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January 14, 2005

Ms. Pamela B. Katz, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06054

Re: Docket No. 272 – The Connecticut Light and Power Company and the United Illuminating Company Application for a Certificate of Environmental Compatibility and Public Need for the Construction of a New 345-kV Electric Transmission Line and Associated Facilities between the Scovill Rock Switching Station in Middletown and the Norwalk Substation in Norwalk, Connecticut

Dear Chairman Katz:

As per my agreement with Derek Phelps, we are submitting today documents and reports in preparation for the hearing on January 19 regarding the property of Linda D. Wilson and The South Main Street Irrevocable Trust located in both in Middletown and Durham, Connecticut (hereinafter referred to as “Wilson’s”).

The Wilsons are vehemently opposed to the “Alternative Route” depicted on the overflight entitled “Royal Oak By-Pass”. The Wilsons property is located on the easterly side of Route 17 and the Alternate Route bisects their residential subdivision. While the present utility Right of Way (“ROW”) isolates from between 5 to 10 acres in the Town of Durham, construction of the 345kv conductor/cable along the existing ROW poses less hardship to the Wilsons. Accordingly, the Wilsons have retained a consultant, Steven Boggs, to examine the utilities alternatives (including underground alternatives) for use of the existing utility easement. We believe that there are technically feasible options (including below ground options) for the 345Kv cable to travel along the existing utility ROW. The following documents are enclosed:

1. Two maps of the Wilsons’ subdivision, one being a topographical map and the other being the subdivision design. These maps will be used to illustrate the environmental impact of the Alternate Route on the Wilsons’ property.
2. This enclosure consists of two zoning maps, one for the Town of Middletown, the other for the Town of Durham identifying the Wilson’s property as being residentially zoned.
3. The next two maps are topographical maps, the first being a reduction of the Durham quadrangle map and the second being a blowup of the quadrangle map showing the

January 14, 2005

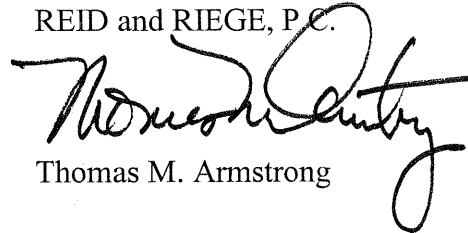
Page 2

approximate area of the Wilsons' property which lies in the Towns of Middletown and Durham.

4. This is a report of the Wilsons' consultant, Steven Boggs, which contains his review of the existing 115Kv conductors, the utilities proposal for addition of a mono-pole structure for the 115 and 345Kv conductors, the Alternative Route as depicted in the Royal Oak By-Pass, and the alternatives proposed by the utilities (including burial options) to reduce EMF levels utilizing various configurations on the existing easement. Mr. Boggs also discusses another option for trenching of the 345Kv cable along the existing easement.
5. Documents already in the Record in Docket 272.

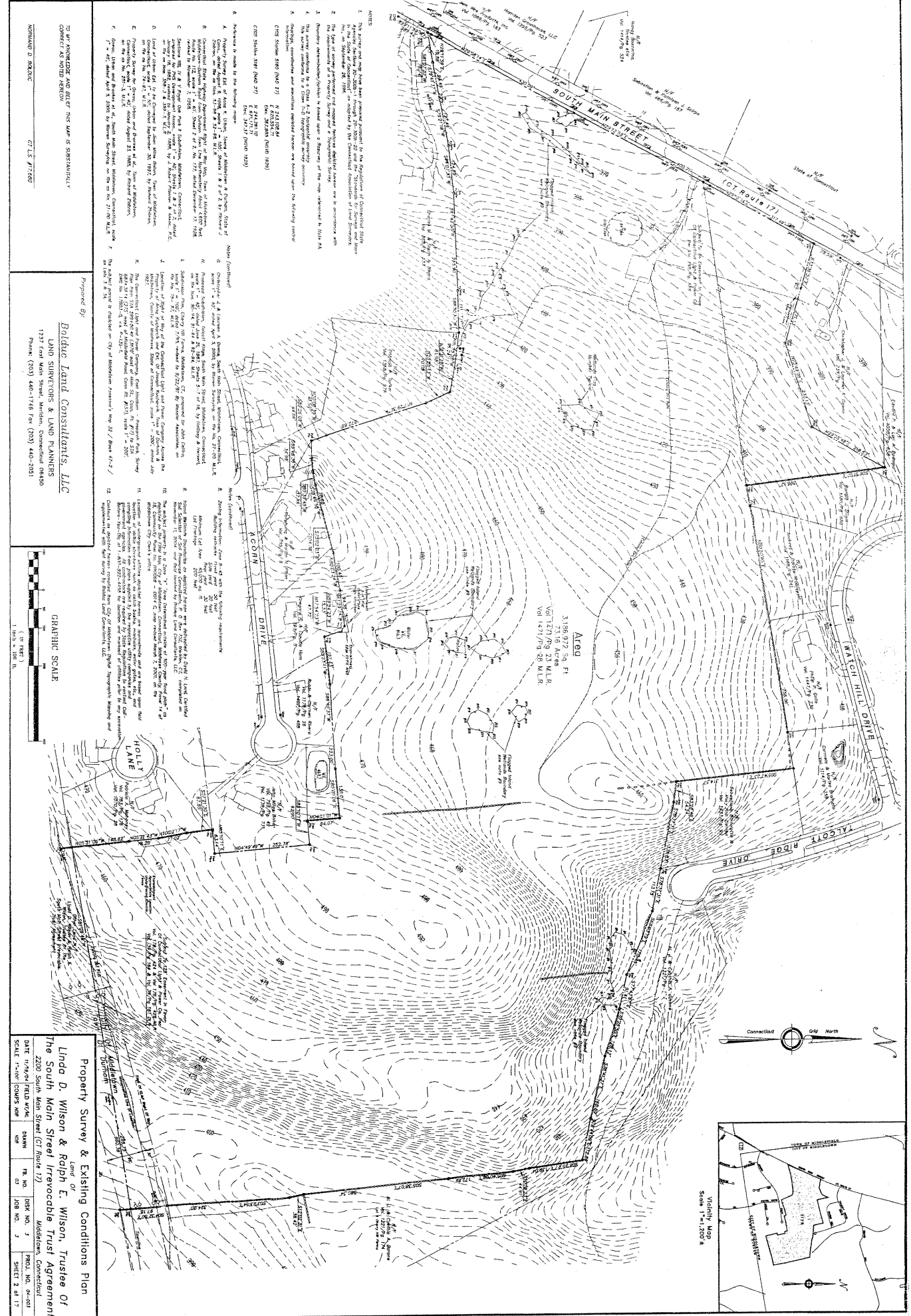
Respectfully Submitted,

REID and RIEGE, P.C.

A handwritten signature in black ink, appearing to read "Thomas M. Armstrong", written in a cursive style.

Thomas M. Armstrong

Enclosures



NOTES:

- This survey and map have been prepared pursuant to the Regulations of Connecticut State Practice, Chapter 10-10, and the State of Connecticut, as amended by the Connecticut Commission of Land Surveyors, on September 28, 1994.
- The boundaries of the property shown on this map were established by a survey conducted by the Surveyor General of the State of Connecticut, on or about 1880.
- The survey conducted by the Surveyor General of the State of Connecticut, on or about 1880, is the basis of this survey.
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Notes (Continued):

- Property Survey of 1880, as shown on the map, is the basis of this survey.
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Property Survey & Existing Conditions Plan

Land of
Linda D. Wilson & Ralph E. Wilson, Trustee Of
The South Main Street Irrevocable Trust Agreement

2200 South Main Street (CT Route 12)
 Middletown, Connecticut

DATE	10/15/04	SCALE	1"=100'
BY	DAWN	JOB NO.	2
REV. NO.	1	SHEET NO.	2 of 17

Prepared By:
Public Land Consultants, LLC
 LAND SURVEYORS & LAND PLANNERS
 1337 East Main Street, Meriden, Connecticut 06450
 Phone: (203) 440-1746 Fax: (203) 440-2851

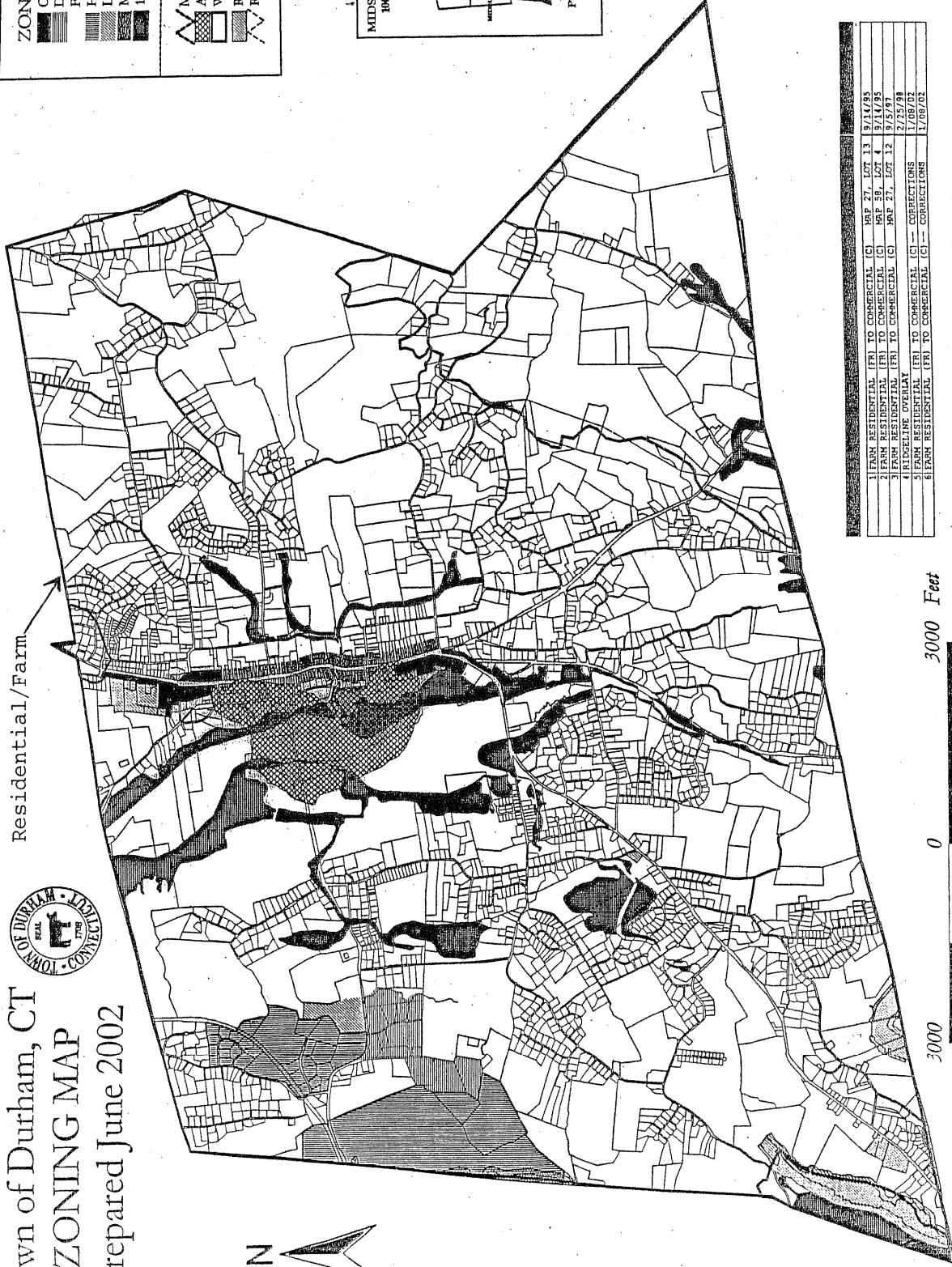
GRAPHIC SCALE
 1" = 100 FT.
 1" = 100 FT.

Vicinity Map
 Scale 1" = 1,200'

Town of Durham, CT ZONING MAP Prepared June 2002



Residential/Farm



ZONING KEY	
[Hatched pattern]	COMMERCIAL
[Hatched pattern]	DESIGN DEVELOPMENT DISTRICT
[Hatched pattern]	FARM RESIDENTIAL
[Hatched pattern]	HEAVY INDUSTRIAL
[Hatched pattern]	LIGHT INDUSTRIAL
[Hatched pattern]	MAIN STREET RESIDENTIAL
[Hatched pattern]	100 YEAR FLOODWAYS
[Hatched pattern]	MAIN STREET HISTORIC DISTRICT
[Hatched pattern]	AQUIFER PROTECTION ZONE
[Hatched pattern]	WATER COMPANY WATERSHED
[Hatched pattern]	RIDGELINE OVERLAY
[Hatched pattern]	ROADS

MIDSTATE REGIONAL PLANNING AGENCY
100 DeKoree Drive, Middletown, CT 06457

Phone: 860.347.7214 Fax: 860.347.6309
E-Mail: mrpa@msrpa.net

I hereby certify that the above constitutes the zoning map adopted for the Town of Durham by the Durham Planning and Zoning Commission which was in effect on November 1, 2001.

George Eames III
Chairman

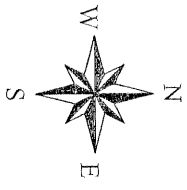
1 FARM RESIDENTIAL (FR) TO COMMERCIAL (C)	MAP 27, LOT 13	9/14/95
2 FARM RESIDENTIAL (FR) TO COMMERCIAL (C)	MAP 58, LOT 4	9/14/95
3 FARM RESIDENTIAL (FR) TO COMMERCIAL (C)	MAP 27, LOT 12	9/15/97
4 RIDGELINE OVERLAY		7/25/98
5 FARM RESIDENTIAL (FR) TO COMMERCIAL (C) -- CORRECTIONS		1/08/02
6 FARM RESIDENTIAL (FR) TO COMMERCIAL (C) -- CORRECTIONS		1/08/02



*(Scale= 1in : 3000ft)

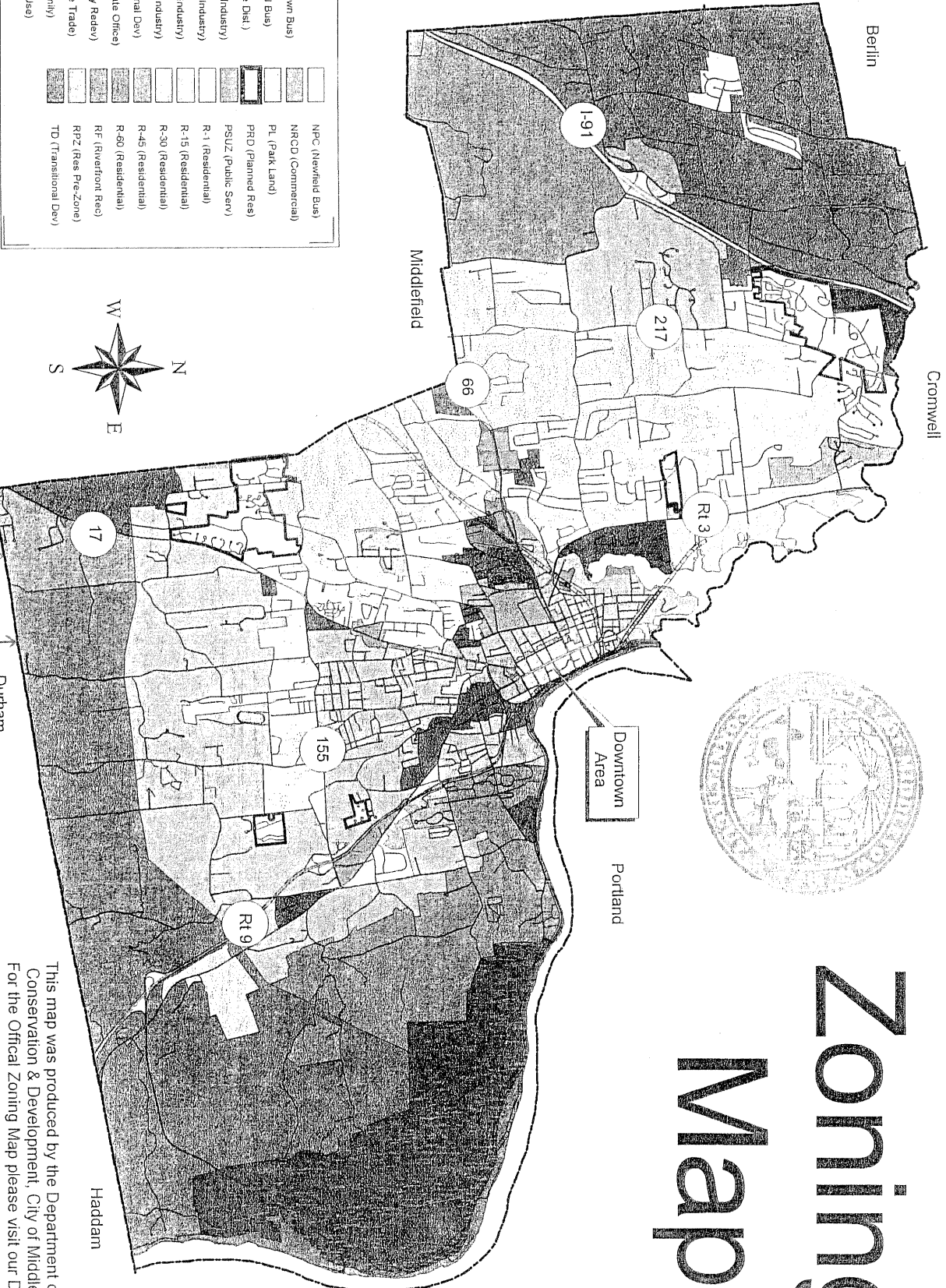
Middletown, CT

Zones			
	B-1 (Downtown Bus)		NPC (Newfield Bus)
	B-2 (General Bus)		NRCD (Commercial)
	DVD (Village Dist.)		PL (Park Land)
	I-1 (Service Industry)		PRD (Planned Res)
	I-2 (Restrict. Industry)		PSU2 (Public Serv)
	I-3 (Special Industry)		R-1 (Residential)
	I-4 (Limited Industry)		R-15 (Residential)
	ID (Institutional Dev)		R-30 (Residential)
	IOP (Interstate Office)		R-45 (Residential)
	IRA (Industry Redevel)		R-60 (Residential)
	IT (Interstate Trade)		RF (Riverfront Res)
	M (Multi-Family)		RPZ (Res Pie-Zone)
	MX (Mixed Use)		TD (Transitional Dev)



R-45 (Residential)

Durham R-60 (Residential)



Zoning Map

This map was produced by the Department of Planning, Conservation & Development, City of Middletown, CT. For the Official Zoning Map please visit our Department.

Scale 1:50,000
72° 45' W
41° 30' N
MIDDLESEX
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

REDUCTION OF DURHAM QUADRANGLE MAP

STATE OF CONNECTICUT
HIGHWAY DEPARTMENT

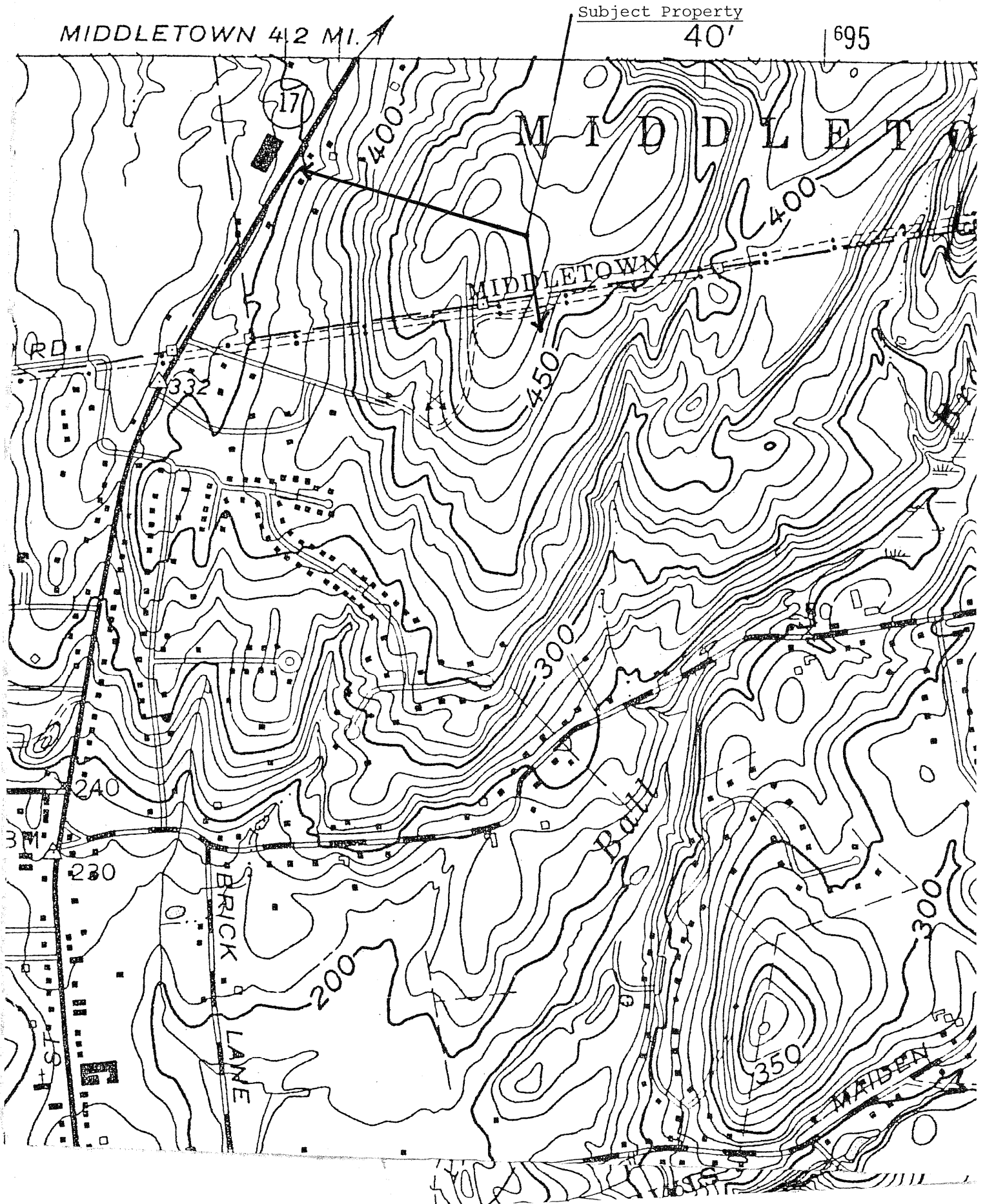
Subject Property

DURHAM QUADRANGLE
CONNECTICUT
7.5 MINUTE SERIES (TOPOGRAPHIC)
Scale 1:50,000
72° 45' W
41° 30' N
MIDDLESEX



Map labels include: 2.7 MI. TO CONN. 17, 27° 30', 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

ENLARGEMENT OF DURHAM QUADRANGLE MAP



Viable Options Identified by the Companies

The primary concern of the opponents to placing a 345 kV overhead line along the present right of way (ROW), in addition to the existing 115 kV line, appears to be related to magnetic fields at the edge of the ROW. In a letter from Anne Bartosewicz and John Prete to Pamela Katz of 28 May, 2004, the Companies (Connecticut Light & Power, ISO New England, and The United Illuminating Company) provided three reasonable alternatives to their preferred structure which places both the 115 kV circuit and the 345 kV circuit on a compact pole which is 105' high and produces fields at the ROW edges of 30.4 and 17.1 mG. These options are:

1. Place a split phase 345 kV overhead line down the ROW on 105' compact poles and put two 115 kV circuits underground. This results in magnetic fields of 12.4 mG at both ROW edges.
2. As above but employ 135' towers which reduces the magnetic field to 6.2 mG at both ROW edges.
3. As above but employ 150' towers which reduces the magnetic field to 4.4 mG.

A fourth option was identified which involves 12 phases on a single, 150' high pole and is, at best, marginally practical. According to the Companies, the above magnetic field values are near worst case values (i.e., at midspan) based on a system load of 15 GW. Given that the magnetic field from the existing 115 kV lines is 9.2 and 13.9 mG, all of the above three options maintain the field near existing levels or reduce it substantially. However some of the reductions come at the expense of increased visual impact. Thus, according to the Companies' documents, there are no technical obstacle to employing the existing ROW while reducing substantially the magnetic fields at the edge of the ROW. The magnetic field reductions according to the above referenced letter do not take into account further possible reductions by the use of "second order" measures which could limit the field at individual properties which may be of concern, such as careful location of poles, etc.

Additional Options

The Companies have not proposed any options which involve cable-like transmission for the 345 kV line. The area in question is very near the Millstone NGS, and the Companies state that the repair time of underground transmission would be unacceptable. This feeling probably results from the assumption two circuits of 345 kV cable-like transmission would be required to carry the full power of the overhead line, so that if one cable failed, the ampacity of the transmission link would be reduced substantially.

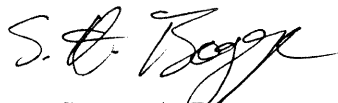
However for the distance in question, about 1 km, gas-insulated transmission line (GITL) is a real option which addresses the Companies' reliability related concerns as well as the desire of local residents that EMF levels not increase. This form of transmission has been very well developed over a period of 30 years, and one of the leading manufacturers (CGIT) is located in New England. If the 345 kV line were carried through the area in

question using two GITL, each could be capable of carrying the full current of the 345 kV overhead line, so that if one GITL failed, no loss would occur in the ampacity of the transmission link. GITL can be installed at ground level or in a covered trench in the ROW. A covered trench has the advantage of eliminating visual impact while keeping the equipment readily available for repair should the need arise. GITL produces no electric field, as the conductor is within a grounded enclosure, and it produces essentially no magnetic field as the return current in the enclosure is nearly the same as that in the conductor. Thus the use of 345 kV GITL would allow the Companies to keep the ROW exactly as it is with the two existing 115 kV structures while adding the two, 345 kV GITL circuits in a trench. This approach would reduce visual impact and eliminate any change in the magnetic and electric fields resulting from the addition of the 345 kV line, which should satisfy all parties. This approach also maintains system reliability as (i) each of the GITL circuits could carry the full load of the 345 kV overhead line and (ii) the GITL in a trench would be readily accessible for repair, should that be necessary. GITL from companies such as CGIT in Westboro, MA is well developed, with a 30 year history of reliability. The delivered (but not installed) cost of 345 kV GITL is about \$2.8 million per circuit-km which should result in a total cost for the GITL option which is within the range of the other options proposed by the Companies.

Conclusions

The Companies have identified a number of options for installing the 345 kV line along the existing ROW with the 115 kV line either overhead along the ROW or as underground cable which maintain or reduce existing levels of magnetic field. The GITL option identified above would allow the Companies to use the existing 115 kV line without change while installing about 1 km of 345 kV line as GITL in the area of concern. This would eliminate the EMF and visual impact of adding the 345 kV line to the existing ROW.

Based on the options identified by the Companies and the above option of installing two GITL each capable of carrying the full current of the 345 kV line, numerous options are available for employing the existing ROW without increasing the EMF exposure to residents in the area, and many of the options reduce such exposure substantially. At least one option, the use of GITL, allows installation of the 345 kV line without any visual or EMF impact. The ROW would appear as it does at present, and the EMF would remain at present levels. Given the numerous options which address the concerns expressed by the various parties, I see no reason to seek an alternative ROW for the project.



Dr. Steven A. Boggs
Consultant

Steven Boggs

BUSINESS PHONE/FAX 860 - 486 - 0915 / 860 - 486 - 5916

CITIZENSHIP United States and Canada

EDUCATION MBA, University of Toronto, 1987
Ph.D. (physics), University of Toronto, 1972
B.A. (physics), Reed College, Portland, Oregon, 1968

POSITIONS HELD

Director (9/96) and Associate Director (10/93), Electrical Insulation Research Center
Research Professor of Materials Science, Physics, and Electrical Engineering
University of Connecticut
Adjunct Associate Professor, Dept. of Electrical Eng., University of Toronto (1991-)
Vice-President, Chicago Condenser Corp. (1987-93)
Director, Engineering and Research, Underground Systems, Inc. (1987-93)
Research Physicist, Ontario Hydro (1975-87)
Research Engineer, Electronic Associates (1974)
PDF, Canada Centre for Remote Sensing (1973-74)

CONSULTING Consultant to Toshiba Corporation of Japan, 1996-2002
Consultant to TYCOM, 2001
Consultant to Union Carbide (Dow), 1995-2002

CONTRACTS

Principal Investigator for numerous contracts with the Electrical Insulation Research Center, University of Connecticut, including contracts related to:
High energy density film capacitors (US Army)
Development of an On-Line Partial Discharge Monitoring System for Gas-Insulated Substations (Consolidated Edison)
Measurement of Polymer High Field Properties (Dow)
Dielectric Property Measurement of Nonlinear Grading Materials (3M)
Theory of Inhomogeneous Thermal Field Breakdown of SF₆ (Toshiba)
Computation of the Electro-thermal Field Distribution in ZnO Elements (Toshiba)

PATENTS Surge Attenuating Cable. U.S. Patent 4,687,882.
Cable Termination. U.S. Patent 5,406,030
Room Temperature Dielectric HTSC Cable. U.S. Patent 6,262,375

MEMBERSHIPS & HONORS Fellow of the IEEE, 1992
IEEE 3rd Millennium Medal, 2000
Contributing Editor, IEEE Electrical Insulation Magazine.
American Chemical Society
IEEE Electrical Insulation Society, IEEE Power Engineering Society, IEEE Industrial Applications Society
Optical Society of America

TECHNICAL PUBLICATIONS

- Zheng, Zhong and S.A. Boggs. "Efficient Solution to Transient Nonlinear Field Problems". Accepted for the 2002 Annual Report of the IEEE Conference on Electrical Insulation and Dielectric Phenomena.
- Cao, Y., G.G. Jiang, and S.A. Boggs. "Guarded Needle for 'Charge Injection' Measurement." Accepted by Rev. Sci. Inst.
- Boggs, S.A. "Mechanisms for Degradation of TR-XLPE Impulse Strength during Service Aging". IEEE Trans. PD-17, No. 2, April 2002. pp. 308-317.
- Liu, B., S.A. Boggs, and M.T. Shaw. "Electrorheological Properties of Anisotropically Filled Elastomers". IEEE Trans. DEI, Vol. 8, No. 2, April 2001. pp. 173-181.
- Boggs, S.A., D.H. Damon, J. Hjerrild, J. Holboll, and M. Henriksen. "Effect of Insulation Properties on the Field Grading of Solid Dielectric DC Cable". IEEE Trans PD-16, No. 4, October 2001. pp. 456-461.
- Jiang, G., J. Kuang, and S.A. Boggs. "Evaluation of High Field Conduction Models of Polymeric Dielectrics". 2000 Annual Report of the IEEE Conference on Electrical Insulation and Dielectric Phenomena. pp. 187-190.
- Cao, Y. and S. A. Boggs. "Measurement and Computation of Thermally-Induced Currents in Coaxial Signal Cables". IEEE Trans DEI-7, No. 2, April 2000. pp. 208-215.
- Boggs, S.A. J. Kuang, H. Andoh, and S. Nishiwaki. "Increased Energy Absorption in ZnO Arrester Elements through Control of Electrode Edge Margin". IEEE Trans. PD. Vol. 15, No. 2, April 2000. pp. 562-568.
- Boggs, S.A. and J. Kuang. "High Field Effects in Solid Dielectrics". IEEE Electrical Insulation Magazine, Vol. 14, No. 6, November/December 1998, pp. 5-12.
- Kuang, J. and S.A. Boggs. "Thermal-Electric Field Distribution around a Defect in Polyethylene". IEEE Trans. PD-13, No. 1, Jan. 1998, pp. 23-27.