day Care Center	Columbus Magnet Elementary School	1,628
Actively Licensed Youth Camps	South Norwalk Summer Day Camp	1,628
Church	Deliverance Pentecostal Church	1,696
Church	Deliverance Pentecostal Church	1,696
Church	Canaan Institutional Baptist	1,746
Child Day Care Center	Children's Playhouse	1,837
Park	Flax Hill Park	2,104
Church	Pentecostal Church John 3 16	2,163
Church	Calvary Baptist Church	2,206
Church	Mount Zion Baptist Church	2,265
Outpatient Clinic	Americares Free Clinic of Norwalk	2,267
Park	Meadow Street Park	2,326
Church	St Josephs Church	2,343
Family Day Care Homes	Christina Gilchrist Daycare	2,404
Community Center	Meadow Garden Community Center	2,441
Church	Saint Joseph's Church	2,450
Outpatient Clinic	Day Street Community Health Center	2,534
Child Day Care Center	Neon at Ben Franklin	2,560
Church	First Apostolic Church of Norwalk	2,579
Park	John H. Ryan Park	2,600
Child Day Care Center	Safe and Sound Daycare 2	2,605
Church	St Pauls Church of God	2,608
School	Brookside Elementary School	2,729
Family Services	Children & Families Dept	2,932
Church	Antioch Temple	2,953
School	Brien McMahon High School	2,972
Child Day Care Center	Neon Headstart	3,042
Church	Christ Temple Pentecostal Church	3,062

Facility Type	Name	Distance from Substation (ft)
Family Day Care Homes	Joan Ridgeway Daycare	3,128
Park	Springwood Park	3,163
Outpatient Clinic	Norwalk Community Health Center	3,180
Child Day Care Center	Free Kick MBM	3,338
Child Day Care Center	Growing Seeds Child Development Center	3,400
Church	Bridge Church	3,594
Outpatient Clinic	Connecticut Counseling Centers	3,613
Church	Bibleway Temple Church	3,644
Park	South Norwalk Boat Club Inc	3,676
Church	Miracle Temple Church of God	3,685
Family Day Care Homes	Leidy Diaz Daycare	3,690
Museum	Norwalk Museum	3,798
Park	Woodward Avenue Park	3,810
Family Day Care Homes	Altagracia Pena Daycare	3,852
Church	St James Baptist Church	3,854
Park	North Water Street Park	3,963
Church	Little Zion Church of Christ	4,148
Park	Devils Garden Open Space	4,215
Family Day Care Homes	Rhina Capone Daycare	4,260
Church	SONO Field House	4,368
Park	Constitution Park	4,447
Church	Grace Baptist Church	4,500
Child Day Care Center	A Kid's Place	4,505
Child Day Care Center	The Children's Playhouse	4,640
Church	First United Methodist Church	4,798
Church	Norwalk Senior Center South	4,803
School	Roton Middle School	5,193
Church	Church of God At Norwalk	5,243

I. OPERATIONAL PROCEDURES: SAFETY AND RELIABILITY

SNEW and CL&P will operate the new substation in accordance with standard safety procedures. The transmission portion of the station will be remotely controlled and will be monitored by CL&P's existing staff. The distribution portion of the station will be controlled and monitored by existing SNEW staff.

The Project would be constructed in full compliance with the standards of the National Electrical Safety Code and good utility practice. Should equipment experience a failure, protective relaying would immediately remove the equipment from service, thereby protecting the public and the equipment within the Substation.

Fire/smoke detection would automatically activate an alarm at Connecticut Valley Electric Exchange ("CONVEX"), and the system operators then would take the appropriate action. The control enclosure would be equipped with fire extinguishers.

The Substation has been equipped with measures to ensure continued service in the event of outages or faults on transmission or substation equipment. Continued reliability would be achieved by incorporating "loop through" design configurations for the existing 115 kV overhead transmission lines, transformer protection, and redundant automatic protective relaying equipment.

The 115 kV portion of the Substation would include a circuit breaker to facilitate a "loop through" design configuration. In the event of a 115 kV line fault, the circuit breaker would open to help isolate the faulted line. Protective relaying equipment is incorporated into the Project design to automatically detect abnormal system conditions and send a protective trip signal to the respective circuit breaker(s) at each end of a line to isolate the faulted section of the transmission system. The protective relaying schemes include fully redundant primary and backup equipment so that an outage of one scheme does

not require the portion of the transmission system being monitored by the protective relaying equipment to be removed from service.

The protective relaying and associated equipment, along with a SCADA system for remote control and equipment monitoring, would be housed in the switchgear enclosures as well as in the control house as depicted on the Project Plans. These enclosures would have smoke detectors installed which would be monitored from a remote location.

Other devices would constantly monitor the Substation equipment to alert SNEW and CL&P of any abnormal or emergency situations. The access drive to the Substation would be gated and the perimeter of the Substation would be enclosed with a 7-foot high chain link fence topped with an additional foot of 3 strands of barbed wire to discourage unauthorized entry and vandalism. Lighting would be provided within the Substation yard to facilitate work at nighttime or during inclement weather.

SNEW would install an oil sump to serve as a spill-containment chamber around the two proposed transformers. The sumps would be sized with sufficient capacity to contain a spill in the event of an inadvertent release of oil.

J. POTENTIAL EFFECTS ON THE ENVIRONMENT

J.1 Public Health and Safety

The Project would be constructed in full compliance with the standards of the National Electrical Safety Code and good utility practice. Applicable signage would be installed alerting the general public of the dangers of high voltage with the substation.

J.2 Land Use and Future Development

The use of the St. Ann's property for a substation is consistent with the Restricted Industrial (RI) zoning classification of the site.

Moreover, the substation development conforms to the *Conservation and Development Policies Plan for Connecticut: 2005-2010* (OPM May 2005), which identifies the site as within the Norwalk Regional Center, where commercial and industrial uses are encouraged. The development of the substation also is consistent with local and regional plans of development.

As described in Section E, SNEWs overall objective in implementing the substation Project is to provide a reliable supply of electric power to meet the existing and future demands of its customers in South Norwalk, including those of the various urban revitalization projects planned. Accordingly, the proposed Project will serve to promote these land use redevelopment initiatives.

J.3 Physical, Biological, and Water Resources

The proposed substation Project will not affect any water resources (wetlands, watercourses, or floodplains) and will not significantly affect physical or biological resources. Most of the site is presently developed, with vegetation characteristic of urban areas found only along the property

boundaries. CT DEEP mapping (updated December 2011) does not indicate any state-listed species or significant natural communities located within ¼ mile in any direction of the proposed substation location. The nearest rare species habitat mapping is over ½ mile from the proposed location.

The development of the substation on the site will require some site preparation work that will involve grading, possibly blasting or other methods of bedrock removal (e.g., ripping), and soil disturbance in order to install foundations and retaining walls and erect the new transmission line towers to interconnect the substation to CL&P's 115 kV transmission line. However, this work will be limited to historically disturbed areas, and measures will be taken, as appropriate, to minimize the potential for off-site soil erosion. Blasting, if required, will conform to appropriate regulatory requirements.

J.4 Geology and Soils

Earthwork will be required for construction of the Substation and access drives into the Substation. Given the elevation differences between the northern section and southern section of the property, some amount of cutting and filling will need to occur on the site in order to construct a relatively level surface on which to construction the Substation. Along a portion of the western property boundary, a retaining wall will be required to facilitate construction in an area with increased slopes. In the event that blasting is required, SNEW would develop a blasting control plan in compliance with industry standards. All disturbed areas outside of the Substation footprint and along the access drive would be stabilized, restored and re-vegetated.

J.5 Water Supply Areas

Residences located in the vicinity of the Substation and distances to the nearest residences are shown on Figure J-1. All businesses and residences within 500 feet of Project site are connected to the public water supply (Exhibit 8). In the event that blasting is required for the construction phase of the

Project, SNEW would evaluate the need to conduct pre-blast surveys and well inspections of nearby residences and businesses.

J.6 Floodplains

The subject property is not located within any mapped flood hazard area. Therefore no adverse effects on floodplains are expected.

J.7 Coastal Zone Management

The subject property is not located within the coastal zone or coastal boundary area. Therefore no adverse effects on coastal areas are expected.

J.8 Scenic Areas and Viewscapes

As described above in Section H.11, no adverse effects will occur to any nearby scenic areas, viewscapes or scenic byways as a result of the proposed substation.

J.9 Lighting

The substation yard would contain manually-operated lights affixed to the substation terminal structures. The floodlights would be used to facilitate work at nighttime or during inclement weather. Additional lighting would be installed on the building structures within the substation yard for safety and security purposes; however, these lights would be recessed or activated manually to minimize visual effects at night. Some automatic lighting will be required to maintain minimum required foot candles. Lighting would not affect existing residences in the vicinity of the property.

The structure designs will accommodate safety lighting for both, the structures within the Metro-North ROW, and the structures within the substation yard, if necessary.

J.10 Transportation

The construction and operation of the proposed substation will have minor effects on local vehicular traffic patterns. Although construction will occur adjacent to the Metro-North railroad corridor, no significant adverse effects on rail operations are expected.

The St. Ann's property is directly accessible from Dr. Martin Luther King, Jr. Drive (a primary local four-lane thoroughfare). The site is presently used for SNEW's materials and equipment storage, which results in periodic traffic movements as SNEW vehicles/personnel enter and leave the property. Similarly, the routine operation of the substation is expected to generate only limited traffic movements as a result of SNEW and/or CL&P employees entering and leaving the site.

At times, the construction of the substation may cause localized traffic congestion (e.g. on Dr. Martin Luther King, Jr. Drive). For example, traffic delays may occur when heavy construction equipment and/or large substation components are maneuvered onto the site. However, any such traffic congestion or delays will be extremely limited, since heavy construction equipment will remain on-site until no longer needed for the Project. Minor traffic congestion also could result from the movements of construction workers' vehicles as they travel to and from the work site. When required, SNEW will station flagmen or police officers at the site to assist in traffic control.

SNEW and CL&P consulted with Metro-North as recently as March 2012 regarding the proposed construction activities adjacent to the railroad's property. Metro-North indicated that SNEWs construction activities, which will be located 25 feet or more from the nearest active railroad track, will not conflict with rail operations. During construction, SNEW will instruct its substation contractor to take particular care to assure that the operation of crane equipment will maintain a safe distance from the railroad facilities. CL&P's construction of the interconnection to SNEW will involve work within 25 feet of active rail lines. CL&P will coordinate directly with ConnDOT/Metro-

North regarding the measures that will be taken to install the interconnection safely and without conflicting with railroad operations.

The operation of the substation will not adversely affect railroad operations or vehicular traffic patterns. The substation will be designed to operate remotely and automatically, for the most part. The routine inspection and/or maintenance of the substation will not generate significant traffic volumes and will not affect the operation of the railroad.

J.11 Socioeconomic Conditions

The proposed Project will have a positive, long-term effect on the local economy by assuring reliable supplies of electricity to support the various urban revitalization projects that are planned for the South Norwalk area, as well as to serve SNEW's existing customers with a more reliable power supply source.

Expenditures on the construction of the substation also could have both direct and spin-off short-term, positive economic effects if the construction workers involved in the Project spend some of their earnings locally (e.g., for food, services) and if some of the materials used in the construction are purchased locally.

J.12 Cultural Resources

As the SHPO has indicated, the proposed Project will not result in any adverse impacts to significant cultural resources.

J.13 Noise

Sound levels associated with the proposed facility have been estimated at four surrounding receptor properties. The acoustic model used to calculate these levels uses the National Electric Manufacturers

Association (NEMA) sound ratings for the two 40 MVA transformers. Essentially the NEMA sound rating is the average A-weighted sound level measured at a distance of approximately 1 foot from the transformer (6 feet from fan cool surfaces). For this analysis, a NEMA sound rating of 55 dBA was assumed. Table J-1 compares estimates of facility sound levels with existing background sound levels and the CTDEEP sound level limits.

These data indicate that facility sound levels are expected to be 33 dBA or lower at the nearest residential properties and 41 dBA at the adjacent commercial property line. These sound levels are well below the most restrictive limits of the CTDEEP Noise Regulation, and the City of Norwalk Noise Control Ordinance. Furthermore, estimated sound levels are significantly below existing lowest measured background sound levels at the nearest residential properties. Sound levels associated with a variety of indoor and outdoor activities are supplied in Table J-2.

The sound study concluded that the facility sound levels at the nearest receptors will be in full compliance with the most restrictive aspects of State and Local Noise Regulations (Table J-3). Sound produced by the transformers is expected to be comparable to the lowest background sound levels measured and it is anticipated that, for the most part, facility sound will not be significantly audible at the nearest residences, and will be consistent with the existing background sounds. The full sound study report is included as Exhibit 10.

J.14 Aesthetics

The new substation will be located in an industrially-zoned area, where it can be expected to have a minor, but long-term effect on the visual environment. SNEW will install landscaping and/or screening, as appropriate, to minimize potential adverse views of the substation.

The substation will be constructed on a site that is adjacent to both the Metro-North railroad corridor and CL&P's 115 kV transmission line easement, and that is presently zoned for industrial development and used for utility purposes (equipment storage). Moreover, the site is situated on a busy urban thoroughfare that links South Norwalk's traditional commercial areas to new industrial uses that have recently been developed adjacent to the railroad/electric transmission line corridor.

Despite this location within an industrially-zoned area, the development of the substation could result in adverse visual impacts to residential areas located both west of the site (i.e., across the railroad/transmission line corridor) and east of the site (i.e., across Dr. Martin Luther King, Jr. Drive).

To minimize potential visual impacts on the residential structures that are located west of the Metro-North railroad corridor and CL&P's 115 kV transmission lines, SNEW will attempt to maintain some portion of the existing vegetation along the western and southern property lines where practical and/or install supplemental screening and landscaping, as appropriate.

Figure J-1

Residences and Approximate Distances to Nearest Residences in the Vicinity of the Project

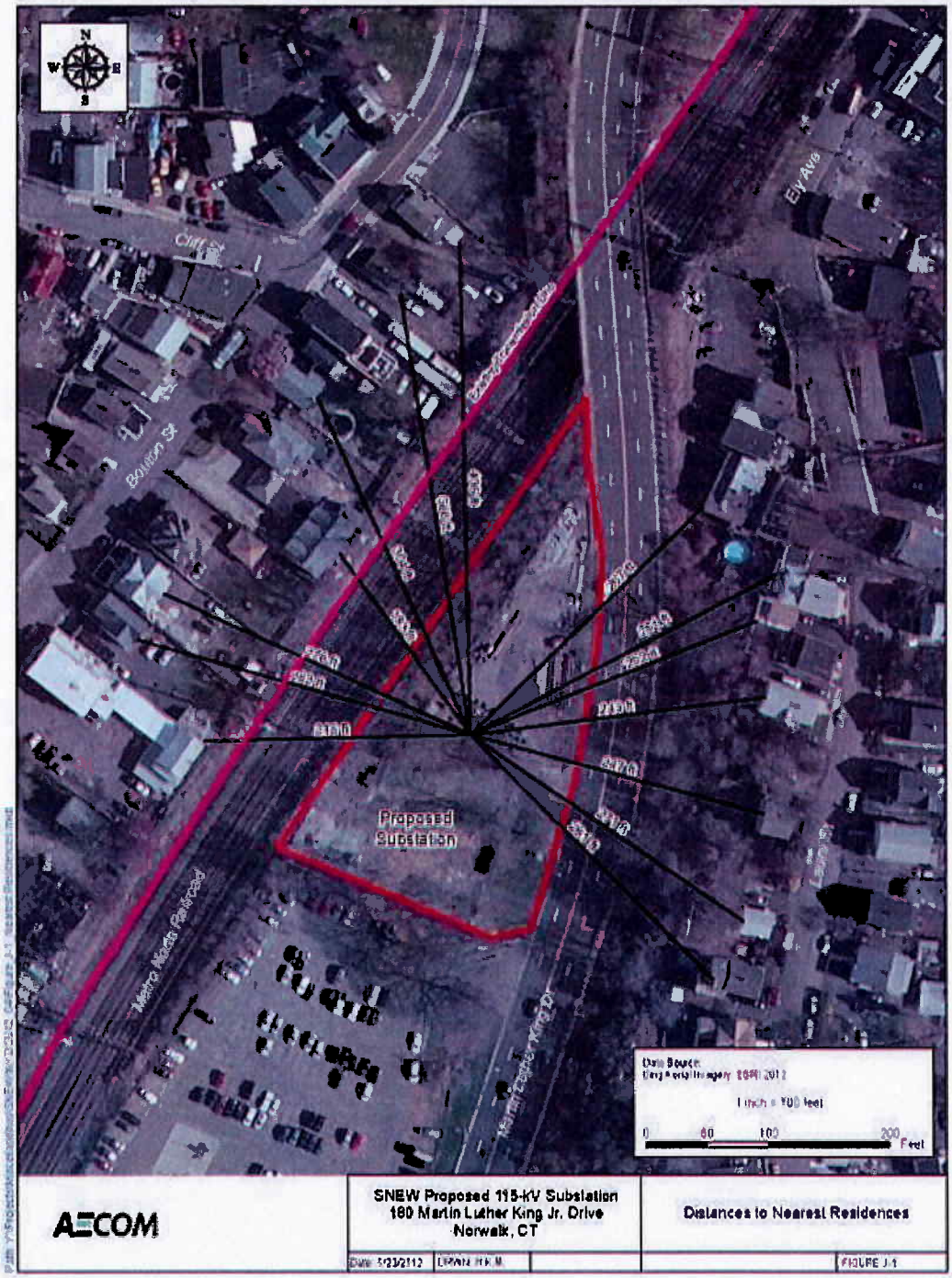


Table J-1

Summary of Existing Background Sound Levels (L90) Near St. Ann's Site

Location	Measured Lowest Background Sound Level	CTDEEP Sound Level Limit[1]	Estimated Substation Sound
Residence - North	37	40	2
Residence - East	37	40	3
Commercial South	38	57	4
Residence - West	38	40	3

[1] Includes 5 dBA penalty for "tonal" sound emissions

Table J-2

Typical Noise Levels Associated with Different Indoor and Outdoor Activities

Outdoor Noise Levels	A-Weighted Sound Level (dBA)	Indoor Noise Levels
Jet aircraft take-off at 100 feet	+ 120	
Riveting machine at operator's position	+110	
Cut-off saw at operator's position	+100	
Elevated subway at 50 feet		
Automobile horn at 10 feet	+90	Newspaper press Industrial boiler room Food blender at 3 feet
Diesel truck at 50 feet		
Noisy urban daytime Garbage disposal at 3 feet	+80	Diesel bus at 50 feet
Gas lawn mower at 100 feet	+70	Shouting at 3 feet \Vacuum cleaner at 10 feet
Quiet urban daytime	+60	Normal conversation at 5 -10 feet Large business office
Quiet urban nighttime	+50	Open office area background level
Quiet suburban nighttime	+40	Large conference room Small theater (background)
Quiet rural nighttime	+30	Soft whisper at 2 feet Bedroom at nighttime
	+20	Concert hall

Table J-3

Connecticut and Norwalk Noise Regulations

by Emitter and Receptor Land Use Classification

Emitter Class	Receptor Class			
	C	B	A/Day	A/Night
C	70	66	61	51
B	62	62	55	45
A	62	55	55	45

In the above table, day is defined as the time interval 7:00 a.m. to 10:00 p.m.
Night is defined as the time interval 10:00 p.m. to 7:00 a.m. Noise Zone Classifications are based on the actual use of the land. Where multiple land uses exist on the same property, the least restrictive limits apply.

A Class A noise zone is land generally designated for residential use or areas where serenity and tranquility are essential to the intended use.

A Class B noise zone includes land uses generally of a commercial nature but also includes utilities such as the substation.

A Class C noise zone includes uses generally of an industrial nature.

Exceptions and Other Limit Provisions

The regulation prohibits the production of prominent, audible discrete tones. If a facility produces such sounds, the applicable limits in Table 1 are reduced by 5 dBA to offset the undesirable nature of tonal sound in the environment. In its definitions, the regulation also presents a definition of prominent discreet tone on the basis of one-third octave band frequency sound levels.

The City of Norwalk noise control ordinance sets limits identical to those set by the CTDEEP.

K. MITIGATION MEASURES

K.1 Pre-Construction Considerations

Prior to the commencement of any construction activities, SNEW would prepare a Development and Management Plan ("D&M Plan"). The content of the plan would include specific procedures and information on erosion control, spill prevention and control, construction staffing and hours, traffic control if necessary and restoration and landscaping after construction. The D&M Plan would also provide contact information should questions or concerns arise during the construction or operation of the Substation.

Prior to the commencement of any construction activities, SNEW would install erosion controls at the limits of work in accordance with the approved Project Plans, the D&M Plan and the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.* The erosion controls would be inspected and maintained throughout the course of the Project until final site stabilization has been achieved.

K.2 Construction Phase Activities

All construction activities would be conducted in accordance with the D&M Plan as approved by the Council. In the event that bedrock is encountered, excavation, drilling, or pneumatic hammer would be the preferred methods to remove rock. Although not anticipated, if extensive bedrock is encountered during construction, provisions for blasting would be considered and developed by SNEW, in accordance with controlled blasting techniques.

SNEW has sited and designed the Substation to minimize the extent of grading and earth work associated with construction of the Substation. However, during site preparation and installation of the Substation components, it may be necessary to temporarily stockpile soils within the Property. These stockpiles would be covered and protected against runoff during storm events with erosion controls. Should soils be stockpiled for a period of 21 days or more, SNEW may temporarily seed or mulch the piles to ensure stability depending on weather and season.

Prior to earth work activities on the site, SNEW would install a temporary crushed stone apron, placed on geotextile fabric, at the driveway entrances from Dr. Martin Luther King, Jr. Drive. These stone aprons would serve as anti-tracking pads to minimize tracking of mud onto the public street. The driveway and Substation would be graded to direct stormwater runoff into the Property. SNEW will maintain the driveway aprons to ensure minimal mud tracking on the public street.

K.3 Post-Construction Features

Upon completion of construction activities, all exposed areas would be stabilized and revegetated. Upland areas would be restored with topsoil and seeded with a New England conservation/wildlife seed mixture that would provide for a permanent cover of grasses, forbs and wildflowers that provide soil stability as well as food and escape cover for wildlife. Erosion controls would remain in place until final site stabilization is achieved.

Although SNEW plans to maintain as much of the existing vegetation as possible, additional landscaping will further mitigate for any potential views of the Substation.

The effects on the existing habitats would be predominantly temporary in nature and would be mitigated through the restoration of disturbed areas and supplemental plantings.

K.4 Construction Sequencing

The general sequence of events that takes place during the construction of a substation includes:

- Placement of erosion and sedimentation control barriers;
- Removal of vegetation from the proposed fenced area and access drive, where necessary;
- Preparation of the Substation Site (cut, fill, grading)
- Installation of retaining walls;
- Stabilizing all slopes by seeding exposed soils with a seed mixture;
- Installing fence, substation foundations, buried conduits and the ground grid;
- Spreading trap rock;
- Installing electrical components and hardware;
- Installing tie-ins to transmission lines and distribution lines;
- Energizing substation;
- Completing site stabilization, landscaping and site restoration;
- Removing erosion control barriers upon completion of site stabilization.

L. HEALTH AND SAFETY

L.1 Electric and Magnetic Fields

The highest levels of electric and magnetic fields around the perimeter fence of a substation typically occur where transmission and distribution lines cross over or under the substation boundary. The levels of fields from substation equipment decrease rapidly with distance, reaching very low levels at relatively short distances beyond the fenced-in equipment. An EMF study was conducted on the site by Gradient and the results of their field studies and modeling of the proposed substation are located in Exhibit 11.

Overall, the existing magnetic fields at the future location of the substation fenceline did not exceed 15 milligauss (mG). The highest fields were measured in the southwest corner of the proposed fenceline, which was likely closest to the existing transmission lines and railroad catenary. Fields along the southern and eastern sides of the proposed fenceline did not exceed 9 mG. Currently, there is a fenced-in area in the northern portion of the site; because this area was not accessible to us, we conducted measurements outside the existing fence and measured fields along the property line instead of at the proposed substation fenceline. However, magnetic fields are expected to be relatively low along the northern fenceline, because this portion of the site is further from the existing transmission lines than western fenceline, which runs parallel to the existing transmission lines. The highest fields would be expected closest to existing sources – *i.e.*, the existing transmission lines.

In the existing configuration, the maximum predicted magnetic field in vicinity of the proposed substation fenceline is 15 mG. For comparison, the maximum measured magnetic field for the existing configuration was also 15 mG. However, because the current loading on the lines at the time of

measurement was lower than the current loading used for modeling, one would expect the maximum measured fields to be lower than the modeled fields. The measured fields might be higher than expected for two reasons: first, the measurements may account for the magnetic fields due to the railroad catenary, and, second, though the measurements were taken as close as possible to the proposed substation fenceline, the steep grade and underbrush in this area could have resulted in a traverse closer to the transmission lines and railroad corridor.

Once the substation is in operation, the magnetic field levels at the substation fencelines are still relatively low (ranging from 1 to 39 mG), with the exception of the northern edge of fenceline (139 mG). Though there is an increase in the magnetic field levels in the area due to the substation, these increases are generally no more than 25 mG; the somewhat higher fields at the northern fenceline in the proposed configuration are due to the fields generated by the underground 13.8 kV distribution lines. However, because the 13.8-kV phase conductors are spaced closely together in this configuration, the magnetic fields drop off rapidly as distance from these lines increases. Also, electric fields from these underground lines are zero. Importantly, even at the point of maximum predicted magnetic field at the fenceline (139 mG), the levels are well below applicable health-based exposure guidelines for public exposure (2,000 mG) (ICNIRP 1998, 2003, 2010). Furthermore, the maximum modeled EMF at the site is on the order of typical field levels found in the vicinity of some common household appliances (*e.g.*, a can opener at 1 foot is about 100 mG) (NIEHS, 2002).

In summary, aside from the areas directly above or below the entering and exiting transmission lines, we found that the magnetic fields do not exceed 40 mG at the substation fenceline. A comparison of all project-specific magnetic values (Tables L-1) with magnetic field guideline values shows that the levels measured at the site fall well below the accepted guidelines for allowable public exposure to magnetic fields (2,000 mG) (ICNIRP 2010). Overall, there is no expectation of adverse health effects due to the EMF created during operation of the proposed project.

L.2 Site Security

A 7-foot high chain-link fence topped by one foot of three strands of barbed wire would enclose the Substation yard to prevent unauthorized access to the site. A locked gate would be installed at each of the entrances to the access drives off of Dr. Martin Luther King Jr. Drive. The Substation yard would also be gated and locked. All gates would be padlocked at the end of the workday during the construction phase and at all times after the Substation is in-service. Appropriate signage would be posted at the Substation alerting the general public of the high voltage facilities within the Substation. Should equipment experience a fault, protective relaying would immediately remove the equipment from service, thereby protecting the public and the equipment within the Substation. Other devices installed within the Substation would constantly monitor the Substation equipment to alert SNEW and CL&P of any abnormal or emergency situations.

L.3 Traffic Considerations and Hours of Operation

Construction traffic would be localized and short term and will not affect local traffic. Access to the site will be made via Dr. Martin Luther King, Jr. Drive. Post-construction site conditions would not significantly affect existing traffic patterns. Once construction of the Substation is complete, the Substation would be in part, remotely operated, with personnel on site only for periodic inspections, maintenance and emergency work.

Table L-1
Maximum Magnetic Fields for Proposed and Existing Configurations at the Proposed Substation Site

Configuration	Location	Magnetic
Existing configuration	Northern edge of fenceline	9
	Eastern edge of fenceline	2
	Southern edge of fenceline	15
	Western edge of fenceline	15
Proposed configuration	Northern edge of fenceline	139
	Eastern edge of fenceline	35
	Southern edge of fenceline	29
	Western edge of fenceline	39

M. GENERAL PROJECT SCHEDULE

The following bar chart provides a generalized overall Project schedule for the construction of the Substation, installation of the transmission structures, and Substation testing and commissioning. The construction of the Substation is anticipated to begin in November 2012 with a completion date and in-service date of November 2013.

N. COMMUNICATION WITH PUBLIC AGENCIES

SNEW has met with or otherwise consulted with the following state and local agencies, dating back over two decades, in connection with the need to increase its system capacity and power reliability in general and to implement the proposed substation Project in particular:

Date	Agency Consulted
April 1991	In conjunction with CSC Docket No. 141 (the Pequonnock -Ely 115 kV transmission line), CMEEC, acting on behalf of SNEW, submitted to the CSC the prepared direct testimony of Mr. Larry Rossi (General Manager of SNEW). This testimony details the potential effects of the 115 kV transmission line on SNEW's future electric supply options, and specifically identifies the need for a future 115 kV interconnection.
May 1991	CMEEC brief in CSC Docket No. 141 is filed, and supports need for 115 kV supply for SNEW.
September 1991	In Findings of Fact for Docket No. 141, CSC noted that CL&P and SNEW plan a 115 kV tap when SNEW load growth increases and discussed possible locations for the tap (#s 97 -100).
December 1993	The CSC authorized an interconnection between CL&P's 115 kV transmission line and SNEW at SNEW's State Street facility.
November 1999	SNEW representatives met with Joel Rinebold, CSC Executive Director, to brief him on the proposed Project and to discuss potential Project site alternatives.
May 2000	SNEW representatives met with Norwalk's Planning & Zoning Department to brief them about the proposed Project and to discuss potential project sites.
December 2000	SNEW representatives contacted Norwalk's Planning & Zoning Department to provide an update about the Project and the Project schedule. Also met with Metro-North representatives to discuss substation construction and avoidance of conflicts with rail operations.
August 2010	SNEW met with Siting Council staff to inform them of the project to be submitted at a later date.
February 21, 2012	SNEW met with City of Norwalk Officials (Mayor, Director of Planning and Zoning, and Corporation Council) to initiate presentment of substation project.
March 2012	SNEW representative met with Norwalk's Planning & Zoning Department director to provide a Project update and schedule.
March 2012	SNEW representatives had a meeting with CL&P and Metro-North representatives to discuss the proposed Project, schedule and restrictions

Date	Agency Consulted
March 2012	AECOM received a letter from SHPO indicating that there were no expected affects on historic locations as a result of the proposed Project.
April 2012	SNEW submitted the MCF application to the City of Norwalk
May 10	SNEW went before the Plan Review Committee
May 16	SNEW attended a public hearing for the Planning and Zoning Commission and received favorable feedback from the city.

O. BULK FILING OF MUNICIPAL DOCUMENTS

At the time this application is filed, SNEW will provide of file this Application, SNEW will provide the following documents to the Council:

- A copy of the documents constituting the technical information submitted to the City of Norwalk as required for the Municipal Consultation Filing;
- City of Norwalk Inland Wetlands and Watercourses Regulations;
- City of Norwalk Zoning Regulation, and;
- City of Norwalk Plan of Conservation and Development

P. ADMINISTRATIVE NOTICE, PUBLIC AND ABUTTERS NOTICE, SERVICE AND OTHER FILING REQUIREMENTS

Pursuant to the Connecticut Siting Council requirements, SNEW is furnishing one original and twenty (20) copies of the Application, along with an electronic version of the Application. This Application is presented based on the Council's Application Guide for Electric Substation Facility, dated June 2007, to assist applicants in filing for a Certificate of Environmental Compatibility and Public Need for the construction of an electric substation as defined in Conn. Gen. Stat. § 16-50i (a)(4).

SNEW also consulted Conn. Gen. Stat. §§ 16-50g through 16-50aa and the Regulations of Connecticut State Agencies §§ 16-50j-1 through 16-50z-4 in preparing this Application.

P.1 Administrative Notice

SNEW respectfully requests that the Council take administrative notice of the complete record in Docket No. 426, including the application materials submitted by the Third Taxing District, the Opinion, Decision and Order, and associated Findings of Fact.

P.2 Pre-Application Process

At least sixty (60) days prior to the filing of the application for a Certificate of Environmental Compatibility and Public Need (Certificate) with the CSC, SNEW was required to submit the MCF to the chief elected official in the City of Norwalk and the Connecticut Energy Advisory Board. SNEW met with City of Norwalk representatives prior to distribution of the MCF to go over the plans to apply for a permit to construct a substation at the proposed location. On April 19, 2012 the MCF was delivered to the Mayor of the City of Norwalk thereby initiating the formal municipal consultation

process. During this period, SNEW sought comment from local government representatives on the Project.

P.3 Application Filing Fees

The filing fee for this Application is determined by the following schedule:

Estimated Construction Cost	Fee
Up to $5,000,000	0.05% or $1,250.00, whichever is greater
Above $5,000,000	0.1% or $25,250.00, whichever is less

Based on this filing fee schedule and the estimated construction cost for the Project presented in Section G, a check for the Council's Application Fee in the amount of $18,861 payable to the Treasurer, State of Connecticut accompanies this Application.

Pursuant to Conn. Gen. Stat. §16-50l (a) (1), SNEW also encloses a separate check in the amount of $25,000.00 payable to the Treasurer, State of Connecticut for the Municipal Participation Fee.

P.4 Proof of Service

This Application was served on the following:

- The chief elected official/chief executive officer, and where applicable, the planning and zoning commissions, and the conservation and wetlands commissions of the site municipality and any adjoining municipality having a boundary not more than 2,500 feet from the facility;
- The regional planning agency;

- The State Attorney General;
- Each member of the Legislature in whose district the facility is proposed or within 2500 feet of the proposed facility;
- Any federal agency which has jurisdiction over the proposed facility;
    - United States Environmental Protection Agency
- the Department of Agriculture;
- the Department of Energy and Environmental Protection;
- the Department of Public Health;
- the Public Utilities Regulatory Authority;
- Council on Environmental Equality
- the Office of Policy and Management;
- the Department of Economic and Community Development;
- the Department of Transportation, pursuant to Conn. Gen. Stat. §16-50l (b);
- Connecticut Energy Advisory Board
- The names of government officials and agencies on whom a copy of the Application is being served (the "Proof of Service") will be provided.

P.5 Public Notices

Notice of the Application (the "Notice") was published at least twice prior to the filing of the Application in a newspaper having general circulation in the site municipality. The Notice included

the name of the Applicant, the date of filing and a summary of the Application. The Notice was published in not less than ten point type and run in the following newspaper:

- Norwalk Hour

Copies of the legal notices ("Public Notices") will be provided.

P.6 Notice to Owners of Property Abutting Substation Site

Notice of this Application also has been sent to each person appearing of record as an owner of property that abuts the proposed site or is near the site, pursuant to C.G. S. § 16-501 (b)

An Affidavit regarding the notice to owners of properties abutting the proposed Substation and nearby, and a listing of abutter names and addresses is included in Exhibit 5.

Q. OTHER RELEVANT INFORMATION

Q.1 Filing with the Connecticut Energy Advisory Board

As discussed in Section F.6, pursuant to Conn. Gen. Stat. § 16-501(a)(2), as an electric substation designed to change or regulate voltage of electricity greater than 69kV, this Project is exempt from the mandatory request for proposal process of the CEAB. A copy of this application and supporting materials will be served on the CEAB.

Q.2 Affected Groups

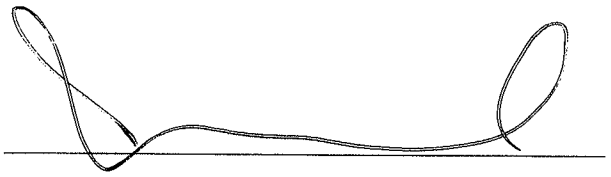
Greater Norwalk Chamber of Commerce
101 East Avenue PO 668
Norwalk, CT 06852

R. CONCLUSIONS

For the reasons described herein, SNEW respectfully requests that the CSC issue a Certificate of Environmental Compatibility and Public Need for the proposed bulk supply 115 kV to 13.8 kV substation at the St. Ann's Site. This substation will greatly improve the reliability of the SNEW distribution system and will do so with minimal impact to the environment.

Dated this 4th day of Sept., 2012.

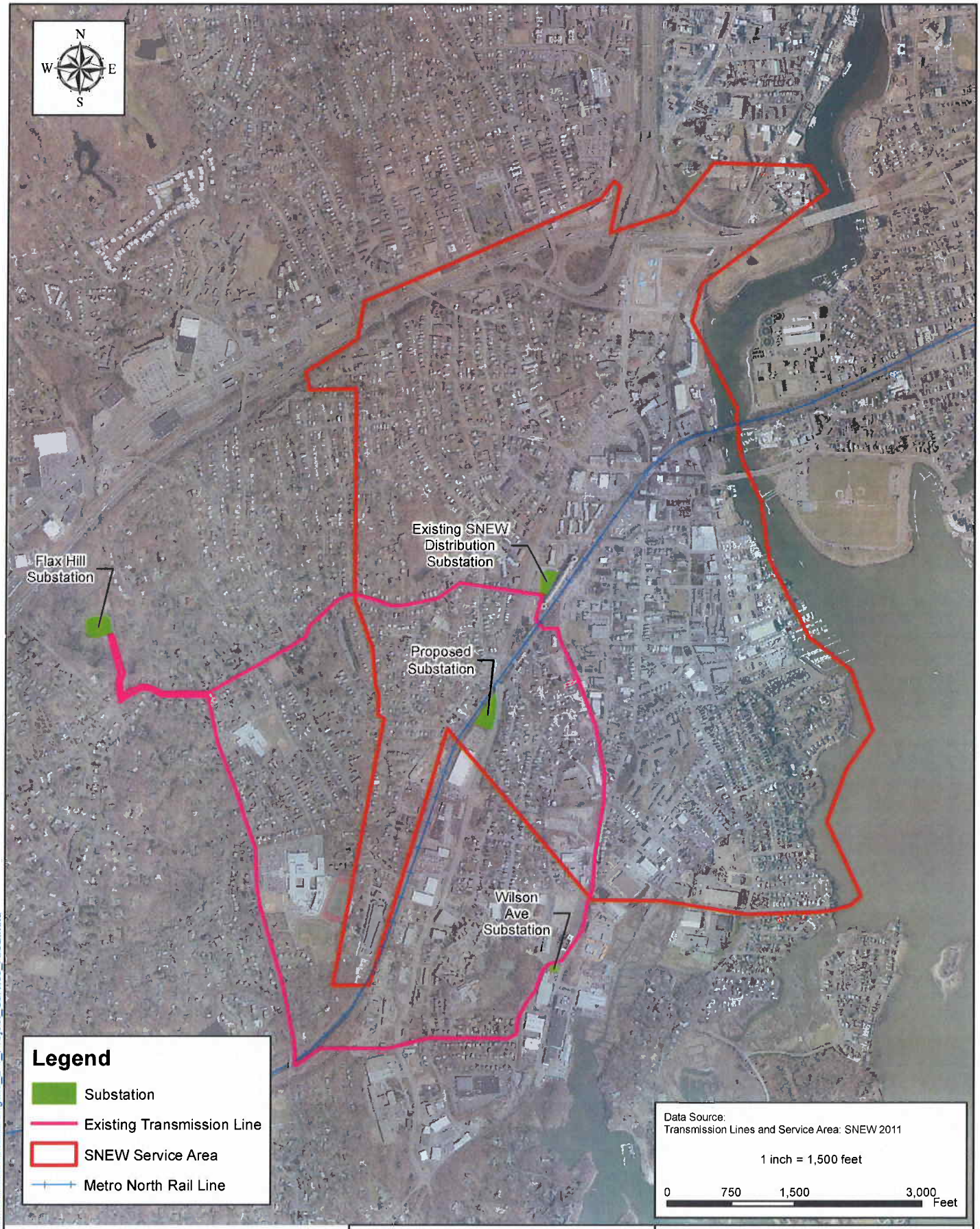
SOUTH NORWALK ELECTRIC AND WATER

By: 

John Hiscock
General Manager
South Norwalk Electric and Water
1 State Street
P.O. Box 400
South Norwalk, Connecticut 06856-0400

EXHIBIT 1

SNEW Service Area and Facilities



Y:\Projects\Miscellaneous\SNEW\MXD\Figure_2-1_Project_Service_Area.mxd

AECOM

SNEW Proposed 115-kV Substation
180 Martin Luther King Jr. Drive
Norwalk, CT

Project Service Area

Date: 4/18/2012 | DRWN: H.K.M. | EXHIBIT 1

EXHIBIT 2

CL&P Outages Since 2007

CL&P Circuit Outages Between 2007 and 2012 Resulting in SNEW Service Area Issues

Date	Outage	Cause	Duration
1/1/2007	9S43 Line	CL&P pole struck by truck	Unknown
3/20/2007	none	Event at CL&P's Norwalk 9S substation	3 momentary, visible flicker event
4/1/2007	9S44 Line	Unknown	Unknown
4/1/2007	9S44 Line	Unknown	Unknown
6/16/2007	9S43 Line	Unidentified CL&P downed wires	02hrs.:59mins.
12/7/2007	Approx. 50% of the District	SNEW employee error	Approx < 05mins.
5/26/2008	None	CL&P's 27.6kV 9S68 line was involved in a downed conductor event	1 momentary, visible flicker event
6/5/2008	None	Unknown	2 momentary, visible flicker events
6/10/2008	9S43 Line	Conductor slap due to high winds on CL&P's 9S43 line	05hrs.:35mins.
6/11/2008	9S43 Line	Conductor slap due to high winds on CL&P's 9S43 line	01hrs.:45mins.
8/5/2008	9S44 Line	Excavator contacted and brought down CL&P's 9S44 line	04hrs.:35mins.
8/8/2008	None	Excavator contacted and brought down CL&P's 9S68 line	2 momentary, visible flicker events
12/11/2008		Tree limb fell on CL&P's 27.6kV 9S41 & 9S42 lines	2 momentary, visible flicker events
12/30/2009	9S43 Line	Tree limb fell on CL&P's 9S43 lines due to high winds	09hrs.:45mins.
3/27/2009	9S44 Line	Excavator contacted CL&P's 9S44 line	01hr.:11mins.
6/19/2009	9S44 Line	Unknown	31hrs.:19mins.
7/26/2009	Entire District	Lightning strike to CL&P's 9S44 Line	01hrs.:26mins.
8/10/2009	Entire District	CL&P's Flax Hill 24A substation transformer that feeds SNEW was struck by lightning	01hrs.:58mins.
8/10/2009	24A31 Line	CL&P's 9S43 wires were downed	02hrs.:44mins.
8/12/2009	24A32 Line	Dump truck made contact with CL&P's 24A32 lines	03hrs:20mins.
12/9/2009	Entire District	CL&P's 24A31 & 24A32 lines slapped and intertwined	03hrs.:22mins.
12/21/2009	Approx. 50% of the District	SNEW contractor work method/practice error	00hrs.:14mins.

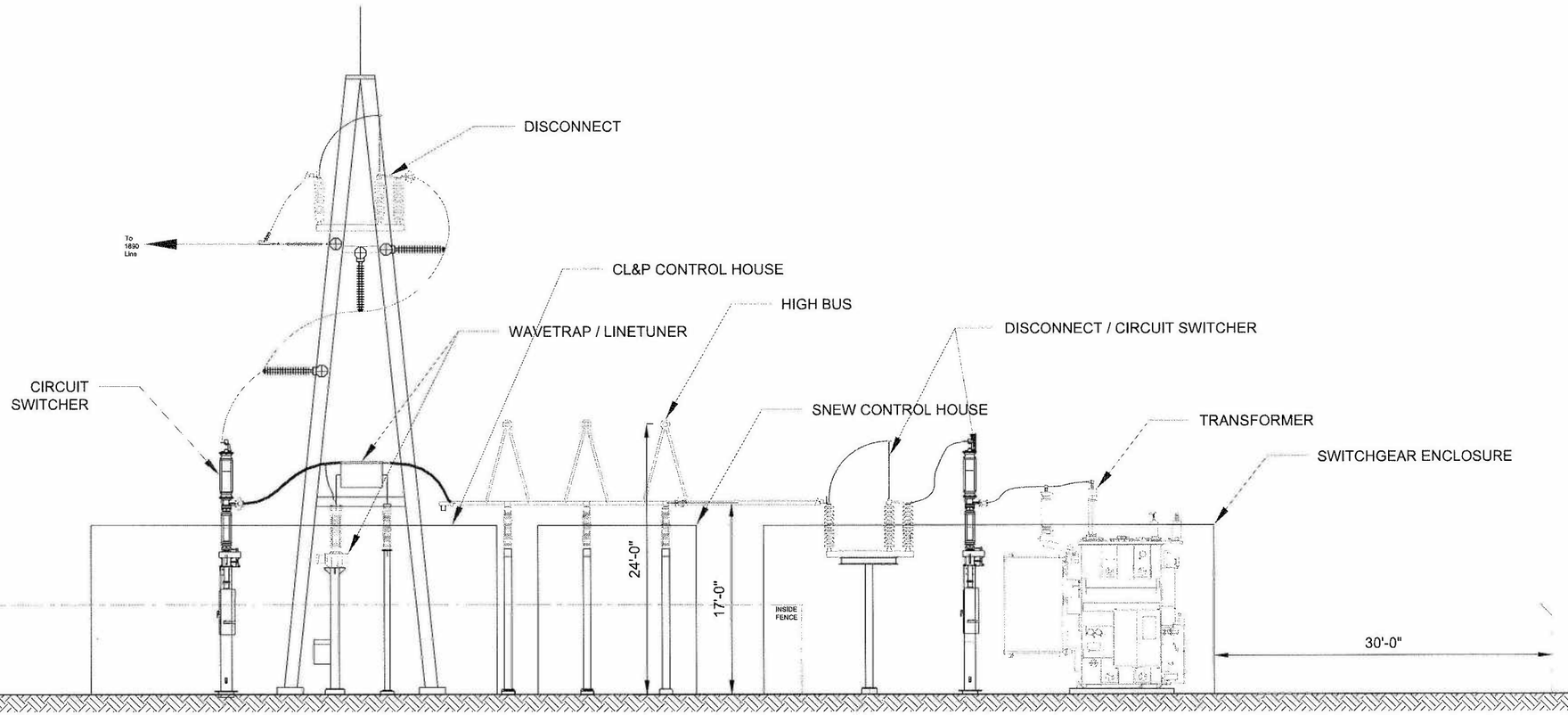
Date	Outage	Cause	Duration
2/8/2010	24A31 Line	Transformer fire, downed wires, and broken insulator on CL&P's 24A31 line	17hrs.:08mins.
3/13/2010	24A32 Line	CL&P's 24A32 line slapping	00:hrs:15mins.
3/13/2010	24A32 Line	CL&P's 24A32 line slapping	02hrs.:09mins.
3/13/2010	Entire District	Unknown	00hrs.:50mins.
3/13/2010	2431 Line	Unknown	04 days:06hrs:54mins.
4/11/2010	24A32 Line	Unknown	14hrs.:15mins
4/29/2010	24A31 Line	Out of service to accommodate CL&P work	11hrs.:40mins.
5/26/2010	24A32 Line	Unknown	23hrs.:20mins.
7/6/2010	24A32 Line	Underground cable fault on CL&P's 24A32 line	39hrs.:51mins.
7/6/2010	Entire district	Underground cable fault on CL&P's 24A32 line	5:hrs.:38mins.
7/7/2010	24A32 Line	Underground cable fault on CL&P's 24A32 line	02days:07hrs:43mins.
2/19/2011	24A31 Line	Animal contact at 101N (Raccoon vs. Arrestor)	2 Hrs - 17 Mins
3/15/2011	24A31 Line	Accommodate CL&P (Maint / Repair)	8 Hrs - 37 Mins
6/9-10/2011	24A31 Line	Storm / Weather	21 Hrs - 25 Mins
6/9/2011	24A32 Line	Storm / Weather	34 Mins
6/9/2011	24A32 Line	Storm / Weather	5 Mins
7/20/2011	24A31 Line	Accommodate CL&P (Maint / Repair 33F & 25B)	6 Hrs - 20 Mins
6/17/2011	24A31 Line	Storm_Lightning / Weather	17 Mins
6/18/2011	24A31 Line	Storm / Weather	25 Mins
6/17-18/2011	24A32 Line	Storm / Weather	19 Hrs - 10 Mins
8/28/2011	24A31 Line	Hurricane Irene / Tropical Storm (Multiple Circuit Trips)	17 Hrs - 7 Mins
8/28/2011	24A32 Line	Hurricane Irene / Tropical Storm (Multiple Circuit Trips)	21 Hrs - 18 Mins
9/7/2011	24A31 Line	Bad Knife Switch @CL&P Pole 9162 (Tripped)	16 Mins
9/7/2011	24A32 Line	Bad Knife Switch @CL&P Pole 9162 (Accommodate for Repair)	1 Hr - 49 Mins
2/27/2012	24A31 Line	Accommodate CL&P (Maint / Repair)	4 Hrs - 56 Mins
3/14-15/2012	24A32 Line	Accommodate CL&P (Maint / Repair)	23 Hrs - 49 Mins

EXHIBIT 3

Survey Maps and Proposed Layout

CONCEPTUAL

NOT FOR CONSTRUCTION



CONCEPTUAL

NOT FOR CONSTRUCTION

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FED40729

CONCEPTUAL

NOT FOR CONSTRUCTION

Legend

Reference Drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	03/12	KML	Update per comments	MF	BK
A	02/12	KML	CONCEPT	MF	BK

Mott MacDonald
400 Blue Hill Drive
Suite 100, North Lobby
Westwood, MA 02090
United States
T +1 (781) 613-0015
F +1 (781) 815-0001
W www.mottmac.com

Client
AECOM / SNEW

Title
CONCEPTUAL
T&D
SUBSTATION
PROFILE

PRELIMINARY
NOT FOR CONSTRUCTION
REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION ISSUE IF REQUIRED BY PROJECT ADMINISTRATION MANUAL

Designed	KS	Eng check	MF
Drawn	KML	Approved	CD
Dwg check	MF	Project Mngr	BK

Scale at ANSI E
1" = 4'

Rev
A

Drawing Number
SNEW_SKE-E-003

NAD 1927

WILBUR ST

TO NEW YORK

TO NEW HAVE

R.R. R.O.W.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
METRO – NORTH RAILROAD

PROPOSED STEEL POLE
STRUCTURE #513A

PROPOSED STEEL POLE
STRUCTURE #513B

CATENARY NO. 513

TRACK #3

TRACK #4

PROPOSED ℄ OF PHASE CONDUCTOR

PROPOSED ℄ OF PHASE CONDUCTOR

GATE

GATE

CONTROL HOUSE

R.R. R.O.W.

PROPERTY LINE

B-511
CATENARY NO. 511

Proposed Str #512A

B-512, DWG. 16450-7
CATENARY NO. 512

CATENARY NO. 513A

B-514W.S.
DWG. 16450-75

B-514 DWG.
16450-7
CATENARY NO. 514

PROPOSED SONO
SUBSTATION

PROPERTY
LINE

GATE

EXISTING BUILDING
190 MARTIN LUTHER KING, JR.
DRIVE

MARTIN LUTHER KING, JR DRIVE

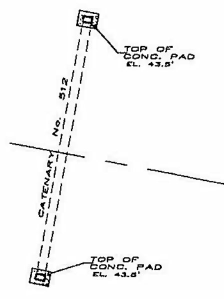
Northeast Utilities Service Co.

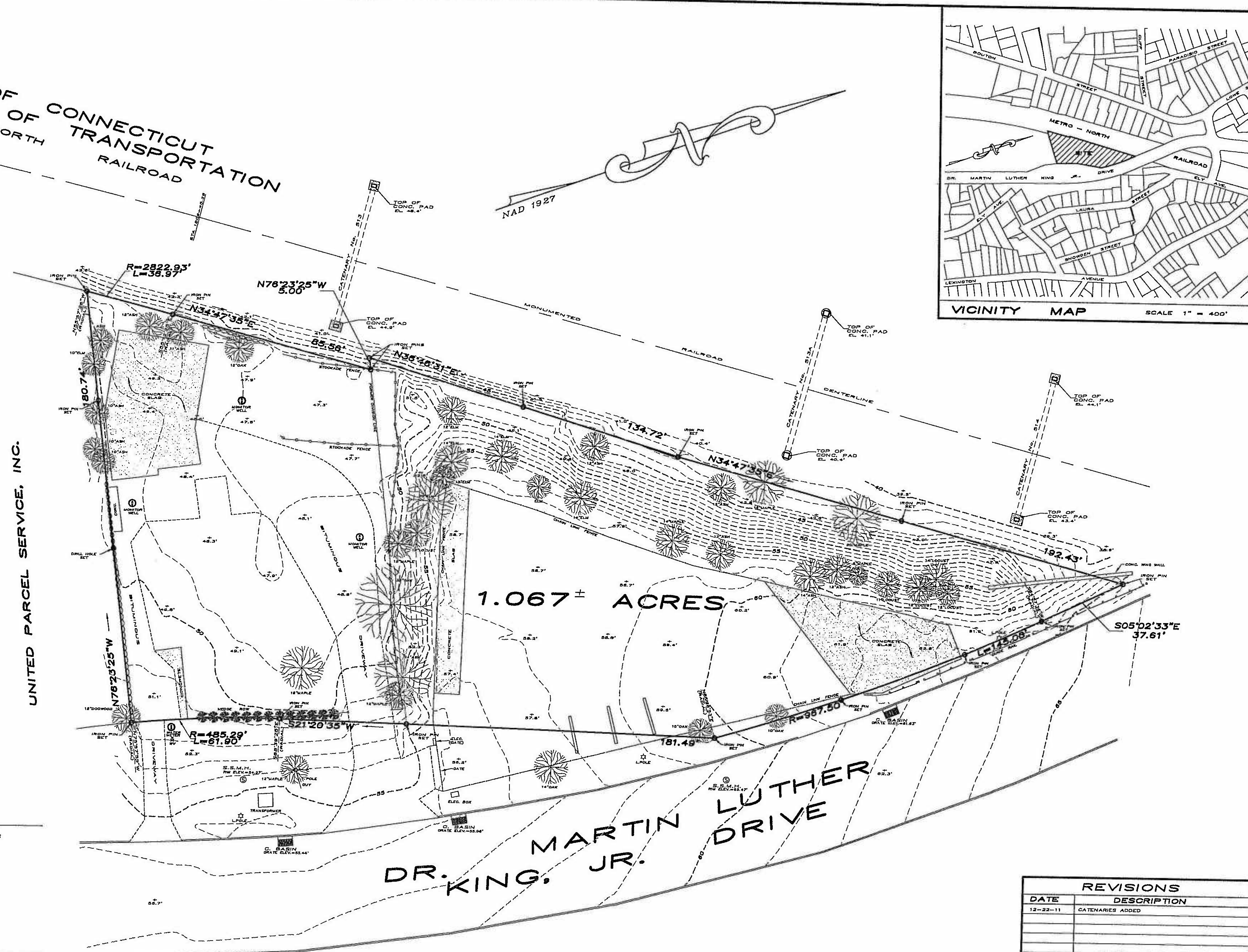
FOR THE CONNECTICUT LIGHT AND POWER COMPANY

TITLE

PROPOSED SONO
SUBSTATION
180–182 MARTIN LUTHER KING, JR. DRIVE
NORWALK, CT

BY SS	CHKD JM	APP Designer or P/C	APP PE
DATE 5/8/12	DATE 5/8/12	DATE	DATE
H-SCALE 1"=60'	SIZE B	FIELD BOOK & PAGES	
V-SCALE 1"=60'	V.S.	R.E. DWG	
R.E. PROJ. NUMBER		NUSCO	EXIBIT 1





N O T E S

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THROUGH 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC.

HORIZONTAL ACCURACY STANDARD - CLASS A-2.

VERTICAL ACCURACY STANDARD - CLASS V-2.

TOPOGRAPHIC ACCURACY STANDARD - CLASS T-2.

ELEVATION DATUM - NAVD 88

BOUNDARY DETERMINATION/OPINION IS BASED UPON A RESURVEY.

REFERENCE IS MADE TO MAPS #1278, #1868, #3655, #3810, #8275, and #11743 NORWALK LAND RECORDS.

REFERENCE IS MADE TO MAP ENTITLED "PROPERTY SURVEY PREPARED FOR SECOND TAXING DISTRICT CITY OF NORWALK" DATED JULY 20, 2009 PREPARED BY RYAN AND FAULDS, LLC.

PROPERTY LOCATED IN RESTRICTED INDUSTRIAL ZONE.

PROPERTY LOCATED IN FLOOD ZONE X AS DEPICTED ON FLOOD INSURANCE RATE MAPS EFFECTIVE JUNE 18, 2010 PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. REFERENCE IS MADE TO COMMUNITY #090012, PANEL #0533 F.

PROPERTY ADDRESS

180-184 DR. MARTIN LUTHER KING DRIVE
NORWALK, CONNECTICUT

9023 TOPOGRAPHIC1.dwg

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

DOUGLAS R. FAULDS
LAND SURVEYOR CONN. LIC. No. 13292

TOPOGRAPHIC SURVEY
PREPARED FOR

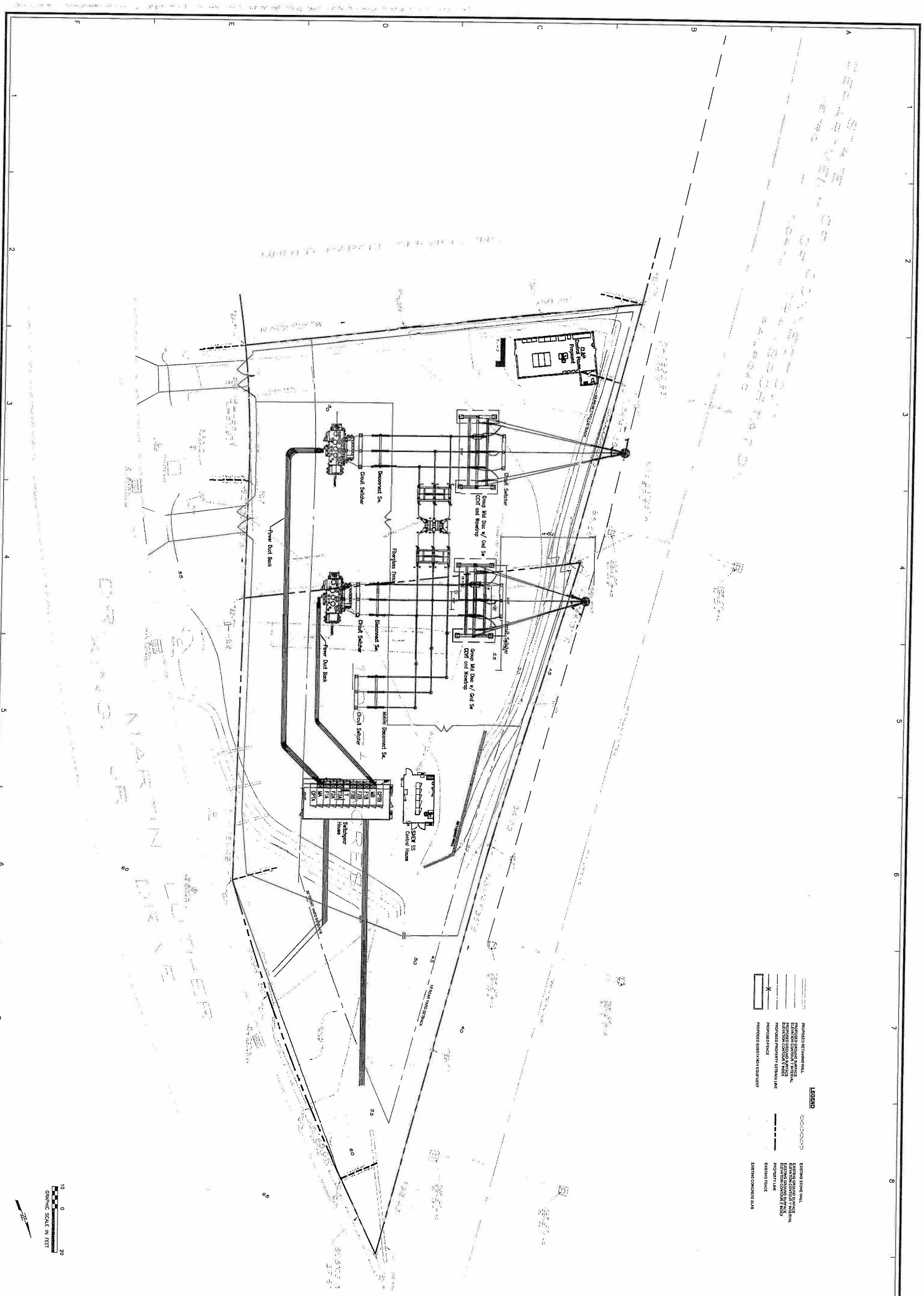
SECOND TAXING DISTRICT
AND
CITY OF NORWALK

NORWALK, CONNECTICUT

SCALE 1" = 20'

MARCH 8, 2011

Ryan and Faulds LLC
Land Surveyors
11 GRUMMAN HILL ROAD
WILTON, CT 06897
Ph. (203) 762-9492 ryanandfaulds.com



PERMIT - NOT FOR CONSTRUCTION

7							
6							
5							
4							
3							
2							
1							
0							
NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE

PROPOSED EQUIPMENT LAYOUT

PROPOSED SUBSTATION

SOUTHERN NORWALK ELECTRIC & WATER
180-184 MARTIN LUTHER KING DRIVE
NORWALK, CT

PROJ. NO.: 60158889-001A | DATE: 04/2012

AECOM
250 APOLLO DR.
CHELMSFORD, MA 01824
www.aecom.com

DRAWING NUMBER: 1
SHEET NUMBER:
REVISION 0

UNITED PARCEL SERVICE, INC.

DEPARTMENT OF TRANSPORTATION
METRO - NORTH RAILROAD

MARTIN LUTHER KING, JR. DRIVE

PLANT LIST:

QTY	LATIN NAME	COMMON NAME	SIZE	SPACING
12	PRUNUS SERRULATA 'KWANZAN'	JAPANESE FLOWERING CHERRY	4.5" BAB	AS SHOWN
48	THUJA PLICATA 'ATROVIRENS'	GREEN GIANT ARBORVITAE	7-8' BAB	8' O.C.
				6' O.C.

"NO SUBSTITUTIONS OF SPECIES AND/OR CULTIVARS WITHOUT APPROVAL BY LANDSCAPING ARCHITECT"

LEGEND

PROPOSED RETAINING WALL
PROPOSED GROUND SURFACE ELEVATION CONTOUR W/ INTERVAL
PROPOSED GROUND SURFACE ELEVATION CONTOUR W/ INDEX
PROPOSED PROPERTY SETBACK LINE
PROPOSED FENCE
PROPOSED SUBSTATION EQUIPMENT

EXISTING STONE WALL
EXISTING GROUND SURFACE ELEVATION CONTOUR W/ INTERVAL
EXISTING GROUND SURFACE ELEVATION CONTOUR W/ INDEX
PROPERTY LINE
EXISTING FENCE
EXISTING CONCRETE SLAB

GRAPHIC SCALE IN FEET
10 0 20

PERMIT - NOT FOR CONSTRUCTION

PROPOSED PLANTING PLAN	SOUTH NORWALK ELECTRIC & WATER 180-184 MARTIN LUTHER KING DRIVE NORWALK, CT
PROPOSED SUBSTATION	PROJ. NO.: 60158889-001A DATE: 04/2012

DRAWING NUMBER: 1
SHEET NUMBER:
REVISION 0

DAVID G. WESTMORELAND
LANDSCAPE ARCHITECT
50 ELMWOOD AVE
NORWALK, CT 06854

NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE
7							
6							
5							
4							
3							
2							
1							
0							

STATE OF CONNECTICUT
DAVID G. WESTMORELAND
No. 1175
LANDSCAPE ARCHITECT

EXHIBIT 4

Representative Photographs of the Site

A photograph taken from the southern parcel looking west toward the MetroNorth ROW

A photograph taken from the southern parcel north toward the storage area

A photograph taken from the southern parcel looking northwest toward the MetroNorth ROW

A photograph taken from the southern parcel looking west toward the MetroNorth ROW. The building in the foreground of the photograph was demolished in 2010.

A photograph taken from inside the northern storage area looking south

A photograph taken from inside the northern storage area looking southeast

A photograph taken from inside the northern storage area looking northwest

A photograph looking north on Martin Luther King, Jr. Drive from the access driveway

A photograph looking south on Martin Luther King, Jr. Drive from the access driveway

A photograph taken from the southern parcel looking west toward the MetroNorth ROW

A photograph looking north along the MetroNorth ROW from the southern parcel

A photograph looking south along the MetroNorth ROW from the southern parcel

Looking across Martin Luther King, Jr. Drive toward the proposed site

Looking across Martin Luther King, Jr. Drive toward the southern portion of the proposed site

A photograph looking at the proposed site from across Martin Luther King, Jr. Drive

A photograph looking at the southern portion of the proposed site from across Martin Luther King, Jr. Drive

A view of the proposed site from the south and from across Martin Luther King, Jr. Drive

EXHIBIT 5

List of Abutters

AFFIDAVIT OF NOTICE TO ABUTTING LANDOWNERS

I, Andrew W. Lord, Esq., being duly sworn, do hereby depose and say:

1. I am over the age of eighteen (18) years and understand the obligations of an oath.

2. The following is a true and accurate statement concerning the notification of owners of record of real property abutting or in the immediate vicinity of the site of a proposed new electric substation and its connection to the an existing kV transmission line in Norwalk, located at 180 Dr. Martin Luther King, Jr. Drive, Norwalk, Connecticut.

3. Based on property owner and abutters lists provided by the City of Norwalk Tax Assessor, all identified abutters have been notified of the intent of South Norwalk Electric and Water ("SNEW") to file an Application with the Connecticut Siting Council pursuant to Section 16-*50l*(a)(3) of the Connecticut General Statutes on September 11, 2012. A list of persons notified, including their addresses is attached.

4. The notice letter, which was delivered by certified mail, return receipt requested to the abutter is attached hereto.

5. Proof of service of the notice letter to the abutter will be filed with the Connecticut Siting Council upon receipt.

6. The notice to abutters, as described above, complies with the notification requirement of Section 16-50*l*(b) of the Connecticut General Statutes.

Dated this 11th day of September, 2012.

Andrew W. Lord, Esq.

STATE OF CONNECTICUT :
: ss. Hartford
COUNTY OF HARTFORD :

Subscribed and sworn to before me this 11th day of September, 2012.

Sarah P. Knudsen

Commissioner of the Superior Court
Notary Public

My Commission Expires:

Exhibit 5: List of Abutters

Property	Owner	Address	City	State	Zip
6 Bouton St	Oliver Wright Jr.	PO Box 2177	Stamford	CT	06906
8 Bouton St	Salvador Olmdeda Jr.	8 Bouton St	Norwalk	CT	06854
10 Bouton St	Robert Pendergrast	16 Sable St	Norwalk	CT	06854
16 Bouton St	Rojelio & Migdalia Cruz	16 Bouton St	Norwalk	CT	06854
151 Ely Avenue	Stevenson & Francosie Telo	118 Spring Hill Ave	Norwalk	CT	06850
12 Bouton St	Oliver Wright Jr.	PO Box 2177	Stamford	CT	06906
15 Laura St	Rodolfo Dejesus	258 Dogwood Dr	Bridgeport	CT	06606
1 Laura St	Jose Ayala & Zenaida Rivera	1 Laura St	Norwalk	CT	06854
24 Bouton St	Aniana Taverez	24 Bouton St	Norwalk	CT	06854
18 Bouton St	Andrew and Linda Caruso	18 Bouton St	Norwalk	CT	06854
20 Bouton St	Andrew and Linda Caruso	18 Bouton St	Norwalk	CT	06854
153 Ely Avenue	Stevenson & Francosie Telo	118 Spring Hill Ave	Norwalk	CT	06850
5 Wilbur St	Wilbur Street LLC	5 Wilbur St	Norwalk	CT	06854
26 Bouton St	Daniel Spencer	26 Bouton St	Norwalk	CT	06854
3 Laura St	Freddy and Marilu Cuadrado	3 Laura St	Norwalk	CT	06854
Laura Steet	Stevenson & Francosie Telo	118 Spring Hill Ave	Norwalk	CT	06850
22 Bouton St	Armand & Italia Maxis	22 Midrocks Dr	Norwalk	CT	06851
28 Bouton St	ABM 28 Bouton LLC	13 Stanley Rd	Darien	CT	06820
5 Laura St	James Deflorio & Maria Lorena	138 Ponus Ave	Norwalk	CT	06850
30 Bouton St	ABM 28 Bouton LLC	13 Stanley Rd	Darien	CT	06820
9 Laura St	Steven Mason	8 Cook St	Norwalk	CT	06853
36 Bouton St	Susan Cavaliere	30 Van Rensselaer Ave	Stamford	CT	06902
38 Bouton St	Paul Beguhn	38 Bouton St	Norwalk	CT	06854
13 Laura Street	Ali Karimi	13 Laura St	Norwalk	CT	06854
190 Dr. MLK Jr. Drive	Jostal Corporation	485 Washington Ave	Plesantville	NY	10570
17 Laura St	Juan Duque	19 Laura St	Norwalk	CT	06854
19 Laura St	Juan Duque	19 Laura St	Norwalk	CT	06854
21 Laura St	Jorge Mendieta & Aguilera Olman	21 Laura St	Norwalk	CT	06854
23 Laura St	Gildardo Mandujano	118 Lexington Ave	Norwalk	CT	06854
183 Ely Avenue	Victor & Sara Hurtado	960 Helm Way	Melbourne	FL	32940
25 Laura St	Gildardo Mandujano	25 Laura St	Norwalk	CT	06851
Railroad	Connecticut DOT	2800 Berlin Turnpike	Newington	CT	06131

ANDREW W. LORD
860.240.6180 DIRECT TELEPHONE
860.240.5723 DIRECT FACSIMILE
ALORD@MURTHALAW.COM

SAMPLE LETTER

September 11, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

ABUTTER LETTER

Re: Docket No. 431; Notice of Application of South Norwalk Electric and Water

Dear Abutter:

I am writing on behalf of South Norwalk Electric and Water ("SNEW") to inform you that SNEW will file an application, pursuant to Section 16-*50l* (a)(3) of the Connecticut General Statutes, with the Connecticut Siting Council on September 11, 2012.

This notice is being provided pursuant to Section 16-50*l*(b) of the Connecticut General Statutes which requires that a notice of such an application be provided to each person appearing of record as an owner of property which abuts the site of the proposed facility. Based upon our review of the most recent certified records obtained from Norwalk's Assessor's Office, we are providing you with this notice. A legal notice appeared in *The Hour* on Friday, September 7, 2012 and Monday, September 10, 2012. A copy of the notice is enclosed.

Please contact the undersigned if you have any questions.

Very truly yours,

Andrew W. Lord

Enclosure

EXHIBIT 6

Soil Scientist Letter Report

AECOM
10 Orms Street, Suite 405
Providence, Rhode Island 02904

401-274-5685 tel

Technical Memorandum

To	Jim Berg	Page	1
CC	file		
Subject	SNEW Proposed 115 kV Substation – Soil Scientist Evaluation		
From	James Durand (SSSSNE Registered Professional Soil Scientist)		
Date	April 18, 2012		

This technical memorandum provides a summary of the evaluation performed at the site of the proposed South Norwalk Electric and Water ("SNEW") 115 kV electric substation to be located on an approximate 1.07 acre parcel located at 184 Dr. Martin Luther King, Jr. Drive in Norwalk, Connecticut.

The site was evaluated for the presence of state-regulated inland wetlands. The 1.07 acre parcel is located at the juncture of Dr. Martin Luther King, Jr. Drive to the north and east, the MetroNorth / Amtrak railroad corridor to the west, and a United Parcel Service ("UPS") facility to the south. The site is located within an urbanized area of South Norwalk and the majority of the site has been affected by previous development.

AECOM has concluded that there are no Connecticut-regulated inland wetlands or watercourses found on the site or proximate to the site, based upon field evaluation and review of available literature and publications obtained and reviewed for the site.

Wetland and Watercourse Evaluation

Wetlands in the State of Connecticut are regulated under the Connecticut Inland Wetlands and Watercourses Act ("the Act"), Section 22a-36 through 45 of the Connecticut General Statutes. Under Section 2 of the Act, a wetland is defined as "land, including submerged land...which consists of poorly drained, very poorly drained, alluvial and floodplain soils as defined by the National Cooperative Soils Survey. Such areas may include filled, graded or excavated sites which possess an aquic (saturated) moisture regime as defined by the United States Department of Agriculture (USDA) Cooperative Soil Survey." As written, the statute assigns no bearing to vegetation when performing wetland delineations. According to the CTDEEP website, approximately 17 percent of the state's land area is comprised of wetlands under the Connecticut wetland definition; however, "under the federal definition only roughly half of this same area would be classified as wetlands" (CTDEEP, 2011).

Watercourses are defined in the Act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The Act defines Intermittent watercourses as having a defined permanent channel bed and bank and the occurrence of two of the following: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing

or flowing water for a duration of longer than a particular storm incident, or C) the presence of hydrophytic vegetation.

AECOM performed a field evaluation on March 29, 2011, to determine the presence and extent of regulated wetlands and watercourses located on or proximate to the site. The majority of the site has been developed. The northern portion of the site is occupied by a fenced-in outdoor storage facility owned and operated by SNEW. The southern portion of the site was previously occupied by a residence and garage that have since been razed. The site is bounded to the east by a roadway and to the west by a railway corridor. The southern and western perimeters of the site support some vegetation that is mostly found on the fringes of the site, including tree species such as white ash (*Fraxinus americana*), black cherry (*Prunus serotina*), tree-of-heaven (*Ailanthus altissima*), shrubs such as staghorn sumac (*Rhus typhina*), and herbaceous vegetation consisting of common pokeweed (*Phytolaccca americana*) and mullein (*Verbascum thapsus*). No wetlands or watercourses were identified on the site. Some signs of surface water drainage were observed along the edge of the railroad corridor however no features that would be considered watercourses were identified.

Soil Assessment

Soils data for the site was collected from the United States Department of Agriculture ("USDA") Natural Resources conservation Service ("NRCS") *Web Soil Survey*, and from the *Soil Survey of Fairfield County, Connecticut* (February,1981). A map depicting the soils mapped for the site and the surrounding area is attached. The soil series detailed in the following subsections have been identified within the limits of the site. Two (2) soil series are mapped within the site.

Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky

The Charlton series is classified as coarse-loamy, mixed, active, mesic Typic Dystrudepts. These well drained soils formed in loamy glacial till derived mainly from gneiss and schist. The similar Chatfield series is classified as coarse-loamy, mixed, superactive, mesic Typic Dystrudepts. These well drained to somewhat excessively drained soils were formed in glacial till derived mainly from granite, schist and gneiss. Chatfield soils have a coarser textured substratum than Charlton soils. Because these series are similar they are grouped and mapped together as an association.

Urban Land

These areas consist of areas where urban structures cover more than 85 percent of the surface. Examples of such structures are roads, parking lots, shopping and business centers, and industrial parks. Most areas are in densely developed portions of Fairfield County. The areas are commonly rectangular and range from 5 to 500 acres. Slopes range from 0 to 8 percent but are dominantly less than 5 percent. Included with this unit in mapping are small areas of Udorthents and areas of excessively drained Hinckley soils; somewhat excessively drained Hollis soils; well drained Agawam, Charlton, and Paxton soils; and moderately well drained Ninigret and Sutton soils.

Detailed information concerning the physical properties, classification, agricultural suitability, and erodibility of soils in the vicinity of the site are presented in the following sections.

Hydric Soils

The State of Connecticut defines inland wetlands based on soils. The Connecticut Inland Wetlands and Watercourses Act defines wetland soils to include "any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soil Survey, as may be amended from time to time, of the Natural Resources Conservation Service of the United States Department of Agriculture."

Map units may be dominated by Connecticut inland wetland soils, but have inclusions of non-wetland soils. Non-wetland map units may contain inclusions of Connecticut inland wetland soils. On site investigation is necessary to determine the presence or absence of wetland soils in a particular area.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or non-hydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

Based on a review of Web Soil Survey for the listing *Connecticut Inland Wetlands Soils* and the *Soil Maps Units Dominated by Hydric Soils,* there are no hydric soils mapped on the site.

Prime and Statewide Important Farmland Soils

The USDA defines prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The land could be cropland, pastureland, rangeland, forestland, or other land, but not urban built-up land or water. Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when it is treated and managed according to modern farming methods.

Based on a review of the Connecticut listing of Prime and Statewide Important Farmland Soils, there are no prime farmland soils or other farmland soils of statewide importance mapped on the site.

Erosive Soils

The erodibility of soils is dependent upon the slope of the land and the texture of the soil. Soils are given an erodibility factor (K), which is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values in Rhode Island range from 0.10 to 0.64 and vary throughout the depth of the soil profile with changes in soil texture. Very poorly drained soils and certain floodplain soils usually occupy areas with little or no slope. Therefore, these soils are not subject to erosion under normal conditions and are not given an erodibility factor. Soil map units described as strongly sloping or rolling may include areas with slopes greater than eight percent and soil map units with moderate erosion hazard.

The Charlton-Chatfield soil series has a slope that ranges from 15% to 45%, with a surface K value of 0.17, meaning this soil series is potentially highly erodible and should be managed if it is to be disturbed or vegetation is to be removed from the surface.

Path: Y:\Projects\Miscellaneous\SNEW\MXD\2012_04\Soils.mxd

AECOM

SNEW Proposed Interconnection			Soil Classifications	
Date: 4/17/2012	DRWN: H.K.M.			FIGURE 1-1

EXHIBIT 7

Project Consultations

State Historic Preservation Office

DECD
State of Connecticut
Department of Economic and Community Development

March 12, 2012

Mr. Paul M. Knapik
Senior Project Manager
AECOM
10 Orms Street, Suite 405
Providence, RI 02094

Subject: Comments on the Proposed South Norwalk Electric and Water 115 kV Substation, West Side of Martin Luther King Jr. Drive, Norwalk, CT

Dear Mr. Knapik:

The Connecticut State Historic Preservation Office (CTSHPO) has reviewed your request for our comments on the potential impacts to historic resources resulting from construction of the referenced facility. South Norwalk Electric and Water plan to construct a new 115 kV electrical substation on a 1.07 acre parcel of land on the west side of Martin Luther King, Jr. Drive and just south of the bridge carrying the roadway over the adjacent rail lines. SHPO notes that area of proposed construction appears to have been subject to substantial ground disturbance and is, in our opinion, unlikely to contain intact and significant archaeological resources. The northern sections of the property are currently an open earth and gravel lot and have been used for material storage. SHPO has reviewed our resource files and notes that there are no reported archaeological or historic architectural properties within or adjacent to the project area. The Beth Israel Synagogue at 31 Concord Street is listed on the National Register of Historic Places and stands approximately 0.35 miles to the northeast. The National Register-listed Haviland and Elizabeth Streets--Hanford Place Historic District is approximately 0.5 miles to the northeast of the proposed substation. Based on the information provided to our office, it does not appear that the construction and operation of the substation facility will alter the setting or other historically significant characteristics of these registered resources. It is the opinion of this office that no historic properties will be affected by this project.

SHPO appreciates the opportunity to comment on this project. For further information please contact me at (860) 256-2761 or daniel.forrest@ct.gov.

Sincerely,

Daniel T. Forrest
Deputy State Historic Preservation Officer

ISO new england

Stephen J. Rourke
Vice President, System Planning

February 3, 2012

Mr. Drew Rankin
Connecticut Transmission Municipal Electric Energy Cooperative
30 Stott Avenue
Norwich, CT 06360

Subject: South Norwalk Substation Project – Level III Proposed Plan Application (PPA) CTMEEC-11-T01

Dear Mr. Rankin:

This letter is to inform you that pursuant to review under Section I.3.9 of the ISO Tariff, no significant adverse effect has been identified with regard to the following PPA:

CTMEEC-11-T01 - Transmission Notification from Connecticut Transmission Municipal Electric Energy Cooperative ("CTMEEC") on behalf of South Norwalk Electric and Water District for the construction of a new 115/13.8 kV Substation having a 115 kV bus tie breaker and two 40 MVA two-winding transformers located in Norwalk CT. Interconnecting via a looped tap into a 6.37 mile overhead transmission line 1890 "E" extending from South Norwalk 115 kV Substation to Sherwood 115 kV Substation located in Westport CT via a tap into the 0.17 mile overhead transmission line segment 1890 "W" from the South Norwalk 115 kV Substation to the Ely Avenue Junction located in Norwalk, CT.

The in-service date of the project is June 1, 2013. The Reliability Committee ("RC") reviewed the materials presented in support of the proposed project and did not identify a significant adverse effect on the reliability or operating characteristics of the transmission facilities of CTMEEC, the transmission facilities of another Transmission Owner or the system of any other Market Participant.

Having given due consideration to the RC review, ISO has determined that implementation of the plan will not have a significant adverse effect upon the reliability or operating characteristics of the Transmission Owner's transmission facilities, the transmission facilities of another Transmission Owner, or the system of a Market Participant.

A determination under Section I.3.9 of the ISO Tariff is limited to a review of the reliability impacts of a proposed project as submitted by Participants and does not constitute an approval of a proposed project under any other provisions of the ISO Tariff.

Sincerely,

Stephen J. Rourke
Vice President, System Planning

cc: Proposed Plan Applications

ISO New England Inc.
One Sullivan Road, Holyoke, MA 01040-2841
www.iso-ne.com T 413 535-4306 F 413 540-4203

EXHIBIT 8

Groundwater Receptor Report

Hygenix, Inc.
Environmental Consultants and Laboratory Services

RECEPTOR SURVEY
(IDENTFY ANY PUBLIC AND/OR PRIVATE WELLS WITHIN 500 FEET OF SUBJECT PROPERTY)

Prepared for:
South Norwalk Electric and Water Company
(2nd Taxing District)
c/o Scott Whittier
164 Water Street
Norwalk, CT 06854

Site Location:

180 Dr. Martin Luther King Jr. Drive
South Norwalk, CT 06854

August 30 – September 24 2010

49 Woodside Street, Stamford, CT 06902 Tel: (203) 324-2222 Fax: (203) 324-9857 Est. 1985

HYGENIX, Inc 49 Woodside Street, Stamford, CT, (203)324-2222

POTABLE WELL RECEPTOR SURVEY

INSPECTION SITE:	180 Dr. Martin Luther King Jr. Drive South Norwalk, CT 06854
CLIENT:	South Norwalk Electric and Water Company Attn: Scott Whittier 164 Water Street South Norwalk, CT 06854
INVESTIGATOR:	Peter Antonucci, BS
INSPECTION DATE:	August 30 – September 24, 2010

INTRODUCTION

HYGENIX, Inc. has completed a potable well receptor survey for The South Norwalk Electric and Water Company (SNEW) in Norwalk, CT. The main objective of this investigation is to determine whether there are any public and/or private drinking water wells within 500 feet radius of the subject property. According to the tax assessor's card the site is officially designated as "180 Dr. Martin Luther King Jr. Drive". The survey was performed, in part, due to a request by Douglas Zimmerman of the State of Connecticut Department of Environmental Protection (CTDEP) in conjunction with a recent filing under the Property Transfer Program.

INVESTIGATION

HYGENIX has completed a receptor survey that was requested for the presence of any drinking water wells within 500 feet radius of the above-mentioned property. To this effect, HYGENIX obtained a detailed GIS map from the Engineering Department of the City of Norwalk with 500-foot radii around the subject property (attachment A). All business and residential addresses within 500 feet were identified and a list was compiled (attachment B). Scott Whittier was contacted for correspondence with South Norwalk Electric and Water (SNEW) 2nd Taxing District to obtain a billing record list of properties connected to municipal water. The billing record list, provided by SNEW, was reviewed to determine if each address within the 500 feet radii was connected to public water. The SNEW records indicate that all addresses within the 500 feet radius are connected to public water supply with the exception of the ones indicated with "No", which do not have accounts with the company (attachment C).

To determine whether the addresses in question have private wells, a review of assessor's field cards available on the City of Norwalk's website along with the information already compiled from the assessor's office were completed by Peter

Antonucci of HYGENIX. Upon further investigation the addresses in question from the South Norwalk Electric & Water Company 2nd Taxing District were either vacant or tied in with adjacent properties. In brief, all of the homes and businesses within 500 feet of the site are connected to public water.

ATTACHMENTS

Enclosed is a 2007 GIS map of the surrounding area with each home or business identified by street number (attachment A), the 500 feet radius address list (attachment B), correspondence with SNEW, list of addresses connected to the public water system (attachment C), a list with addresses in question after review of the SNEW Company 2nd Taxing District with results (attachment D).

CONCLUSION

All of the residences and businesses within the 500 feet radius of 180 Dr. Martin Luther King Jr. Drive in South Norwalk, CT are connected to the public water supply.

Investigator:

Date: September 24, 2010

Peter Antonucci, BS
HYGENIX, Inc.

Review by:

Lloyd Jones, BS, MS
HYGENIX, Inc.

ATTACHMENT A

GIS MAP

King Jr. Drive
Laura Street
Wilbur
DR. MARTIN LUTHER KING JR. DRIVE

ATTACHMENT B

500 FOOT RADIUS ADDRESS LIST

HYGENIX, INC. *49 Woodside Street, Stamford CT 06902 203-324-2222*

Receptor Survey
180 Dr. Martin Luther King Jr. Drive
Norwalk, CT

500 Feet Radius Address List

Austin Street	#3, 6 & 10
Bouton Street	#6, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 28, 29, 30, 33, 35, 36, 38, 44, 46 & 50
Buda Street	#1 & 2
Cliff Street	#4, 6, 8 & 10
Dr. Martin Luther King Jr. Drive	#0, 180 & 190
Ely Avenue	#151, 153, 183, 187, 188, 189, 190, 192 & 193
Laura Street	#1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21, 23, 24 & 25
Lexington Street	#56, 58, 60, 64, & 66
Oak Street	#26 & 40
Observatory Place	#15
Papp Street	#3
Paradiso Street	#5
Podmore Street	#11, 12 & 14
Snowden Street	#2, 8, 11, 12, 14, 16, 20 & 22
Wilbur Street	#2, 4 & 5
Windsor Place	#2 & 6

ATTACHMENT C

CORRESPONDANCE FROM SOUTH NORWALK ELECTRIC & WATER (SNEW) - 2ND TAXING DISTRICT

POTABLE WATER SUPPLIED BY SNEW

Street	Street Number	Served by SNEW
Austin Street	3	Yes
Austin Street	6	Yes
Austin Street	10	Yes
Bouton Street	6	No
Bouton Street	8	Yes
Bouton Street	9	Yes
Bouton Street	10	Yes
Bouton Street	11	Yes
Bouton Street	12	Yes
Bouton Street	15	Yes
Bouton Street	16	Yes
Bouton Street	17	Yes
Bouton Street	18	Yes
Bouton Street	19	Yes
Bouton Street	20	No
Bouton Street	22	Yes
Bouton Street	23	Yes
Bouton Street	24	Yes
Bouton Street	25	Yes
Bouton Street	26	Yes
Bouton Street	28	Yes
Bouton Street	29	No
Bouton Street	30	Yes
Bouton Street	33	Yes
Bouton Street	35	No
Bouton Street	36	Yes
Bouton Street	38	Yes
Bouton Street	44	Yes
Bouton Street	46	Yes
Bouton Street	50	No
Buda Street	1	Yes
Buda Street	2	Yes
Cliff Street	4	Yes
Cliff Street	6	Yes
Cliff Street	8	Yes
Cliff Street	10	Yes
Dr. Martin Luther King Jr. Drive	0	No
Dr. Martin Luther King Jr. Drive	180	Yes
Dr. Martin Luther King Jr. Drive	190	Yes
Ely Avenue	151	Yes
Ely Avenue	153	Yes
Ely Avenue	183	Yes

Street	Street Number	Served by SNEW
Ely Avenue	187	Yes
Ely Avenue	188	Yes
Ely Avenue	189	Yes
Ely Avenue	190	Yes
Ely Avenue	192	Yes
Ely Avenue	193	Yes
Laura Street	1	Yes
Laura Street	2	Yes
Laura Street	3	Yes
Laura Street	4	Yes
Laura Street	5	Yes
Laura Street	6	Yes
Laura Street	8	Yes
Laura Street	9	Yes
Laura Street	10	Yes
Laura Street	12	Yes
Laura Street	13	Yes
Laura Street	14	Yes
Laura Street	15	Yes
Laura Street	17	Yes
Laura Street	18	Yes
Laura Street	19	Yes
Laura Street	20	Yes
Laura Street	21	Yes
Laura Street	23	Yes
Laura Street	24	Yes
Laura Street	25	Yes
Lexington Street	56	Yes
Lexington Street	58	Yes
Lexington Street	60	Yes
Lexington Street	64	Yes
Lexington Street	66	Yes
Oak Street	26	Yes
Oak Street	40	Yes
Observatory Place	15	Yes
Papp Street	3	Yes
Paradiso Street	3	Yes
Podmore Street	11	Yes
Podmore Street	12	Yes
Podmore Street	14	Yes
Snowden Street	2	Yes
Snowden Street	8	Yes
Snowden Street	11	Yes
Snowden Street	12	Yes
Snowden Street	14	Yes

Street	Street Number	Served by SNEW
Snowden Street	16	Yes
Snowden Street	20	Yes
Snowden Street	22	Yes
Wilbur Street	2	Yes
Wilbur Street	4	Yes
Wilbur Street	5	Yes
Windsor Place	2	Yes
Windsor Place	6	Yes

ATTACHMENT D

RECONNAISSANCE RESULTS OF ADDRESSES IN QUESTION

LIST OF ADDRESSES IN QUESTION FROM SECOND TAXING DISTRICT WATER COMPANY OF SOUTH NORWALK

- 6 Bouton Street: Vacant Lot, No residence
- 20 Bouton Street: Tied in with 18 Bouton Street
- 29 Bouton Street: Vacant Lot, No residence
- 35 Bouton Street: Tied in with 33 Bouton Street
- 50 Bouton Street: Stock yard, no residence
- 0 Dr. Martin Luther King Jr. Drive: Storage yard, no residence on site

EXHIBIT 9

Visual Rendering of Proposed Substation

TION

South Norwalk Electric and Water Proposed Substation

Visual Simulation from Dr. Martin Luther King Jr. Drive

City of Norwalk, Fairfield County, Connecticut

May 2012

Viewpoint and Photographic Technical Data

Viewpoint: Dr. Martin Luther King Jr. Drive
Camera Type: Nikon D5100
Field of View: 67.38°
Views: Location:
Latitude: 41.0905° N
Longitude: -73.4256° W
View Direction: Northwest
Time of Photograph: 9:22 AM
Date Photograph Taken: April 17, 2012

Viewpoint Location and View Direction

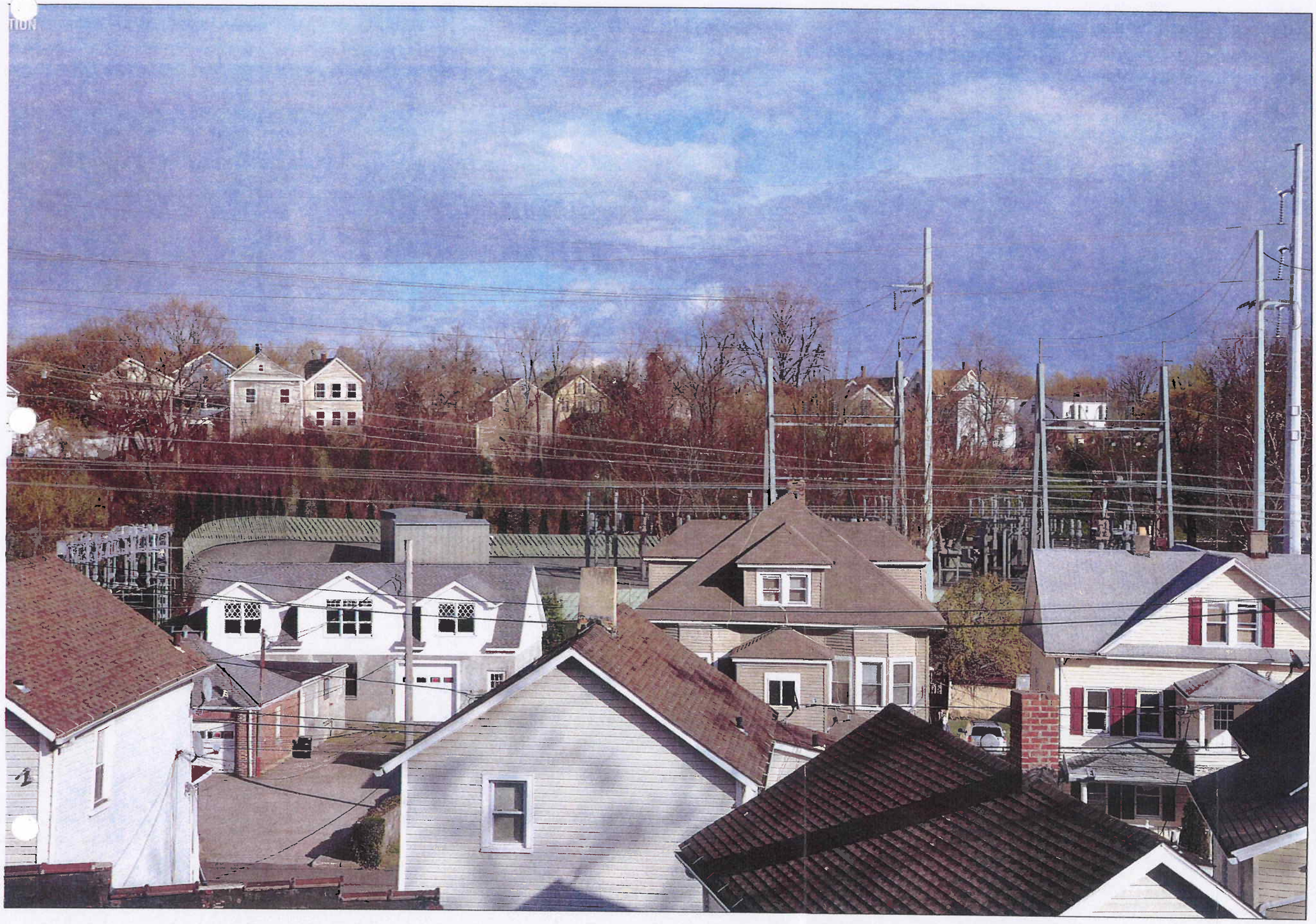
Original Photograph

Prepared For:

Prepared By:

AECOM

edr COMPANIES



South Norwalk Electric and Water Proposed Substation

Visual Simulation from Podmore Street

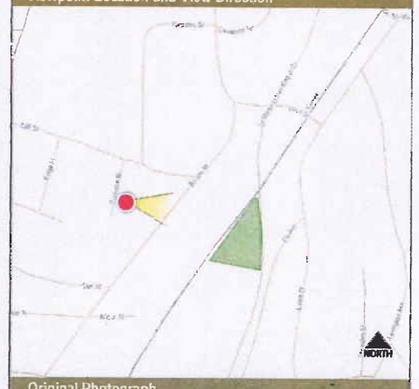
City of Norwalk, Fairfield County, Connecticut

May 2012

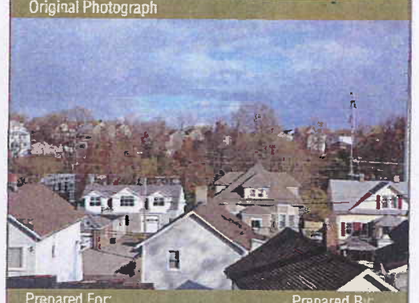
Viewpoint and Photographic Technical Data

Viewpoint	Podmore Street
Camera Type	Nikon D90
Field of View	35.93°
Viewer Location:	
Latitude: 41.0918° N	
Longitude: -73.4271° W	
View Direction	East
Time of Photograph	5:00 PM
Date Photograph Taken	April 12, 2012

Viewpoint Location and View Direction



Original Photograph



Prepared For:

Prepared By:

AECOM

edr COMPANIES

EXHIBIT 10

Noise Study

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Proposed SNEW Substation

180-184 Dr. Martin Luther King Jr. Drive

Norwalk, Connecticut

Environmental Sound Evaluation

May 2, 2012

Prepared for:

South Norwalk Electric and Water
164 Water Street
Norwalk, CT 06854

Proposed SNEW Substation
180-184 Dr. Martin Luther King Drive
Norwalk, Connecticut
Environmental Sound Evaluation

Introduction

Cavanaugh Tocci Associates has evaluated environmental sound impact associated with the proposed SNEW Substation at 180-184 Dr. Martin Luther King Jr. Drive in Norwalk, Connecticut.. The objectives of this evaluation were:

- To define acoustic design goals based on applicable noise regulations,
- To quantify and characterize existing background sound in the community surrounding the project,
- To estimate the acoustic impact of the proposed project in the surrounding community.

Results of the evaluation are summarized herein. Appendix A of this report is a glossary of acoustical terminology.

Environmental Noise Regulations

There are two regulations that are pertinent with respect to sound produced by the proposed facility. These are the Connecticut Department of Environmental Protection (CDEP) Noise Regulation, the City of Norwalk Noise Control Ordinance. The following briefly discusses the applicable aspects of these regulations.

State of Connecticut Noise Regulation

The State of Connecticut Noise Regulation (Section 22a-69-1 to 7.4) defines limits for environmental sound produced by this project. The sound level limits are based on both emitter and receptor land use classifications, and are listed below in Table 1:

TABLE 1

Connecticut DEP Sound Level Limits (dBA)

	Receptor Class			
Emitter Class	**C**	**B**	**A/Day**	**A/Night**
C	70	66	61	51
B	62	62	55	45
A	62	55	55	45

cta

Definitions

In the above table, day is defined as the time interval 7:00 a.m. to 10:00 p.m. Night is defined as the time interval 10:00 p.m. to 7:00 a.m. Noise Zone Classifications are based on the actual use of the land. Where multiple land uses exist on the same property, the least restrictive limits apply.

A Class A noise zone is land generally designated for residential use or areas where serenity and tranquility are essential to the intended use.

A Class B noise zone includes land uses generally of a commercial nature but also includes utilities such as the substation.

A Class C noise zone includes uses generally of an industrial nature.

Exceptions and Other Limit Provisions

The regulation prohibits the production of prominent, audible discrete tones. If a facility produces such sounds, the applicable limits in Table 1 are reduced by 5 dBA to offset the undesirable nature of tonal sound in the environment. In its definitions, the regulation also presents a definition of prominent discreet tone on the basis of one-third octave band frequency sound levels.

City of Norwalk Noise Control Ordinance

The City of Norwalk noise control ordinance contained in the Code of the City of Norwalk Connecticut, (Chapter 68) sets limits identical in level and format to those of the CDEP regulation in Table 1. However, the ordinance does not incorporate provisions for tonal sound.

Facility Acoustic Design Goal

On the basis of our review of land uses, and zoning of the properties surrounding the project site, we believe that the substation would be categorized as an emitter class "B". Therefore, the most restrictive nighttime limit for facility sound is 45 dBA at all receptor class "A" residential properties that are north, east, and west of the proposed substation. Land use south of the facility is commercial in nature and is most appropriately categorized as receptor class "B". At this property line, the most restrictive limit is 62 dBA.

Sound produced by the transformers at the substation will be dominated by discrete tones at twice the line frequency (120 Hz) and harmonics (240, 360, 480 Hz, etc.). Since this sound may be considered "tonal", a reduction of 5 dBA in the previously discussed limits (to 40 dBA and 57 dBA) may be required to assure to compliance with the Connecticut DEP noise regulations.

Existing Background Sound Levels

Sound is a feature of all environments. Sound is only objectionable when it is inconsistent with its environment; by being either too loud or by being distinctive in character (i.e. tonally or temporally varying). The goal of acoustical design is to render facility noise consistent with the level and character of other sounds in the environment. To this end, the following environmental noise analysis evaluates sound produced by the proposed Project in light of existing environmental sound levels.

An environmental sound survey was conducted to quantify and characterize the existing acoustic environment in the vicinity of the proposed Project. In order to document typical background sound levels in the project area, the sound monitoring program consisted of short-term intermittent measurements (attended 15-minute samples), performed at three representative receptor locations. Figure 1 is an aerial photograph of the project site indicating the sound monitoring locations. The measurements were conducted during daytime hours (2:30 p.m. to 4:00 p.m.) on Tuesday June 28, 2011, and the early morning hours (midnight to 2:00 a.m.) on Wednesday, June 29, 2011. The measurements were conducted with a Bruel and Kjaer Instruments Type 2250 sound level analyzer outfitted with a ½ inch electret microphone and windscreen. The instrument was calibrated before and after use with a Bruel and Kjaer Instruments Type 4231 acoustical calibrator. During all measurements, the meter was mounted on a tripod with the microphone situated approximately 5 feet above the ground. These instruments conform to ANSI S1.4 for Type 1 precision sound measurement instrumentation and have current calibration certificates traceable to the National Institute of Standards and Technology (NIST).

The results of the measurements are presented in Figures 2-7. The data presentation format has three chief elements:

- The first is a listing of A-weighted descriptors on the upper left hand side of the figures. Note that the statistical descriptors (L_n) are presented in order of decreasing value. Logically, the L_{max} is the highest sound level reached during the 15-minute interval; the L_{01} is the next highest since it is exceeded only 1 percent of the time interval, and so forth. The L_{eq} and L_{90} are shown shaded, as they are the key descriptors used in evaluating background sound levels.

- The second element in these figures is a 1/3 octave band spectrum of the L_{90} sound pressure level. This spectrum is used to identify the presence of distinct tonal characteristics and to quantify the frequency content associated with the background sounds. In these samples, there are no prominent discrete frequency components identified.

- The third element at the bottom of the figures is a graphic level record, or time-history, of the A-weighted sound level in 1-second increments recorded over the 15-minute interval. The peaks in these figures are associated with transient sounds produced by passing vehicles on local roads and occasionally a passing train on the rail line west of the Project site.

The background sound levels measured at these locations are dominated by sound produced local traffic with occasional high level sounds (75 to 80 dBA) from passing trains. The results of the survey indicate that daytime background (L_{90}) sound levels range between 48 and 50 dBA. During late night and early morning hours, when traffic is at a minimum, background sound levels drop to between 37 and 38 dBA.

Project Noise Analysis

Sound levels associated with the proposed facility have been estimated at four surrounding receptor properties. The acoustic model used to calculate these levels uses the National Electric Manufacturers Association (NEMA) sound ratings for the two 40 MVA transformers. Essentially the NEMA sound rating is the average A-weighted sound level measured at a distance of approximately 1 foot from the transformer (6 feet from fan cooled surfaces). For this analysis, a NEMA sound rating of 55 dBA was assumed. Figure 8 is a site plan indicating the proposed equipment layout. Figures 9-12 present the results of the acoustic modeling. Table 2 below compares estimates of facility sound levels with existing nighttime background sound levels and the Connecticut DEP sound level limits.

TABLE 2

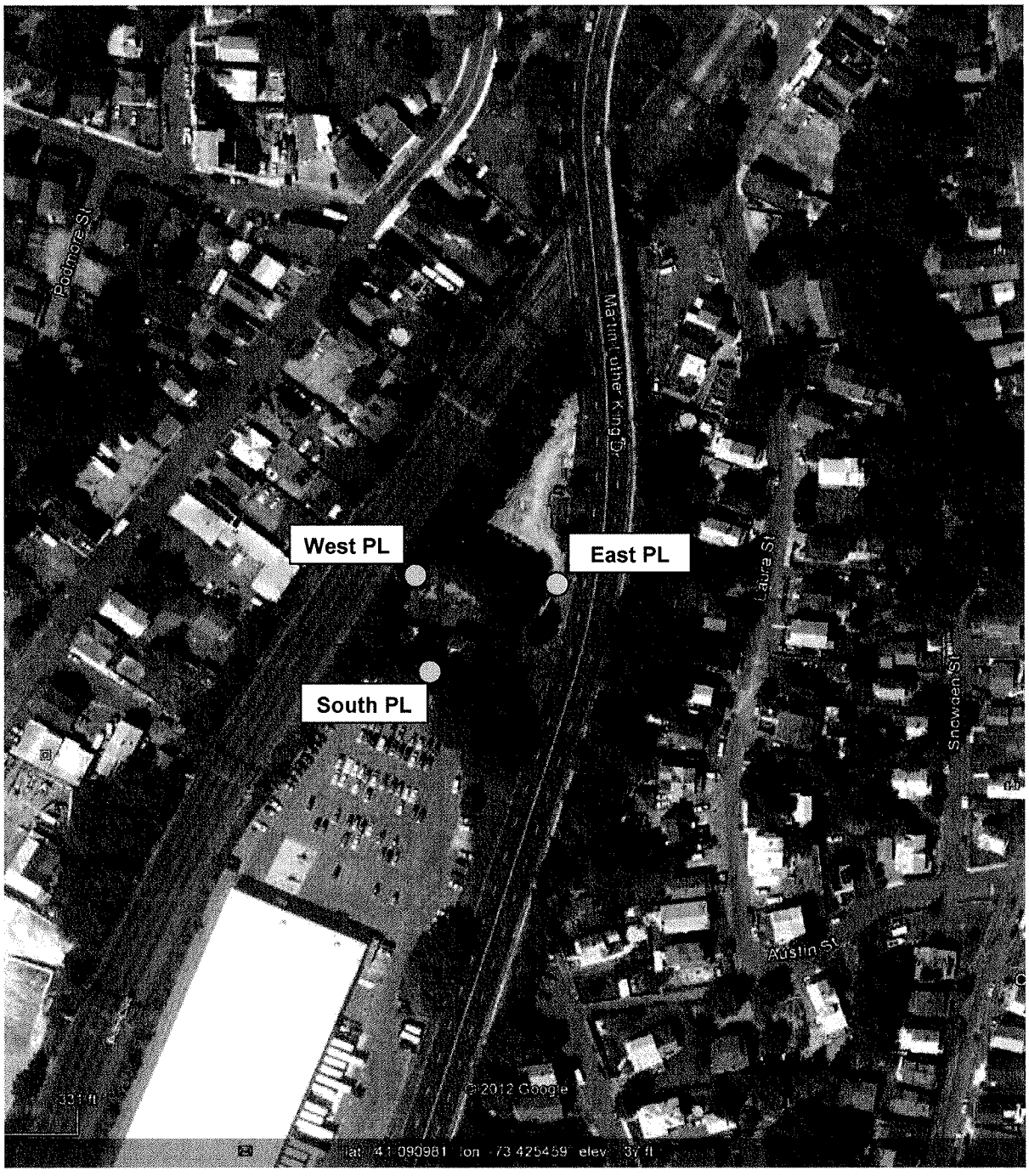
Location	Measured Lowest Background Sound Level (dBA)	CDEP Sound Level Limit[1] (dBA)	Estimated Substation Sound Level (dBA)
Residence - North	37	40	27
Residence - East	37	40	33
Commercial South	38	57	41
Residence - West	38	40	32
[1] Includes 5 dBA penalty for "tonal" sound emissions			

These data indicate that facility sound levels are expected to be 33 dBA or lower at the nearest residential properties and 41 dBA at the adjacent commercial property line. These sound levels are well below the most restrictive limits of the CDEP Noise Regulation, and the City of Norwalk Noise Control Ordinance. Furthermore, estimated sound level are significantly below existing lowest measured background sound levels at the nearest residential properties.

Conclusion

Based on our review, it is our opinion that facility sound levels at the nearest receptors will be in full compliance with the most restrictive aspects of State and Local Noise Regulations. Furthermore, sound produced by the transformers is expected to be comparable to the lowest background sound levels measured. We anticipate that, for the most part, facility sound will not be significantly audible at the nearest residences, and will be consistent with the existing background sounds.

cta



Aerial Photograph of Project Site Indicating Sound Monitoring Locations

Figure 1

cta

East Property Line - Day

Measured Tuesday, June 28, 2011, Between 3:21 PM & 3:36 PM

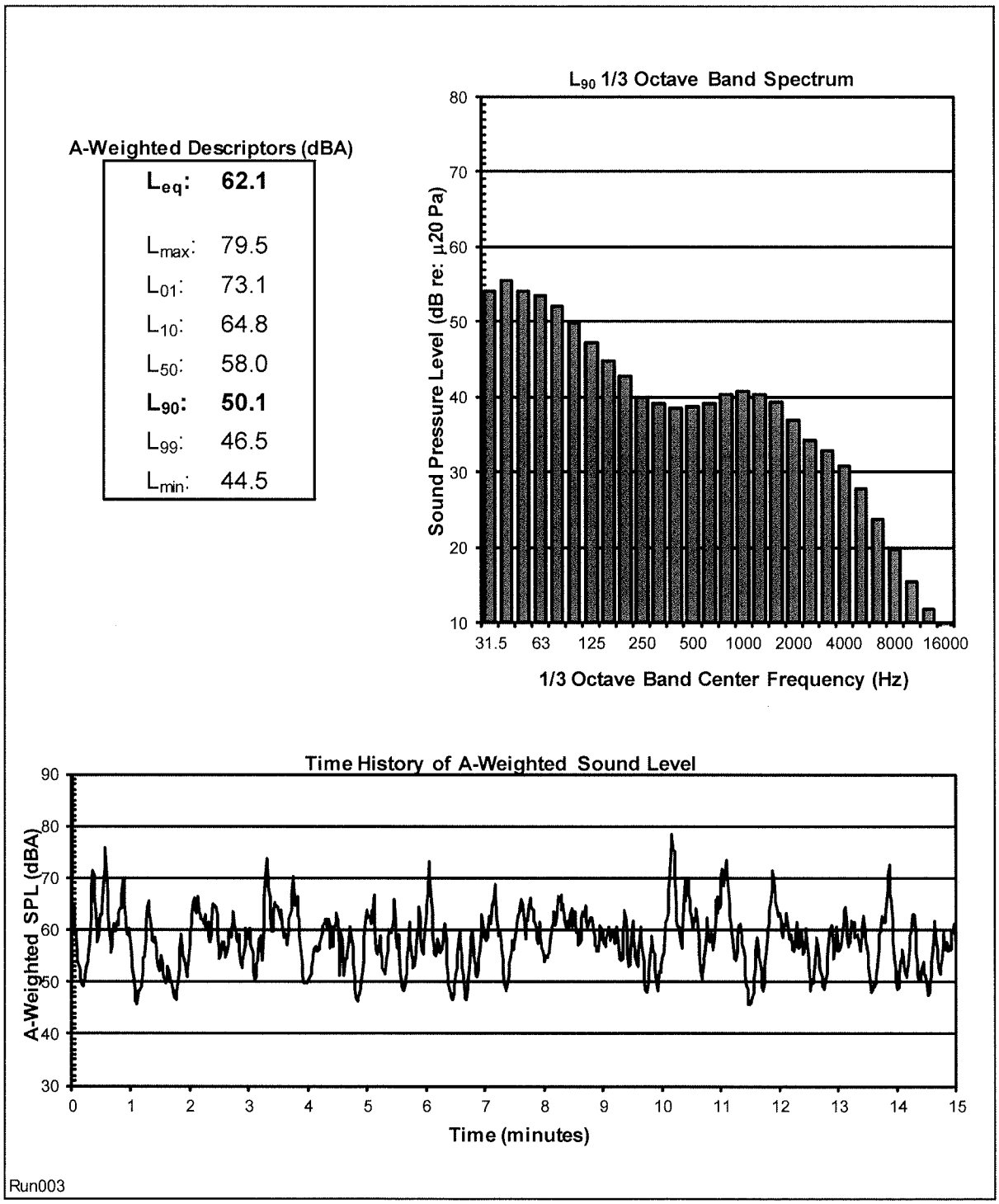


Figure 2

East Property Line - Night

Measured Wednesday, June 29, 2011, Between 12:35 AM & 12:50 AM

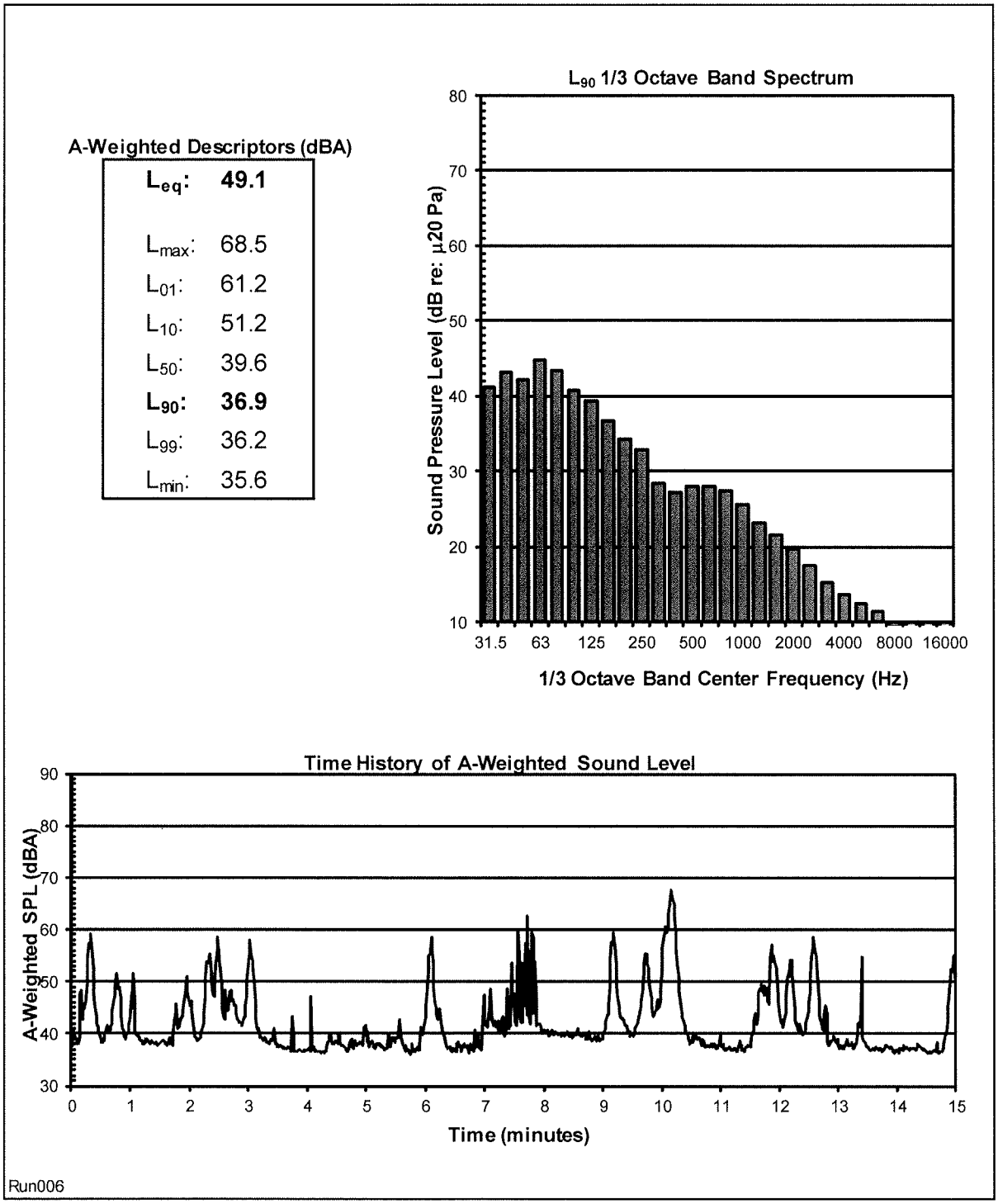


Figure 3

South Property Line - Day

Measured Tuesday, June 28, 2011, Between 3:04 PM & 3:19 PM

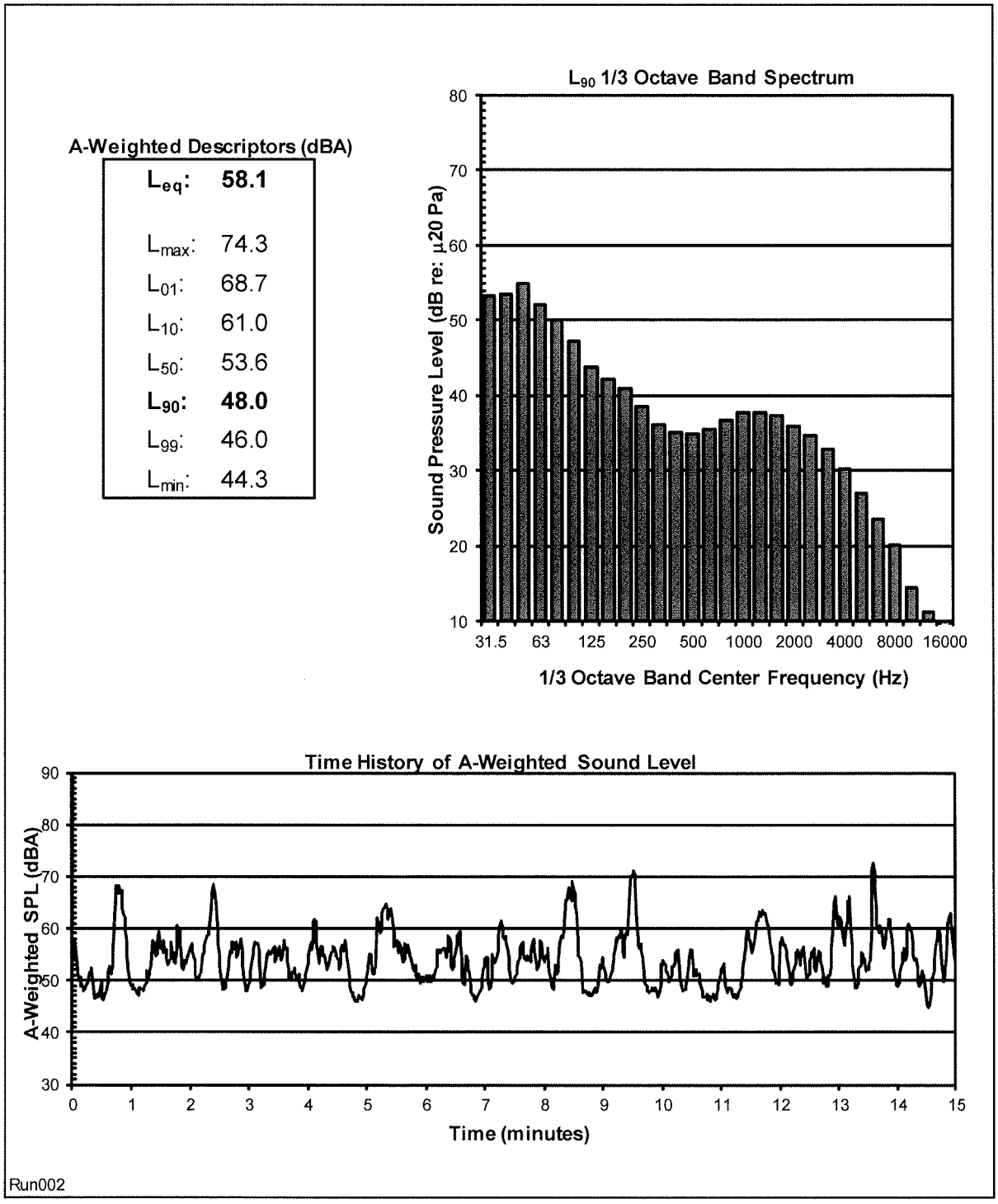


Figure 4

South Property Line - Night

Measured Wednesday, June 29, 2011, Between 12:19 AM & 12:34 AM

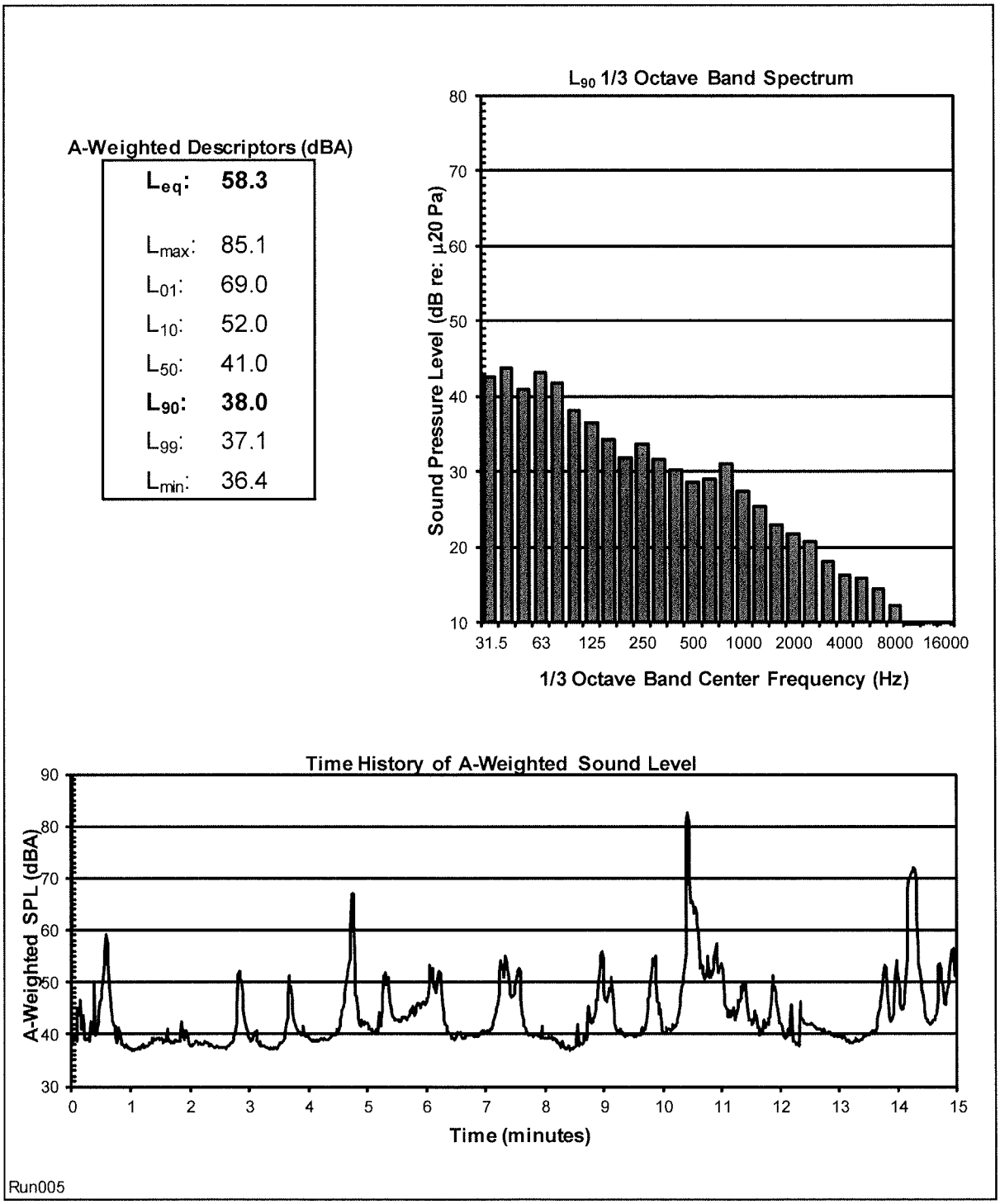


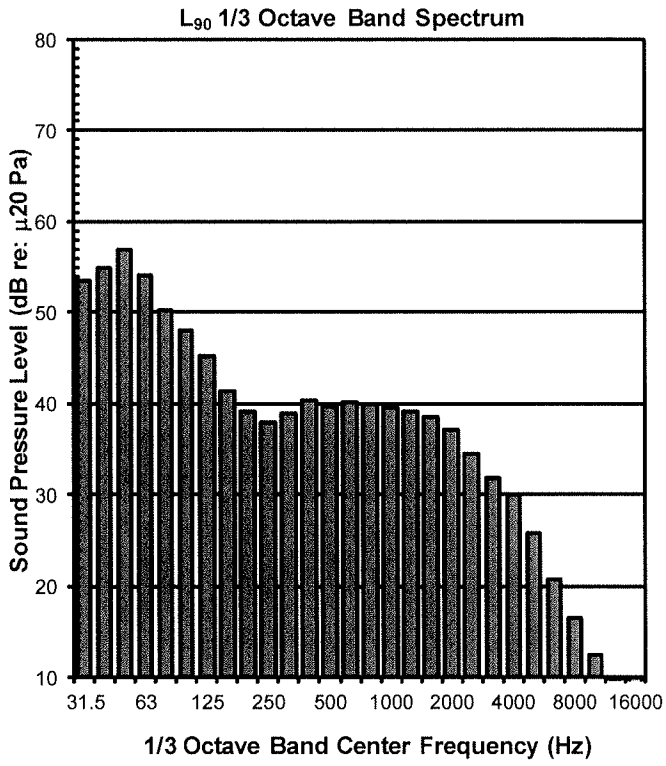
Figure 5

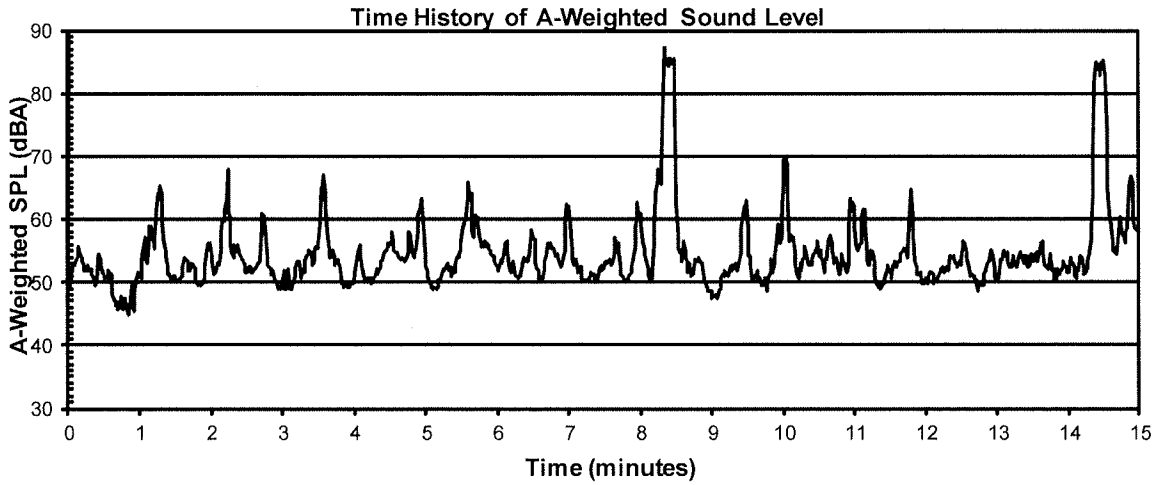
West Property Line - Day

Measured Tuesday, June 28, 2011, Between 2:49 PM & 3:04 PM

A-Weighted Descriptors (dBA)

L_{eq}:	**68.5**
L_{max}:	89.7
L_{01}:	85.1
L_{10}:	60.2
L_{50}:	53.1
L_{90}:	**49.8**
L_{99}:	46.2
L_{min}:	43.9





Run001

Figure 6

West Property Line - Night

Measured Wednesday, June 29, 2011, Between 12:03 AM & 12:18 AM

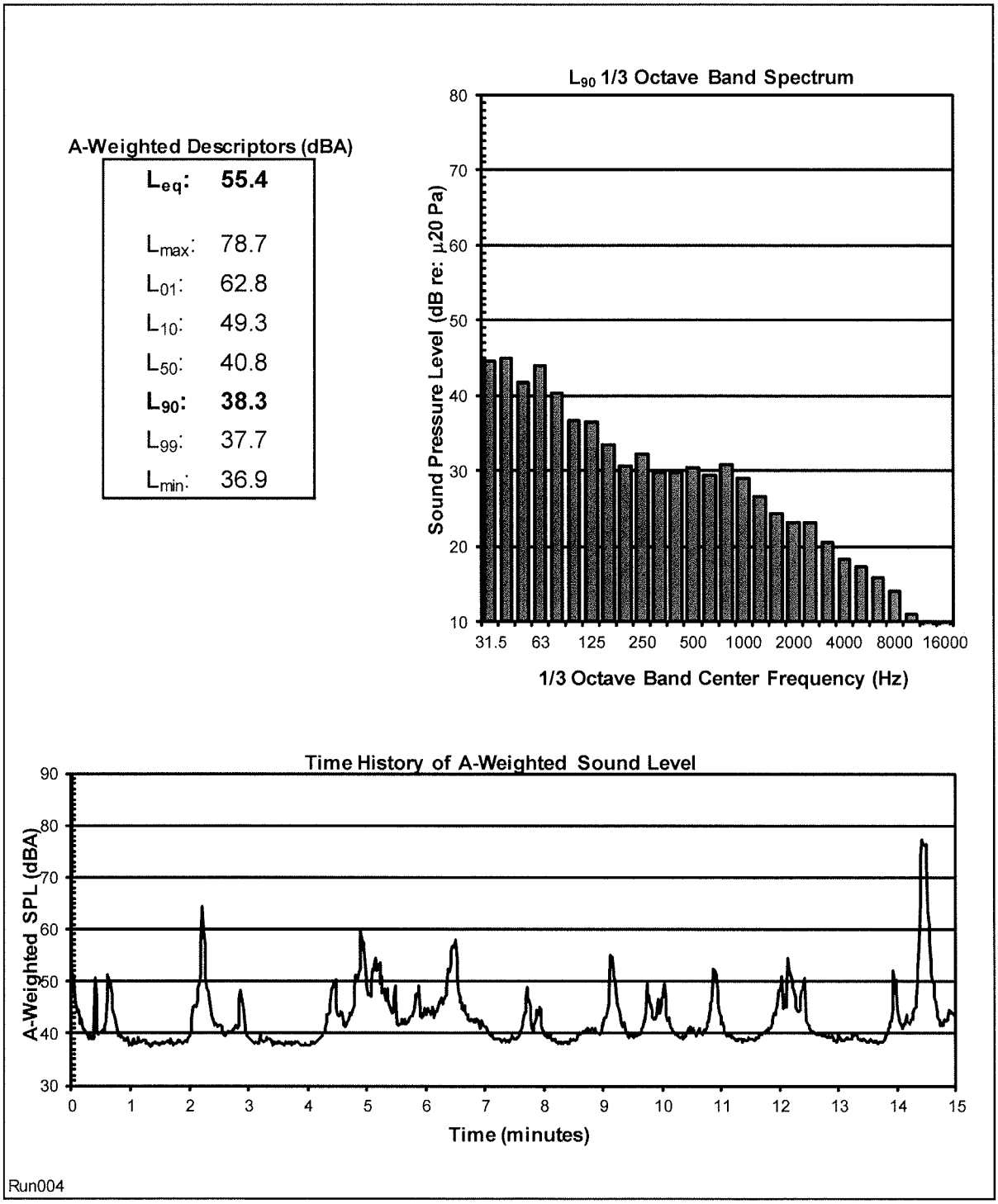


Figure 7

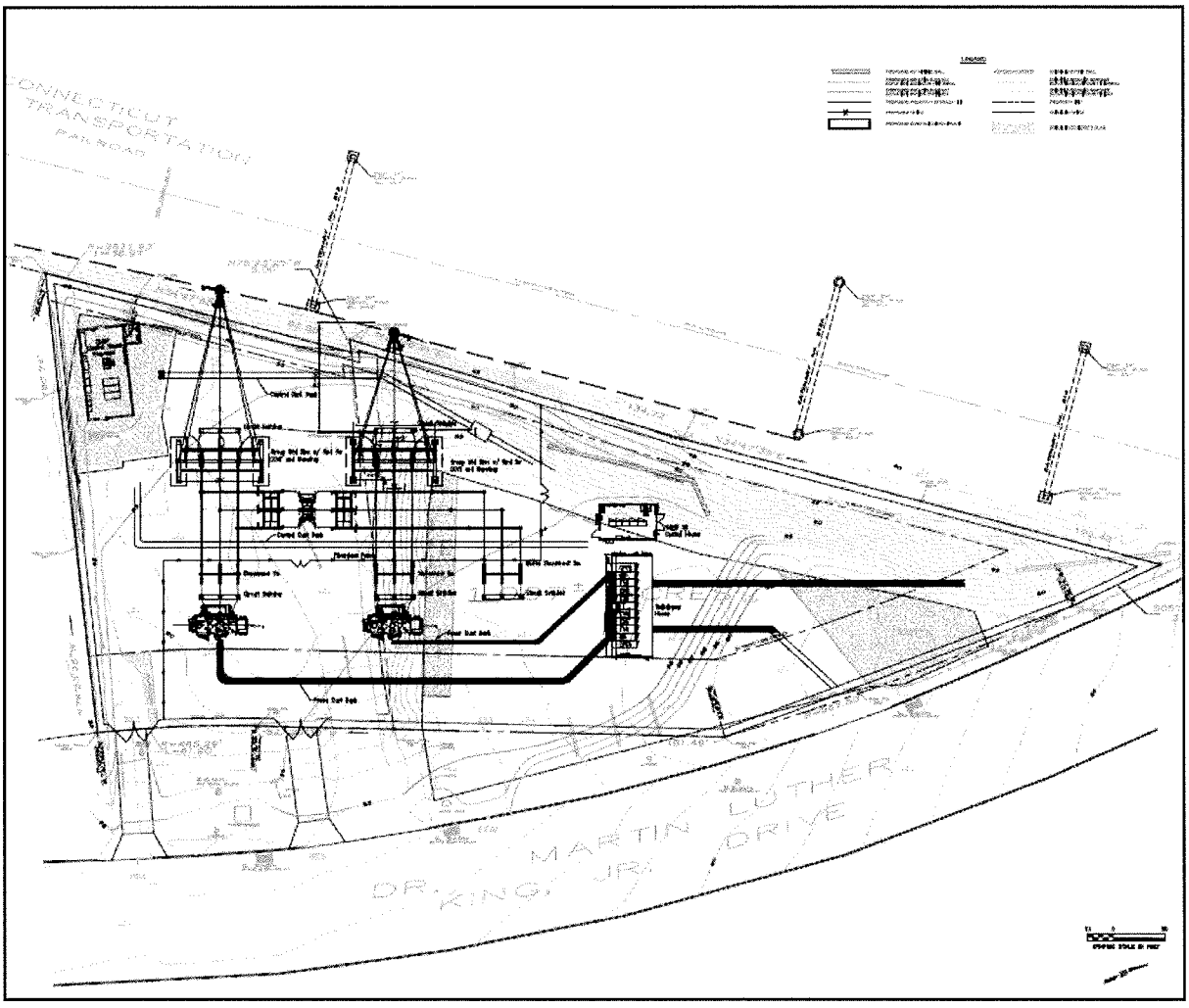

CONNECTICUT
TRANSPORTATION
MARTIN LUTHER
DR. KING, JR. DRIVE

Figure 8

Estimated Substation Sound at Nearest Residence - North

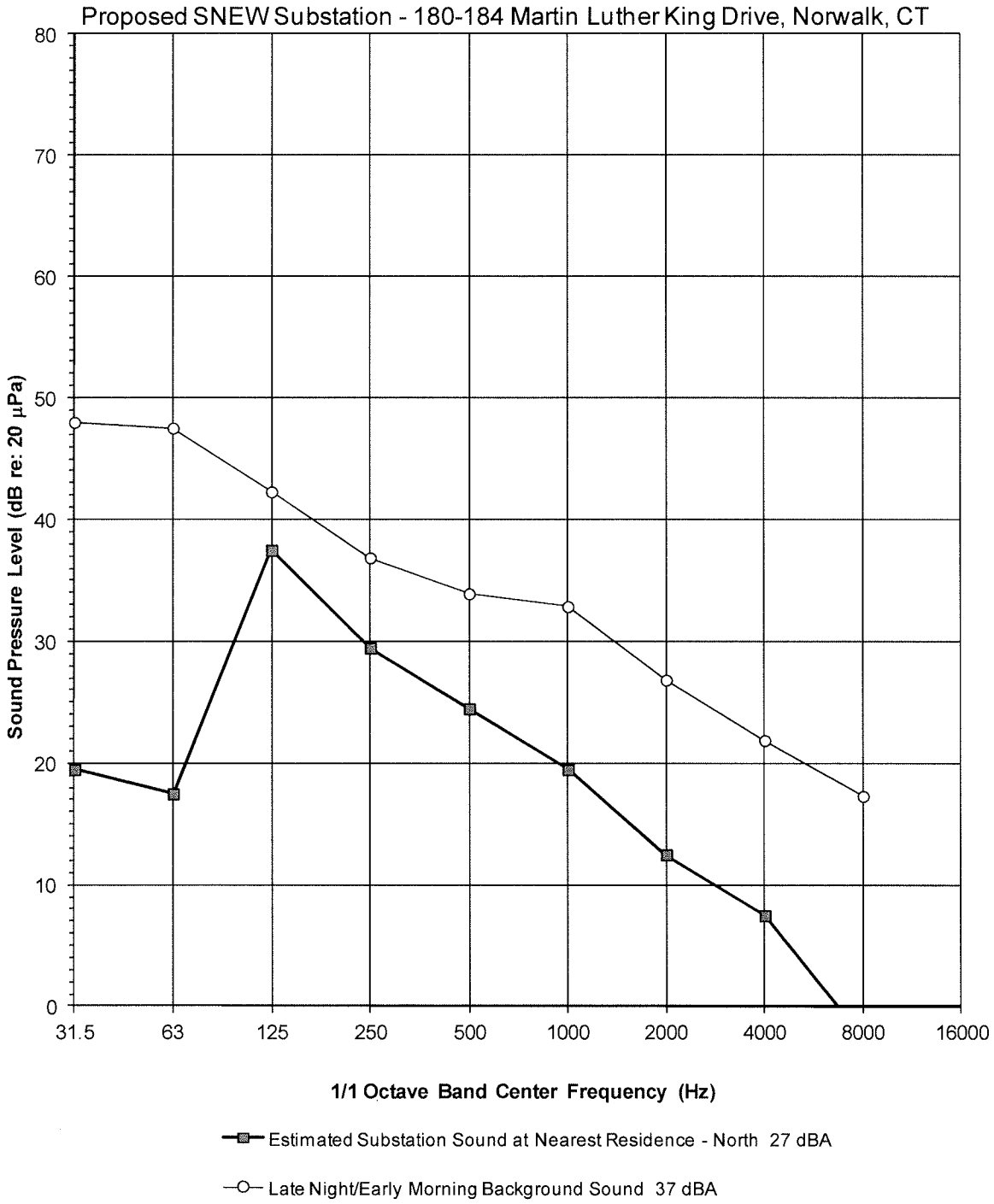


Figure 9

Estimated Substation Sound at Nearest Residence - East

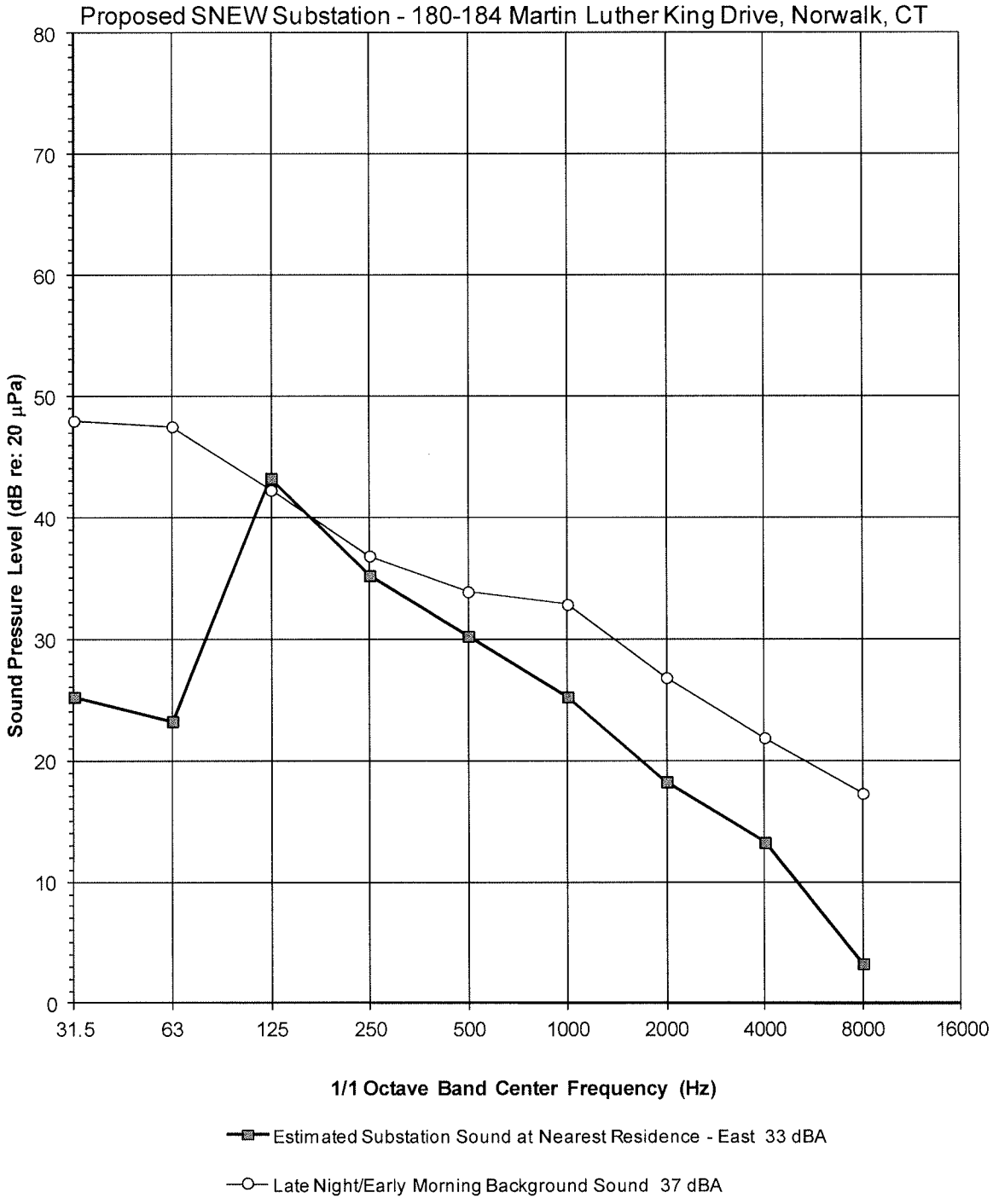


Figure 10

Estimated Substation Sound at Property Line - South

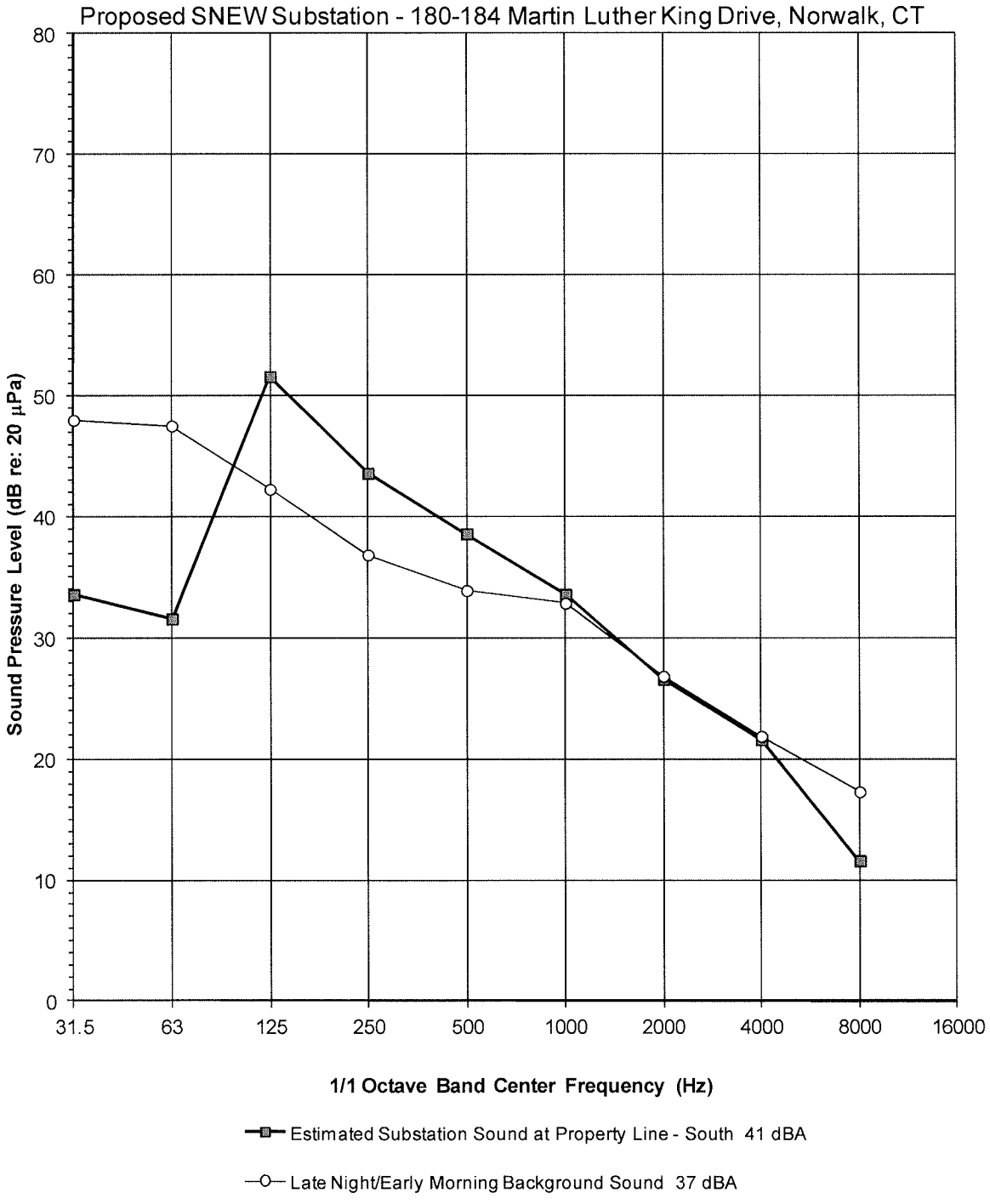


Figure 11

Estimated Substation Sound at Nearest Residence - West

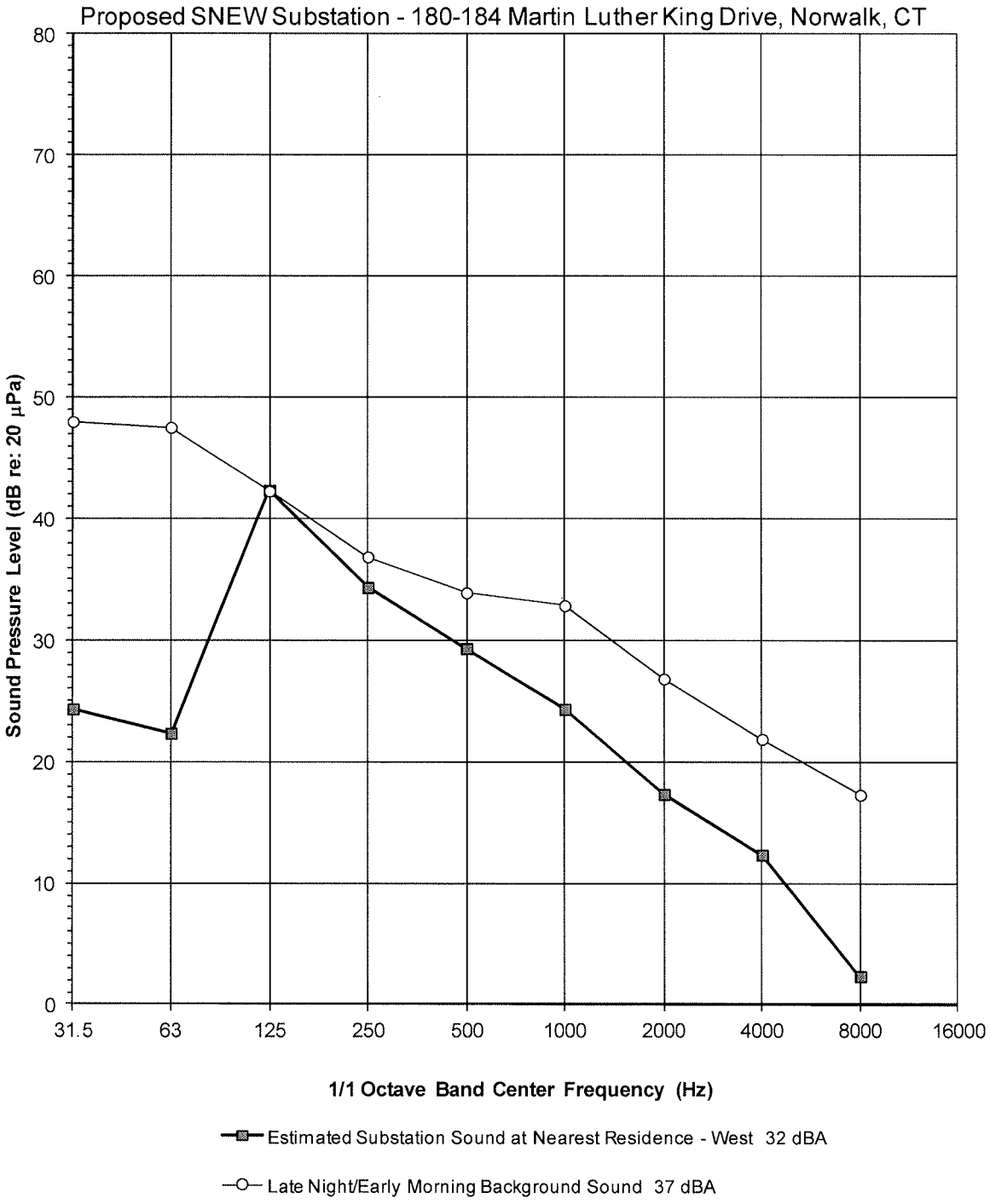


Figure 12

Appendix A

Sound Measurement Terminology

SOUND MEASUREMENT TERMINOLOGY

In order to quantify the amplitude, frequency, and temporal characteristics of sound, various acoustical descriptors are used. The following is an introduction to acoustic terminology that is used in this report.

Sound Level

Sound levels are typically quantified using a logarithmic decibel (dB) scale. The use of a logarithmic scale helps to compress the wide range of human sensitivity to sound amplitude into a scale that ranges from approximately 0 to 180 dB. Note however, that the use of the logarithmic scale prevents simple arithmetic operations when combining the cumulative impact of sources. For example, two sources of equal sound level operated simultaneously results in a combined sound level that is only 3 dB higher than if only one source was operated alone. An important feature of the human perception of continuous sound is that an increase or decrease in sound pressure level by 3 dB or less is barely perceptible, and an increase or decrease by 10 dB is perceived as a doubling or halving of noise level.

A-weighting

Generally, the sensitivity of human hearing is restricted to the frequency range of 20 Hz to 20,000 Hz. However, the human ear is most sensitive to sound in the 500 Hz to 5,000 Hz frequency range. Above and below this range, the ear becomes progressively less sensitive. To account for this feature of human hearing, sound level meters incorporate filtering of acoustic signals that corresponds to the varying sensitivity of the human ear to sound at different frequencies. This filtering is called A-weighting. Sound level measurements that are obtained using this filtering are referred to as A weighted sound levels and are signified by the identifier, dBA. A weighted sound levels are widely used for evaluating human exposure to environmental sounds. To help place A weighted sound levels in perspective, Figure A-1 contains a scale showing typical sound levels for common interior and environmental sound sources.

Octave and 1/3 Octave Band Sound Levels

To characterize a sound, it is often necessary to evaluate the frequency distribution of the sound energy. As mentioned before, the frequencies of most interest where human exposure is concerned range between 20 Hz and 20,000 Hz. This frequency range is commonly divided into octave bands, where an octave band is a range of frequencies. Each octave band is referred to by its center frequency and has a bandwidth of one octave (a doubling of frequency). To cover the full range of human hearing, it is necessary to measure sound in 10 separate octave bands. Typically, the lowest frequency band measured has a center frequency of 31.5 Hz. The next frequency band has a center frequency of 63 Hz. This geometric series continues to the highest frequency band that has a center frequency of 16,000 Hz. A set of octave band sound levels to describe a particular sound is called an octave band spectrum. Covering the full range of hearing,

an octave band spectrum would have 10 values, one for each band. Under certain circumstances, more frequency resolution in acoustical data is needed to identify the presence of tonal sounds. A 1/3 octave band spectrum uses filters that divide each octave band into 3 separate frequency bands. Note that octave band and 1/3 octave band sound levels are not usually A weighted, with their units being dB.

Environmental Noise Descriptors

Sound levels in the environment are continuously fluctuating and it is difficult to quantify these time-varying levels with single number descriptors. Statistical approaches, which use percentile sound levels and equivalent sound levels, are often used to quantify the temporal characteristics of environmental sound.

Percentile sound levels (L_n) are the A-weighted sound levels that are exceeded for specific percentages of time within a noise measurement interval. For example if a measurement interval is one hour long, the 50th percentile sound level (L_{50}) is the A-weighted sound level that is exceeded for 30 minutes of that interval. Similarly, the 90th percentile sound level (L_{90}) is the A-weighted sound level that is exceeded for 54 minutes of the same one-hour long interval. The 90th percentile sound level represents the nominally lowest level reached during the monitoring interval and is typically influenced by sound of relatively low level, but nearly constant duration, such as distant traffic or continuously operating industrial equipment. The L_{90} is often used in standards to quantify the existing background or residual sound level. Conversely, the L_{10} represents the nominally highest sound levels reached during a monitoring interval. The L_{10} is typically influenced by sound of high level, but short duration, such as that produced by vehicles passing on a nearby road. The L_{10} is sometimes called the intrusive sound level. By using percentile sound levels, it is possible to characterize the sound environment in terms of the steady-state background sound (L_{90}) and occasional transient sound (L_{10}).

The equivalent sound level (L_{eq}) is the energy average of the A-weighted sound level for the measurement interval. Sounds of low level and long duration, as well as sounds of high level and short duration influence this sound level descriptor. Noise levels at night generally produce greater annoyance than do the same levels which occur during the day. It is generally agreed that a given level of environmental noise during the day would appear to be 10 dBA louder at night – at least in terms of potential for causing community concern. The day night average sound level (L_{dn}) is a 24-hour average A-weighted sound level where a 10 dB "penalty" is applied to sound occurring between the hours of 10:00 p.m. and 7:00 a.m. The 10 dB penalty accounts for the heightened sensitivity of a community to noise occurring at night.

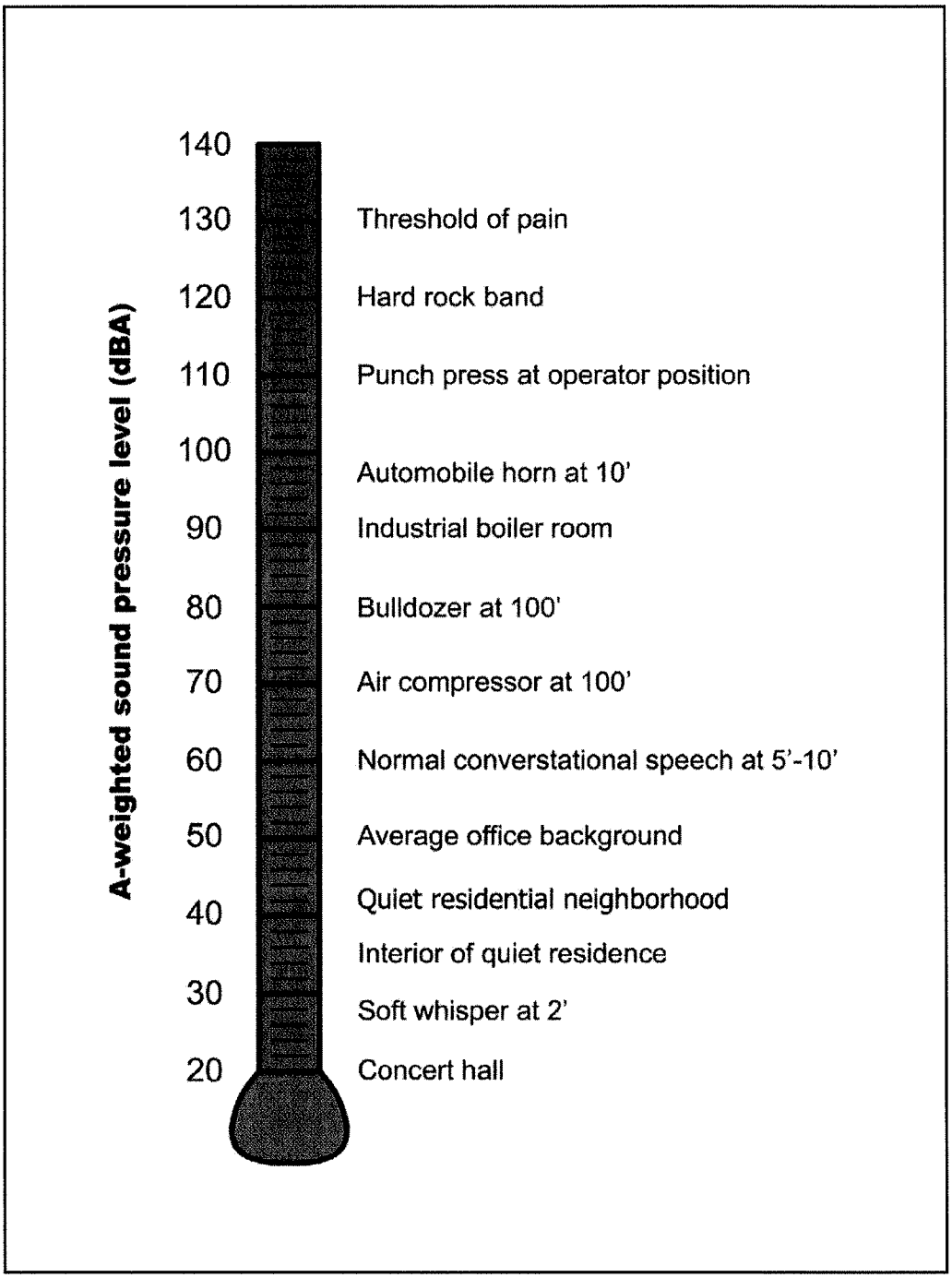


Figure A-1

Typical Sound Levels for Common Interior and Environmental Source

EXHIBIT 11

EMF Study

Electric and Magnetic Field (EMF) Analysis for South Norwalk Electric Works (SNEW) for the Proposed SNEW Substation in Norwalk, CT

Prepared for
South Norwalk Electric Works
AECOM

July 3, 2012

Gradient

www.gradientcorp.com • 20 University Road • Cambridge, MA 02138

Table of Contents

1 Introduction and Summary

South Norwalk Electric Works (SNEW) requested that Gradient perform an independent assessment of the magnetic field impacts associated with the proposed SNEW substation at 180-184 Martin Luther King Drive in Norwalk, CT. The site borders a railroad corridor servicing the Metro-North and Amtrak train lines. This corridor also contains two transmission lines 1416 and 1890, operated by Northeast Utilities. Currently, the site does not contain electrical equipment, and magnetic fields in the vicinity are due to the existing transmission lines, 1416 and 1890. In the proposed structure, Line 1890 will loop in and out of the substation, and power tapped from this line will feed 13.8-kilovolt (kV) distribution lines connecting to the existing SNEW substation located on State Street. Upgrades to the substation will be carried out in conjunction with the proposed change in transmission line 1890.

As described in this report, we found that the magnetic field levels projected to exist at fencelines for the SNEW substation project are well below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) health-based guidelines for continuous, public exposure to EMF (2,000 milligauss, mG). Overall, we found that the highest fields at the substation fenceline were directly over the 13.8 kV underground distribution lines (139 mG), but these fields decrease rapidly as distance from the underground lines increases. Moreover, the magnetic fields are comparable to those that can be found in homes, offices, and schools near operating electrical appliances (*e.g.*, an operating electric can opener produces about 100 mG at one foot distance).

Section 2 of this report describes the nature of EMF and provides values for EMF levels both from common sources and from available EMF exposure guidelines. Section 3 outlines the EMF measurement results for the present-day site, and Section 4 provides an analysis of the substation EMF modeling. Section 5 summarizes the conclusions, and Section 6 lists the bibliographic references.

2 Nature of Electric and Magnetic Fields

All matter contains electrically charged particles. Most objects are electrically neutral because positive and negative charges are present in equal numbers. When the balance of electric charges is altered, we experience electrical effects, such as the static-electricity attraction between a comb and our hair, or drawing sparks after walking on a synthetic rug in the wintertime. Electrical effects occur both in nature and through our society's use of electric power (generation, transmission, consumption).

2.1 Units for EMF are Kilovolts per Meter (kV/m) and Milligauss (mG)

The electrical tension on utility power lines is expressed in volts or kilovolts (kV; 1 kV = 1,000 V). Voltage is the "pressure" of the electricity, and can be envisioned as analogous to the pressure of water in a plumbing system. The existence of a voltage difference between power lines and ground results in an "electric field," usually expressed in units of kilovolts per meter (kV/m). The size of the electric field depends on the voltage, the separation between lines and ground, and other factors.

Power lines also carry an electric current that creates a "magnetic field." The units for electric current are amperes (A) and are a measure of the "flow" of electricity. Electric current can be envisioned as analogous to the flow of water in a plumbing system. The magnetic field produced by an electric current is usually expressed in units of gauss (G) or milligauss (mG), where 1 G = 1,000 mG. Another unit for magnetic field levels is the microtesla (μT), where 1 μT = 10 mG. The size of the magnetic field depends on the electric current, the distance to the current-carrying conductor, and other factors.

2.2 There are Many Natural and Man-made Sources of EMF

Everyone experiences a variety of natural and man-made electric and magnetic fields. EMF levels can be slowly varying or steady (often called "DC fields"), or can vary in time (often called "AC fields"). When the time variation of interest corresponds to that of power line currents, *i.e.*, 60 cycles per second, the fields are called "60-Hz" EMF. Man-made magnetic fields are common in everyday life. Many childhood toys contain magnets. Such permanent magnets generate strong, steady magnetic fields, or time-varying magnetic fields, should the magnet be moving. Typical toy magnets (*e.g.*, "refrigerator door" magnets) have fields of 100,000 to 500,000 mG. The earth's core creates a steady magnetic field that can be easily demonstrated with a compass needle. The size of the earth's magnetic field in the

Northern US is about 570 mG. Knowing the strength of the earth's magnetic field provides a perspective on the size of power-line magnetic fields. The earth's steady field does not have the 60-Hz time variation characteristic of power-line EMF, but is experienced as a changing magnetic field as one moves around in it. For example, a magnet spinning at 60 times a second will produce a 60-Hz magnetic field indistinguishable from that found near electric power lines carrying the appropriate level of electric current. Even the rotating steel-belted radial tires on a car produce time-varying magnetic fields. Magnetic resonance imaging ("MRI") is a diagnostic procedure that puts humans in much larger, but steady, magnetic fields (20,000,000 mG) yet is preferred over taking an X-ray picture, because, contrary to X-rays, MRIs have no known health risks (other than the large forces exerted on nearby steel objects).

2.3 Power-frequency EMF are Found Near Electric Lines and Appliances

Electric power transmission lines, distribution lines, and electric wiring in buildings carry AC currents and voltages that change size and direction at a frequency of 60 Hz. These 60-Hz currents and voltages create 60-Hz EMF nearby. The size of the magnetic field is proportional to the line current, and the size of the electric field is proportional to the line voltage. The EMF associated with electrical wires and electrical equipment decrease rapidly with increasing distance away from the electrical wires.

When EMF derives from different sources (*e.g.*, adjacent wires), the size of the net EMF produced will be somewhere in the range between the sum of EMF from the individual sources and the difference of the EMF from the individual sources. That is, EMF may partially add, or partially cancel, but generally, because adjacent wires are often carrying current in opposite directions, the EMF produced tends to be cancelled. Inside residences, typical baseline 60-Hz magnetic fields (far away from appliances) range from 0.5 to 5.0 mG. EMF in the home arise from electric appliances, indoor wiring, grounding currents on pipes and ground wires, and outdoor distribution or transmission circuits. All these separate power-line magnetic fields add or subtract from the steady field of the earth (570 mG), so that the sum total magnetic field in the home has both a steady part and a time-varying part.

Higher 60-Hz magnetic field levels are found near operating appliances. For example, can openers, mixers, blenders, refrigerators, fluorescent lamps, electric ranges, clothes washers, toasters, portable heaters, vacuum cleaners, electric tools, and many other appliances generate magnetic fields of size 40 to 300 mG at distances of 1 foot (NIEHS, 2002). Magnetic fields from personal care appliances held within ½ foot (*e.g.*, shavers, hair dryers, massagers) can produce 600 to 700 mG. At school and in

the workplace, lights, motors, copy machines, vending machines, video-display terminals, pencil sharpeners, electric tools, and electric heaters are all sources of 60-Hz magnetic fields.

2.4 State, National, and International Guidelines for EMF are Available

The US has no federal standards limiting occupational or residential exposure to 60-Hz EMF. Table 2.1 shows guidelines suggested by national and world health organizations. Table 2.2 lists guidelines that have been adopted by various states in the US. The levels shown on Table 2.1 are designed to be protective against any adverse health effects, but the limit values should not be viewed as demarcation lines between safe and dangerous levels of EMF. The second table shows (state) guidelines that are not health-effect based, and have been typically adopted to maintain the *status quo* for EMF on and near transmission-line rights-of-way (ROWs).

Table 2.1
60-Hz EMF Guidelines Established by Health & Safety Organizations

Organization	Magnetic Field	Electric Field
American Conference of Governmental and Industrial Hygienists (ACGIH) (occupational)	10,000 mG [(a)] 1,000 mG [(b)]	25 kV/m [(a)] 1 kV/m [(b)]
International Commission on Non-Ionizing Radiation Protection (ICNIRP) (general public, continuous exposure)	2,000 mG	4.2 kV/m
Non-Ionizing Radiation (NIR) Committee of the American Industrial Hygiene Assoc. (AIHA) endorsed (in 2003) ICNIRP's occupational EMF levels for workers	4,170 mG	8.3 kV/m
Institute of Electrical and Electronics Engineers (IEEE) Standard C95.6 (general public, continuous exposure)	9,040 mG	5.0 kV/m
U.K., National Radiological Protection Board (NRPB) [now Health Protection Agency (HPA)]	2,000 mG	4.2 kV/m
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), Draft Standard, Dec. 2006 [(c)]	3,000 mG	4.2 kV/m
*Comparison to **steady** [see text] (DC) EMF, encountered as EMF outside the 60-Hz frequency range:*		
Earth's magnetic field and atmospheric electric fields, steady levels, typical of environmental exposure [(d)]	[550 mG]	[0.2 kV/m up to > 12 kV/m]
Magnetic Resonance Imaging Scan, static magnetic field intensity [(d)]	[20,000,000 mG]	---

Notes:

(a) The ACGIH (2010) guidelines for the general worker (TLV handbook, pp. 124-127).
(b) The ACGIH (2010) guideline for workers with cardiac pacemakers (TLV handbook, pp. 124-127).
(c) http://www.arpansa.gov.au/pubs/comment/dr_elfstd.pdf and http://www.arpansa.gov.au/News/events/elf.cfm.
(d) These EMF are steady fields, and do not vary in time at the characteristic 60-cycles-per-second that power-line fields do. However, if a person moves in the presence of these fields, the body experiences a time-varying field.

Table 2.2
State EMF Standards and Guidelines for Transmission Lines

State/Line Voltage	Electric Field		Magnetic Field	
	On ROW	Edge ROW	On ROW	Edge ROW
Florida [c] 69 – 230 kV	8.0 kV/m	2.0 kV/m [f]		150 mG
Florida [c] 500 kV	10.0 kV/m			200 mG, 250 mG [e]
Massachusetts		1.8 kV/m		85 mG
Minnesota	8.0 kV/m			
Montana	7.0 kV/m [a]	1.0 kV/m [b]		
New Jersey		3.0 kV/m		
New York [c]	11.8 kV/m 11.0 kV/m [d] 7.0 kV/m [a]	1.6 kV/m		200 mG
Oregon	9.0 kV/m			

Notes:

ROW = right of way
mG = milligauss
kV/m = kilovolts per meter

(a) Maximum for highway crossings.
(b) May be waived by the landowner.
(c) Magnetic fields for winter-normal, i.e., at maximum current-carrying capability of the conductors.
(d) Maximum for private road crossings.
(e) 500 kV double-circuit lines built on existing ROWs.
(f) Includes the property boundary of a substation.

Sources:

NIEHS, 2002.
Florida, see: ftp://ftp.dep.state.fl.us/pub/siting/Rules/62-814-EMF.doc.

3 Present-Day Magnetic Field Measurements

On the evening of Friday, May 26, 2012, present-day magnetic field strengths were measured as close to the proposed substation fenceline as possible. The traverse began at the site boundary at the southeastern corner, continued along the southern border, along the railroad ROW to the west, and finally along Martin Luther King Road to the east. The weather was clear and sunny. An aerial image of the substation site is shown in Figure 3.1, and the substation site includes the area above the parked cars as well as the wedge-shaped lot. Line 1890 is between the railroad tracks and the proposed site, and Line 1416 is to the west of the railroad tracks.

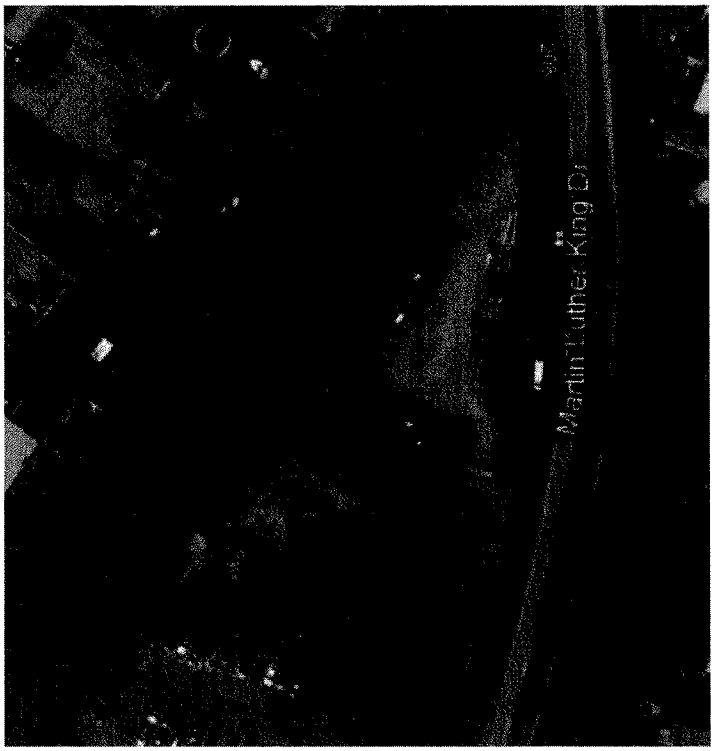


Figure 3.1 Aerial Image of Proposed Substation Site at 180-184 Martin Luther King Drive, South Norwalk, CT. Image from Google Earth. North points upward in this figure.

3.1 Procedures for Measuring Magnetic Fields

Magnetic field strengths were recorded roughly along the proposed substation fenceline. Though portions of the route were on steeply graded ground containing underbrush, the measurements were taken as close to the proposed fenceline as possible. These measurements provided representative present-day

EMF readings. In each case, magnetic field strength was measured at least every 3 seconds[1] at an elevation of approximately 3 feet above grade.[2] Magnetic field strength was measured using an EMDEX II recording meter (manufactured by Enertech Consultants, Campbell, CA). Specifications for this instrument appear in Table 3.1.

Table 3.1
EMDEX II Meter Specifications

Sensors	Three orthogonally oriented magnetic field sensor coils
Sensitivity	Electric fields: 0.0 kV/m - 109 kV/m Magnetic fields: 0.1 mG - 3,000 mG Reports magnetic field resultant (root mean square, RMS) in the broad band mode, the frequency bandwidth being 40 Hz to 800 Hz.
Features	Automatic multi-range measurement capability Output can be selected between "Survey" and "Normal" measurement modes
Amplitude Response	True RMS measurement with a "Crest Factor" of a periodic signal
Power	One 9-volt alkaline battery
Output	Survey mode: Data values displayed on LCD Normal mode: Sampled data stored in memory

The EMDEX II reports the resultant field strength in mG.[3] This meter satisfies the Institute of Electrical and Electronics Engineers (IEEE) instrumentation standards for measuring magnetic field strength at power line frequencies (IEEE, 1995a,b). The device records these measurements either every 1.5 or 3 seconds, and it allows the user to designate "events" corresponding to measurements at specific locations (*e.g.*, corners of the proposed fenceline).

3.2 Results for Measured Magnetic Fields

We obtained concurrent loading information for the time of the measurements from Northeast Utilities. The loads on Lines 1416 and 1890 are shown in Table 3.2. Because magnetic fields are

[1] Specifically, a 1.5-second running average field strength was computed continuously and reported by the EMDEX measuring device every 1.5 seconds.
[2] 1 meter (approximately 3 feet) elevation is specified by the Institute of Electrical and Electronics Engineers (IEEE) as part of its standard procedures for the survey of EMF generated by power lines (IEEE, 1995a, p. 21).
[3] The resultant field strength (B_r) is equal to the square root of the sum of the squared field intensity values measured along three orthogonal axes. That is, $B_r = \sqrt{B_x^2 + B_y^2 + B_z^2}$, where B_x, B_y, and B_z are the field intensity measurements along the x, y, and z axes.

proportional to current, knowledge of the measured magnetic fields and concurrent loading values can be used to estimate projected magnetic field values for different line loadings.

Table 3.2
Concurrent System Loads, May 26, 2012

Lines	Amperes
1416	217
1890	298

Overall, we found that the magnetic fields at the future location of the substation fenceline did not exceed 15 mG. The highest fields were measured in the southwest corner of the proposed fenceline, which was likely closest to the existing transmission lines and railroad catenary. Fields along the southern and eastern sides of the proposed fenceline did not exceed 9 mG. Currently, there is a fenced-in area in the northern portion of the site; because this area was not accessible to us, we conducted measurements outside the existing fence and measured fields along the property line instead of at the proposed substation fenceline. However, magnetic fields are expected to be relatively low along the northern fenceline, because this portion of the site is further from the existing transmission lines than western fenceline, which runs parallel to the existing transmission lines. The highest fields would be expected closest to existing sources – *i.e.*, the existing transmission lines.

4 Analysis of Substation Modeling

4.1 Software Programs Used for Modeling Electric and Magnetic Fields

The "SUBCALC" module of the "EMF Workstation" computer program was used to model the magnetic field strengths from the combined existing transmission lines and proposed substation (and associated proposed changes to Line 1890) as a function of current and distance from transmission lines and buswork. The EMF Workstation program is based on Maxwell's equations, which accurately describe the laws of physics as they apply to electricity and magnetism. Modeled EMF results can be expected to be both precise and accurate for the input data utilized. The EMF Workstation program was designed by the Electric Power Research Institute (EPRI) and has been checked extensively against other software (such as "CORONA" from the Bonneville Power Administration, US Department of Energy, and the "FIELDS" program produced by Southern California Edison) to ensure that the implementation of the laws of physics is consistent among these widely used models. As expected, program results for EMF were found to be in very good agreement with each other.

4.2 Power-Line Loads on Conductors

The power, as a function of current per phase satisfies the relationship:

$$P = \sqrt{3} \times V \times I_{phase} \tag{4.1}$$

where P is the power in kilovolt-amps (kVA), V is the line voltage in kilovolts (kV), and I_{phase} is the current per phase in amps (A). Thus, the current per phase conductor is:

$$I_{phase} = \frac{P}{\sqrt{3} \times V} \tag{4.2}$$

Power can be given in megawatts (MW) or megavolt-amps (MVA). To convert between power quoted in megawatts to megavolt-amps, one must divide by the power factor. The existing and proposed loads on the transmission lines 1416 and 1890 are summarized in Table 4.1 The loads on the existing lines were modeled using line loadings communicated by Northeast Utilities in document "SNEW_EMF_Powerflow.docx." The substation load was modeled using the substation capacity of 40 MVA quoted by Mott Macdonald. According to CT Siting Council's guidelines (CSC, 2007), magnetic field modeling is to be done at 1) peak load conditions at the time of the application filing, and

2) projected seasonal maximum 24-hour average current load on the line anticipated within five years after the line is placed into operation.

Table 4.1
System Loads Used for Modeling Existing and Proposed Configurations

Lines	Existing 2013 (Amperes)	Proposed 2018 (Amperes)
1416	543.0	598.3
1890	544.3	-
1890-E	-	685.1
1890-W	-	601.4

4.3 Results of EMF Modeling of Present-Day Configuration

Gradient undertook modeling of the present-day and proposed configurations in the vicinity of the proposed SNEW substation site at 180-184 Martin Luther King Drive. Modeling accounted for the nearby transmission 115 kV lines, 1416 and 1890, located to the west of the proposed site. These transmission lines coexist in a railroad ROW that services Amtrak trains and the Metro-North railroad. Line 1890 is between the railroad tracks, and the proposed site and Line 1416 is to the west of the railroad tracks. In addition, the catenaries providing power to the two rail lines are intermittent sources of 60-Hz AC magnetic fields when trains pass by the site. There are also train-associated signaling circuits that are additional sources of magnetic fields. Because the sources of EMF associated with the railroad are intermittent and independent of the transmission line and proposed project, they were not considered in the modeling.

The existing configuration was communicated by Northeast Utilities, which provided schematics of the transmission towers as well as line load information in the existing configuration. Gradient used the schematic "01153-10001_17357Ka.dwg" from Northeast Utilities to determine transmission line tower placement and the spreadsheet "SNEW SUB OTRM 012 Spreadsheet BEFORE.xlsx" to determine the existing tower configurations (#512, 513, and 514) for Lines 1416 and 1890.

Figure 4.1 shows the existing configurations with the two transmission lines, 1416 and 1890, along with an outline of the proposed substation fenceline for reference purposes. Figure 4.2 shows the magnetic fields due to the present-day loads on the transmission lines in the vicinity of the future, proposed substation, for the amperage loadings given in Table 4.1 The overhead transmission lines are shown in orange, and the proposed substation fenceline is shown in light green.

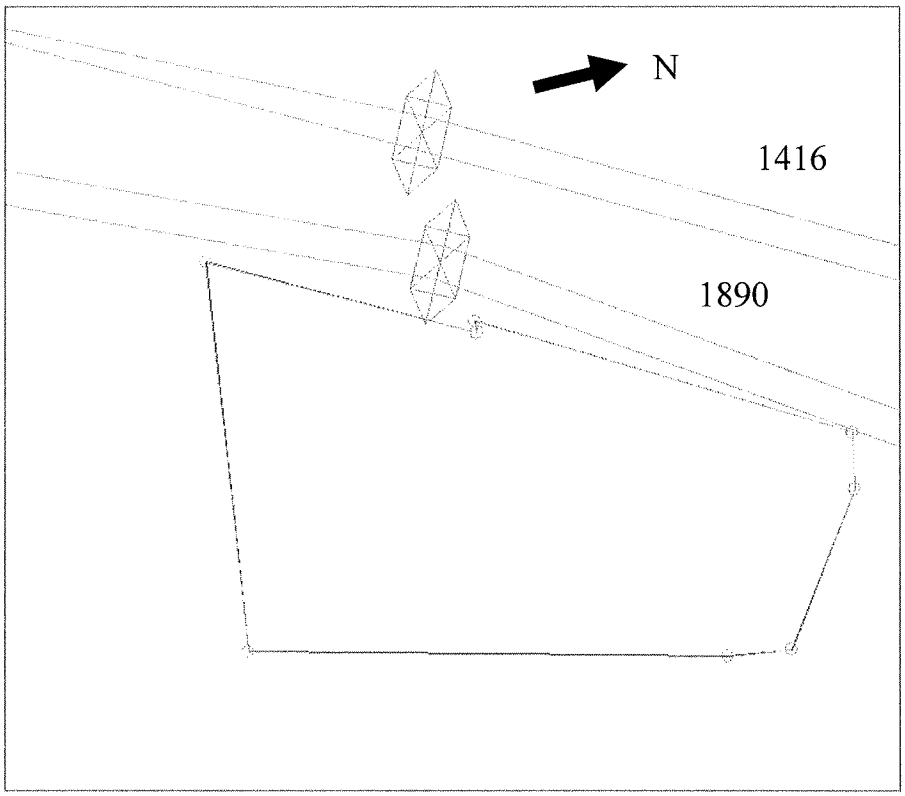


Figure 4.1 Schematic of Existing Configuration Near Proposed SNEW Substation

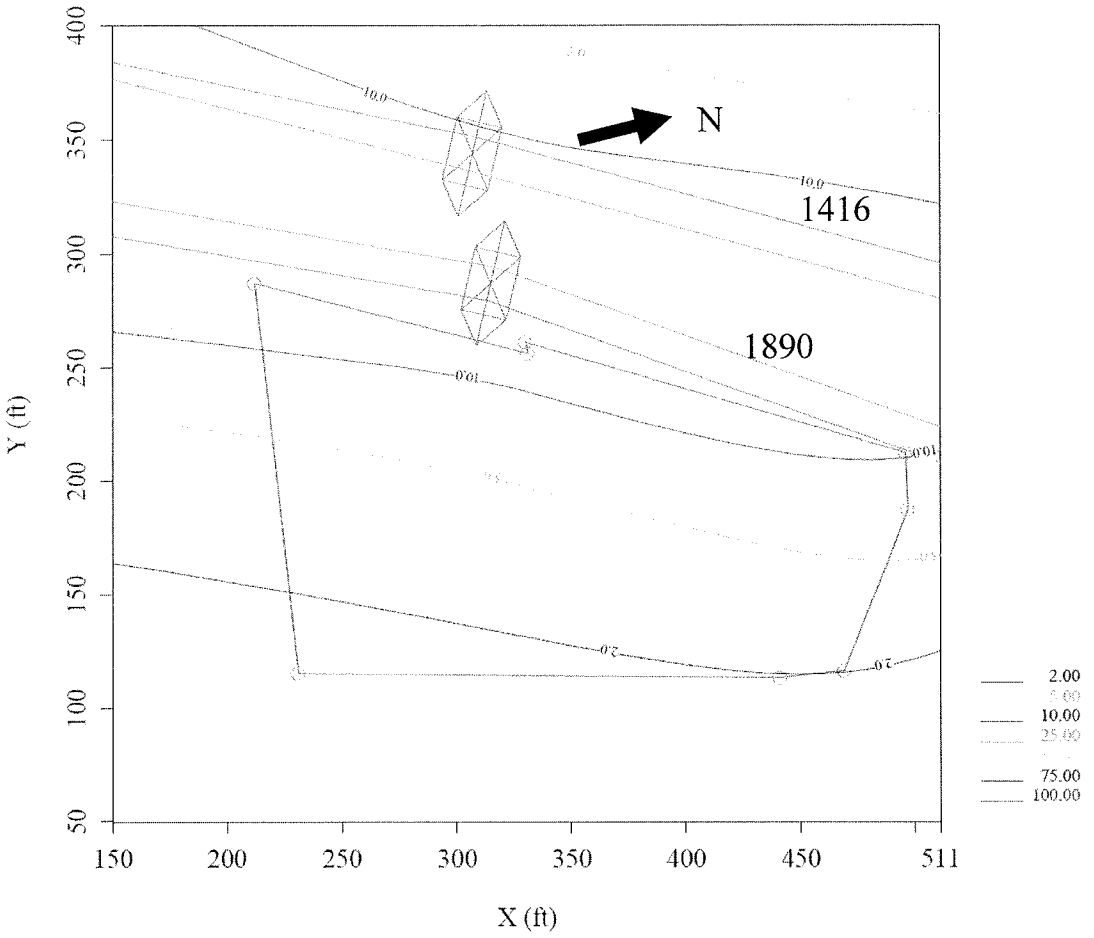


Figure 4.2 **Schematic of Magnetic Fields (mG) for Existing Configuration Near Proposed SNEW Substation.** Fields at the proposed fenceline do not exceed 15 mG.

4.4 Results of EMF Modeling of Proposed Configuration

In the proposed configuration, Line 1890 will loop in and out of the substation, and power tapped from this line will be transformed down to 13.8 kV underground distribution lines. These distribution lines will exit the substation to the north and feed an existing SNEW substation located on State Street.

The detailed layout of the proposed configuration was communicated by Northeast Utilities, SNEW, and Mott MacDonald. Northeast Utilities provided the schematics of the transmission towers in the proposed configuration as well as the line load information. The substation design was done by Mott MacDonald. Gradient used the schematic "SNEW_SKE-E-002 SS layout 12 03 23 rev d progress.dwg" from Mott MacDonald *via* AECOM to determine the substation layout and position of new towers #513A and #513B for line 1890. Schematic "01153-10001_17357Ka.dwg" from Northeast Utilities was used to

determine existing transmission line tower placement. The spreadsheet "SNEW SUB OTRM 012 Spreadsheet AFTER.xlsx" was used to determine the tower configurations for the two new #513A and #513B towers for line 1890. The substation 115 kV buswork was communicated by Matt MacDonald to be 7 feet phase-to-phase at a height of 18 feet. The 13.8 kV underground duct banks were communicated to be roughly 3 feet underground.

A schematic of the proposed substation is shown in Figure 4.3, and magnetic fields due to the proposed changes are shown in Figure 4.4. The overhead transmission lines are shown in orange, buswork in blue, and the substation fenceline in light green.

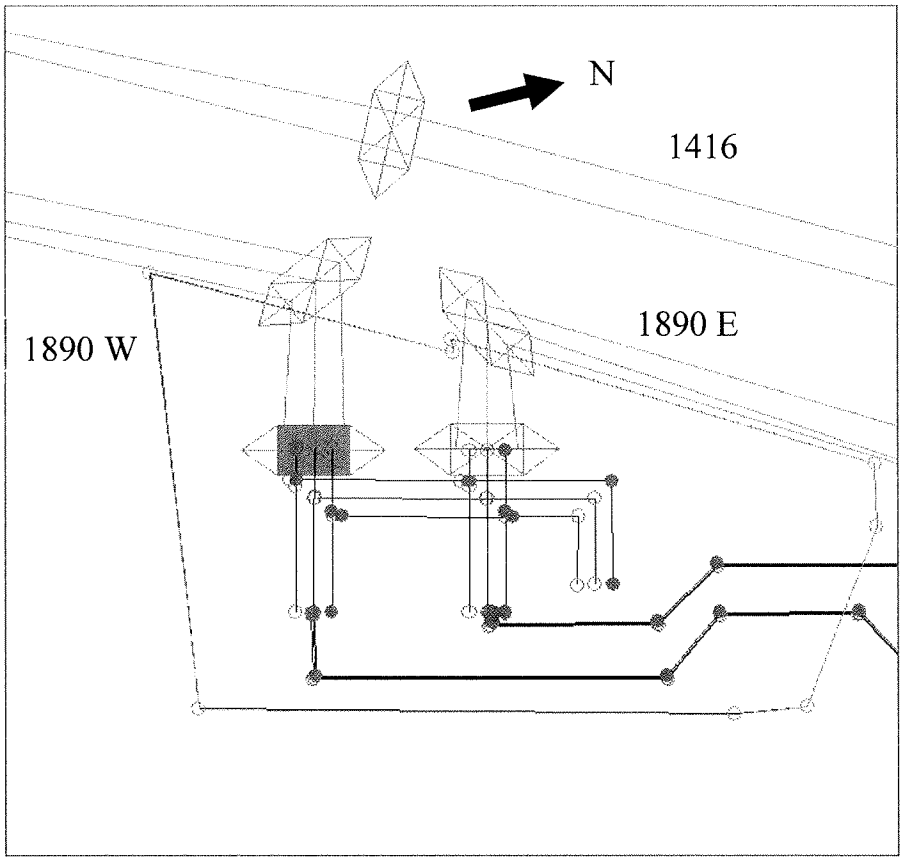


Figure 4.3 **Schematic of Proposed SNEW Substation.** The location of the 115-kV to 13.8-kV transformers is where the three parallel thin blue lines (the three phases of the 115-kV circuit) change into the single heavy, dark blue line.

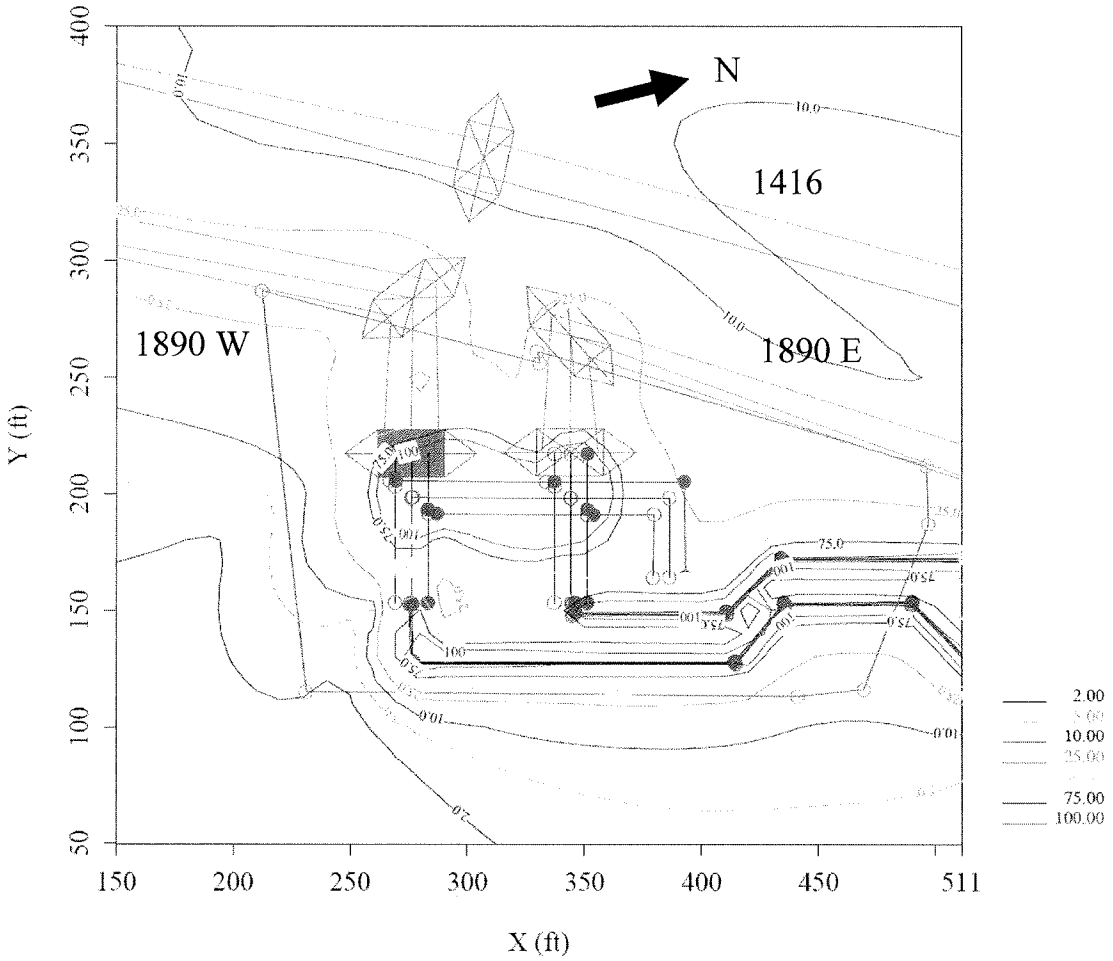


Figure 4.4 **Schematic of Magnetic Fields After Proposed SNEW Substation Is in Operation.** The highest fields at the fenceline are due to the entering and exiting underground 13.8 distribution lines (139 mG). Fields at other portions of the fenceline do not exceed 40 mG.

Comparison of Figures 4.2 and 4.4 show that magnetic fields increase in the vicinity of the substation but only up to 40 mG at the substation fenceline away from the 13.8 kV distribution lines. At locations near and above the underground distribution lines, the magnetic fields increase to 139 mG.

5 Conclusions

We have tabulated modeled magnetic fields for each portion of the fenceline for the existing configuration (two transmission lines only) and the proposed SNEW substation configuration at 180-184 Martin Luther King Drive. These results are summarized in Table 5.1

Table 5.1
Maximum Magnetic Fields for Proposed and Existing Configurations at the SNEW Substation Site

Configuration	Location	Magnetic Field (mG)
Existing configuration	Northern edge of fenceline	9
	Eastern edge of fenceline	2
	Southern edge of fenceline	15
	Western edge of fenceline	15
Proposed configuration	Northern edge of fenceline	139
	Eastern edge of fenceline	35
	Southern edge of fenceline	29
	Western edge of fenceline	39

In the existing configuration, the maximum predicted magnetic field in vicinity of the proposed substation fenceline is 15 mG. For comparison, the maximum measured magnetic field for the existing configuration was also 15 mG. However, because the current loading on the lines at the time of measurement (Table 3.1) was lower than the current loading used for modeling (Table 4.2), one would expect the maximum measured fields to be lower than the modeled fields. The measured fields might be higher than expected for two reasons: first, the measurements may account for the magnetic fields due to the railroad catenary, and, second, though the measurements were taken as close as possible to the proposed substation fenceline, the steep grade and underbrush in this area could have resulted in a traverse closer to the transmission lines and railroad corridor.

Once the substation is in operation, the magnetic field levels at the substation fencelines are still relatively low (ranging from 1 to 39 mG), with the exception of the northern edge of fenceline (139 mG). Though there is an increase in the magnetic field levels in the area due to the substation, these increases are generally no more than 25 mG; the somewhat higher fields at the northern fenceline in the proposed configuration are due to the fields generated by the underground 13.8 kV distribution lines. However,

because the 13.8-kV phase conductors are spaced closely together in this configuration, the magnetic fields drop off rapidly as distance from these lines increases. Also, electric fields from these underground lines are zero. Importantly, even at the point of maximum predicted magnetic field at the fenceline (139 mG), the levels are well below applicable health-based exposure guidelines for public exposure (2,000 mG) (ICNIRP, 1998, 2003, 2010). Furthermore, the maximum modeled EMF at the site is on the order of typical field levels found in the vicinity of some common household appliances (*e.g.*, a can opener at 1 foot is about 100 mG) (NIEHS, 2002).

In summary, aside from the areas directly above or below the entering and exiting transmission lines, we found that the magnetic fields do not exceed 40 mG at the substation fenceline. A comparison of all project-specific magnetic values (Tables 5.1) with magnetic field guideline values (Tables 2.1 and 2.2) shows that the levels measured at the site fall well below the accepted guidelines for allowable public exposure to magnetic fields (2,000 mG) (ICNIRP, 2010). Overall, there is no expectation of adverse health effects due to the EMF created during operation of the proposed project.

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