DOCKET NO. 470 – NTE Connecticut, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 550-megawatt dual-fuel combined cycle electric generating facility and associated electrical interconnection switchyard located at 180 and 189 Lake Road, Killingly, Connecticut.	}	Connecticut
	}	Siting
	}	Council

May 11, 2017

Findings of Fact

Introduction

1. Pursuant to Connecticut General Statutes (C.G.S.) §16-50g et seq., on August 17, 2016, NTE Connecticut, LLC (NTE or Applicant) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a 550-megawatt (MW) combined cycle electric generating facility and associated electrical interconnection switchyard located at 180 and 189 Lake Road, Killingly. (NTE 1, Vol. 1, p. 1)

2. NTE is a Delaware Limited Liability Company with principal offices located at 24 Cathedral Place, Suite 300, St. Augustine, Florida. NTE, an affiliate of NTE Energy, LLC (NTE Energy), is focused on the goal of developing, constructing, owning, and operating power projects across the United States. (NTE 1, Vol. 1, p. 1)

3. NTE Energy has thousands of MW under development, with two projects under construction in Ohio and North Carolina, both of which will begin operation in 2018. Both are natural gas-fueled combined cycle plants approximately 450 MW each. (NTE 1, Vol. 1, p. 2; Transcript 11/15/16 [Tr. 3], p. 3, p. 407; Transcript 01/26/17, 11:01 a.m., [Tr. 7], p. 1047-1048)

4. The purpose of the proposed project is to develop and operate an independent power production facility in the wholesale electric power market operated by ISO New England, Inc. (ISO-NE). (Tr. 7, p. 1047)

5. NTE's proposed facility is referred to as the Killingly Energy Center (KEC or Project). (NTE 1, Vol. 1, p. ES-1)

6. While KEC would connect to the electric transmission system, KEC itself is not an electric transmission facility within the meaning of C.G.S. §16-50i(a)(1). KEC is an electric generating facility under C.G.S §16-50i(a)(3). (C.G.S. §16-50i; NTE 1, Vol. 1, p. 1)

7. The parties in this proceeding are NTE, Not Another Power Plant (NAPP), the Town of Killingly (Town), Sierra Club (SC)*, Connecticut Fund for the Environment (CFE), and Wyndham Land Trust, Inc. (WLT). (Transcript 1, October 20, 2016, 6:30 p.m. [Tr. 1], pp. 6-7; Transcript 2, November 3, 2016, 11:02 a.m. [Tr. 2], pp. 152-158; Council Memorandum dated November 7, 2016, pp. 1-2; Council Party/Intervenor Status Decision Letter to NAPP dated September 30, 2016)

   *SC's party status was contingent upon SC's counsel submitting an application pursuant to Connecticut's amended Pro Hac Vice Rule, which was submitted on December 23, 2016. (Record)

8. Pursuant to C.G.S. §22a-19, the Council granted NAPP, SC and WLT Connecticut Environmental Policy Act intervenor status. (Tr. 2, pp. 152-154, 157-158; Council Memorandum dated November 7, 2016, pp. 1-2; Council Party/Intervenor Status Decision Letter to NAPP dated September 30, 2016)

9. On November 3, 2016, the Council grouped the following Parties with the same interests pursuant to C.G.S. §16-50n(c): NAPP, SC and WLT (Grouped Party). (Tr. 2, pp. 153-154, and 158; Council Memorandum dated November 7, 2016, pp. 1-2)

10. Pursuant to C.G.S. §16-50*l*(b), public notice of intent to file the application with the Council was published in The Bulletin on August 15, 2016 and August 16, 2016. (NTE 1, Vol. 1, p. 7; NTE 1, Vol. 2, Appendix A – Notice and Service Documentation)

11. Pursuant to C.G.S §16-50*l*(b), notice of the application was provided to all abutting property owners by certified mail on or about August 15, 2016. Return receipts were received from all abutters. (NTE 1, Vol. 1, p. 7; NTE 1, Vol. 2, Appendix A – Notice and Service Documentation; NTE 7, response 2; NTE 14, response 70 – Abutters Map)

12. NTE provided notice to all federal, state and local officials and agencies listed in C.G.S. §16-50*l*(b). (NTE 1, Vol. 1, pp. 6-7; NTE 1, Vol. 2, Appendix A – Notice and Service Documentation)

Council Procedures

13. On August 19, 2016, the Council sent a letter to the State Treasurer, with a copy to the Chief Elected Officials of the Towns of Killingly, Putnam and Pomfret, stating that $25,000 was received from NTE and deposited in the Office of the State Treasurer's Municipal Participation Account for any of these three municipalities to apply for a portion of the funds if they become participants in the proceeding, pursuant to C.G.S. § 16-50bb. (Record)

14. During a regular Council meeting on September 15, 2016, the application was deemed complete pursuant to Regulations of Connecticut State Agencies (R.C.S.A) §16-50*l*-1a and the public hearing schedule was approved by the Council. (Record)

15. Pursuant to C.G.S §16-50m, the Council published legal notice of the day and time of the public hearing in The Bulletin on September 19, 2016. (Record)

16. On September 28, 2016, the Council held a pre-hearing conference on procedural matters for parties and intervenors to discuss the requirements for pre-filed testimony, exhibit lists, administrative notice lists, expected witness lists, filing of pre-hearing interrogatories and the logistics of the public inspection of the site scheduled for October 20, 2016 at the office of the Council, 10 Franklin Square, New Britain, Connecticut. (CSC Pre-Hearing Conference Memoranda, dated September 20, 2016 and September 29, 2016).

17. Pursuant to R.C.S.A § 16-50j-21, on October 4, 2016, NTE erected two signs along Lake Road: one at 180 Lake Road and one at 189 Lake Road. The signs presented information regarding the project and the Council's public hearing. (NTE 11; Tr. 2, p. 180)

18. The Council and its staff conducted a public inspection of the 180 and 189 Lake Road, Killingly sites on October 20, 2016, beginning at 3:30 p.m. During the field inspection, NTE flew a red balloon with a diameter of approximately 3.5 to 4 feet at the proposed heat recovery steam generator (HRSG) stack location to simulate the height of the proposed stack. During the field review, the balloon was raised to a height of 465 feet above mean sea level (amsl), which is the 150-foot stack height above the proposed final grade level*. The balloon was aloft from approximately 8:00 a.m. until 6:00 p.m. for the convenience of the public. The weather conditions for the balloon flight were clear with light winds in the morning, but increased winds later in the day. Overall, visibility conditions were favorable.

*The length of the balloon's string was 167 feet, which is 150 feet for the HRSG stack plus the 17-foot difference between the proposed grade of 315 feet amsl and existing grade of 298 feet amsl. The top of the balloon was higher because of its diameter.

(Council Hearing Notice dated September 16, 2016; Tr. 2, pp. 178-180; Tr. 3, pp. 362-363; NTE 1, Vol. 1, pp. xii and 32; NTE 9 – Site Walk Plan; Tr. 2. 180)

19. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public comment session on Thursday, October 20, 2016 at 6:30 p.m. at the Killingly High School, Auditorium, 226 Putnam Pike, Killingly, Connecticut and an evidentiary session on Thursday, November 3, 2016 at 11:00 a.m. at the Council's offices at 10 Franklin Square, New Britain, Connecticut. (Council's Hearing Notice dated September 16, 2016; Tr. 1, p. 1; Tr. 2, p. 147)

20. The evidentiary hearings were continued on November 15, 2016, December 15, 2016*, January 10, 2017, and January 26, 2017 at the office of the Council, 10 Franklin Square, New Britain, Connecticut.

*On December 15, 2016, the Council held a public evidentiary session beginning at 11:00 a.m. and a closed evidentiary session beginning at approximately 1:00 p.m.
(Tr. 3, p. 356; Transcript 12/15/16, 11:00 a.m., [Tr. 4], p. 583; Redacted Transcript 12/15/16, 1:02 p.m., [Tr. 5], p. 688; Transcript 01/10/17, 11:00 a.m., [Tr. 6], p. 823; Tr. 7, p. 1017)

21. The closed evidentiary session pertained to confidential, market-sensitive and proprietary information exempt from public disclosure under the Connecticut Freedom of Information Act and subject to a protective order issued by the Council on November 3, 2016. Parties, intervenors and their witnesses who signed a non-disclosure agreement, the applicant, Council members and Council staff were in attendance. (Protective Order, November 3, 2016; Tr. 5, pp. 692-693)

22. Pursuant to C.G.S. § 16-50p(a), on January 12, 2017, the Council requested consent to extend the 180-day deadline to render a decision on this application from February 13, 2017 until May 15, 2017. On January 12, 2017, NTE consented to extend the deadline to render a decision until April 15, 2017. (Council Request for Extension of Time Letter dated January 12, 2017; NTE Consent to Extension of Time Letter dated January 12, 2017)

23. On February 13, 2017, NTE filed a Motion to Reopen the Evidentiary Record (Motion to Reopen) for the limited purpose of introducing evidence related to the results of the Forward Capacity Auction (FCA) conducted by ISO-NE on February 6, 2017 and NTE's participation in that auction. On March 3, 2017, the Council granted NTE's Motion to Reopen and scheduled an additional evidentiary hearing for March 23, 2017. (Council Memorandum dated February 14, 2017; Council Memorandum dated March 3, 2017)

24. Pursuant to C.G.S. § 16-50p(a), on March 10, 2017, the Council requested consent to extend the deadline to render a decision on this application from April 15, 2017 until June 1, 2017. On March 10, 2017, NTE consented to extend the deadline to render a decision until June 1, 2017. (Council Second Request for Extension of Time Letter dated March 10, 2017; NTE Second Consent to Extension of Time Letter dated March 10, 2017)

25. An evidentiary hearing on the reopened record was held on March 23, 2017 at the office of the Council, 10 Franklin Square, New Britain, Connecticut. (Transcript 03/23/17, 12:59 p.m., [Tr. 8], p. 1139)

Municipal Consultation and Community Outreach

26. Since January 2016, NTE met with municipal officials and commissions in the towns of Killingly, Pomfret and Putnam, state legislators and members of the surrounding community. (NTE 5, p. 4, Attachment 7; NTE 10; Tr. 7, pp. 1046-1047)

27. NTE has developed and maintained a project website to promote awareness of the project. The website contains the Application, the project schedule, contact information and forms, reports, technical information, presentations, and other news and announcements about the KEC facility proposal. The reports include the KEC technical report, the wetland report, the visual, sound, and traffic impact reports, the geotechnical and hydrogeologic reports, the Environmental Justice Report, among others. (NTE 29, pp. 12-13; NTE 29, Appendix K)

28. Maps, plans, studies, and reports were published on the KEC website (www.killinglyenergycenter.com) with hard copies of this information made available for review at the Killingly Town Hall and Killingly Public Library. (NTE 1, Vol. 1, p. 6)

29. In accordance with C.G.S. § 16-50 *l* (e), NTE formally commenced the 60-day pre-application municipal consultation process by providing copies of the technical report to municipal officials in Killingly, Pomfret*, and Putnam* on May 4, 2016.

*The municipalities of Pomfret and Putnam are located within 2,500 feet of the proposed site. (NTE 1, Vol. 1, Figure 2-1; NTE 1, Vol. 1, p. 6; C.G.S. § 16-50*l* (e))

30. On March 8, 2016, NTE made a presentation to the Killingly Town Council about the KEC project. (NTE 5, Attachment 7; NTE 29, p. 17; NTE 10)

31. NTE held public information meetings on March 22, 2016 and May 4, 2016. Both meetings were held at the Golden Eagle at the Laurel House Restaurant and Banquet Facility at 8 Tracy Road in Dayville. NTE held additional public information meetings on July 11, 2016 and October 19, 2016 at the Killingly High School. Notice of these meetings were sent to over 300 community members, organizations, businesses, abutting landowners, and municipal and state officials, was published in a local newspaper, and posted on the subject property in accordance with Environmental Justice requirements. (NTE 1, Vol. 1, p. 6; NTE 7, response 3; Tr. 7, p. 1046)

32. In late June 2016, NTE posted a sign on the subject property for the KEC. The sign identified the "Proposed Site" for KEC and provided contact information. This sign is separate from and in addition to the sign required by the Council. (NTE 1, Vol. 1, p. 6; Tr. 7, pp. 1044-1045, 1082)

33. On July 19, 2016, NTE presented its KEC proposal at a joint meeting of the Killingly Planning & Zoning Commission and Inland Wetlands & Watercourses Commission. (NTE 1, Vol. 1, p. 6)

34. By letter dated August 14, 2016, the Pomfret Conservation Commission expressed concerns about the KEC project including, but not limited to, wetland filling, tree clearing, water consumption in the context of the Quinebaug River, air emissions, and air emissions-related health concerns. (Pomfret Conservation Commission Comments dated August 14, 2016)

35. By letter dated December 15, 2016, the Killingly Town Council (Town Council), while not taking an official position on the KEC project, expressed its support for the Town's Municipal Regulate and Restrict Orders. The Town Council also expressed concerns about the amount of water required to supply KEC and the possible impacts of such water use on the Town. If the project is approved, the Town Council requests that the Council require NTE to investigate and utilize some alternative to potable water. (Town 6, pp. 1-2)

36. C.G.S. § 22a-20a and DEEP's Environmental Justice Guidelines require applicants seeking a permit from DEEP or the Council for a new or expanded facility defined as an "affecting facility" that is proposed to be located in an environmental justice community to file an Environmental Justice Public Participation Plan (EJPPP). The proposed facility would be an "affecting facility" under C.G.S. §22a-20a because it would be an "electric generating facility with a capacity of more than ten megawatts." (NTE 6; C.G.S. § 22a-20a)

37. NTE submitted an EJPPP to DEEP dated March 31, 2016 and also submitted an updated* EJPPP to DEEP on April 14, 2016. By letter dated April 19, 2016, DEEP noted that the EJPPP was approved on April 19, 2016.

*The only change/update from the original EJPPP to the updated EJPPP was the approximate date listed for the initial Public Information Meeting.
(NTE 6)

38. Pursuant to C.G.S § 22a-20a, any municipality, owner or developer may enter into a community environmental benefits agreement in connection with the affecting facility. (C.G.S § 22a-20a)

39. NTE and the Town of Killingly are working on a Community Environmental Benefits Agreement (CEBA). The CEBA has several components, including but not limited to a financial component, reference to a decommissioning plan for KEC, establishing educational scholarships for Killingly students who seek to study environmental science in college, and the purchase and planting of trees on an annual basis. (Tr. 7, p. 1025, 1038-1040)

40. As of January 26, 2017, Sean Hendricks, Town Manager, Town of Killingly is recommending that the Killingly Town Council approve or adopt the CEBA. (Tr. 7, p. 1025)

41. As of February 6, 2017, NTE had not yet signed a final CEBA with the Town. (Tr. 8, p. 1157)

State Agency Comments

42. Pursuant to C.G.S. §16-50j(g), on September 16, 2016, the following state agencies were requested to submit written comments regarding the proposed facility: Department of Energy and Environmental Protection (DEEP); Department of Agriculture (DOAg); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Emergency Services and Public Protection (DESPP); Department of Consumer Protection (DCP); Department of Labor (DOL); Department of Construction Services (DCS); Department of Transportation (DOT); the Connecticut Airport Authority (CAA); and the State Historic Preservation Office (SHPO). (Council Hearing Package, dated September 16, 2016)

43. On September 16, 2016, the Council received a response from the DOT's Bureau of Engineering and Construction indicating that DOT had no comments. (DOT Letter dated September 15, 2016)

44. On October 24, 2016, the Council received comments from the DPH, including, but not limited to, the following:
    a) The Project is located 4,000 feet from the Killingly Industrial Park Wellfield;
    b) The Project is not within the source water protection area, but final Level A Aquifer Protection Area mapping is not complete;
    c) The water supply analysis provided by NTE does not sufficiently document that CWC Crystal Division has adequate water with an appropriate margin of safety to supply KEC;
    d) If additional water analysis determines that interconnection with the CWC Plainfield system is necessary, such infrastructure improvements require approval and construction;
    e) The project must comply with the backflow prevention requirements;
    f) The project must have annual tests performed by a certified DPH Backflow Prevention Device Tester; and
    g) Inspections must be performed by a certified DPH Cross Connection Survey Inspector. (DPH Letter dated October 20, 2016)

45. On November 7, 2016, the Council received comments from the DEEP, including, but not limited to, the following:
    a) The Generating Facility Site contains several small dump sites;
    b) The Project would require extensive grading and cut and fill;
    c) Existing stone walls should be preserved, especially along Lake Road;
    d) Existing noise at the Generating Facility Site is dominated by sounds from a shooting range across the Quinebaug River in Pomfret;
    e) NTE's air permit (based on revisions to accommodate the Town) could go to Notice of Tentative Determination in the first quarter of 2017;
    f) KEC's air emissions benefits associated with displacing older, less efficient, higher emitting plants is a function of ISO-NE evaluating and selecting bids for various capacity products and the final retirement or run status' of older, higher emitting plants;
    g) NTE would require the purchase of NOx emissions credits, but based on future upwind major sources, the KEC's air NOx benefits may be considered probable but not absolutely certain;
    h) On November 1, 2016, NTE was instructed to submit a Natural Diversity Database request;
    i) While KEC's ultra-low sulfur distillate (ULSD) use is most likely to correspond to extreme cold weather spells, it could possibly occur during summer months when public potable water use is higher and supplies are lower;
    j) A water supply analysis should be conducted as recommended by DPH;
    k) The use of sewage treatment effluent should be evaluated as a water supply alternative;

l) The proposed interconnection of the Plainfield Division Wellfield into the interconnected system of the Philip Hopkins Wellfield and the Brooklyn Wellfield would require a Diversion Permit from DEEP;
m) Any ULSD use that is flexible or discretionary with regard to timing should not take place during the driest periods or highest water demand periods of the year such as between June 15 and October 15;
n) NTE would have to register with DEEP under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities or the General Permit for the Discharge of Stormwater Associated with Industrial Activities;
o) Wastewater from KEC would likely require a DEEP permit to discharge to the Killingly wastewater treatment plant;
p) The creation of 0.39 acres of inland wetland to mitigate impacts associated with the utility switchyard and a five-year monitoring plan for invasive species appears appropriate;
q) With wetland impacts under 0.5 acres, the Utility Switchyard would likely be eligible for a Pre-Construction Notification rather than an individual permit from the U.S. Army Corps of Engineers (ACOE);
r) If the Pre-Construction Notification to ACOE is determined to be appropriate, the Utility Switchyard would qualify under DEEP's Section 401 Water Quality Certification General Permit;
s) The two days of ULSD storage should be justified and incremental reliability benefits, if any, associated with additional ULSD storage should be examined;
t) Additional detail on firm gas delivery should be provided;
u) NTE should explain why KEC, as a baseload facility, would operate about 60 to 75 percent of the year;
v) More information should be provided on the natural gas pipeline interconnection;
w) NTE should explain the source of the KEC's water vapor plume and include on which conditions it would occur;
x) The stormwater management plan would be evaluated principally pursuant to the General Permits for the Discharge of Stormwater from Construction Activities and from Industrial Activities; and
y) DEEP is concerned about noise impacts to the two homes located south of the KEC site.

(DEEP Letter dated November 7, 2016)

46. On January 19, 2017, the Council received additional comments from DPH indicating that, if KEC is constructed and utilizes the public drinking water supply for cooling as proposed, an interconnection between Connecticut Water Company's (CWC) Crystal and Plainfield systems is necessary for CWC to maintain an adequate margin of safety through the projected planning periods. (DPH Letter dated January 19, 2017)

47. The following agencies did not respond to the Council's request for comment on the proposed facility: DOAg, CEQ, PURA, OPM, DECD, DESPP, DCP, DOL, DCS, CAA, and SHPO. (Record)

Public Benefit

Evolving Benefits

48. Pursuant to Public Act 98-28, An Act Concerning Electric Restructuring, generators of electricity may compete with each other for the development of electric generation. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #50)

49. The concept of a regional New England electricity market began with the Northeast Blackout of 1965, during which more than 30 million customers from Maine to New Jersey were without power, and the recognition that the reliability of an electricity system is best met by pooling power generation resources across a region (e.g. the New England states) as opposed to on an individual (e.g. state by state) basis. (NTE 20, supplemental response 83, p. 1)

50. In 1999, the wholesale electric markets were in their infancy in New England. The process called "deregulation" had just begun, during which ownership of generation resources by vertically integrated utilities with guaranteed cost recovery was being transferred to competitive entities that were dependent on the competitive wholesale markets to compensate them for the cost of operating their generation facilities and allow them the opportunity to recover their investment. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #51)

51. Created by the Federal Energy Regulatory Commission (FERC) in 1997, ISO-NE is the independent, not-for-profit corporation responsible for the reliable operation of New England's electric power generation and transmission system, overseeing and ensuring the fair administration of the region's wholesale electricity markets, and managing comprehensive regional electric power planning. (Council Administrative Notice Item No. 31 – ISO FCA #10 Press Release dated February 29, 2016, p. 2; Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #52)

52. ISO-NE operates the power system and the competitive wholesale electric markets so that the lowest cost resources are used first to meet consumer demand. However, ISO-NE's primary responsibility is electric reliability. (Council Administrative Notice Item No. 36 – ISO-NE State of the Grid Presentation dated January 30, 2017, p. 6)

53. ISO-NE is fuel and technology neutral and takes no position on any proposed energy projects. ISO-NE does not own any transmission or distribution lines or power plants. (Council Administrative Notice Item No. 36 – ISO-NE State of the Grid Presentation dated January 30, 2017, p. 5)

54. The New England region operates a power pool and is interconnected with other power pools associated with New York and the Canadian provinces of Québec and New Brunswick. (NTE 20, supplemental response 83, p. 2; Council Administrative Notice Item. No. 48 – Docket No. 192B, Finding of Fact #53)

55. The early period of deregulation, from the late '90s to the mid-2000s, brought a rush for new generation. Seven applications for efficient combined-cycle gas/oil-fired power plants were made to the Council. Of the five approved, including Towantic, three came to fruition promptly (Milford, Lake Road, Bridgeport Energy), benefiting Connecticut and the region with new electric supply. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #54)

56. As early as 2002, the Council recognized the potential problem of over-dependence on natural gas. The concern remains current. Specifically, the most recent Integrated Resource Plan (IRP) issued by DEEP (2014 IRP) stated, "There is growing concern over New England's increasing dependence on natural gas…and the implications resulting from such dependence in terms of reliability and cost." (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #55)

57. After the first wave of power-plant construction, New England public utility departments engaged with FERC to find a market solution that would bring down the high environmental and economic costs of generation. This resulted in a 2006 settlement between states' attorneys-general and FERC whereby a regional Forward Capacity Market was phased in that gradually managed not only to de-escalate wholesale energy prices but also to encourage diversity in energy resources: first, renewable fuels and, second, "demand response", also called "load response", that is, various forms of energy conservation and efficiency. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #56)

58. During 2007, Public Act 07-242 became effective, with a sweeping set of provisions. Key among them were: 1) a fast-track schedule to achieve 20 percent renewable energy sources by 2020, with a detailed set of rules for how to get there; 2) a policy that any needs for new generation resources must "first be met" by procuring all cost-effective programs to reduce electric demand; 3) commitment to the Regional Greenhouse Gas Initiative (RGGI) and an agreement to dedicate funds gained from RGGI cap-and-trade auctions to the state's energy efficiency goals. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #57)

59. The new generation spurred by deregulation at the turn of the century could not benefit Connecticut without a more efficient transmission system. During the first part of the decade 2000-2010, the Council approved Dockets 217 and 272, major 345-kV upgrades serving southwest Connecticut. Subsequently, through a regional upgrade planned by ISO-NE called New England East-West Solution (NEEWS), the Council approved the Connecticut portions of two major interstate 345-kV upgrades, one linking north-central Connecticut with Massachusetts, the other linking northeastern Connecticut with Rhode Island. Between 2007 and now, Connecticut is on its way from being the New England State with the least import capacity compared with peak load (30 percent) to being, like Massachusetts and Maine, close to 50 percent. Overall, since 2000 the new backbone of a strong 345-kV system in Connecticut has emerged, bringing benefits paralleling those of generation. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #58)

60. Increased import potential, for Connecticut, means increased diversity in fuel resources and helps Connecticut meet its renewable energy goals. That weighs the benefit of transmission, since, beginning in 2017, Connecticut and the rest of the region may face a more prolonged shortage of Class I renewables unless additional supply can be accessed. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #59)

61. The introduction of renewable resources creates a reliability challenge because of the intermittent nature of their output, particularly with wind and solar photovoltaic resources. A study performed by ISO-NE in 2009 showed that in addition to a significant amount of transmission expansion, the need for flexible resources to provide operating reserves, as well as other ancillary services such as regulation and ramping, would increase as a result of the addition of intermittent resources needed to meet state-mandated renewable portfolio standards goals. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #60)

62. In 2011, FERC issued its Order 1000, which mandates improvements in regional transmission planning processes, with a focus on public policy projects and cost allocation. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #62)

63. The investments by Connecticut and the region in Conservation and Load Management and Distributed Generation have resulted in less stress on the electric system, reduced need to construct additional generation and transmission and greater ability to serve loads while reducing pollution from burning fuel, particularly fossil fuel. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #63)

64. Connecticut continues to prioritize investment in energy efficiency as a "first fuel" to resolve the capacity and electricity market needs, to the extent technically available and cost-effective. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #64)

65. PA 11-80 was the legislation that restructured the Department of Environmental Protection as the Department of Energy and Environmental Protection. Section 51 of PA 11-80 requires that DEEP prepare a Comprehensive Energy Strategy (CES) every three years. As such, this statute consolidated Connecticut's energy planning for the first time. The final version of the state's inaugural CES was published on February 19, 2013. It advocated smaller, more diversified generation projects using renewable fuels, as well as smaller, more innovative transmission projects emphasizing reliability. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #66)

66. The 2014 IRP contains a section entitled "Plan for Achieving Reliable, Clean, and Cost-Effective Energy Supply." Three of the IRP's eight recommendations concern distributed generation (DG) in general, combined heat and power (CHP) in particular, and DG's transmission partner, the microgrid. Many forms of DG involve renewable fuels, and should be supported to help meet Connecticut's RPS requirements. CHP is particularly worth support in locations where it can power microgrids and/or avoid costly upgrades to the electricity infrastructure. (Council Administrative Notice Item No. 69 – 2014 IRP, pp. v-vii)

Reports on Resource Adequacy

67. According to the Council's 2014/2015 Forecast of Connecticut Electric Loads and Resources Report dated December 10, 2015 (Council Forecast Report), "This Council has considered Connecticut's electric energy future and finds that even taking into account the most conservative prediction, the ISO-NE 90/10 forecast, and conservatively neglecting the effects of non-ISO-NE-dispatched DG, the electric generation supply during 2015-2024 will be adequate to meet demand." This analysis is based on the electric generation in Connecticut (and import into Connecticut) versus the ISO-NE 90/10 forecast for Connecticut itself, not the New England region as a whole. (Council Administrative Notice Item No. 38 – Council 2014/2015 Forecast Report, pp. 36-37, 50)

68. The Council Forecast Report is biennial and was last released in 2015. (Council Administrative Notice Item No. 38 – Council 2014/2015 Forecast Report, cover page)

69. While the Council's Connecticut forecast is for Connecticut only, the State of Connecticut operates as part of a broader grid. Thus, what is most important is the overall level of resource adequacy in New England. (Tr. 6, p. 918)

70. On a regional or New England level, according to ISO-NE's 2014 Regional System Plan (2014 RSP), the New England region required 424 MW in 2019/2020 to meet the installed capacity requirement. This was expected to increase to a shortage of 1,155 MW by 2023/2024, taking into account load and energy efficiency forecasts and known retirements totaling approximately 3,200 MW. (Council Administrative Notice Item No. 19 – 2014 RSP, p. 62)

71. ISO-NE holds an annual auction to acquire the power system resources needed to meet future demand for the New England region. The annual Forward Capacity Market Auction (FCA) is held approximately three years before each capacity commitment period to provide time for new resources to be developed. Capacity resources can include traditional power generation, renewable generation, or demand-side resources, such as load management and energy efficiency measures. Resources clearing in the auction will receive a monthly payment during the delivery year in exchange for their commitment to provide power or curtail demand when called on by ISO-NE. (Council Administrative Notice Item No. 31 – ISO FCA #10 Press Release dated February 29, 2016, pp. 1-2)

72. The 2014 IRP states that, "New resources cleared in FCA #9, including a 725 MW combined-cycle plant located in Connecticut, will help the reliability needs for 2018. The 2014 IRP projects that resources within Connecticut are expected to be sufficient to meet Connecticut's Local Sourcing Requirement through 2024, although Connecticut generation prices will be affected by regional supply/demand conditions. If the resources cleared in FCA #9 do not come online by the 2018 timeframe, the region will experience a capacity shortfall, which will increase prices for all ratepayers in the region, including Connecticut." (Council Administrative Notice Item No. 69 – 2014 IRP, p. 76)

73. Subsequent to the issuance of the 2014 RSP and ISO-NE's Eighth Forward Capacity Auction FCA #8 results, FCA #9 was held in early 2015. Approximately 1,067 MW of new generation resources cleared the auction, including the following in Connecticut: Towantic Power Plant (~725 MW) and Wallingford Energy (~90 MW). On November 5, 2015, ISO-NE issued its 2015 Regional System Plan (2015 RSP). In the 2015 RSP, ISO-NE noted that, "Assuming all FCA #9 existing and new resources remain in service in 2018 and beyond, the region would have sufficient resources through 2023, according to RSP15 resource adequacy study results." (Council Administrative Notice Item No. 20 – 2015 RSP, p. 5)

74. The ISO-NE Regional System Plan was formerly an annual report, but was recently changed to a biennial report. Thus, the 2015 RSP is the most current report at this time because a new report is not expected until approximately October 2017. (Tr. 3, p. 363)

KEC Benefit

New England Reliability

75. Connecticut and the rest of the ISO-NE region are inextricably interconnected and rely on each other for a reliable electricity system. (NTE 20, supplemental response 84)

76. System reliability is comprised of two aspects: transmission security and resource adequacy. Resource adequacy means having sufficient resources to meet load at all times. Transmission security means having a system than can withstand contingencies such as the loss of a transmission line, or successive losses of multiple transmission lines, or the loss of a major generating plant, during a time of high system load. (Grouped Party 9, p. 11)

77. The physical power from the KEC facility would be delivered to ISO-NE, and it would follow the normal flow of power to where it is needed within the ISO-NE region. (Tr. 7, p. 1048)

78. Power pooling, such as in New England, allows for the economies of scale and scope for power plants. A bigger power plant typically leads to a lower dollar per MW cost to build the power plant and higher efficiency. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #70; Tr. 7, p. 1126)

79. ISO-NE computes and annually updates an installed capacity requirement (ICR) for the New England Region. There is no separate ICR for Connecticut. (Grouped Party 9, p. 12)

80. ICR is a measure of the installed resources that are projected to be necessary to meet both ISO-NE's and the Northeast Power Coordinating Council's (NPCC) reliability standards, with respect to satisfying the peak load forecast for the New England Balancing Authority while maintaining required reserve capacity. (Council Administrative Notice Item No. 30 - ISO-NE ICR Report dated January 2016, p. 9)

81. Net ICR (NICR) is the installed capacity requirement for New England net of capacity credits from the Hydro Quebec interconnection and is lower than ICR. Either of these two metrics, ICR or NICR, can be considered the reliability need for capacity resources in New England. (Grouped Party 9, p. 12)

82. The ISO-NE 2015 Net Load Forecast (2015 Net Forecast) has a compound annual growth rate (CAGR) of 0.536 percent based on 26,565 MW for 2015 and 27,875 MW for 2024. The 2016 Net Forecast has a CAGR of 0.173 percent based on 26,704 MW 2016 and 27,122 MW in 2025. (Council Administrative Notice Item No. 38 - Council 2014/2015 Forecast Report, Glossary – CAGR, pp. 53; Grouped Party 9, Attachment 1, 2016 Net Forecast, p. 1.1.1; Council Administrative Notice Item No. 20 – 2015 RSP, 2015 Net Forecast, Table Nos. 3-6 and 3-7, pp. 44-45)

Generating Capacity Retirements in New England

83. ISO-NE identifies the following power plants as "closed" or "retiring."

Power Plant	**Fuel**	**Summer Capacity**	**Status**
Vermont Yankee	Nuclear	604 MW	Retired
Mount Tom	Coal	146 MW	Retired
Salem Harbor	Coal and Oil	750 MW	Retired
Pilgrim	Nuclear	702 MW	Retiring by May 2019
Brayton Point Nos. 1-4	Coal and Oil	1,493 MW	Retiring May 2017
Norwalk	Oil	342 MW	Retired
Total		**4,037 MW**	

(Grouped Party 9, p. 26; Council Administrative Notice Item No. 28 – ISO-NE 2016 Regional Electricity Outlook, p. 11; Council Administrative Notice Item No. 21 – 2015 CELT Report, pp. 2.1.3, 5.1.7, and 5.1.8; NTE 14, response 82; Council Administrative Notice Item No. 36 – ISO-NE State of the Grid Presentation dated January 30, 2017, p. 13; Council Administrative Notice Item No. 29 – ISO-NE 2017 Regional Electricity Outlook, p. 28; Council Administrative Notice Item No. 20 – 2015 RSP, p. 95; Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #73)

84. ISO-NE identifies the following power plants as "at risk" for retirement.

Power Plant	Fuel	Summer Capacity	In-Service Year By Unit No.
Yarmouth Nos. 1-4	Oil	811 MW	1957, 1958, 1965, and 1978
Merrimack No. 1-2	Coal	436 MW	1960, 1968
Newington No. 1	Oil/Natural Gas	400 MW	1974
Schiller Nos. 4&6	Coal	95 MW	1952, 1957
Mystic No. 7***	Natural Gas/Oil	575 MW	1975
Canal No. 1-2	Oil	1,121 MW	1968, 1976
West Springfield No. 3***	Natural Gas/Oil	94 MW	1957
Middletown Nos. 2-4*	Oil/Natural Gas	744 MW	1958, 1964 and 1973
Montville Nos. 5-6**	Oil/Natural Gas	467 MW	1954, 1971
New Haven Harbor	Oil/Natural Gas	447 MW	1975
Bridgeport Harbor No. 3	Coal	383 MW	1968
Total		**5,573 MW**	

*Middletown No. 4 is oil-fired only. Middletown Nos. 2 and 3 are oil/natural gas.
**Montville No. 5 is oil/natural gas. Montville No. 6 is oil-fired only.
***While primarily fueled by natural gas, these are steam turbine units.
(Grouped Party 9, p. 26; Council Administrative Notice Item No. 28 – ISO-NE 2016 Regional Electricity Outlook, p. 11; Council Administrative Notice Item No. 29 – ISO-NE 2017 Regional Electricity Outlook, p. 28; Tr. 5, pp. 723-724; Council Administrative Notice Item No. 21 – ISO-NE 2015 CELT Report, pp. 2.1.12, 2.1.13, 2.1.16, 2.1.43, 2.1.44, 2.1.48, and 2.1.49)

85. The roughly 6,000 MW of "at risk" units were initially projected to have a very high probability of retiring or being forced to retire by 2020, consistent with the 2016 ISO-NE Regional Electricity Outlook (2016 REO). The 2017 Regional Electricity Outlook (2017 REO) adjusted the "at risk" retirement projection and identified it as "at risk for retirement in coming years" and referred to these resources in a table as "hypothetical" retirements in the 2025 through 2030 timeframe. (Tr. 2, pp. 317-318; Council Administrative Notice Item No. 28 – ISO-NE 2016 REO, p. 11; Council Administrative Notice Item No. 29 – ISO-NE 2017 REO, pp. 27-28)

86. Given the Council's approval of Bridgeport Harbor No. 5, Bridgeport Harbor No. 3 is expected to retire by July 1, 2021 in accordance with a Community Environmental Benefits Agreement. (Council Administrative Notice Item No. 55 – Petition No. 1218 Finding of Fact #10 and Decision and Order)

87. The Project would not be expected to cause the retirement of Millstone Nuclear Power Plant. (Tr. 2, p. 297)

ISO-NE's Forward Capacity Market Auction

88. While NICR is a reliability "target" for New England, the FCA rules allow the New England region to acquire more or less capacity (in MW) than NICR. (Grouped Party Administrative Notice Item. No. 27, ISO-NE FCA Press Release dated February 9, 2017, p. 1)

89. Capacity resources that clear the auction receive a Capacity Supply Obligation (CSO). A CSO requires the capacity resource to bid into the day-ahead energy market during the 12-month Capacity Commitment Period (CCP), which begins roughly three years after the auction is held. For example, for the eleventh FCA (FCA #11), resources that cleared in February 2017 are committed to the June 1, 2020 through May 31, 2021 CCP (2020-2021 CCP). (NTE 20, supplemental response 83, pp. 3-4)

90. To ensure accurate capacity pricing, ISO-NE has developed capacity market rules that prevent resources from bidding below their actual costs. (Council Administrative Notice Item No. 29 – 2017 ISO-NE Regional Electricity Outlook, p. 36)

91. Capacity that clears the FCA in excess of NICR will always clear at a price at least as high as capacity cleared at the level of NICR. (Grouped Party 11 – Surrebuttal Testimony of Robert Fagan, p. 2)

92. In FCA #9 (held in 2015), 34,695 MW cleared the auction. The clearing price was $9.55 per kilowatt-month (kW-month). (Council Administrative Notice Item No. 31 – ISO-NE FCA #10 Press Release dated February 29, 2016; Council Administrative Notice Item No. 38 – Council 2014/2015 Forecast Report, p. 38)

93. In FCA #10 (held in 2016), 35,567 MW cleared the auction. The clearing price was $7.03 per kW-month. (Council Administrative Notice Item No. 31 – ISO-NE FCA #10 Press Release dated February 29, 2016)

FCA #11 and NTE's Participation

94. By press release dated February 9, 2017, ISO-NE's results in FCA #11 indicate sufficient resources to meet demand in 2020-2021. FCA #11 closed with a final clearing price of $5.297 or about $5.30 per kW-month. Approximately 35,835 MW cleared FCA #11, in excess of the NICR target of 34,075 MW. (Grouped Party Administrative Notice Item No. 27 – ISO-NE FCA #11 Memo date February 9, 2017, p. 1; NTE 31, Supplemental Testimony of Seth Shortlidge, p. 2)

95. NTE planned to participate in FCA #11, scheduled to be held in February 2017. NTE originally sought to receive a CSO for 2020-2021 CCP for KEC. (NTE 20, supplemental response 83, p. 4)

96. To qualify to participate in FCA #11, NTE filed a New Capacity Qualification Package with ISO-NE, which included a Critical Path Schedule (CPS). KEC underwent a rigorous evaluation process by ISO-NE's Independent Market Monitor, during which all aspects (including construction costs) of KEC's business case were thoroughly vetted for reasonableness. (Tr. 8, p. 1156; NTE 20, supplemental response 83, p. 4)

97. Subsequently, NTE received notification from ISO-NE that KEC had been accepted for participation in FCA #11. (Tr. 4, p. 715)

98. KEC projected that approximately 35,500 MW would clear FCA #11 at a clearing price of $6.19 per kilowatt-month. (NTE 1, Vol. 2, Appendix B-2, p. 14)

99. FCA #11 was held on February 6, 2017 and had six rounds of competitive bidding. (Grouped Party Administrative Notice Item No. 27 – ISO-NE FCA #11 Memo dated February 9, 2017, p. 1; Tr. 8, p. 1154)

100. NTE participated in five rounds of bidding. NTE's minimum allowed bid was substantially below the level where round five ended. At the end of round five, NTE was not absolutely certain that all necessary permits could be obtained in order to build the facility and have a start date to meet the obligations that NTE would be taking under ISO-NE. NTE then withdrew from FCA #11 before it was concluded and did not receive a CSO. NTE withdrew because of concerns about cost and schedule uncertainties regarding its ongoing permitting efforts. (Tr. 8, pp. 1155-1156; NTE 31, Supplemental Testimony of Seth Shortlidge, p. 2)

101. Specifically, NTE was falling behind on the CPS and believed that its timeline to meet the CPS would be very tight. As of February 6, 2017, NTE had not yet received its tentative determination on the DEEP Air Permit; and it had not received a draft decision from the Council on the Certificate process. (Tr. 8, pp. 1156-1157)

102. Decisions regarding participation in various rounds of an FCA auction are directly related to a risk analysis. The amount of assumed revenue a generator participant would receive could offer the opportunity to pay contractors more to expedite schedules and provide flexibility to meet delays. However, as the auction proceeds closer and closer to a participant's minimum bid, there is less ability to manage delays through additional revenue. (Tr. 8, p. 1157)

103. For interconnection purposes, ISO-NE defines "large generators" as generators with a generating capacity greater than 20 MW. (Tr. 8, p. 1154)

104. No large new generators cleared in FCA #11. Thus, KEC, as a large generator, did not clear FCA #11. However, 640 MW of new energy efficiency and demand reduction measures, the equivalent of a large power plant, cleared FCA #11 and will be available for 2020-2021. (Grouped Party Administrative Notice Item No. 27 – ISO-NE FCA #11 Memo dated February 9, 2017, p. 1; Tr. 8, p. 1154)

105. No large resources retired in FCA #11. However, a few small oil-fired generators delisted during the auction. Thus, they have dropped out of the capacity market for one year, but can sell energy during that time and compete again in future auctions. (Grouped Party Administrative Notice Item No. 27 –ISO-NE FCA #11 Memo dated February 9, 2017, p. 3)

106. The approximate breakdown of capacity resources that cleared FCA #11 are listed below.

Existing Generation Sites (excluding wind or solar)	30,922 MW
Upgrades/uprates to Existing Generating Sites	264 MW
Existing Demand Resources	2,571 MW
New Demand Resources	640 MW
Imports from New York, Quebec and New Brunswick	1,235 MW
Existing Wind	131 MW
New Wind	6 MW
Existing Solar (not connected to distribution)	61 MW
New Solar (not connected to distribution)	5 MW
Total Cleared Capacity Resources in FCA #11	**35,835 MW**
NICR	**34,075 MW**
Capacity in Excess of NICR	**1,760 MW**

(Grouped Party Administrative Notice Item No. 27 – ISO-NE FCA #11 Memo dated February 9, 2017, p. 3)

107. Nearly all* of roughly 6,000 MW of "at risk" generation cleared FCA #11, which means that, at a minimum, these generator participants have CSO's committing the plants to operating during the June 1, 2020 through May 31, 2021 CCP.

*Yarmouth Nos. 1 and 2 (totaling approximately 100 MW) were identified as zero MW for FCA #11 auction results. Most likely, there was a dynamic delist bid indicating that Yarmouth Nos. 1 and 2 withdrew from the auction, and it is a strong indication that the owner, NextEra Energy, intends to retire those units. All other "at risk" units, including Yarmouth Nos. 3 and 4, have a CSO for FCA 11.

(Grouped Party Administrative Notice Item No. 28 – FCA #11 Results Filing with FERC; Tr. 8, pp. 1161-1162, 1175; Council Administrative Notice Item No. 21 – ISO-NE 2015 CELT Report, p. 2.1.43)

108. Declining FCA clearing prices, such as from $7.03 in FCA #10 to $5.30 in FCA #11 are expected to impact revenues for "at risk" retirement facilities and potentially accelerate their retirements. (NTE 31, Supplemental Testimony of Seth Shortlidge, p. 4; Grouped Party Administrative Notice Item No. 27 –ISO-NE FCA 11 Memo dated February 9, 2017, p. 1; Tr. 8, pp. 1157-1158)

109. On or about February 28, 2017, ISO-NE filed its FCA #11 results with FERC (FCA #11 FERC Filing). Attachment A of the FCA #11 FERC Filing listed each of the capacity resources that secured CSOs for the 2020 to 2021 CCP. While NICR was exceeded by a total of 1,760 MW, in the FCA 11 FERC Filing, ISO-NE does not specifically indicate which of the listed capacity resources in Attachment A specifically add up to NICR and which are considered the resources in "excess" of NICR. (Grouped Party Administrative Notice Item No. 28 – FCA 11 FERC Filing dated February 28, 2017)

110. Despite not clearing FCA 11, NTE anticipates participating in the Annual Reconfiguration Auctions (ARA)* and/or Bi-Lateral process (BL)* associated with the 2020-2021 CCP. The ARA participants buy and sell CSOs and adjust their positions. While NTE does not currently have a CSO "position" to adjust, it could offer its capacity into both the BL and the ARA for FCA 11. For example, if ISO-NE or another participant with a CSO award was short on capacity, KEC could help fill that gap.

*The ARA and the BL are not exclusive to NTE. Other capacity participants may participate as well.

(NTE 31, Supplemental Testimony of Seth Shortlidge, pp. 3-4; Tr. 8, pp. 1159-1161; NTE Administrative Notice Item No. 10 – ISO-NE Market Rule 1 Standard Market Design, Section Nos. III.13.4 through III.13.5)

111. The schedule for the ARA and BL for the 2020-2021 CCP are listed below.

BL #1	April 2018
ARA #1	June 2018
BL #2	May 2019
ARA #2	August 2019
BL #3	December 2019
ARA #3	March 2020

(Tr. 8, pp. 1160-1161)

112. NTE will continue to finalize all necessary permits, approvals and agreements and plans. Assuming that the necessary permits are received, NTE would participate in FCA #12. (NTE 31; Tr. 8, p. 1178)

113. If the Project is approved, NTE would be amenable to the Council placing a condition on the Certificate approval that NTE receive a CSO from ISO-NE prior to starting construction of KEC. (Tr. 8, p. 1178-1180)

Competitive Markets Benefit

114. As an independent power production facility, the KEC project is the type of project that competitive markets were developed to create. KEC would not be relying on contracts with electric utilities in order to get built. KEC relies on market signals primarily for capacity and energy, as well as ancillary services, and it is responding to those market signals and identifying a need to build the plant. (Tr. 5, pp. 701-702; Tr. 7, p. 1047)

Transmission Reliability Benefit

115. From a transmission reliability perspective, the KEC project, as a Connecticut generation resource, could reduce the potential impact of a loss of a transmission line importing power into the State. (Tr. 5, pp. 730-731)

Flexibility and Ramping Benefit

116. Connecticut's Renewable Portfolio Standards call for 20 percent of Connecticut's electricity usage to come from Class I renewable resources by 2020, which is higher than Class I targets in Massachusetts and Rhode Island. Furthermore, ISO-NE on page 11 of 2016 REO identifies more than 6,000 MW (nameplate) of proposed wind and solar generation. As the State of Connecticut and the region attract these increasing amounts of renewable resources, Connecticut and the region will need flexible and efficient forms of power generation to maintain the reliability of the system. (NTE 20, supplemental response 84, p. 11)

117. The 2016 REO states that, "The ability of many natural gas-fired power plants to change output quickly helps to balance an increasing amount of generation from intermittent resources that rely on wind and sun." (NTE 14, response 78; Council Administrative Notice Item No. 28 – ISO-NE 2016 Regional Electricity Outlook, pp. 10-11)

118. On November 3, 2016, Commissioner Katie Dykes of PURA stated that, "Today, in New England, gas and renewables are tied together. Their destiny is linked in the grid that we have today…Our economy is built on an expectation of 24/7/365 reliable electric power, and that means that the integration of these renewable resources depends, at least in the near term, on having a reliable gas system to back it up." (NTE 20, supplemental response 84, p. 12)

119. In the State of the Grid 2017 Presentation (SOTG 2017), Gordon Van Welie, President & CEO of ISO-NE, notes that, "To assure reliability, the region needs fast-responding, flexible capacity resources that are not constrained in their operation." (Council Administrative Notice Item No. 36 – SOTG 2017, p. 36)

120. KEC's approximate ramp rate of 29 MW per minute would be well within the range of industry standard ramp rates for new state-of-the-art thermal electric generating resources. This ramp rate would be sufficient to allow KEC to participate in the ISO-NE ancillary services market and provide ISO-NE with the generation response needed to balance intermittent renewable power resources such as wind and solar. (NTE 14, response 78)

Winter Reliability Benefit

121. There is an urgent need to address growing concerns about the ability of natural gas-fired generators to dependably access adequate fuel during winter cold snaps. Without a timely solution, this fuel-security issue could put reliability at risk, as well as drive up costs and derail progress on meeting the New England states' clean energy goals. (Council Administrative Notice Item No. 29 – 2017 REO, pp. 2-3)

122. Natural gas-fueled generators typically arrange for fuel only as needed and rely on unused pipeline capacity for delivery. Because these generators have no guarantee of when or how long they would be called to run, this "just in time" strategy helps natural gas-fired generators keep their costs as low as possible. While that can work for most of the year, on cold days, the natural gas pipelines are running at or near maximum capacity solely to meet heating demand. (Council Administrative Notice Item No. 26 – 2017 REO, pp. 25-26)

123. On the coldest days of the year, natural gas-fired power plants cannot always access adequate gas because natural gas transportation and storage infrastructure hasn't kept pace with demand from the electricity sector. On frigid winter days in particular, the region has no alternative but to depend on other fossil fuels and the remaining nuclear power stations, while also working to improve fuel accessibility for natural gas-fired generators. The latter will be particularly vital after the summer of 2019, when two more major non-gas-fired generators have retired. (Council Administrative Notice Item No. 29 – 2017 REO, pp. 4, 6)

124. In SOTG 2017, ISO-NE, notes that, "[O]perating conditions are precarious during the winter," and "ISO-NE is focused on ensuring that reliability can be sustained during extreme cold conditions beyond 2019." (Council Administrative Notice Item No. 36 – SOTG 2017, p. 20)

125. While ISO-NE does not have the authority to require generators to make long term investments in fuel supplies, ISO-NE has been developing tactics for the past six years to mitigate fuel security risk, such as the following:
    a) Developing new situational awareness and forecasting tools for system operators to confirm fuel availability for natural gas-fired units;
    b) Improving communication and coordination with interstate pipeline operators;
    c) Implementing Winter Reliability Programs that pay demand-response resources to be available and generators to boost winter fuel inventories of oil and liquefied natural gas (LNG) or to invest in dual-fuel technology, i.e. the ability to switch between different fuels, typically natural gas and oil;
    d) Fine-tuning the energy markets to strengthen resource performance; and
    e) Instituting "pay for performance" (PFP) enhancements, that starting in 2018, will reward resources that make investments to successfully boost performance during periods of system stress, such as ensuring adequate fuel, while resources that don't perform will forfeit capacity payments.

    (Council Administrative Notice Item No. 29 – 2017 REO, p. 30)

126. While ISO-NE's fuel security risk mitigation efforts help, they are unlikely to result in a timely "fix" because PFP incentives will ramp up only gradually through 2024. Additionally, many states' increasingly stringent air emissions limitations may prevent natural gas-fired generators from installing cost effective oil-fired backup fuel systems. As a result, the region's winter reliability concerns will continue until generators decide to sign contracts for LNG or ultimately, greater natural gas pipeline capacity. (Council Administrative Notice Item No. 29 – 2017 REO, p. 30)

127. If the region cannot invest in new gas infrastructure or allow adequate use of dual-fuel capability, changes will be required to the market rules to ensure reliability through existing infrastructure and resources. (Council Administrative Notice Item No. 36 – SOTG 2017, p. 36)

128. KEC would add approximately 550 MW* of electric generation to Connecticut, with a firm natural gas contract plus ULSD backup fuel.

*This is close to the winter output with natural gas of approximately 552 MW, including duct firing. Winter operation with ULSD is approximately 359 MW. (NTE 1, Vol. 1, p. 16; NTE 14, response 79)

Economic Benefit

129. The addition of KEC would result in a reduction of wholesale electricity costs to consumers. One set of estimates offered by NTE's consultant, PA Consulting Group, is that KEC would reduce wholesale electricity costs to Connecticut ratepayers approximately an average of $215M per year. (NTE 1, Vol. 2, Appendix B, Analysis of Need and Economic & Environmental Impacts, p. 4)

130. The financial risk associated with the Project is on NTE. Hypothetically, if the Project were constructed but did not generate any megawatt-hours of electrical energy, the ratepayers would not be at risk. (Tr. 2, p. 286)

Project Alternatives

NTE's Location Alternatives

131. Due to the growing need identified by NTE for flexible, reliable baseload power generation in ISO-NE's territory, NTE evaluated potential development sites throughout New England. (NTE 1, Vol. 1, p. 174)

132. Connecticut was selected as a focus area for site selection because Connecticut was identified by NTE as having a need to supplement and replace existing aging power generating assets. Also, locations in Connecticut are closer to load centers, south of transmission and natural gas constraint points in the New England region where much of the existing generation is north of these constraints. (NTE 1, Vol. 1, p. 174)

133. The comparison of NTE's site alternatives is listed below.

Category	Alternative Site 1 – 295 Lake Road, Killingly	Alternative Site 2 – 251 Lake Road, Killingly	Proposed Site – 180 and 189 Lake Road, Killingly
Site Size	Sufficient acreage available	Sufficient acreage available	Sufficient acreage available
Owner Interest	Potential for option	No interest in option	Potential for option
Engineering Suitability	Site constrained due to parcel configuration and location of existing infrastructure corridors. Unlikely to support a facility layout.	Sloping site. Given location of wetland/floodplain constraints, it may prove challenging to avoid impacts.	Sloping site. Location of mapped constraints appears to retain sufficient area for a layout that would avoid impacts.
Air Quality	No material difference between all three sites	No material difference between all three sites	No material difference between all three sites
Wetlands	Mapped wetland hydric soils within Quinebaug River floodplain area	Mapped wetlands, hydric soils, and potential streams	Mapped wetlands, stream, and hydric soils. Considerable non-mapped area remains.
Floodplain	Significant area of floodplain mapped adjacent to Quinebaug	Floodplain pocket in center of site	Floodplain pocket. Considerable non-mapped area remains.
Protected Species	Entire site in State-mapped habitat area	Southern portion of site in State-mapped habitat area	Southern portion of site in State-mapped habitat area. Northern tip in mapped area along Quinebaug River
Land Use and Zoning	Zoned Industrial	Zoned Rural Development with future Industrial area	Zoned Rural Development with future Industrial area
Noise	Residential standards not required to be met at property lines	Residential standards required to be met at property lines	Residential standards required to be met at property lines
Visibility	Closest to Quinebaug River and Interstate 395	Generally wooded setting	Wooded setting
Cultural Resources	Closest to Quinebaug River, although existing infrastructure disturbance reduces potential sensitivity	Minimal prior disturbance	Minimal prior disturbance
Water Supply	No material difference between all three sites	No material difference between all three sites	No material difference between all three sites
Wastewater	No material difference between all three sites	No material difference between all three sites	No material difference between all three sites

(NTE 1, Vol. 1, pp. 176-177; NTE 7, response 5)

NTE's Technology Alternatives

Renewable Energy Technologies

134. NTE considered renewable energy technologies as an alternative. However, solar and wind are intermittent resources, as opposed to flexible, baseload technologies. (NTE 1, Vol. 1, p. 178)

135. The load factor (or equivalently, the capacity factor) of a power plant is the ratio of its actual electrical energy output over a period of time to its maximum potential output if it were possible to operate at full nameplate capacity continuously for that same period of time. (Tr. 2, p. 181; NTE 14, response 73)

136. One MW of solar photovoltaic (solar PV) electric generation is not equivalent to one MW of conventional natural gas-fueled generation in terms of electrical energy production because of the different capacity factors involved. The capacity factor of solar PV is primarily limited by technical factors such as adequate sun, whereas the capacity factor of conventional natural gas-fueled generation is primarily limited by dispatch or required load. (NTE 7, response 6)

137. ISO-NE estimates that the average solar PV capacity factor in Connecticut (assuming fixed panels) is approximately 16 percent based on alternating current (AC) output. (NTE 14, response 73)

138. Assuming that all 73 acres for the KEC site was usable, this would result in about 12 MW of solar-powered generation under ideal conditions only. (NTE 1, Vol. 1, p. 179)

139. The KEC site could yield just over 3 MW of wind-powered generation at maximum wind output conditions, based on the parcel size. (NTE 1, Vol. 1, p. 179)

140. The solar or wind alternatives located at the KEC site would result in considerably lower energy production than the technology proposed by NTE. (NTE 1, Vol. 1, p. 179)

Energy Storage Technologies

141. Energy storage systems do not yet allow for reliable power generation across the potential demand spectrum. (NTE 1, Vol. 1, p. 178)

Simple Cycle Combustion Technology

142. A full load heat rate is a measurement of a power plant's efficiency in converting feedstock or fuel (such as natural gas) into electricity at maximum operating output. A lower heat rate equates into higher efficiency. (NTE 1, Vol. 1, p. 13)

143. Simple cycle combustion turbine (SCCT) technology is not as efficient as combined cycle units in terms of energy and emissions produced. SCCTs have a heat rate in the range of 9,750 to 10,850 British Thermal Units (Btu) per kilowatt-hour (kWh). Combined cycle technology has heat rates between 6,430 and 7,050 Btu/kWh. (NTE 1, Vol. 1, p. 179)

144. SCCTs are quick starting and well suited for meeting peak electric demand as opposed to baseload demand. As such, SCCT technology would not provide the power to meet KEC's objectives and the needs of the region. (NTE 1, Vol. 1, p. 179)

Site

145. The subject properties include an approximately 63-acre parcel (Generating Facility Property) located north and west of Lake Road at an address of 189 Lake Road and an approximately 10-acre parcel (Utility Switchyard Property) located immediately across the street from the Generating Facility Property and south and east of Lake Road at an address of 180 Lake Road. (NTE 1, p. 1; NTE 14, response 70)

146. The proposed generating facility site (Generating Facility Site) would be located on the Generating Facility Property. The utility switchyard site (Utility Switchyard Site) would be located on the Utility Switchyard Property. Collectively, these two sites are referred to as the KEC site (KEC Site). NTE 1, p. 1)

147. On March 3, 2016, NTE entered into an Option Agreement for the Purchase of Real Property associated with both the 10-acre parcel and the 63-acre parcel from Geoffrey A. Sorrow, Gerald T. Erwin, Sr., and Annarita D. Erwin. (NTE 4)

148. The Generating Facility Site is largely undeveloped. One two-story house and associated structures are located in the southwest corner of the Generating Facility Site, with the balance consisting of undeveloped woodland, a man-made pond, wetlands, and bedrock outcrops near the center of the parcel. (NTE 1, Vol. 1, p. 22)

149. The Generating Facility Site is mostly former agricultural land now covered with a mixture of hardwoods and coniferous (e.g. white pine and hemlock) forest. (DEEP Letter dated November 7, 2016, p. 1)

150. The existing residence on the Generating Facility Property would be demolished if KEC is constructed. (Tr. 2, p. 181)

151. Several small dumpsites were observed by DEEP on the Generating Facility Property such as discarded appliances, a pickup truck, gas grills, tires, bottles, and cans. If the project is approved, NTE would clean up such dumpsites. (DEEP Letter dated November 7, 2016, p. 1; Tr. 3, p. 364)

152. The Generating Facility Site is identified in the Town of Killingly's *2010-2020 Plan of Conservation and Development* as an area intended for future industrial use. (NTE 1, Vol. 1, p. 22)

153. The Utility Switchyard Property is predominantly wooded, with an open field and a dilapidated barn structure located to the north, along Lake Road. Other features include several small outbuildings, stone walls, a remnant foundation, and a small family cemetery. (NTE 1, Vol. 1, p. 22)

154. The Utility Switchyard Property is generally steeper and more irregular in terrain than the Generating Facility Site, particularly towards the southern end. Forest cover is hardwood, chiefly black locust, sugar maple, and ash. Shrub cover and the remnants of a grassy barnyard are found towards the northern end of this parcel. The remnants of a barn across from the Sorrow residence and the stone wall-enclosed Lippett Family cemetery are the chief manmade features on this parcel. (DEEP Letter dated November 7, 2016, p. 2)

155. An existing Eversource transmission line right-of-way abuts the Utility Switchyard Property to the east. There are two 115-kV lines on the eastern portion of the right-of-way and two 345-kV lines on the western portion of the right-of-way. (NTE 1, Vol. 1, Figure 2-2 – KEC Site Location Aerial Photograph and Figure 2-5 – KEC Plot Plan; NTE 1, Vol. 1, p. 15)

156. Terrain in the immediate vicinity the KEC site is relatively flat. (NTE 1, Vol. 1, p. 82)

157. The KEC Site is located in the Rural Development District Zone. (NTE 1, Vol. 1, p. 121; Tr.3, pp. 554-555)

158. The KEC Site is located in an area of Killingly that includes a mix of industrial development in the Killingly Industrial Park, as well as rural residential and lakefront residential uses. (NTE 1, Vol. 1, p. 114)

159. There is one off-site residence located within 1,000 feet of the center of the proposed power plant footprint at the Generating Facility Site. This closest off-site residence is located at 149 Lake Road, and its property boundary is located approximately 150 feet southwest of the nearest proposed KEC equipment. In total, three off-site residential properties have property boundaries that intersect the 1,000-foot radius from the center of the power plant footprint. (NTE 7, response 38)

160. There are six residences located within 1,000 feet of the center of the Utility Switchyard Site. The nearest residence is located at 154 Lake Road and its property boundary is located approximately 28 feet southwest of the Utility Switchyard Property. (NTE 7, response 39)

161. The existing Lake Road Generating Facility (LRGF), an approximately 800 MW combined-cycle electric generating plant is located at 56 Alexander Parkway, Killingly, approximately 1 mile northeast of the proposed KEC. (NTE 1, Vol. 1, p. 26)

162. The municipal population information is listed below.

Town	Population in Year 2010
Killingly	17,370
Putnam	9,584
Pomfret	4,247

(Council Administrative Notice Item No. 15 – United States Census Bureau, American Fact Finder)

Project

163. The proposed project includes construction of a 550 MW (net) combined cycle natural gas-fueled power plant with ULSD as a backup fuel and its associated Plant Switchyard, power plant equipment areas, parking areas, and related storage facilities. (NTE 1, p. ES-1 and Figure 2-5 KEC Plot Plan)

164. The project would use a combined-cycle configuration with one Siemens Model SGT6-8000H (or equivalent) combustion gas turbine and one associated steam turbine. (NTE 1, Vol. 1, p. 33; NTE 1, Vol. 3, Appendix G – Air Permit, p. 3, Combustion Turbine Emissions Estimates)

165. There is not sufficient room at the Generating Facility Property to install more than one combined cycle generating unit configuration. (Tr. 3, p. 430)

166. The complete power output of the proposed power plant in MW is listed below, modeled for various conditions.

	Natural Gas Summer	**Natural Gas Winter**	**Natural Gas ISO***	**ULSD Summer**	**ULSD Winter**	**ULSD ISO***
Combustion Turbine Generator	282 MW	313 MW	301 MW	253 MW	255 MW	260 MW
Steam Turbine Generator (with duct firing)	224 MW	254 MW	248 MW	N/A	N/A	N/A
Steam Turbine Generator (without duct firing)	139 MW	152 MW	151 MW	118 MW	114 MW	123 MW
Parasitic Load (with duct firing for natural gas only)	(13 MW)	(15 MW)	(14 MW)	(10 MW)	(10 MW)	(10 MW)
Net Output (with duct firing for natural gas only)	493 MW	552 MW	535 MW	361 MW	359 MW	373 MW

*ISO, in this context, refers to standard or typical ambient temperature conditions and is not to be confused with ISO-NE.
(NTE 14, response 79)

167. The major buildings on the site would include the following: (1) the turbine building, to house the steam turbine generator; (2) the administrative/warehouse/water treatment building, with dimensions of approximately 175-foot by 65-foot. (NTE 1, Vol. 1, Figure 2-4; NTE 1, Vol. 2, Appendix C – Geotechnical Engineering Report, p. 13)

168. The heat recovery steam generator (HRSG) would be located immediately northwest of the combustion turbine. The HRSG recovers heat from the combustion turbine exhaust and provides steam to power the steam turbine generator in order to generate even more power than from the combustion turbines alone, thus providing a "combined cycle." (NTE 1, Vol. 1, p. 33 and Figure 2-4 – KEC Site Layout and Grading)

169. The HRSG exhaust stack, approximately 150 feet in height and approximately 22 feet in diameter, would be located at the end of the HRSG. (NTE 1, Vol. 2, Appendix C – Geotechnical Engineering Report, Appendix A, p. 12; Tr. 7, p. 1058)

170. The air-cooled condenser structure (ACC) would measure approximately 249 feet by 168 feet by 80 feet high. As its name indicates, it would cool and condense the steam exhaust from the HRSG using air, not water. The process would not use a wet-surface cooler. These features of the ACC's overall design are intended to reduce water consumption. (NTE 1, Vol. 1, pp. ES-2, 28, 35-36, 188)

171. A natural gas-fired auxiliary boiler would operate as needed to keep the HRSG warm during periods of turbine shutdown and provide sealing steam to the steam turbine during combustion turbine generator startups to reduce startup times and emissions. The auxiliary boiler's stack would be approximately 90 feet tall. (NTE 1, Vol. 1, p. 38; Tr. 7, p. 1058)

172. The plant would have a 1,380-kW (mechanical) backup generator fueled by ULSD to supply on-site power in the event of a power outage. If approved, details of the containment measures for the generator's fuel, oil and coolant would be included in the D&M Plan. (NTE 1, Vol. 1, p. 38; NTE 7, response 63)

173. The combustion turbine generator and steam turbine generator would have output voltages of 20-kilovolts (kV) and 18-kV, respectively. Each generator would be connected to its respective generator step-up transformer (GSU Transformer) to boost the voltage to 345-kV. (NTE 1, Vol. 1, p. 15)

174. NTE's Plant Switchyard (Plant Switchyard) would be located adjacent to the GSU Transformers and would consist of two 345-kV circuit breakers, disconnect switches, and associated bus structures, and it would serve to consolidate the output from both generators to a single point of connection. (NTE 1, Vol. 1, p. 15)

175. The Plant Switchyard, being separate from the Utility Switchyard, allows NTE to control and operate its own circuit breakers and equipment independently of Eversource. This not only eliminates complicated coordination between two parties, but also allows each party to rely solely on its own lock-out/tag-out system to ensure the safety of their respective personnel. (NTE 23, p. 4)

176. A short three-phase transmission line segment, originating from a vertical tangent structure in the Plant Switchyard, would cross Lake Road and terminate at a vertical tangent structure within Eversource's Utility Switchyard, located at the Utility Switchyard Site on the opposite side of Lake Road. (NTE 1, Vol. 1, p. 15 and Figure 2-4 – KEC Site Layout and Grading)

177. NTE's proposed Plant Switchyard would be designed to be air-insulated, rather than gas-insulated. (NTE 23, p. 10)

178. There would be a raw water tank and a demineralized water tank. Each tank would contain 500,000 gallons of water. The water tanks would each be approximately 45 feet in diameter by 45 feet tall. (NTE 1, Vol. 1, p. 28; NTE 1, Vol. 2, Appendix C – Geotechnical Engineering Report, Appendix A, p. 13)

179. The plant would have four water demineralization trailers located on the western side of the plant, adjacent to the raw/fire suppression water storage tank. (NTE 1, Vol. 1, Figure 2-4)

180. A fuel-oil storage tank would store 1,000,000 gallons of ULSD. It would be 75 feet in diameter by 45 feet tall. It would include a lined containment area. (NTE 1, Vol. 2, Appendix C – Geotechnical Engineering Report, Appendix A, p. 13; NTE 7, response 64)

181. Access to the site property would be via Lake Road. The proposed plant access road on the subject property would be constructed off of Lake Road. (NTE 1, Vol. 1, Figure 2-4)

182. Approximately 2,500 linear feet of asphalt driveway would be constructed on the subject property to loop around the power block. If the project is approved, the final driveway design would be included in the D&M Plan. (NTE 7, response 10; NTE 1, Vol. 1, Figure 2-4)

183. Most unpaved areas within the KEC footprint would be crushed stone. However, many of the outlying areas would be revegetated after construction is completed (NTE 7, response 8)

184. The KEC facility would be surrounded by an eight-foot tall chain link fence with standard two-inch mesh and three strands of barbed wire at the top as an anti-climbing measure. If the project is approved, the final fence design would be included in the D&M Plan. (NTE 7, response 9)

185. All construction would be conducted in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.* (NTE 1, Vol. 2, Appendix D – Stormwater Pollution Prevention Plan, p. 9)

186. The drainage design and water quality mechanisms have been designed in accordance with the *2004 Connecticut Stormwater Quality Manual.* (NTE 1, Vol. 2, Appendix D – Stormwater Pollution Prevention Plan, p. 8)

187. The estimated construction cost of the proposed project is:

Equipment Costs*	$318M
Construction and Other Costs**	$219M
Total Estimated Costs	**$537M**

**Includes the combustion turbine and generator, HRSG, HRSG stack, steam turbine generator, cooling and related systems, and the plant switchyard.*
***Includes development, design and construction.*
(NTE 1, Vol. 1, pp. 19-20)

Utility Switchyard

188. The Utility Switchyard, to be located on the Utility Switchyard Property, would be owned and operated by Eversource, and an easement would be granted by NTE to Eversource for such purposes. (NTE 1, Vol. 1, p. 1)

189. The Utility Switchyard would be located immediately adjacent to Eversource's 115-kV and 345-kV transmission line right-of-way, eliminating the need for any new transmission corridor or right-of-way to facilitate KEC's output from the Utility Switchyard to the regional transmission system. The Utility Switchyard would be designed in a three-breaker ring bus configuration to allow for an in-and-out tap of the existing 345-kV transmission line, such that the power generated by KEC can flow through that existing line. (NTE 1, Vol. 1, p. 15)

190. Eversource's planned Utility Switchyard would be designed to be air-insulated, rather than gas-insulated. (NTE 23, p. 10)

191. Eversource would file a Petition for a Declaratory Ruling for the Utility Switchyard project and its connection to the existing transmission line right-of-way at a later date if the Project is approved. See next section titled Electrical Interconnection. (NTE 1, Vol. 1, p. 15)

Electrical Interconnection

192. There would be an electrical interconnection from the Utility Switchyard to one of the existing 345-kV transmission lines located in an existing right-of-way east of the Utility Switchyard Site. The connection would split the #3271 345-kV line into two lines: one traveling to the north and one traveling to the south. (NTE 1, Vol. 1, Figure 2-5)

193. An ISO-NE System Impact Study should be completed by the first quarter of 2017. (NTE 7, response 20)

Natural Gas Pipeline Connection

194. The natural gas interconnection would include a natural gas pipeline lateral approximately 2.8 miles in length, connecting the Algonquin Gas Transmission Pipeline to the north to KEC to the south within an existing natural gas line lateral right-of-way owned and operated by Eversource f/k/a Yankee Gas. (NTE 1, Vol. 1, pp. 17, 166)

195. The existing Eversource pipeline is approximately four or six inches in diameter with a pressure of approximately 600 pounds per square inch gauge (psig). (Tr. 3, pp. 431-432)

196. NTE would not utilize the existing Eversource pipeline. A new pipeline would be installed adjacent to the existing line. The existing pipeline would be taken out of service after the new pipeline is installed. It is not yet known if the existing pipeline would be removed after installation of the new pipeline. (Tr. 3, pp. 432, 561-562)

197. The new pipeline would be expected to be at least 14 inches in diameter with a pressure of approximately 700 psig. (NTE 1, Vol. 1, p. 166)

198. It is NTE's understanding that Eversource's new pipeline would require Eversource to seek a State approval rather than a federal (e.g. Federal Energy Regulatory Commission) approval because it is an intrastate pipeline. (Tr. 3, p. 431)

199. The pipeline replacement would not increase the width of the existing right-of-way. (NTE 1, Vol. 1, p. 167)

200. As an alternative, NTE had considered tapping off of the existing natural gas line that currently serves LRGF, but that was determined not to be the most economical alternative. In addition, the existing Eversource pipeline is located closer to KEC. (Tr. 7, pp. 1050-1051)

Water Supply Interconnection

201. An existing water main, adequate to meet KEC's water needs, currently exists at the intersection of Lake Road and Louisa Viens Drive. The water main would be extended along Lake Road approximately 3,100 feet to the KEC access drive. (NTE 1, Vol. 1, p. 172)

202. The water supply connection to KEC, as well as the connection of the Brooklyn and Plainfield water systems, would be the permitting responsibility of Connecticut Water Company (CWC). CWC is a public service company under the authority of PURA. Thus, CWC may consult with the Town, but it does not require local approvals for these water line improvements. (NTE 14, response 76)

Wastewater Interconnection

203. KEC would discharge its wastewater into the existing municipal wastewater treatment system. A sewer main manhole, adequate to meet KEC's discharge volumes, currently exists just west of the intersection of Lake Road and Louisa Viens Drive. The sewer main would be extended along Lake Road approximately 3,100 feet to the KEC access drive. (NTE 1, Vol. 1, pp. 172-173)

204. It is expected that all piping work would occur within Lake Road. (NTE 1, Vol. 1, p. 173)

205. Given that the wastewater discharge piping associated with KEC would be located within the limits of local roadways, it may, pursuant to local regulations, require local approvals. (NTE 14, response 76)

Municipal Regulate and Restrict Orders and its Appeal

206. On October 13, 2016, NTE received copies of the Town Inland Wetlands and Watercourses Commission (IWWC) and Town Planning and Zoning Commission (PZC) Regulate and Restrict Orders (collectively, the Municipal Orders), issued pursuant to C.G.S. §16-50x(d). (NTE 15, p. 1; Town 3 and 4)

207. Subsequently, on October 27, 2016, NTE submitted to the Council an Appeal of and Responses to the Municipal Regulate and Restrict Orders. (NTE 15, p. 1)

208. Several of the Municipal Orders request certain Application and KEC facility plan modifications. Thus, on October 27, 2016, NTE submitted a modified KEC facility Site Plan (Revised Site Plan); a Revised Stormwater Pollution Protection Plan (Revised SWPPP); an Updated Acoustic Modeling Analysis (Updated Noise Report); an Updated Erosion and Sedimentation Control Plan (Updated E&S Plan); and an Update on Wetland Issues and Surface Water Quality Sampling/End of Season of Survey at Wetland A1 (Updated Wetland Report). (NTE 15, p. 2)

209. During the evidentiary hearing held on November 3, 2016, the Council voted to incorporate NTE's appeal of the Town's regulate and restrict orders (ARRR Orders) into the proceedings on the application consistent with Council practice in past matters. (Council Memorandum dated November 7, 2017)

Killingly Inland Wetland and Watercourses Commission (IWWC) Orders

210. Based upon the outlet of the proposed drainage structure and regrading of the site, the IWWC is concerned that wetlands Al, A3, and X would not receive adequate overland flow resulting in their destruction. A potential solution to this concern is described in the "Recommendations for CSC Conditions and Third Party Review" by the Town's consultant, TRC Environmental Corporation (TRC Report), as:

a) Rainfall recharge to groundwater feeding the wetlands would be significantly impacted by the Project through the extensive loss of forested loose understory layer, site regarding and compaction of the site soils. To provide positive means of groundwater recharge, a continuous crushed stone filled trench shall be installed along the limits of grading from Wetland A1 to Wetland A3;
b) The trench shall be a minimum of three feet wide by five feet deep and shall be completely enclosed with filter fabric and covered with 1 foot of topsoil;

c) The bioretention basin crushed stone underdrains shall be tied into the crushed stone trench. This system will provide additional treated stormwater runoff storage for recharge immediately up gradient from the wetland system; and
d) Soil breaks in the stone filled trench shall be provided between the bioretention basins to ensure even distribution of water along the entire limits of grading.

The IWWC believes that this potential solution would not only allow the wetlands to receive flows as and where they do currently, it would also be a benefit for the Applicant as it could do away with the proposed wet basin, avoiding a potential "decoy" vernal pool.

NTE finds this order acceptable in part and appeals the order in part. The primary stormwater basin has been reassessed to incorporate a crushed stone layer into the design to encourage further infiltration. Two additional basins at the headwaters of Wetland A1 and A3 have been added and incorporated into the stormwater design in the Revised SWPPP and Updated E&S Plan. The two additional basins would also incorporate a crushed stone layer to encourage infiltration. Further, NTE would provide an infiltration mechanism as recommended (i.e., a crushed stone trench) between two new additional basins and Wetlands A1 and A3, respectively. NTE has verified that the two additional basins, two additional crushed stone trenches, and the addition of crushed stone to all three basins would allow for more than the recommended infiltration volume. Therefore, NTE appeals the limited portion of the order call for the installation of a trench between KEC's limits of grading and the entirety of Wetlands A1 to A3.

NTE also notes that the proposed crushed stone surfaces in these features would serve as a further opportunity for infiltration and groundwater recharge at the completion of construction. The "wet pool" feature has been removed from the primary stormwater basin as requested. Although the original design was protective of both the wetland function and potential vernal pool usage, the updated design would also support wetland and vernal pool functions effectively. (NTE 15, pp. 2-4; Town 4, p. 2)

211. The IWWC believes that the proposed ULSD tank and containment area would pose a number of problems. Specifically, the size of the containment area would force a large increase in grading towards the wetlands (Al); the drainage inside the containment area could potentially allow for a fuel spill to enter the wetlands; and the fabric containment area would have to be installed by hand and each seam must be joined adequately or there would be a risk of a spill getting into the ground water.

The IWWC recommends a double-walled or "tank within a tank" configuration rather than the proposed single wall tank and containment area along with a smaller containment area directly surrounding the proposed tank.

Per TRC Report:

a) Eliminate the ULSD storage tank spill containment berm and change the welded steel tank design to a double-wall or "tank in a tank" design;
b) The bottom of the tank shall have a double floor with interstitial leak detection monitoring. The tank bottom shall have an engineered cathodic protection system;
c) The welded steel tank shall be designed and constructed in accordance with API Standards and shall comply with seismic design standards;
d) Hydrostatic and leak testing and inspection shall be under the direction of a competent third party licensed professional engineer;
e) Underground fuel piping shall be double walled with interstitial leak detection sensing;

f) The fuel unloading area shall have spill containment suitable to handle the largest tanker capacity used to offload fuel to the storage tank and shall conform to 40 C.F.R. §112; and

g) A Spill Prevention, Control and Countermeasures Plan and Facilities Response Plan conforming to 40 C.F.R. §112 shall be prepared and implemented. The operator shall and facility personnel shall receive and keep updated the required spill response training and shall retain the services of an on-call Connecticut licensed spill response contractor to assist with larger spills.

NTE finds this order acceptable. Although the bermed and lined spill containment design for the ULSD storage tank as originally proposed is a commonly used and accepted design, NTE has revised the ULSD storage tank to include a secondary steel containment around the tank as requested, which would allow for elimination of the bermed spill containment area and is included in the Revised Site Plan. The tank would include a double floor with engineered cathodic protection and would be designed, fabricated and constructed in accordance with American Petroleum Institute (API) standards applicable to Welded Steel Storage Tanks for Oil Storage (API- 650) and associated appendices for under tank leak detection. The tank would be subject to scheduled inspections as per API-653 (Tank Inspection, Repair and Alteration). Below grade piping would be comprised of double wall pipe with interstitial leak detection, and the loading areas would be designed in accordance with 40 C.F.R. §112 with spill containment capability suitable to handle the largest tanker capacity used to offload fuel to the storage tank. As required, a spill prevention plan will be prepared and implemented in accordance with 40 C.F.R. §112, which will include contact information for a licensed spill response contractor. (NTE 15, pp. 4-6; Town 4, pp. 2-3; Tr. 6, p. 870)

212. The IWWC notes that the 25 foot no disturbance buffer in Section 6.3 of the IWWC regulations is not being upheld. Specifically, Section 6.3 states: "No disturbance wetland buffer - 25 feet." Separation distances listed above may be increased by IWWC if deemed necessary for the protection and preservation of the natural and indigenous character of the wetlands and/or watercourses system and riparian corridors due to site specific factors such as topography, slope, soil type, presence of rare, endangered and/or species of concern, unique or uncommon habitats, etc. The IWWC recommends that this buffer be increased to a minimum of 75 feet from Wetlands Al and A3 wherever feasible.

The TRC Report agrees with IWWC's recommendation:

a) Within the main plant parcel, move the limits of all grading activities, clearing and disturbance a minimum of 75 feet from all wetland boundaries and maintain the tree canopy in this zone;

b) The location of the administration building, compressor station, main plant facility, tanks and other site features shall be moved to accomplish the required separation;

c) Slopes should be no greater than 2 horizontal to 1 vertical and shall have turf established to stabilize the surface from erosion; and

d) Erosion netting or turf reinforcing mat shall be used on all slopes equal to or steeper than 3 horizontal to 1 vertical along the north side of the site along the wetlands.

The IWWC also agrees with TRC that a 2:1 vegetated slope should be required; however, if it is feasible to have 3:1 slopes, the IWWC would prefer that all slopes be at 3:1.

NTE finds this order acceptable in part and appeals the order in part. The majority of KEC's originally proposed layout was located more than 25 feet from wetlands, with the exception of the very tip of Wetland A3 (which is within 20 feet of proposed grading) and the area where a

retaining wall would be constructed to avoid impact to Wetland X. However, in response to this order, certain elements (i.e., air cooled condenser, gas compressor building, and ring road) on the Generating Facility Site have been relocated or reconfigured to increase the separation distance from all wetlands boundaries to a minimum of 25 feet as required by IWWC Regulations and depicted in the Revised Site Plan.

NTE has increased that separation distance/buffer further, to comply with the requested 75-foot separation, where feasible. Side slopes on the Revised Site Plan are predominantly 2:1 and would be vegetated. The only location where a 1:1 slope is required is a 2,500-square foot area adjacent to Wetland X where that steeper slope is required to comply with the 25-foot no disturbance buffer from Wetland X as defined in the IWWC Regulations. For this limited area, NTE appeals that portion of the order calling for a maximum 2:1 slope. Instead, rip-rap would be employed in this limited area for stabilization of the 1:1 slope. In all other areas, permanent turf reinforcement matting would be utilized as specified in the previously submitted plans and in the order. (NTE 15, pp. 6-8; Town 4, p. 3)

213. The IWWC believes that the proposed E&S Plan is too broad and does not go into enough specifics for the challenges of the site. In many instances, the proposed silt fence and hay bales may not be enough to stop all sedimentation, especially during construction when retention basins may not be in place and functioning. An independent inspector should be onsite to monitor erosion and sedimentation and drainage, in addition to periodic inspections performed by Town staff. The IWWC also recommends that temporary drainage basins be constructed prior to grading the areas around Wetlands Al, A3, and X. Runoff shall be directed at the drainage basins.

The TRC Report also addresses this recommendation:

a) Temporary sediment basins shall be added upgradient of Wetlands Al and A3 and shall be properly sized in accordance with the CT Water Quality Manual; and
b) Section 6.3 of the IWWC Regulations states: "No system, at any distance from such watercourse or inland wetland, shall be constructed or maintained in such a manner so as to allow untreated surface drainage into any such watercourse or inland wetlands. Guidelines are available in the *2004 Storm Water Quality Manual*…"

NTE finds this order acceptable. NTE concurs that the discharge of untreated stormwater runoff to wetlands and significant resource areas is unacceptable, and has not, therefore, included that type of discharge in its stormwater design. Temporary sediment basins have been added upgradient of Wetlands Al and A3 and included in the Updated E&S Plan as requested, and these features, along with the other best management practices (BMPs) identified in the Updated E&S Plan, would be among the first measures implemented during initial site disturbance activities. The construction contractor would conduct regular inspections, as will NTE, during construction to affirm that BMPs are properly installed, maintained and functioning for the intended purpose. As required by DEEP, monthly inspection reporting will be completed by a licensed professional engineer or certified professional in stormwater quality (CPSWQ). In addition, NTE expects that the Council would require a third-party inspector be utilized during construction, and Town and DEEP staff would also have authority to visit the site for construction inspections. These various checks and balances would provide assurance that appropriate BMPs are selected and implemented to keep the work area stabilized and prevent off-site concerns. (NTE 15, pp. 8-9; Town 4, pp. 3-4)

214. The IWWC recommends that at least one hydrodynamic chamber that also removes suspended solids be installed in-line with the proposed catch basins prior to the exit to the proposed drainage basin(s). This is in line with past practices on industrial and commercial sites.

NTE finds this order acceptable. NTE would comply with this order and has amended its Project via the Revised Site Plan and the Revised SWPPP, accordingly. The original KEC plan specified a hydrodynamic separator with oil isolation capabilities at the single discharge point of the stormwater collection system. The drainage design in the Revised SWPPP has been modified to create three separate discharge points with hydrodynamic separators for each discharge. (NTE 15, pp. 9-10; Town 4, p. 4)

215. IWWC notes that the proposed 15,000 square feet of wetlands disturbance at the proposed switchyard site (Wetland D) requires a permit from the US Army Corps of Engineers (ACOE). NTE is proposing a reclamation site of approximately 17,000 square feet of created wetland. Typically, when an applicant proposes a reclaimed/created wetland it is done at a 1.5:1 according to past practice. IWWC believes that NTE should propose a larger mitigation area and created wetland. Detailed plans and plantings should be submitted to the IWWC for review. This wetland should also be monitored by an independent inspector and maintained after project completion to insure the wetland characteristics remain. The created wetland should be monitored for a period of two growing seasons after full establishment.

The TRC Report expounds on this:

a) Wetland mitigation is proposed to offset the direct impact to Wetland D associated with the construction of the switchyard. A wetland replication area consisting of approximately 17,000 square feet (0.39 acre) is proposed;
b) The proposed grading, planting and monitoring plans and details associated with the wetland replication area has not yet been completed;
c) Since the replication area is greater than 5,000 square feet, an application will need to be submitted to the New England District of the ACOE. The New England District of ACOE has detailed wetland creation plan submission requirements that should ensure that sufficient detail is provided in the future; and
d) The Town shall be given an opportunity to review and approve this plan.

NTE finds this order acceptable. NTE agrees that the proposed wetland fill, of 12,500 square feet (not the 15,000 square feet referenced in the order), requires filing with the ACOE to affirm coverage under its General Permit program. As a part of that filing, additional detail would be developed regarding mitigation. NTE has proposed 17,000 square feet of wetland replication, which would provide several hydrologic regimes, not just the "seasonally saturated" regime of the existing wetland, and support a higher diversity of flora and fauna, including amphibians. The resulting created wetland has the potential to provide more function and value than the existing wetland area, which is transitional in nature and replete with invasive plants: NTE is willing to increase this to 18,750 square feet to reflect a 1.5:1 ratio.

In addition to the 18,750 square feet of created wetlands now proposed within a 0.77-acre conservation easement, NTE previously identified in its Application proposed wetland enhancements, including 35,000 square feet on the Generating Facility Site and 18,000 square feet on the Switchyard Site. NTE discussed this proposed mitigation strategy with ACOE during a pre-application meeting on September 28, 2016. At that meeting, the ACOE discouraged the use of replication as a mitigation strategy and suggested that an In-Lieu Fee, coupled with the proposed enhancements, was a more appropriate strategy. However, as noted above, NTE is

willing to continue to provide for replication and is willing to do so at a 1.5:1 ratio. As noted, additional details would be provided in the ACOE pre-construction notification and would be shared with the IWWC. Section 5.2 of NTE's *Wetland Report: Proposed Conditions* references evaluation through two growing seasons and notes that additional detail regarding monitoring provisions would be provided in the mitigation plan. However, in order to better align with ACOE wetland mitigation guidance, monitoring and requisite maintenance would be expanded to five years post-implementation and would include invasive plant control and eradication. Monitoring would be conducted by a qualified inspector (i.e., wetland scientist or wetland ecologist) with appropriate reports submitted to both the ACOE and the IWWC. (NTE 15, pp. 10-12; Town 4, p. 4)

216. IWWC notes that there have been no submissions to the IWWC for permitting of any proposed gas lines and water lines. Accordingly, the IWWC requires that all permits for water and gas be applied for and approved prior to the construction of the proposed generating facility.

Per the TRC Report:

a) Water supply from CWC, involving the Killingly system interconnection with the Plainfield system, shall receive permit and other necessary approvals from DEEP and DPH before any work on the site shall commence;
b) In addition, the plans for installation of water mains shall receive all local and DOT road disruption and restoration permits, including detailed plans for maintenance and protection of traffic before site work shall commence; and
c) Plans for the installation of sewer, water main and gas pipelines in Lake Road, including detailed plans for maintenance and protection of traffic, shall require submission to the Town for review and approval before any site work shall commence.

NTE finds this order acceptable in part and appeals the order in part. NTE is committed to work with the CWC, Eversource f/k/a Yankee Gas and the Town to obtain all necessary State and local permits and approvals for the extension of water, sewer and natural gas service to the KEC facility, including all necessary road disruption and restoration permits needed to complete these improvements. NTE expects, however, that these permitting procedures will run concurrently with certain site construction activity and do not need to be completed before "any site work shall commence." NTE, therefore, appeals only this limited portion of this order. (NTE 15, pp. 12-13; Town 4, p. 4; NTE 1, Vol. 1, p. 166)

217. NTE is showing an increase in peak runoff from the switchyard site to the neighboring property. The IWWC requests that the final peak runoff be equal to current peak runoff. IWWC also requests that stormwater retention as well as treatment of any runoff be submitted and reviewed by the IWWC prior to approval. NTE should follow MS4 guidelines for monitoring all stormwater on site prior to any discharge to neighboring properties. The IWWC would like to be informed of the Council's ruling and the procedure followed to procure that ruling. The IWWC would also like to be informed of any modifications to this proposal by either the Council or NTE. Referral back to the IWWC should be a condition of approval. Any recommendations made by the IWWC would be submitted to the Council for approval and/or to keep the Council informed of the actions taken by the IWWC and the Applicant.

NTE finds this order acceptable. A stormwater basin with low level outlet has been designed and placed adjacent to the switchyard to limit peak runoff and discharge at or below pre-construction conditions. Such modifications were included in the Revised SWPPP and Updated E&S Plan. As required, MS4 guidelines and procedures for stormwater monitoring would be upheld during construction. While peak runoff increases for the switchyard area were minor with

the previous design, the revised design would ensure that the peak runoff would be equivalent to the current peak runoff. (NTE 15, pp. 13-14; Town 4, pp. 4-5)

Killingly Planning and Zoning Commission (PZC) Orders

Emergency Management Services

218. The PZC requests that proper access for fire and all emergency response equipment be maintained throughout all stages of the construction period, on site and along Lake Road.

NTE finds this order acceptable. (NTE 15, p. 15; Town 3, p. 2)

219. The PZC requests that the owner/operator prepare and keep current an emergency response plan and shall maintain at all times a designated team of on-site personnel trained to respond to emergency situations. The plan shall identify Town fire, police and emergency units, Town Officials, and Town Staff that would be notified in the event of an emergency situation.

NTE finds this order acceptable. (NTE 15, p. 15; Town 3, p. 2)

220. The PZC requests that the owner/operator put in place an emergency response plan, to include a spill prevention control and countermeasure plan. This plan must be created in conjunction with the proper Town staff and emergency personal.

NTE finds this order acceptable. (NTE 15, p. 15; Town 3, p. 2)

221. The PZC requests that the Fire Marshal, the Town Manager, and all other appropriate Town staff be notified as soon as practical within the first hour of occurrence of any spills and/or non-routine, unexpected situations that arise at the facility that may pose a heightened risk to the public.

NTE finds this order acceptable. (NTE 15, p. 15; Town 3, p. 3)

222. The PZC requests that the owner/applicant provide access to an on-site first aid station to all employees during the construction phase of the project.

NTE finds this order acceptable. (NTE 15, p. 16; Town 3, p. 3)

Water Supply and Utilities

223. The PZC requests that engineering drawings for the design for the improvements to the water system (from Plainfield) be submitted to the Town Engineering Department/Planning Department for review to verify that there will be enough water in said supply for the proper fire protection through the construction phase and thereafter.

NTE finds this order acceptable in part and appeals the order in part. NTE would share the Town's request to review engineering design drawings with the CWC and would comply with all applicable state and local laws and regulations related to water supply improvements, the connection of the Killingly and Plainfield water systems and the adequacy of that water supply to the KEC facility. However, NTE cannot unilaterally commit to the Town's request without the consent of CWC. Therefore, NTE appeals only this limited portion of the order. (NTE 15, p. 16; Town 3, p. 3)

224. The PZC requests that water supply improvements from CWC, involving the Killingly system interconnection with the Plainfield system, receive permit and other necessary approvals from the DEEP and DPH before any work on the main site commences. In addition, the PZC requests that the plans for installation of water mains receive all local and DOT road disruption and restoration permits, including detailed plans for maintenance and protection of traffic, before any work on the main site commences.

NTE finds this order acceptable in part and appeals the order in part. NTE and the CWC would comply with all applicable State and local requirements related to water supply improvements associated with the connection of the Killingly and Plainfield systems, including any road opening permits or approvals. Work related to these improvements would likely occur concurrently, with other on and off-site project improvements. However, NTE does not believe that the water system improvements need to be completed before the commencement of "any work on the main [Project] site." NTE, therefore, appeals this limited portion of the Commission's order. (NTE 15, pp. 16-17; Town 3, p. 3)

225. The PZC requests that the owner/applicant confirm with the Town Engineering Department/Planning & Development Department, after construction and all improvements, that there is sufficient water supply to provide for the operation of the plant under all circumstances and for the fire protection for the duration of the project. (Reference is hereby made to the correspondence from CT Water Company, stating the project is to be revisited annually.)

NTE finds this order acceptable. NTE will provide the Town with information from the CWC regarding the sufficiency of the water supply as requested. (NTE 15, p. 17; Town 3, p. 3)

226. The PZC requests that appropriate bonds be provided to the Town to ensure road repair and maintenance and protection of traffic associated with any failure, settlement, defect or other similar associated cost associated with water main installation.

NTE finds this order acceptable. NTE recognizes that it must comply with all local requirements for any work that may occur within local roadways, including any and all necessary bonding requirements. (NTE 15, pp. 17-18; Town 3, p. 3)

227. The PZC requests that plans for the installation of sewer, water main and gas pipelines in Lake Road, including detailed plans for maintenance and protection of traffic, be submitted to the Town (Engineering Department/Planning & Development Department) for review and approval before any site work shall commence.

NTE finds this order acceptable in part and appeals this order in part. NTE, in cooperation with CWC, Eversource and the Town, would comply with this order and submit all plans for sewer, water and gas line work in Lake Road to the Town prior to the commencement of work within Lake Road. However, NTE does not believe that the commencement of this permitting for work within Lake Road needs to occur "before any site work shall commence." NTE, therefore, appeals only this limited portion of this order. (NTE 15, p. 18; Town 3, p.3)

228. The PZC requests that natural gas system interconnection and improvements necessary to supply fuel for the Project receive all local, state and federal approvals required before any site construction shall commence. The PZC also requests that all such approvals be filed with the Town (Engineering Department/Planning & Development Department).

NTE finds this order acceptable in part and appeals the order in part. NTE will receive all necessary local, state and federal permits and approvals for the natural gas interconnection service required for the KEC facility, and it agrees to file all such approvals with the Town. NTE expects that permitting for the gas line interconnection will occur concurrently with other site development activity and does not need to occur "before any site work shall commence." NTE, therefore, appeals only this limited portion of this order. (NTE 15, pp. 18-19; Town 3, p. 3)

229. The PZC requests that appropriate bonds be provided to the Town to ensure road repair and maintenance and protection of traffic associated with any failure, settlement, defect or other similar associated cost associated with utility installations.

NTE finds this order acceptable. (NTE 15, p. 19; Town 3, p. 3)

Widening of Lake Road and Traffic

230. The PZC would like to see the switchyard be moved across the street (to the north side of roadway) onto the main location of the proposed energy power plant. The reasoning behind this is as follows:

- the removal of high tension lines over the roadway:
- less impact on the rural neighborhood;
- minimize the impact on the cemetery that is located on the present switchyard site; and
- allow the minimization of the curve radius on the widening of Lake Road.

NTE appeals this order for the following reasons, in response to the PZC's four listed concerns:

a) Due to the current configuration, location and size of structures of the existing transmission line right of way east of the Generating Facility Site, as well as the topography on the Generating Facility Site and the existing transmission line right of way, the interconnection with the Eversource 345 kV transmission system would still be required to take place south of Lake Road, on the Switchyard Site. Therefore, the transmission lines would still be required to cross Lake Road, even if the switchyard itself was located on the Generating Facility Site;

b) There are currently four transmission lines (two 115 kV, two 345 kV) crossing Lake Road approximately 550 linear feet from the location of KEC's proposed Lake Road crossing. The proposed location of the switchyard is immediately adjacent to this major transmission corridor. The location of the switchyard and transmission line crossing over Lake Road is not inconsistent with what currently exists in this area. In addition, placement of the utility switchyard north of Lake Road would significantly lessen the amount of equipment setback to Lake Road, as well as increasing the required amount of grading, potential blasting and potential tree clearing close to the property boundary required, thereby increasing visual impact of the entire project;

c) The cemetery will be protected and enhanced even with the Utility Switchyard on the Switchyard Site. Buffer has been maintained where possible, and a retaining wall has been incorporated into the design to maximize separation where a buffer cannot be established. NTE would work with the State Historic Preservation Office to implement construction and operational measures to prevent impact and to better showcase the cemetery as a local historical resource; and

d) The design of the curve radius is independent of the location of the Utility Switchyard. Rather, the location of existing transmission line towers, neighboring properties, and the cemetery are the key factors. Notwithstanding, NTE is proposing to widen the width of the road to accommodate two WB-62 Design vehicles traveling in opposite directions. The design of the roadway will be coordinated with the Town Engineering Department and all applicable DOT and Town specifications will be met. (NTE 15, pp. 19-21; Town 3, pp. 3-4)

231. The PZC requests that engineering drawings for the widening and realignment of Lake Road be submitted to the Town Engineering Department/Planning Department for review and approval. The design shall allow safe travel way and sight distance for large tractor trailer trucks/tankers (WB-62 design vehicles) and Town fire trucks traveling east of the plant entrance.

NTE finds this order acceptable. (NTE 15, p. 21; Town 3, p. 4)

232. The PZC requests that other signage needed to restrict truck traffic west of the site entrance be provided at the direction of the Town Engineering Department.

NTE finds this order acceptable. (NTE 15, p. 21; Town 3, p. 4)

233. The PZC requests that any stone walls/fences disturbed by the road realignment be restored at a safe distance from the edge of the travel way to maintain the rural character of the road. The PZC also requests that the owner/applicant shall bear the burden of the cost of said restoration.

NTE finds this order acceptable. (NTE 15, p. 22; Town 3, p. 4)

234. The PZC requests that all project construction traffic be required to enter from the east and leave to the east toward Attawaugan Crossing Road /1-395 along Lake Road. The PZC also requests that traffic not be permitted to travel west on Lake Road toward Route 101.

NTE finds this order acceptable. NTE assumes for the purposes of this response that "construction traffic" does not include personal vehicles driven by construction workers and employees at the NTE site. Passenger vehicles may well use portions of Lake Road to the west of the site in accordance with current restrictions. (NTE 15, p. 22; Town 3, p. 4)

235. The PZC requests that, when traffic volumes and deliveries during construction create traffic issues, the contractor be required to comply with the Town's request to provide manual traffic control support or modify activities to alleviate congestion and ensure public safety, and that non-compliance result in project shut-down until measures correct the issues to the Town's satisfaction. The PZC requests that the contractor be required to alert the Town of any deliveries of oversize vehicles that may need traffic control.

NTE finds this order acceptable in part and appeals this order in part. NTE will comply with this order and will work with the Council and the Town throughout the construction of the KEC to ensure adequate and appropriate traffic and public safety measures are in place and will alert the Town prior to delivery of any over-sized vehicles, equipment or facility components. NTE disagrees that non-compliance should result in shut-down of KEC construction activities; rather, should an issue arise, NTE and the Town would determine the specific cause and immediately agree on measures to address the particular issue of concern. Therefore, NTE appeals only this limited portion of the PZC order. (NTE 15, pp. 22-23; Town 3, p. 4)

236. The Town requests that inspection of all road construction along Lake Road is inspected by either the Town, or in its sole discretion a designated representative, paid for by NTE, (to make sure that all construction is done to the proper standards and that public safety is recognized and properly required traffic controls, and construction matters are in place at all times). The Town shall have the authority to direct the owner/applicant to cure deficiencies in workmanship. Non-compliance would result in road construction project shut-down until measures to correct the issues to the Town's satisfaction.

NTE finds this order acceptable in part and appeals this order in part. NTE will comply with this order and will work with the Council and the Town throughout the construction of the KEC to ensure adequate and appropriate traffic controls and public safety measures are in place for road construction along Lake Road. NTE disagrees that non-compliance should result in shut-down of KEC construction activities; rather, should an issue arise, NTE and the Town would determine the specific cause and immediately agree on measures to address the particular issue of concern. Therefore, NTE appeals only this limited portion of the PZC order. (NTE 15, p. 23; Town 3, p. 4)

237. The Town requests that the road widening of Lake Road is completed prior to the commencement of site construction activities. Also, owner/applicant must provide the Town with a plan on how they are going to acquire the property in order to complete the widening of Lake Road.

NTE finds this order acceptable in part and appeals the order in part. Lake Road widening and property acquisition plans would be developed and submitted to the Town for review prior to the commencement of any road widening improvements. Other site construction activities may commence prior to the approval of the Lake Road widening plans. Reconstruction of the roadway would likely be completed early in the construction process, but would not need to occur "prior to the commencement of site construction activities." Therefore, NTE appeals only this limited portion of the PZC order. (NTE 15, p. 24; Town 3, p. 4)

238. The Town requests bonding to ensure that all road work is constructed and completed properly and on time.

NTE finds this order acceptable. NTE will comply with all bonding requirements for the Lake Road improvements. (NTE 15, p. 24; Town 3, p. 4)

Pre-Construction and Construction

239. The Town requests that a copy of any construction sequencing and management plan to include, but not be limited to, detailed project schedules for all work activities with weekly work plans, lay down areas, worker numbers, worker parking, traffic management, delivery routes, and coordination with local authorities regarding any potentially disruptive deliveries. The Town requests that it receive a copy of said construction sequencing and management plan, and that said plan shall be delivered in a prompt and timely manner, including any changes thereto.

NTE finds this order acceptable. NTE will comply with this order and fully expects that the described construction sequencing and management plan will be required as a part of the Council's D&M Plan. (NTE 15, pp. 24-25; Town 3, p. 4)

240. The PZC requests that a pre-construction meeting with key town staff (Engineering Department/Planning & Development/ Building Office/Fire Marshal) is required no less than eight weeks in advance of any proposed construction commencement including initial site clearing and preparation.

NTE finds this order acceptable. (NTE 15, p. 25; Town 3, p. 5)

241. The PZC requests that notification be provided to the Town and key Town staff, e.g. Engineering Department/Planning & Development/Building Office/Fire Marshal, no less than three weeks in advance of:

a) Commencement of facility construction:
b) Commencement of facility testing;
c) Commencement of commercial operation;
d) Commencement of any routine maintenance which generates loud or unusual noises; and
e) Permanent termination of any operation of the project.

NTE finds this order acceptable. (NTE 15, pp. 25-26; Town 3, p. 5)

242. The PZC requests that notification be provided to the Town of any unscheduled maintenance which generates loud or unusual noises shall be made as soon as the need is apparent.

NTE finds this order acceptable. (NTE 15, p. 26; Town 3, p. 5)

243. The Town requests copies of any required construction reports submitted to the Council that are part of the Council's regulations and restrictions, including but not limited to, quarterly progress reports, starting with the commencement of construction and ending with the commencement of commercial operation.

NTE finds this order acceptable. (NTE 15, p. 26; Town 3, p. 5)

244. The PZC requests that the Town and key town staff, e.g. Engineering/Planning & Development/Building Office/Fire Marshal shall receive copies, notices and the opportunity to review any other applications, petitions or amendments that may be required in conjunction with this project and/or necessary for its interconnection into the public water supply lines, the electrical transmission grid and/or fuel pipeline, or any other related activity.

NTE finds this order acceptable. (NTE 15, p. 26; Town 3, p. 5)

245. The Town requests that an independent third party engineering/environmental professional be hired by the Town to act as its representative, paid for by the owner/applicant, to be on site every day during the construction period to verify that all proper procedures, regulation, restrictions, etc. on the federal, state and local level are being met and followed by the owner /applicant and its representatives. The third party (town representative) shall have the authority to direct the contractor to cure deficiencies in workmanship, including requiring additional sedimentation and erosion control measures and dust control. If deficiency is not cured, the Town shall have the authority to shut down the project until the deficiencies are cured.

NTE finds this order acceptable in part and appeals this order in part. NTE does not object to the request that the project hire a third party engineering/environmental professional to monitor construction activity. NTE would look to the Council to provide the scope of work to be performed and inspection frequency by a third-party professional. NTE appeals that limited portion of the order that attempts to dictate the need for daily site inspections. (NTE 15, pp. 26-27; Town 3, p. 5)

246. The PZC requests that the entire site during the construction phase and after shall be surrounded by security fencing, and said security fencing shall be gated at night to protect the public.

NTE finds this order acceptable. (NTE 15, p. 27; Town 3, p. 5)

Oil Storage Tank

247. Eliminate the oil storage tank spill containment berm and change the welded steel tank design to a double wall or "tank-in-a-tank" design. The bottom of the tank shall have a double floor with interstitial leak detection monitoring. The tank bottom shall have an engineered cathodic protection system. Exterior tank coating shall be a neutral beige/tan color to be selected by the Town Engineering Department. The welded steel tank shall be designed and constructed in accordance with API Standards and shall comply with seismic design standards. Hydrostatic and leak testing and inspection shall be under the direction of a competent third party licenses professional engineer. Underground fuel piping shall be double walled with interstitial leak detection sensing. The fuel unloading area shall be designed and constructed with spill containment suitable to handle the largest tanker capacity used to offload fuel to the storage tank and shall conform to 40 C.F.R. §112. A Spill Prevention, Control and Countermeasures Plan and Facilities Response Plan conforming to 40 C.F.R. §112 shall be prepared and implemented. The operator shall and facility personnel shall receive and keep updated all of their required spill response training and shall retain the services of an on-call Connecticut licensed spill response contractor to assist with large spills throughout the lifetime of the power generating plant.

NTE finds this order acceptable. (NTE 15, pp. 27-28; Town 3, pp. 5-6)

Storm Drainage

248. PZC defers to IWWC on storm drainage and also refers to the TRC Report.

NTE refers to its responses to IWWC orders noted above. (NTE 15, p. 28; Town 3, p. 6)

249. The Town also requests that the owner/applicant be held to the standards listed in the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* and the *2004 Connecticut Stormwater Quality Manual.*

NTE finds this order acceptable. (NTE 15, pp. 28-29; Town 3, p. 6)

Pedestrian and Vehicular Access

250. The PZC requests that the owner/applicant provide safe and secure pedestrian access to and from the employee parking lot and the main construction site.

NTE finds this order acceptable. (NTE 15, p. 29; Town 3, p. 6)

251. The PZC requests that, at all times (pre-construction, construction, and post construction), the owner/applicant make sure that there is an ingress and egress available to emergency services vehicles.

NTE finds this order acceptable. (NTE 15, p. 29; Town 3, p. 6)

252. The PZC notes that no permanent access is shown on any plans with regard to the switchyard if the switchyard stays on the southern side of Lake Road. This is a concern for public health, safety, and general welfare.

NTE notes that the permanent access to the switchyard site is shown on the original site plan included as a part of NTE's Application on Figure 2-8. (NTE 15, p. 29; Town 3, p. 6)

Noise Abatement

253. The State of Connecticut noise standard and the Town noise ordinance defines ambient/background sound as the L_{90} (not L_{EQ}) standard. Noise analysis and background noise levels shall be rerun using this standard for compliance. The standard also has a numerical definition for prominent discrete tones that shall also be included in the report. If a prominent discrete tone sound is generated by the project, then the allowable 51 dBA limit is reduced by 5 dBA.

NTE appeals this order. The Connecticut noise regulations and the Town noise ordinance identify the L_{90} to characterize background noise; however, background noise is not used to determine compliance unless measured levels are in excess of the standards, which is referred to as 'high-background noise'. If measured levels are in excess of the standards (51 dBA), a sound source is not permitted to exceed the background noise level by 5 dBA. The measured L_{90} values presented in Section 7.4 of the CSC Application are well below the most stringent 51 dBA standard; therefore, the area surrounding the KEC Site is not considered to have high-background noise and the absolute standards apply. KEC meets the most stringent 51 dBA sound level limit applicable at the property boundaries. Additionally, no discrete tones are expected to be associated with normal operation of the KEC. (NTE 15, p. 29-30; Town 3, p. 6)

254. The PZC requests that the noise modeling results be presented for discrete residential location property lines to show if compliance with the noise standards is achieved because the ambient measurement locations are not necessarily at the actual residences. The standards apply at the residential property lines.

NTE appeals this order. The Connecticut noise regulations and the Town noise ordinance identify the point of compliance as the property boundary. The analysis completed for the KEC includes modeling results at discrete locations that confirm compliance at the property boundary; therefore, normal operation of the KEC will be in compliance with state and local noise standards. The isopleth map, provided in Figure 7-5 of the CSC Application and in the Updated Acoustic Modeling Analysis, illustrates the level of sound resulting from KEC's normal operation in areas surrounding the KEC Site. (NTE 15, pp. 30-31; Town 3, p. 6)

255. The PZC notes that there is no analysis in the application of the potential impact that the modeled operational sound levels may result in non-conformance with noise standards. The PZC requests that the analysis be expanded to show the modeled project sound levels at discrete residential locations, the measured late night ambient L_{90} (not L_{EQ}) sound levels, and what increases over ambient are expected at night. Showing compliance with the regulatory limits is required, but simply meeting a limit does not necessarily mean that no impacts will occur. A basis or rationale for determining if the expected project noise levels and/or the increase over ambient conditions are significant shall also be provided.

NTE appeals this order. Normal operation of the KEC has been demonstrated to comply with applicable state and local standards, which do not require comparison to ambient conditions unless a project setting is identified as a high-background noise area (as outlined in Section 22a-69-3.6 of the Connecticut noise regulations). As noted above, the area surrounding the KEC Site is not considered a high-background noise area. (NTE 15, p. 31-32; Town 3, pp. 6-7)

256. A statement is made that there would not be a perceptible change in sound at locations near Alexander Lake, yet, there is no analysis of this within the report. Further, no ambient measurements were conducted near Alexander Lake to support this assertion. NTE indicates the noise contours show Project levels of 27 dBA or lower, and that the lowest nighttime sound measured anywhere was 26 dBA. However, the contours provided by NTE clearly show Project levels of greater than 30 dBA at Alexander Lake. The PZC believes that increased levels of 3 dBA or more are considered perceptible and applicant's data therefore indicates a perceptible change.

NTE appeals this order. Modeled sound levels near Alexander Lake show decibel values ranging from the mid-20s to the low-30s dBA in the Application (Figure 7-5) and even lower levels for more of the Alexander Lake area in the Updated Noise Modeling, which reflects the layout refinements and the effect of intervening structures. KEC has demonstrated compliance with the stringent 51 dBA limit applicable at the property boundaries and sound levels at Alexander Lake are well below that limit. Imperceptibility or inaudibility under all operating conditions is not required by the Town or the State of Connecticut, and is an unrealistic expectation for this Project or any other industrial or commercial activity. (NTE 15, p. 32; Town 3, p. 7)

257. The PZC notes that construction may occur 7 days per week, and that construction could last for 3 years. The PZC requests that some numerical analysis of construction noise levels be provided to support NTE's assertion that no adverse or long-term impacts will occur.

NTE appeals this order. Both the State and local noise requirements list construction, including loud noises such as blasting, as exceptions to the requirements, if created during daytime hours. NTE has committed to restricting particularly loud construction activities (i.e., blasting, steam blows) to daytime hours. Although a numerical analysis could be conducted, it could only employ assumptions based on the anticipated range of activities during certain phases of construction, which would vary depending on construction progress and would not be particularly meaningful. NTE would establish a procedure prior to the start of construction to address the handling of construction noise-related complaints. NTE also notes construction work would typically occur five days per week. (NTE 15, pp. 32-33; Town 3, p. 7; Tr. 3, p. 458)

258. The PZC requests that the owner/applicant shall provide to the Town's staff (e.g. Engineering Department/Planning Department) the name and number of the owner/applicant's key personnel to contact that can resolve an issue the Town may have with noise.

NTE finds this order acceptable. (NTE 15, p. 33; Town 3, p. 7)

259. The PZC requests that the owner/applicant provide notification to the Town's staff (e.g. Engineering/Planning & Development/ Building Office/ Fire Marshal) if there is going to be noise for an extensive period of time so the public may be notified.

NTE finds this order acceptable. (NTE 15, p. 33; Town 3, p. 7)

260. In the event that a noise abatement issue cannot be resolved, in the Town's sole discretion in a timely and effective manner; the Town shall follow and enforce its existing noise ordinance found in its Code of Ordinances Chapter 12.5 (Planning and Development) Article VI (Noise Ordinance, Sections 12.5-120, et. seq., and as may be amended.

NTE finds this order acceptable. (NTE 15, p. 34; Town 3, p. 7)

Other Pollution or Related Issues

261. The PZC requests that the Council review and consider additional analysis regarding the-effect of emissions on nearby sensitive receptors. The additional analysis should include an evaluation through the DPH on the effect that air emission from the plant will have on the incidence(s) of asthma and other respiratory ailments in the Town of Killingly and surrounding communities. The Town of Killingly is concerned with the effects upon young children and the elderly, as there are schools and elderly care facilities all located within an approximately a 2.00 / 3.00 mile radius of the proposed site development. The PZC refers the Council to the following Center for Disease Control and Prevention (CDC) and DPH sources:
a) https://www.cdc.gov/air/pollutants.htm; and
b) http://www.ct.gov/dph/cwp/view.asp?a=3137&q=398480.

NTE appeals this order. KEC has been designed to comply with the National Ambient Air Quality Standards (NAAQS), which have been established by the U.S. Environmental Protection Agency (EPA) to protect the most sensitive populations, such as children, elderly, and individuals suffering from respiratory disease. These and other air quality requirements are addressed in NTE's pending air permit application now undergoing DEEP review. Additionally, operation of

the KEC will displace older, less-efficient generating units, improving the air quality of the surrounding area. (NTE 15, pp. 34-35; Town 3, p. 7)

262. For the emergency generator and fire pump respectively. Tier II and Tier III emission standards are proposed. These comply with New Source Performance Standards (NSPS) IIII. But for Best Available Control Technology (BACT), one must consider available and innovative technologies. The PZC believes that it is reasonable to reject Tier IV engines, which would typically use selective catalytic reduction (SCR). But there are Tier III (less polluting) engines widely available at the rating specified for the emergency generator.

NTE appeals this order. No Tier III standards have been promulgated for engines greater than 560 kilowatt (kW), and the emergency generator proposed for KEC is 1,500 kW. KEC's proposed fire pump engine (228 kW) meets the Tier III standard. (NTE 15, p. 35; Town 3, p. 7)

263. The PZC notes that emission for formaldehyde from the combustion turbine generator (CTG) are based upon the Maximum Achievable Control Technology (MACT) floor emission rate determined by EPA for the National Emission Standard for Hazardous Air Pollutants (NESHAP) Subpart YYYY, as representative for a CTG equipped with DLN combustors and an oxidation catalyst, Subpart YYYY applies to major sources of Hazard Air Pollutants (HAPs). The project is an area source. Subpart YYYY does not apply to duct burners. The application should either use vendor data for formaldehyde emissions, or use AP42 emission factors.

NTE appeals this order. AP-42 emission factors are based upon emissions testing conducted more than 20 years ago on uncontrolled and now-obsolete combustion turbine generators (CTGs), and are inappropriate to apply to the unit proposed for the KEC facility, which is a new state-of-the-art CTG equipped with dry low nitrogen oxide (NOx) combustors and an oxidation catalyst. EPA's MACT Floor evaluation involved extensive testing of similar state-of-the-art CTGs equipped with similar emission controls. As a result, NTE believes the Subpart YYYY values represent the most applicable formaldehyde emission factor for the KEC CTG. The formaldehyde emission rates used by KEC are identical to the limits approved by DEEP as BACT in the most recent combined cycle turbine project in Connecticut (Towantic Energy), as well as those proposed in the most recent application currently before the DEEP (Bridgeport Harbor). NTE also notes that the Subpart YYYY regulation actually does not apply to major sources of HAP; rather, it applies to a CTG located at a major source of HAP, as determined by potential emissions from the entire facility, not just from the CTG. (See 40 CFR 63.6085.) KEC is not a major source of HAP, and therefore it is correct that Subpart YYYY does not apply to the KEC CTG. However, Subpart YYYY remains relevant as setting forth up-to-date and representative emission factors for the KEC CTG. Also, although duct burners are not directly covered under Subpart YYYY, in cases such as this where such equipment would be integral and difficult to separately monitor, it is common practice to incorporate duct burner emissions into the CTG emission figures. (NTE 15, pp. 35-37; Town 3, p. 8)

264. The Town requests that it be given the opportunity to review Air Permit conditions imposed by DEEP, and if there are changes to the plant design and operation, the Town requests that it be given sufficient time to review and respond.

NTE finds the order acceptable. While outside the scope of the Council's authority, the Town currently has reviewed and will continue to have the opportunity to review and comment on the NTE Air Permit application now being reviewed by DEEP. (NTE 15, p. 37; Town 3, p. 8)

Erosion and Sediment and Dust Control

265. The PZC requests that phasing and details of the grading activities be provided, with additional E&S control information shown for each phase on the drawings. Locations for soil, topsoil and rock stockpiles shall be provided, with appropriate means to control erosion and sedimentation. Location for the placement of rock crushing and screening operations shall be shown along with appropriate means of E&S Control. Total quantities of estimated earth excavation, rock excavation and fill volumes shall be provided. Any soil material brought to the site and used on the project shall be tested at a frequency of 1 sample per 1000 cubic yards for all constituents to determine compliance with the DEEP standards for Residential Direct Exposure and GA Pollutant Mobility Criteria.

NTE finds the order acceptable. Should the project be approved by the Council, NTE will prepare and submit a detailed phasing and construction sequencing plan in conjunction with registration under the DEEP General Permit for the Discharge of Stormwater Associated with Construction Activities. This registration will be prepared by a licensed professional engineer and will require a 3rd party review by a second licensed professional engineer prior to submittal to the DEEP. NTE expects approximately 220,000 cubic yards of material to be relocated on site, resulting in a balanced cut and fill. As described in Section 3.2.1 of the Application (Volume I), the intent of the grading plan is to minimize the total net import or export of material to or from the site. Limited quantities of structural fill may need to be brought to the site if adequate material is not present. Imported soils will be subject to appropriate testing. (NTE 15, pp. 37-38; Town 3, p. 8)

266. The PZC requests that the temporary sediment basins be added upgradient of Wetland Al and A3 and shall be properly sized in accordance with the Connecticut Water Quality Manual.

NTE finds this order acceptable and notes that change in the Revised SWPPP and Updated E&S Plan. (NTE 15, p. 38; Town 3, p. 8)

267. The General Permit for Stormwater for Construction Activities requires that, for site disturbances of 15 acres or more, the SWPPP and stormwater system design must be reviewed and certified by a third-party independent Connecticut Licensed Professional Engineer not connected to the project; thus, the PZC requests that this be a condition of approval.

NTE finds this order acceptable. (NTE 15, pp. 38-39; Town 3, p. 8)

268. The PZC requests that a detailed plan for dust control and management for site grading and on-site soil/rock processing be required. Significant volumes of water will be required to prevent fugitive dust and tracking onto Lake Road. Provisions for water supply, water tanker, sprinklers and equipment water sprays shall be provided and in place before site work begins.

NTE finds this order acceptable. (NTE 15, p. 39; Town 3, p. 8)

269. The Town requests that the Applicant become familiar with the Town's Earth Filling and Excavation Regulations (Section 560 - Town Zoning Regulations), and that the Applicant follow said regulations as a requirement. The PZC requests that the Applicant provide the Commission with the detailed plan for dust control and management as noted above.

NTE finds this order acceptable. (NTE 15, 39; Town 3, p. 8)

Site Plan Conditions/Grading

270. The Town requests that within the main plant parcel, the owner/applicant shall move the limits of all grading activities, clearing and disturbance a minimum of 75 feet from all wetland boundaries and maintain the tree canopy in this zone.

NTE finds this order acceptable in part and appeals this order in part. See NTE's response to IWWC in FOF #212 above. (NTE 15, pp. 39-40; Town 3, p. 9)

271. The Town requests that the location of the administration building, compressor station, main plant facility, tanks and other site features shall be moved to accomplish the required separation.

NTE finds this order acceptable in part and appeals this order in part. See NTE's response to IWWC in FOF #212 above. (NTE 15, p. 40; Town 3, p. 9)

272. The Town requests that slopes should be no greater than two horizontal to one vertical and have turf established to stabilize the surface from erosion. The Town requests that erosion netting or turf reinforcing mat be used on all slopes equal to or steeper than three horizontal to one vertical along the north side of the site along the wetlands, if the Council allows the slopes to be greater than 2:1.

NTE finds this order acceptable in part and appeals this order in part. See NTE's response to IWWC in FOF #212 above. (NTE 15, p. 40; Town 3, p. 9)

Landscaping

273. The Town requests that NTE provide a complete landscaping plan for the main plant site and the switchyard site prepared by a licensed landscape architect. The Town requests that the plan be submitted to the PZC for review and approval. The plan shall provide adequate tree and shrub plantings to provide an effective visual screen from Lake Road and the residential property abutting on the west. Areas of the site disturbed by site grading activities that are not part of the active facility shall be replanted with trees to reestablish wooded/ forested coverage. There must be enough soil (12" - 18" of combined top spoil and sub soil) to sustain such forested coverage.

NTE finds this order acceptable. The revised grading plan and elimination of the fuel tank berm will allow the project to maintain greater vegetated buffers along the western property boundary. Where possible, existing vegetation along Lake Road and the western boundary will also be maintained. Where grading requires removal of vegetation in areas that are not part of the active facility, forested coverage will be re-established to provide visual screening. A landscaping/planting plan will be prepared and presented as a part of the D&M Plan for review by the Town and approval by the Council. (NTE 15, pp. 40-41; Town 3, p. 9)

274. The Town requests that buffers be doubled within certain areas of the site, where possible to limit the impact upon the surrounding residential area.

NTE finds this order acceptable in part and appeals this order in part. NTE will attempt, where possible, to maintain existing vegetation along the perimeter of the KEC site and increase the size of that buffer nearest the adjacent residential neighbors. NTE cannot commit, at this point, to the "doubling" of these buffers and therefore appeals this portion of the PZC order. (NTE 15, p. 41; Town 3, p. 9)

275. The Town requests that the owner/applicant comply with the necessary lighting to adhere to the Town's Dark Sky regulations found in the Town Subdivision Regulations Article IV Section 17 Lighting - "Outdoor lighting…shall be designed to provide the minimum lighting necessary to ensure adequate safety, night vision, and comfort, and shall not create or cause excessive glare on adjacent properties and public street rights-of-way. Streetlights shall be avoided in subdivisions located in rural areas of Town."

NTE finds this order acceptable. (NTE 15, p. 41-42; Town 3, p. 9)

Neighborhood Impact

276. Should the Council and/or DEEP find that factors and reasons for not moving the switchyard override the PZC's preference for the move, the PZC requests that the owner/applicant do research in the graveyard area, outside of the stone walls to verify that the switchyard will not interfere with any possible grave sites located outside of the stone walls.

NTE finds this order acceptable. NTE will comply with this order by working with the SHPO to identify appropriate measures in areas where the 50-foot buffer recommended by the SHPO cannot be maintained. (NTE 15, p. 42; Town 3, p. 9)

Architectural and Aesthetic Impact

277. The PZC requests that, where it can be accomplished, buffer zones be doubled. Where buffer zones cannot be doubled, PZC requests that they be maximized and that plantings/landscaping are put in place that buffers KEC from the surrounding area.

NTE finds this order acceptable in part and appeals this order in part. NTE will attempt, where possible to maintain existing vegetation along the perimeter of the KEC site and increase the size of that buffer nearest the adjacent residential neighbors. NTE cannot commit, at this point to the "doubling" of these buffers and therefore appeals this portion of the PZC order. (NTE 15, pp. 42-43; Town 3, p. 9)

278. The PZC would like the total project to be on one parcel of real estate.

NTE appeals this order. See NTE's Response in FOF #230 above. (NTE 15, p. 43; Town 3, p. 9)

Zoning Regulations

279. The PZC requests that the owner/applicant be aware of other Town Zoning Regulations that apply to this project and should be followed:

a) Section 450, *et seq.* - Dimensional Regulations;

b) Section 470, *et seq.* - Site Plan Review;

c) Section 560, *et seq.* - Earth Filling & Excavation;

d) Section 700, *et seq.* - Special Permits; and

e) Section 790 –Bonding.

NTE finds this order acceptable. NTE is familiar with the identified provisions of the Town Zoning Regulations. (NTE 15, p. 43; Town 3, p. 3)

Incremental Changes to Environmental Review in Consideration of NTE's ARRR Orders Changes

280. KEC's HRSG stack location would remain the same, as would its existing and final ground elevations. (Tr. 7, pp. 1056-1057)

281. The distance from the center of the KEC site to the nearest off-site residence would not materially change if the ARRR changes were implemented as proposed by NTE. (Tr. 7, p. 1054-1055)

282. The Project would continue to comply with the same noise standards if the ARRR changes were implemented as suggested by NTE. (Tr. 7, p. 1055-1056)

283. NTE's visibility analysis would remain essentially the same. There would only be very minor shifts of some of the taller equipment such as the air-cooled condenser. Removal of the berm around the ULSD tank would not be a material change. (Tr. 7, p. 1057)

284. NTE's vernal pool analysis would not be materially affected. (Tr. 7, p. 1057-1058)

285. The total length of the on-site access drive would increase. (Tr. 7, p. 1058)

Permits and Approvals

United States Army Corps of Engineers (ACOE)

286. A Clean Water Act Section 401 Permit from the U.S. Army Corps of Engineers (ACOE) would not be required for the construction on the Generating Facility Property. An application for a general permit to be filed for switchyard site would be following the renewal of the General Permit Program in the summer of 2016. (NTE 1, Vol. 1, p. 193)

Connecticut Department of Energy and Environmental Protection (DEEP)

287. NTE submitted its application to DEEP regarding Permit to Construct, PSD, and NNSR on April 15, 2016. NTE submitted its ambient air quality analysis on May 27, 2016. DEEP issued its sufficiency notice on May 31, 2016. As of January 26, 2017, the tentative determination from DEEP was expected to be available for public review in the very near future. As of March 23, 2017, NTE expects to receive a tentative determination on its Air Permit soon and have it finalized approximately 60 to 90 days later. (NTE 1, Vol. 1, p. 193; Tr. 7, p. 1059; Tr. 8, pp. 1176-1177)

288. NTE would submit its application to DEEP for an Acid Rain Permit no later than 24 months prior to operation. NTE's Acid Rain Permit has not yet been filed. (NTE 1, Vol. 1, p. 193)

289. NTE's Clean Water Act, Section 401 Water Quality Certification would be reviewed along with other DEEP water discharge approvals as necessary. (NTE 1, Vol. 1, p. 193)

290. NTE's Wastewater Discharge Permit for discharge to sanitary sewer would be issued prior to discharge. It has not yet been filed. (NTE 1, Vol. 1, p. 193)

291. NTE's National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater construction. This would be reviewed prior to construction. NTE's Notice of Intent has not yet been filed. (NTE 1, Vol. 1, p. 193)

292. NTE's Natural Diversity Database review by DEEP included an initial consultation that was completed on March 18, 2016. The recommended studies have been completed and are under DEEP review. (NTE 1, Vol. 1, p. 193)

Connecticut Department of Transportation (DOT)

293. Since the Project does not have direct access to a State highway, and no off-site roadway improvements would be required to offset the impact of site related traffic, an encroachment permit from DOT Direct II Administrative Office would not be required. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 1)

U.S. Fish & Wildlife Service

294. The U.S. Fish & Wildlife Service (USFWS) approved a bat monitoring work plan on May 11, 2016 and confirmed that no other studies would be required. On September 27, 2016, USFWS confirmed that it had reviewed the monitoring report and has no questions or comments. (NTE 1, Vol. 1, p. 193; NTE 7, response 57)

Federal Aviation Administration (FAA)

295. By letter dated July 18, 2016, the Federal Aviation Administration (FAA) issued a Determination of No Hazard to Air Navigation (No Hazard Determination) for the 150-foot HRSG stack. The No Hazard Determination expires on January 18, 2018 unless construction commences or it is extended/revised by the FAA. (NTE 1, Vol. 4, Appendix J)

296. According to the No Hazard Determination, marking and lighting of the HRSG stack is not required for aviation safety, but could be performed on a voluntary basis. NTE does not plan to mark or light the HRSG stack in order to reduce the visual impact of the stack on surrounding areas. (NTE 1, Vol. 4, Appendix J; NTE 7, response 67)

297. If the project is approved, NTE plans to commence construction prior to expiration of the No Hazard Determination, and NTE would provide notice to the FAA for the commencement of construction. (Tr. 7, pp. 1080-1081)

298. It is not necessary for NTE to seek FAA determinations of no hazard to air navigation for other proposed structures on the site. The single No Hazard Determination letter for the HRSG stack is sufficient. (NTE 7, response 66)

299. The proposed HRSG stack would be located approximately 2.9 miles (or 2.6 nautical miles) north-northwest of the 2,700-foot Runway 13/31 of Danielson Airport, the nearest air navigation facility. (NTE 8, response 68, p. 1)

Fuel

Natural Gas

300. Natural gas would be supplied via a new Eversource natural gas pipeline lateral interconnected to one of the two nearby Algonquin Gas Transmission (AGT) pipelines. The AGT pipelines are located approximately two miles to the north of KEC and generally travel in a northeast/southwest direction. (NTE 1, p. 18 – Figure 1-2 and p. 39)

301. NTE has a contract for year-round firm natural gas delivery for KEC. The current contract is for seven years, beginning in 2020. NTE would extend the current natural gas contract or enter into a natural gas supply contract with another regional natural gas supplier prior to 2027, the end date of the current natural gas agreement. (NTE 1, Vol. 1, pp. 16, 19; NTE 7, response 27; Tr. 5, p. 727)

302. KEC's firm natural gas transport contract would provide up to 95,000 million Btu of natural gas per day. This is sufficient to support KEC's operations at maximum output. (NTE 1, Vol. 1, p. 19)

303. Natural gas customers with interruptible service would have their service curtailed before consideration of curtailing service to a firm natural gas customer. (Tr. 7, response 1050)

304. The existing natural gas transmission system is adequate to meet the firm natural gas requirements of the project. KEC is located south of the traditional pipeline constraints that occur farther north of the New England natural gas supply system around the major metropolitan and load centers, resulting in strong fuel reliability for KEC. Thus, the KEC project is not dependent on the completion of gas transmission projects such as the Access Northeast Pipeline Project or Algonquin Incremental Market Project. (NTE 1, Vol. 1, p. 16; NTE 7, response 24)

305. The proposed KEC facility requires approximately 550 psig for gas supply at the inlet of the gas turbine interface (under full load conditions) and approximately 650 psig at the KEC site boundary. The average operating pressure on the Algonquin gas pipeline is in the range of 650 psig and 750 psig. Notwithstanding, on-site gas compression is required to compensate for any pressure drops in the Algonquin gas pipeline or the Eversource distribution line. If the Project is approved, the final design of the natural gas compressor portion of KEC would be included in the D&M Plan. (NTE 1, Vol. 1, p. 39; Tr. 7, p. 1052; NTE 7, response 26)

Ultra-low Sulfur Distillate (ULSD)

306. Backup fuel would be required in order to meet capacity and delivery obligations to ISO-NE, as delivery obligations are not excused even in the event of curtailment of firm natural gas supply. (NTE 1, Vol. 1, p. 19)

307. ISO-NE has instituted a "pay for performance" (PFP) component to the FCA construct to ensure capacity resources are available during periods of system stress (referred to as Capacity Scarcity Conditions) for a multitude of reasons, including but not limited to fuel availability. The PFP is a two-settlement capacity market design that, starting in 2018, will reward capacity resources that make investments to successfully boost performance during periods of system stress. (NTE 14, response 85)

308. While KEC would be predominantly a natural gas-fired facility, the proposed KEC facility would also be able to burn ULSD as an alternative fuel to ensure reliability. KEC's ULSD backup would protect against forfeiting capacity revenues under PFP and also provide the necessary level of reliability to support ISO-NE's system as a result of winter reliability concerns, even though KEC would have a very reliable firm supply of natural gas fuel. (Tr. 2, p. 312; NTE 14, response 85)

309. NTE expects that its ULSD fuel use would be subject to a 720-hour annual limit based on the pending DEEP Air Permit. (NTE 1, Vol. 1, p. 19, 38; Tr. 2, p. 312; Tr. 3, p. 482)

310. NTE anticipates that its DEEP air permit would contain requirements/restrictions on ULSD operation such as, for example, limiting its use to appropriate testing and to meet needs under natural gas curtailment conditions. (Tr. 2, pp. 312-313)

311. NTE projects that ULSD would be needed, on average, for very few hours per year based on historical force majeure or curtailments on the Algonquin pipeline. (NTE 1, Vol. 1, p. 19; Tr. 3, pp. 371-372)

312. Events that would require the use of ULSD are generally not known in advance. (Tr. 3, p. 370)

313. The maximum ULSD consumption rate of the plant, under full load conditions, would be approximately 17,500 gallons per hour. (NTE 7, response 28)

314. On-site ULSD storage would be sufficient for at least two days at full operating load. Although longer periods of ULSD operation would not be anticipated based on historic information, the proposed storage volume would allow a sufficient amount of time to arrange for deliveries of additional ULSD via tanker truck while operating KEC continuously at full load. Truck delivery would replenish the supply should extended use be required. (NTE 1, p. 41; NTE 7, responses 25 and 28)

315. There would be two truck deliveries per hour for the duration of the ULSD operation in order to replenish the storage tank. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 8)

316. The ULSD storage tank, truck unloading area, and associated pumping and piping facilities would be designed in accordance with all applicable regulatory standards, which include established standards for secondary containment to prevent leaks and spills from contaminating the environment. Specifically, the ULSD storage tank would have a lined containment area sized for 110 percent of the ULSD storage tank volume. (NTE 1, p. 41; NTE 7, response 64)

317. NTE expects that, with proper maintenance, ULSD can be stored for up to three years. Initially, the inventory can be maintained with recirculation, water removal, and possible heating. The ULSD would be sampled and analyzed on a regular basis as required to determine if there has been any deterioration of the product and to help predict the remaining life. If the ULSD inventory is not consumed after approximately one year, NTE may consider treating the ULSD with a stabilizer or biocide, as necessary, to control growth of microbial bacteria. One possible fuel biocide additive would be KATHON FP 1.5. (NTE 1, Vol. 1, p. 41; NTE 7, response 30; NTE 23, pp. 12-13)

318. Prior to reaching the end of its useful life, the ULSD inventory could either be sold back to the supplier or sold to a contractor who would resell it for other uses. Then, the ULSD tank would be replenished with fresh ULSD. (NTE 7, response 31)

Project Construction

319. Site preparation would include, but not be limited to, flagging the limits of construction; installing an anti-tracking construction entrance; cutting trees within the defined clearing limits and removing cut wood; chipping brush, branches and small trees and stockpile chips for use on site for erosion and sedimentation controls (E&S Controls) and install E&S Controls. (NTE 1, Vol. 2, Appendix D – Stormwater Pollution Prevention Plan, pp. 9-10)

320. On the 63-acre Generating Facility Property, approximately 24 acres of land (including construction laydown) would be disturbed, leaving approximately 39 acres or 62 percent of the area undisturbed. On the 10-acre Utility Switchyard Property, a total of approximately 4 acres would be disturbed, leaving 6 acres or 60 percent of the area undisturbed. (NTE 1, Vol. 2, Appendix D – Stormwater Pollution Prevention Plan, pp. 6-7; NTE 7, response 32)

321. NTE estimates that there would be approximately 220,000 cubic yards of material relocated on site, resulting in balanced cut and fill. NTE's grading plan is intended to minimize the total net import or export of material to or from the site. (NTE 7, response 7)

322. Limited quantities of structural fill may be needed and brought to the site if adequate material is not present. It would be clean fill, and it would be tested for existing contaminants. (NTE 7, response 7; Tr. 2, p. 197)

323. If the Project is approved, and had KEC received a CSO in FCA #11, the original construction schedule projected approximately three years for construction commencing in the second quarter of 2017 with commercial operation required before June 2020 to fulfill such CSO. (NTE 1, Vol. 1, Figure 1-3, p. 21; NTE 7, response 23)

Facility Operation

324. The proposed KEC facility is expected to have a service life of at least 30 years. (NTE 1, Vol. 1, p. 39)

325. If the project is approved, NTE would provide a decommission plan in the D&M Plan, including plant infrastructure removal plans and site restoration plans. (NTE 7, response 21)

326. KEC would operate as a baseload facility. KEC's load factor would be in the range of 65 to 80 percent. (NTE 7, response 13; NTE 14, response 73)

327. Operation of KEC would be expected to occur approximately 60 to 75 percent of the year. During normal operation, the power production from KEC may vary from approximately 40 percent load (or 220 MW gross) to 100 percent load (or 550 MW gross), depending on the ISO-NE electric system dispatch and ambient conditions. (NTE 1, Vol. 1, p. 61)

328. Typically, combined-cycle facilities operate as baseload facilities early in their useful life and as intermediate facilities later in their useful life. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact No. 164)

329. KEC would have a full load heat rate of approximately 6,500 Btu/kWh. The proposed combined cycle facility has an efficiency of about 53 percent during annual average ambient conditions and without duct firing. (NTE 7, response 15; NTE 20, supplemental response 83, p. 11)

330. Duct firing would be operated during high demand periods and peak load conditions. Given the higher heat rate of duct firing capacity, it is only economically dispatched during periods of high electricity use or in response to a specific reliability request by ISO-NE. KEC's duct burner would only be designed to operate on natural gas, not ULSD. (NTE 7, response 14; Tr. 2, pp. 189-190)

331. KEC would provide ancillary services in the ISO-NE market. Specifically, KEC could potentially provide Regulation, Voltage Support, Ten Minute Spinning Reserves, and Thirty Minute Spinning Reserves. The ability to provide these specific ancillary services would be verified with ISO-NE as the Project nears commercial operation. (NTE 7, response 22)

332. The start-up times and ramp-up rates for the proposed KEC facility are listed below.

Parameter	Proposed KEC Facility
Cold start-up time (minutes)*	35
Hot start-up time (minutes)*	30
Ramp rate (MW/minute)	29

*The start-up times are comparable for natural gas operation and ULSD operation.
(NTE 7, responses 17 and 18; Tr. 7, p. 1053-1054)

333. The plant would not have black start capability. (NTE 7, response 12)

Fire Protection and Safety

334. KEC would be designed, constructed and operated in accordance with federal, state, and local regulations and responsible engineering practices, including the Occupational Safety and Health Administration standards. The latest edition of design standards and regulations would be used to develop KEC's programs. (NTE 1, Vol. 1, p. 54)

335. Plans and provisions for cyber security protection would be implemented, consistent with the North American Electric Reliability Corporation (NERC). Plans and provisions for physical site security would be implemented consistent with the Council's Whitepaper on the Security of Siting Energy Facilities. (NTE 1, Vol. 1, p. 54; Council Administrative Notice Item No. 39 – Council Energy Security Whitepaper)

336. KEC would incorporate a variety of alarms and controls systems to provide early identification of emergency situations that may require plant and/or system shutdown. (NTE 1, Vol. 1, p. 55)

337. KEC would have an on-site fire protection system consisting of hydrants, hose stations, sprinkler systems, deluge systems, CO_2 system, and portable fire extinguishers. Fire suppression water would be supplied from KEC's 500,000-gallon raw/fire suppression water storage tank. At least 150,000 gallons of water would be maintained in the tank in the event of a fire. (NTE 1, Vol. 1, p. 56)

338. NTE would assist in the training of emergency responders to address a power plant emergency. In particular, NTE would coordinate with local fire stations to ensure that appropriate equipment and training is available to meet emergency needs. (Tr. 7, p. 1080; NTE 1, Vol. 1, p. 56)

339. NTE would comply with the conditions of the Electric Generator Decision and Order dated March 17, 2011 in Council Docket No. NT-2010. This includes the requirement that flammable natural gas not be used to clear KEC's natural gas lines. (NTE 7, response 69; Council Administrative Notice Item No. 50 – Docket No. NT-2010, Final Decision)

340. NTE would retain a special inspector to assist the municipal fire marshal in reviewing the construction plans and conducting inspections pursuant to CGS §16-50ii. (NTE 7, response 69)

341. NTE would remit a fee to the Code Training Fund to be used in the training of local fire marshals on complex issues of electric generating facility construction in accordance with CGS §29-251c. (NTE 7, response 69)

342. NTE would develop an emergency response/safety plan (Emergency Plan) in consultation with State and local public safety officials. If the project is approved, NTE would file its Emergency Plan with the Council as part of the D&M Plan. (NTE 7, response 69; Council Administrative Notice Item No. 50 – Docket No. NT-2010, Final Decision)

343. A 12,000-gallon tank would store 19 percent aqueous ammonia for emissions control and would be located within a concrete containment area with the capacity to store 110 percent of the aqueous ammonia. (NTE 1, Vol. 1, pp. 28, 59-60)

344. The generators would be water-to-air cooled units. Thus, there is no need for on-site hydrogen for the purposes of generator cooling. (NTE 14, response 90)

Electric and Magnetic Fields

345. NTE's consultant, Exponent, performed an electric and magnetic field (EMF) analysis and provided an EMF Report that includes KEC's new 345-kV electrical interconnection and the existing transmission right-of-way west of the Utility Switchyard. (NTE 1, Vol. 4, Appendix M – EMF Report, pp. iv, 2)

346. The construction of the new 345-kV overhead transmission line connection that would cross Lake Road would increase magnetic field levels (under average annual load conditions) to a maximum of 322 milligauss (mG) directly under the center of line and over Lake Road, adjacent to KEC. (NTE 1, Vol. 4, Appendix M – EMF Report, p. iv)

347. KEC's power output would increase magnetic field levels in the center of the electric transmission right-of-way adjacent to the Utility Switchyard from 56 mG to a worst-case of 213 mG under average annual load conditions. (NTE 1, Vol. 4, Appendix M – EMF Report, B-1)

348. All projected magnetic field levels identified in the EMF Report would remain far below the International Commission on Non-Ionizing Radiation Protection acceptable exposure level of 2,000 mG for the general public as recognized in the Council's "Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut" (EMF BMPs). (NTE 1, Vol. 4, Appendix M – EMF Report, pp. 9, 19; Council Administrative Notice Item No. 37 – EMF BMPs)

ENVIRONMENTAL EFFECTS

Visibility

349. The tallest feature of the KEC plant would be the HRSG stack reaching 150 feet above (final) grade or about 465 feet amsl. (NTE 1, Vol. 4, Appendix K – Visual Impact Assessment, p. 2; Tr. 2, p. 178)

350. While NTE would likely be able to demonstrate compliance with applicable air quality standards with a HRSG stack shorter than 150 feet, NTE selected a HRSG stack height of 150 feet because it believes it would best balance minimizing air quality impacts while minimizing visibility. The selected HRSG stack height of 150 feet would be shorter than the three approximately 165-foot tall stacks at LRGF and would not be expected to be an intrusive visual element in the area. (NTE 7, response 50; Council Administrative Notice Item No. 43 – Docket No. 189, Finding of Fact No. 15)

351. The visual study area, based on a five-mile radius, has an area of approximately 50,265 acres. (Tr. 7, pp. 1068-1069)

352. Taking into account only the effects of terrain and neglecting vegetation, about 25 percent of the visual study area would have views of the HRSG stack. Taking into account the effects of terrain and vegetation, about two percent of the visual study area would have views of the HRSG stack. (NTE 1, Vol. 4, Appendix K, p. 11)

353. The two percent of the visual study area that would have views of the HRSG stack is not expected to materially change between leaf-on and leaf-off conditions. (NTE 1, Vol. 4, Appendix K, p. 11; Tr. 2, p. 196)

354. Within the five-mile study area, the highest ground elevation is approximately 764 feet amsl. This is about 299 feet higher than the top of the HRSG stack, which has an elevation of 465 feet amsl. (NTE 7, response 40)

355. The existing facility stacks at the LRGF are 165 feet tall. As a comparison on an amsl basis, NTE notes that the ground elevation for the LRGF stacks is similar to the ground elevation for HRSG stack for KEC. (NTE 8, p. 3; Tr. 7, p. 1067)

356. The Project would not be expected to materially impact The Last Green Valley National Heritage Area (LGVNHA), which extends over an approximately 706,000-acre area generally located along the Quinebaug River Valley. Current land use conditions continue to reflect industrial uses interspersed throughout the corridor, including the industrial area of Killingly that is proximate to the KEC site. KEC would be located in an area designated for industrial and commercial development and would not represent a significant change in the overall character of the LGVNHA. (NTE 7, response 32)

357. The Airline North State Park Trail (NSPT) runs generally in an east-west direction, and it is located approximately 1.8 miles northwest of KEC at its closet point. In most locations on the NSPT, dense existing vegetation would be expected to screen the distant views of KEC. (NTE 7, response 34)

358. An approximately 32-mile portion of Route 169, from Rocky Hollow Road in Lisbon to the Massachusetts border in Woodstock, has been designated as a National Scenic Byway. A portion of Route 169 is located approximately two miles west of KEC. However, intervening topography and tall, dense vegetation would significantly screen views of KEC from this roadway. (NTE 7, response 34)

359. State-designated Scenic Roads within a five-mile radius of KEC include portions of Route 244 (at a distance of 3.1 miles from KEC) and Route 97 (at distance of 4.5 miles from KEC). These State Scenic Roads are located at an even greater distance from KEC than Route 169 and views of KEC would be similarly screened by vegetation. (NTE 7, response 34)

360. Other features at the Generating Facility Site include the HRSG, which extends from its stack and the turbine building, with the ACC located east of the HSRG stack and north of the turbine building. The ACC structure consists of a large bank of fans on a steel support structure. Although no building enclosure is associated with the ACC, the fan bank itself represents a solid visual element at the top of the ACC. (NTE 1, Vol. 4, Appendix K – Visual Impact Assessment, p. 7)

361. Ancillary buildings, equipment and storage tanks would have an industrial appearance, but would be considerably smaller than the main structures. None of these elements would be expected to affect KEC's potential for visual impact on the surrounding area. (NTE 1, Vol. 4, Appendix K – Visual Impact Assessment, p. 7)

362. KEC would be designed to maintain as much of the existing vegetation as possible. The Generating Facility Site has substantial wooded vegetation, with only the southeastern corner near Lake Road unscreened by trees. The Switchyard Site is more open along Lake Road, but much of the Switchyard Site is also heavily forested. Although clearing would be required around KEC and for the temporary work spaces, an approximately 50-foot wooded buffer along Lake Road would be maintained, as originally proposed. (NTE 1, Vol. 4, Appendix K – Visual Impact Assessment, p. 7)

Exhaust Plumes

363. The combustion of natural gas produces water vapor. The exhaust plume emitted from the HRSG stack would be colorless and transparent except under certain conditions. The visibility of a plume is a function of humidity and temperature. As such, a visible exhaust plume would exist under certain operating and atmospheric conditions. Generally, visible plumes are rare at temperatures above 40 degrees Fahrenheit (F). Visible plumes are more prevalent in cold (i.e. less than 40 degrees F) or very humid conditions such as near 100 percent relative humidity. For example, for a clear day in January with stable atmospheric conditions (e.g. no wind), the plume from KEC would rise to approximately 41.2 meters or about 135 feet above the top of the HRSG stack. With greater movement of the surrounding air, the visible plume would dissipate more rapidly. (NTE 7, response 36; Tr. 7, p. 1068; Tr. 3, pp. 374-375; Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact No. 189)

364. Since KEC would run primarily on natural gas, the exit velocity at the top of the stack would be approximately 61.4 feet per second for natural gas operation under full load conditions. The exit temperature would be approximately 188 degrees F under such conditions. This is based on -10 degrees F ambient temperature. (NTE 8, response 68, p. 3)

365. The temperature and velocity of the exhaust gas would adequately disperse the water vapor such that it would not condense on adjacent properties. (NTE 7, response 65)

366. The ACC would not create a plume. (NTE 7, response 46)

367. The auxiliary boiler stack is associated with a small combustion source and would typically operate for a short time during startup. Thus, the auxiliary boiler stack would emit a negligible visible exhaust plume. (NTE 7, response 37)

Aviation Safety of Exhaust Plumes

368. Concerns can exist when small aircraft are proximate to thermal exhaust stacks and in critical phases of flight, particularly takeoff, landing, and within an airfield traffic pattern (i.e. following a standard path in preparation for landing). (NTE 8, response 68, p. 2)

369. Given the distance of approximately 2.9 miles from the proposed HRSG stack to Danielson Airport and that the proposed HRSG stack is not aligned with the nearest runway of Danielson Airport, aircraft would not be expected to be in critical phases of flight when in the vicinity of the KEC facility. Notwithstanding, to address the possible risk of exhaust plumes posing a hazard to aircraft, NTE performed a plume analysis using software recommended by the FAA. (NTE 8, response 68 – Plume Analysis, pp. 1-2)

370. The MITRE Corporation (MITRE) software recommended by FAA (and licensed to NTE's consultant Tetra Tech, Inc.) uses power plant data and nearly three years of meteorological data to determine the probabilities that any of four different aircraft types: light sport; light general aviation; business jet; and narrow-body (essentially a fairly large commercial jet) would experience either severe turbulence or an upset as a result of a power plant exhaust plume. (NTE 8, response – Plume Analysis, p. 2,4; Council Administrative Notice Item No. 55 – Petition No. 1218, Finding of Fact #185)

371. For the purposes of the plume analysis, the criterion used to determine whether an aircraft "upset" would occur is the vertical gust required to reach a 45-degree wing tilt for an aircraft executing a turn with a 25-degree wing tilt with the gust caused by the stack plume hitting the wing tip. "Severe turbulence" is considered by MITRE to be vertical acceleration of 1g* or greater.

*One "g" is a measure of the acceleration equivalent to that resulting from earth's gravity.
(NTE 8, response 68 – Plume Analysis, p. 4; Council Administrative Notice Item No. 55 – Petition No. 1218, Finding of Fact #186; NTE 1, Vol. 1, p. xii)

372. Tetra Tech ran the MITRE model conservatively based on full load natural gas operation of KEC with duct firing. Since the plume would be larger under colder temperatures, an ambient temperature of -10F was assumed. (NTE 8, response 68 – Plume Analysis, p. 3)

373. Over congested areas (e.g. cities and towns), aircraft must fly no lower than 1,000 feet above the highest obstacle within a horizontal 2,000-foot radius of the aircraft. The Killingly area, in the vicinity of KEC, would be considered a "congested area." (NTE 8, response 68, p. 1; Tr. 7, p. 1081)

374. Based on the results of the MITRE, the following probabilities of "severe turbulence" associated with various types of aircraft at certain distances from the proposed KEC HRSG stack are listed in the tables below.

Aircraft Type	Probability of Severe Turbulence	Vertical Distance	Radial Distance
Light Sport	1 in 10,000	1,250 feet	400 feet
Light General Aviation	1 in 10,000	600 feet	400 feet
Business Jet	1 in 10,000	350 feet	400 feet
Narrow-Body Jet	1 in 10,000	200 feet	320 fet

(NTE 8, response 68, pp. 4-5)

375. On September 24, 2015, the FAA issued a memorandum referencing a change to the Aeronautical Information Manual (AIM) made on July 24, 2014. The change updated terminology and provided more detail regarding the associated hazards of exhaust plumes. In addition, in order to retain a current license, all aircraft pilots are required to complete a Biennial Flight Review. This two-year refresher training includes both classroom and flight time and is intended to ensure that all pilots remain aware of regulatory and other information in the AIM. (NTE 8, response 68 – Plume Analysis, p. 2-3; Council Administrative Notice Item No. 55 – Petition No. 1218, Finding of Fact #192)

Noise

376. NTE performed a noise assessment study for the proposed project, including ambient noise monitoring and noise modeling. The ambient noise measurements were performed on March 21 and 22, 2016, and represents current noise levels in the area. Short-term monitoring was conducted at five locations. Long-term monitoring was conducted at one location. Measurements at such locations are shown in the chart below:

Location (relative to KEC Turbine Building)	Daytime L_{EQ} Measured Noise Levels	Nighttime L_{EQ} Measured Noise Levels
ST-1 – 860 feet southeast across Lake Road	47	47
ST-2 – 550 feet west	39	42
ST-3 – 1,020 feet northeast	38	32
ST-4 – 650 feet southeast	39	41
ST-5 – Utility Switchyard Site	42	47
LT-1 – 380 feet south	42	38

(NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 8-14)

377. Using L_{90}, ambient noise ranged from 30 dBA to 40 dBA at nighttime and 32 to 36 dBA during the daytime for short-term noise monitoring. For long-term noise monitoring, using L_{90}, ambient noise ranged from 32 dBA to 38 dBA during the daytime period and 26 dBA to 35 dBA during the nighttime period. (NTE 1, Vol. 1, pp. 132-133)

378. NTE's noise analysis model generates results that can be determined at any location along the property boundaries. Thus, when selecting ambient noise level measurement locations, NTE typically looks for locations that are offset from a project itself, but in various compass directions around the site and generally focusing on public ways in those vicinities. (Tr. 7, p. 1055)

379. KEC would be considered an industrial Class C noise emitter, and its surrounding areas are treated as as Class A residential receptors. State of Connecticut Noise Standards for a Class C source emitting to a Class A receiver are 61 dBA daytime and 51 dBA nighttime. (NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 6)

380. The Town of Killingly Noise Standards are consistent with those specified by DEEP, although the definition of "daytime" or "nighttime" differs slightly. (NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 6-7)

381. KEC is not located within a high-background noise area because the L_{90} ambient measurements are below 51 dBA. (NTE 15, p. 30; NTE 1, Vol. 1, pp. 132-133)

382. NTE used the Cadna-A computer noise model to predict noise levels expected from the proposed project. (NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 18)

383. The following noise mitigation measures were incorporated into the original screening level assessment to demonstrate the feasibility of KEC to meet the specific noise requirements, but the final design may incorporate different mitigation measures in order to achieve the same objective as demonstrated in this assessment:

a) The HRSG stack would incorporate a 10-foot silencer system that would reduce the noise from the upper stack portion and the exhaust stack exit;
b) The turbine exhaust diffuser would incorporate a 40-foot high sound barrier wall located on the west side of the diffuser. Alternatively, lagging or increased casing could be incorporated into the design to reduce the sound power level of the turbine diffuser to 98 dBA;
c) The HRSG transition duct would incorporate an acoustical shroud to reduce the overall sound power level to 91 dBA;
d) The HRSG duct burner gas piping would incorporate acoustical lagging to reduce the overall sound power level to 92 dBA;
e) The fuel gas piping would incorporate acoustical lagging to reduce the overall sound power level to 85 dBA;
f) The fuel gas heater stack would incorporate a silencer to reduce the overall sound power level to 83 dBA;
g) The ACC would be a low noise design incorporating noise reduction measures to achieve a net sound power level of 103 dBA;
h) The closed cooling water fin-fan tower would be a low noise design incorporating noise reduction measures to achieve a net sound power level of 95 dBA;
i) The gas turbine enclosure air inlet vents would incorporate a silencer system to reduce the overall sound power level to 85 dBA; and
j) The gas turbine enclosure air discharge vents would incorporate a silencer system to reduce the overall sound power level to 83 dBA.

(NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 21)

384. In NTE's ARRR Orders filing, NTE included additional noise mitigation measures, as noted below:

a) The fuel gas compressor would incorporate an enhanced enclosure that would reduce the overall sound power level to 87 dBA; and
b) The demineralized water pumps would be housed within a building assuming a sound transmission class (STC) rating of 35.

(NTE 15, Updated Acoustic Modeling Analysis, pp. 4-5)

385. The ACC fans would be staged according to the facility output so that the minimum required number of fans would be on at a given time in order to minimize noise and parasitic loads, subject to the steam turbine manufacturer's requirements. (NTE 7, response 41)

386. Projected noise levels for the same six locations monitored above (see Figure Nos. 8 and 18) are identified in the chart below:

Location	Originally Projected Sound Levels* (dBA)	Revised Projected Sound Levels** with ARRR Orders (dBA)
ST-1	44	44
ST-2	49	47
ST-3	40	39
ST-4	46	46
ST-5	41	42
LT-1	49	50

*The data in this column take into account the extensive noise control measures listed in FOF #383.
**The data in this column take into account the noise control measures listed in FOF #383 and FOF #384.
(NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 23; NTE 15, Updated Acoustic Modeling Analysis, p.5)

387. The Projected Sound Levels were modeled for a worst-case full load operation of KEC. (Tr. 7, p. 1056)

388. The proposed facility would be in compliance with DEEP noise control and Town standards, provided that various proposed noise control measures are employed. (NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 24)

389. Construction noise is exempt from DEEP standards. Construction noise during the day is exempt from the Town of Killingly Noise Ordinance. To the extent that any construction activities must occur after 9:00 p.m. (i.e. defined by Killingly's ordinance as the start of the nighttime), NTE would implement construction noise mitigation measures. (NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 17; R.C.S.A. §22a-69-108(g))

Traffic

390. In the vicinity of the Project and the existing Eversource transmission line right-of-way, Lake Road is a paved road approximately 24 feet wide, with a single travel lane in each direction, and it is separated by a painted double yellow centerline. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, pp. 1-2)

391. DOT data indicates that a portion of Lake Road (north of Route 101) carries an average daily traffic of 1,700 vehicles per day, with a morning peak hourly volume of 150 per hour at 7:00 a.m. and an afternoon peak hourly volume of 174 vehicles at 4:00 p.m. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 2)

392. The proposed project would have up to 30 employees present during plant operations. This would result in less than 25 peak hour trips under normal operations. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 9)

393. The existing roadway network has sufficient excess capacity and would be capable of accommodating traffic volumes associated with the Project with little or no change in the operating conditions during normal operations. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 9)

394. Construction would occur over a 33-month period with peak volumes observed over a three-month period. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 9)

395. During the peak period of construction, the Project would generate approximately 385 peak hour trips during the morning and afternoon hours. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 9)

396. During the peak period of construction, acceptable levels of service would be maintained at all intersections within the Traffic Impact Analysis study area. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 9)

397. In order to allow WB-62 design vehicles to access the proposed KEC facility, a widening of Lake Road in the vicinity of the curves or an adjustment to the alignment may be necessary to bring the roadway up to industrial standard. NTE should consult with Town staff to provide an acceptable solution. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 9)

398. Local residents ride horses on Lake Road and also on the Wyndham Land Trust property which abuts the 189 Lake Road parcel location for KEC. (Grouped Party 3b, p. 2)

399. NTE's Traffic Impact Report did not include any counts of equestrian activity on Lake Road (Tr. 6, p. 883)

400. The volume of truck traffic associated with replenishing the ULSD supply during a ULSD operation event would not have a significant impact on traffic operations in the local roadway network. (NTE 1, Vol. 4, Appendix I – Traffic Impact Report, p. 8)

Historic and Archaeological Resources

401. A Phase I Cultural Resources Reconnaissance Survey Report (CRRS Report) dated August 2016 was prepared by Tetra Tech, Inc. (Tetra Tech) for the KEC project and considered both the 180 Lake Road and 189 Lake Road parcels. The assessment concluded that no further archaeological investigations are recommended. A historic architectural survey was conducted by Tetra Tech for standing structures within the Project Study Area. Tetra Tech concluded that none of the structures are eligible for listing on the National Register for Historic Places (NRHP). (NTE 7, response 59 - CRRS Report, p. 19)

402. The CRRS Report was reviewed by the Connecticut State Historic Preservation Office (SHPO), which determined that there would be no effect on the historic properties, and no additional archaeological investigations are warranted. SHPO requires the submission of two bound copies of the final reports for permanent curation and public accessibility, as well as an unbound copy of the site form for Site 69-103. (NTE 7, response 59)

403. Correspondence received from the Mashantucket Pequot Tribal Nation (MPTN) dated November 5, 2016 indicated that the MPTN concurs with the CRRS Report that no archaeological sites were identified in particular areas. However, MPTN believes that further assessment on particular historic property types is absent. Due to the high indigenous occupation in the Project Study Area historically, coupled with water source proximity and other natural features, impacts to cultural landscapes, ceremonial stone features, traditional cultural properties – properties of cultural and religious significance – may also be assessed and evaluated for National Register for Historic Places eligibility. (NTE 27, supplemental response 59)

404. NTE believes that, based on the response from the SHPO, no further activities are required to address MPTN comments. (Tr. 7, p. 1075)

405. No correspondence from the Mohegan Tribal Historic Preservation Office (MTHPO) has been received to date. However, MTHPO is planning to visit the site and has been reviewing NTE's report. (Tr. 7, p. 1075)

406. The layout of the Utility Switchyard would be designed to avoid adversely impacting the private Sorrow Cemetery as identified in the Option Agreement submitted on August 25, 2016. Specifically, SHPO recommends a 50-foot buffer be incorporated into the design. A 50-foot minimum buffer can be accommodated by NTE for most, but not all, areas surrounding Sorrow Cemetery. (NTE 7, response 60)

Geology and Hydrology

407. A geotechnical investigation was performed to obtain information on subsurface soil, rock and groundwater conditions and a report (Geotech Report) was issued in July 2016. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 1)

408. Surficial geology maps describe the overburden soils as ground-moraine (i.e. glacial till) consisting of poorly sorted, poorly stratified deposits generally composed of glacial debris ranging from clay-size particles to boulders. Boulders were observed at the ground surface. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 3)

409. The Bedrock Geological Map of Connecticut identified the bedrock as Quinebaug Formation consisting of medium to dark gray, medium-grained, well-layered gneiss. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 3)

410. In some locations, excavation up to 30 feet of glacial till and bedrock are proposed to reach the required subgrade. Conventional heavy construction equipment, such as excavators, bulldozers, graders, front-end loaders, and dump trucks can remove soils and portions of weathered rock. (NTE 1, Vol. 1, p. 70)

411. While techniques such as ripping are feasible for shallow rock cuts, certain areas would require blasting to reach the proposed subgrades. Controlled blasting techniques would be utilized to ensure that nearby structures are not damaged by blasting, flyrock or debris. Controlled blasting mats would be utilized to contain flyrock within the construction area. (NTE 1, Vol. 1, pp. 70-71)

412. A specialized blasting contractor would implement the work in accordance with a formal blasting plan. (NTE 1, Vol. 1, p. 71)

413. NTE's geotechnical engineering consultant, Haley & Aldrich, Inc. (Haley & Aldrich) monitored a test boring program consisting of 18 test borings. Fifteen of these test borings were located on the Generating Facility Property, and three were located on the Utility Switchyard Property. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 3 and Figure 2 – Exploration Location Plan)

414. Groundwater levels measured in test borings (during and after drilling) and observation wells corresponded to about 5 to 20 feet below ground surface. Water levels observed in the borings shortly after drilling are typically influenced by drilling operations, and thus, they may not represent stabilized conditions. Groundwater levels will fluctuate with season, precipitation, and nearby construction activity. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 6)

415. Final excavation, subgrade preparation, filling, foundation construction, and utility construction should be conducted in dry conditions. Since most excavations would be in low permeability soils and bedrock, anticipated temporary construction dewatering activities would likely be minor and largely related to the control of precipitation that falls on excavations and surface water runoff into excavations. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 19)

416. It would be expected that dewatering could be accomplished by open pumping from sumps, temporary ditches, and trenches within and around excavations. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 19)

417. The "Indoor Radon Potential Map of Connecticut" dated 1997 and prepared by DEEP indicates that the site is located within a "moderate-high" area of radon potential. Moderate-high zones are defined as areas where 33 percent of the tested homes in that area have basement air radon levels greater than or equal to 4.0 picocuries per liter of air (pCi/L), respectively. Given this radon potential, Haley & Aldrich recommends that the Project team assess if a radon protection system is warranted. (NTE 1, Vol. 2, Appendix C – Geotech Report, p. 11)

418. The KEC Site is located in Federal Emergency Management Agency (FEMA) Zone C, an area located outside of the 100-year and 500-year flood zones. However, a small area on the Generating Facility Property, north of the KEC footprint, is designated a 100-year flood zone or FEMA Zone A. (NTE 7, response 45)

419. The Project would not be located within a DEEP-designated Aquifer Protection Area. (NTE 7, response 43)

420. Groundwater at the KEC site is classified as Class GA according to DEEP water quality classifications. Class GA-designated uses include existing and private and potential public or private supplies of water. DEEP presumes that groundwater in such areas is suitable for drinking and other domestic uses without treatment. (NTE 1, Vol. 1, p. 106)

421. KEC would be located within the watershed of the Quinebaug River. Groundwater in this sub-basin currently flows and would continue to flow from the KEC site and discharge into the Quinebaug River. KEC does not propose to use groundwater at this site and would incorporate spill prevention and control measures such as containment and curbing areas to prevent ULSD or other chemicals from discharging to the groundwater. Thus, the Project would not be expected to impact Class GA groundwater resources. (NTE 1, response 44)

Wetlands

422. There are seven wetlands on the Generating Facility Property, known as Wetland A1, Wetland A2, Wetland A3, Wetland B, Wetland C, Wetland E, and Wetland X. There is one wetland located on the Utility Switchyard Property, known as Wetland D. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, Figure 2)

423. Wetland A1 is a roughly 0.25-acre man-made pond, originally developed in 1959 as a swimming hole and a source of water for the then-active farm. As a spring-fed pond, it is fed by both groundwater discharge and a small rivulet associated with a springhouse. The hydro-geomorphic setting is classified as "groundwater depression" within the pond, and "groundwater slope" on adjacent wetlands. It is largely shaded by trees, both broad-leaf deciduous and evergreen. The pond depth fluctuates seasonally, but it retains some water year-round. Wetland A1 is located in the southern portion of the Generating Facility Property. Wetland A1 is located approximately 54 feet northeast of the proposed KEC fence line at the closest point. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 4 and Figure 2; NTE 1, Vol. 1, Figure 2-4 – KEC Site Layout and Grading)

424. Wetland A2 and its associated intermittent stream is roughly 1.98-acres in size and is located on the Generating Facility Property. This intermittent stream has a stony substrate in its upper reach, near the pond, and it becomes more sandy as soils transition from those derived from glacial till to sandy glacial outwash deposits. Wetland A2 begins at the outlet to Wetland A1 and extends northwesterly to the northern limits of the Generating Facility Property. Wetland A2 is located approximately 63 feet northeast of the proposed KEC fence line at the closest point. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 5 and Figure 2; NTE 1, Vol. 1, Figure 2-4 – KEC Site Layout and Grading)

425. Wetland A3 is the largest wetland unit in the vicinity of the Project and located in the central portion of the Generating Facility Property. Wetland A3 is approximately 6.26 acres in size. Underlying sandy outwash surficial materials determine the nature of Wetland A3. Extensive, very poorly drained, peaty soils support sunny emergent marsh on the east side of the swamp, dominated by tussock sedge and skunk cabbage, and also thickets of red maple saplings. The hydro-geomorphic setting of Wetland A3 is classified as "groundwater slope" because the low-gradient wetland intercepts the sub-regional groundwater table in the permeable and sandy outwash soils. Wetland A3 is located approximately 87 feet west of the proposed KEC fence line at the closest point. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 5 and Figure 2; NTE 1, Vol. 1, Figure 2-4 – KEC Site Layout and Grading)

426. Wetland B is approximately 1.8 acres and located in the far northwestern section of the Generating Facility Site. The southeastern portion of Wetland B is a forested hillside with deep, friable, poorly drained soils derived from glacial till. Spiceberry and winterberry are the dominant shrubs, with red maple as the dominant tree species. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 6)

427. Wetland C is an approximately 0.08-acre hillside swale that joins (with Wetland B) an off-site stream from the east. Wetland C does not qualify as a watercourse because it is lacking a defined channel. Its vegetation includes sparse skunk cabbage, some barberry, birch samplings, and red maples. Much of the surface flow associated with this wetland unit is expected to infiltrate, especially as it reaches Hinckley soil, continuing, subsurface, towards the Quinebaug River. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 7)

428. Wetland E is an approximately 0.04-acre wetland pocket that is located upgradient of Wetland C at the far northern portion of the Generating Facility Site. Wetland E is seasonally flooded to seasonaly saturated wetland with poorly drained soils and a hydro-geomorphic setting classified as "surface water slope." It is dominated by hemlock in the overstory, and, due to dense shading, little vegetation grows in the understory. A few violets, wood ferns, poison ivy, grasses, and New York fern were observed in this area. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 8)

429. Wetland X is a roughly 0.027-acre narrow wetland with disturbed soils located in the western portion of the Generating Facility Property. Wetland X is located southwest of Wetland A2 and close to Wetland A1. Wetland X is located within an area that has historically been farmed and used as a travel way to other portions of the overall site. Wetland X is a seasonally saturated wetland devoid of an overstory, but it has hydrology suitable for hydrophytes such as skunk cabbage, sensitive fern and a few sedges. Wetland X is located approximately 37 feet northeast of the proposed KEC fence line at the closest point. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 8 and Figure 2; NTE 1, Vol. 1, Figure 2-4 – KEC Site Layout and Grading)

430. Wetland D encompasses approximately 0.51 acres of the eastern portion of the Utility Switchyard Property. Wetland D is dominated by scrub shrub and emergent (i.e. wet meadow) cover types, mostly with poorly drained outwash-derived soils. The scrub shrub portion of Wetland D is dominated by white pine and red maple saplings, but also includes shrubs such as highbush blueberry, meadowsweet, and willows. (NTE 1, Vol. 2, Wetland Report: Existing Conditions, p. 8 and Figure 2)

431. No direct wetland impacts are proposed on the Generating Facility Site. (NTE 1, Vol. 2, Wetland Report: Proposed Conditions, p. 2)

432. Direct wetland impacts would be limited to 12,500 square feet of Wetland D on the Utility Switchyard Property in order to accommodate the utility switchyard. Alternative layouts for the utility switchyard were considered during the planning phase in an effort to avoid direct wetland impacts, but the site constraints and Eversource's required specifications for the utility switchyard did not allow complete avoidance. (NTE 1, Vol. 2, Wetland Report: Proposed Condition, pp. 9-10)

433. Since opportunities for wetland restoration, such as restoring a degraded and/or filled wetland, do not exist at the KEC Site, compensatory wetland mitigation in the form of wetland creation coupled with wetland enhancement is proposed. (NTE 1, Vol. 2, Wetland Report: Proposed Condition, p. 24)

434. A suitable site for wetland creation is the northeastern section of the Switchyard Site, which is currently an open field. The designed final vegetation classes for the wetland creation are wet meadow and emergent marsh with a native scrub-shrub transition zone. This would not only replace the vegetative cover types at the impact area, but would also complement the wetland habitats immediately off-site to the east within the Eversource electric transmission right-of-way. (NTE 1, Vol. 2, Wetland Report: Proposed Condition, p. 24)

435. Within a conservation easement of about 0.77 acre, the proposed created wetland area would be approximately 17,000 square feet in size or about 0.39 acres. This was revised to 18,750 square feet or about 0.43 acres in NTE's ARRR Orders. (NTE 1, Vol. 2, Wetland Report: Proposed Condition, p. 25; NTE 15, pp. 10-12)

436. The invasive species control methods to be used for invasive shrub control and eradication would be those that are promulgated by DEEP and/or the Nature Conservancy. This would include a combination of mechanical and chemical protocols. (NTE 1, Vol. 2, Wetland Report: Proposed Conditions, p. 26)

437. No significant or adverse impacts to wetlands and watercourses, either on-site or off-site, would be expected to result from the proposed Project. The proposed mitigation package, consisting of wetland habitat replication, enhancement and preservation would more than offset the proposed direct wetland impacts. (NTE 1, Vol. 2, Wetland Report: Proposed Conditions, p. 27)

Wildlife

Birds

438. The nearest Important Bird Area as identified by the National Audubon Society is the Bafflin Sanctuary Complex, located approximately 1 mile west of KEC. (NTE 7, response 51)

439. The top and sides of the HRSG stack, while hot during operation, would not represent attractive perching sites for birds. The stack test platforms and associated ladders, however, are more suitable perching locations. These features safely support stack testers during plant operations and would not represent surfaces too hot for bird perching. (NTE 7, response 54)

440. The majority of studies on bird mortality due to collisions with towers focuses on very tall towers (i.e. greater than 1,000 feet), illuminated with non-flashing lights, and utilizing guy wires. These types of towers, if sited in major migratory pathways, could result in significant bird mortality. More recent studies of short towers, including, but not limited to, studies prepared for USFWS, reveal that short towers of less than 300 feet rarely kill migratory birds. Thus, the design features of concern do not apply to KEC's proposed HRSG stack. With a relatively short 150-foot HRSG stack, no guy wires, and no proposed lighting, no adverse impact to migrating bird species would be expected to be associated with KEC. (NTE 7, responses 54 and 67)

441. The broad-winged hawk, a State-designated Species of Special Concern, was observed at the Utility Switchyard Site. However, it would be unlikely that the broad-winged hawk would be impacted because much unfragmented, high quality forest would remain at or near the Utility Switchyard Site. (NTE 1, Vol. 2, Wetland Report: Proposed Conditions, pp. 7, 23)

Mammals

Bats

442. NTE's consultant, Tetra Tech, performed a presence/absence survey of bats (Bat Survey). The Bat Survey included a desktop analysis and the deployment of ultrasonic bat detectors/recorders. Specifically, acoustic bat detection and recording was performed by Tetra Tech between June 2, 2016 and June 9, 2016. (NTE 1, Vol. 2, Bat Monitoring Survey Results, p. 1)

443. The acoustical detectors were deployed on two locations at the Generating Facility Property. (NTE 1, Vol. 2, Bat Monitoring Survey Results, p. 4)

444. During the acoustical survey, five bat species were identified: the eastern red bat; the big brown bat; the hoary bat, a State-designated Species of Special Concern; the silver-haired bat, a State-designated Species of Special Concern; and the little brown bat, a State-designated Endangered Species. (NTE 1, Vol. 2, Bat Monitoring Survey Results, p. 10; Council Administrative Notice Item No. 71 – DEEP Endangered, Threatened and Special Concern Species 2015, p. 1)

445. The four species not identified during the acoustical survey were the following: the Indiana bat, a State-designated and federally designated Endangered Species; the Northern long-eared bat (NLEB), State-designated Endangered Species and federally designated Threatened Species; the tri-colored bat, a State-designated Endangered Species; and the small footed bat. (NTE 1, Vol. 2, Bat Monitoring Survey Results, p. 10; Council Administrative Notice Item No. 71 – DEEP Endangered, Threatened and Special Concern Species 2015, p. 1)

446. As a precautionary measure, tree clearing for the Project would be restricted in accordance with USFWS Rule 4(d) requirements and would not occur in the months of June or July, in order to avoid the pup season for the bat species. (NTE 1, Vol. 2, Bat Monitoring Survey Results, p. 10; Council Administrative Notice Item No. 12 – USFWS Final 4(d) Rule)

447. NTE would prefer not to "phase" tree clearing. NTE would prefer to perform all of the tree clearing at once for efficiency in order to ensure compliance with seasonal restrictions on clearing with respect to bats. (Tr. 3, p. 370-371)

448. Significant wooded areas would remain on the site and in its vicinity, with expansion of edge effect habitat providing for additional foraging lanes for bats. The area would continue to provide habitat suitable for bat use during the summer activity period. (NTE 1, Vol. 2, Bat Monitoring Survey Results, p. 10)

Reptiles

Turtles

449. Two State-designated reptile species have been identified by DEEP in the vicinity of the KEC Site. These listed species are the wood turtle, a State-designated Species of Special Concern; and the eastern box turtle (EBT), a State-designated Species of Special Concern. These turtle species were not encountered at the KEC Site or in its immediate vicinity during field surveys. Such surveys were performed by NTE's consultant, REMA Ecological Services, LLC (REMA), on May 26, 2016; June 10, 2016; and June 13, 2016. (NTE 1, Vol. 1, p. 80; NTE 1, Vol. 2, Appendix F – Ecological Assessment Report, p. 25)

450. While neither turtle species were found at the KEC Site, REMA concludes that it is likely that the EBT occurs at the site, given the availability of habitats and the landscape context. REMA also concludes that it is not likely that wood turtles occur at the site, given the availability of habitats and local topography. (NTE 1, Vol. 1, p. 80; NTE 1, Vol. 2, Appendix F – Ecological Assessment Report, pp. 26-27)

451. NTE plans to implement a Turtle Protection Plan (TPP). The conditions associated with the TPP are listed below.

Prior to Construction:

a) Silt fencing shall be installed around the work area prior to any construction during the turtle hibernation period between November 1 and April 1; and

b) The area within the perimeter of the silt fence shall be canvassed by a qualified individual one day prior to the installation of the silt fencing and for five consecutive days after installation for the presence of turtles. Any turtles found within the bounds of the silt fence shall be relocated outside of the bounds of the silt fence.

During Construction:

c) Work crews shall be appraised of the species description and possible presence prior to construction;

d) Work crews shall search the work area for turtles prior to the start of each construction day;

e) Any turtles encountered during the work shall be moved unharmed to an area immediately outside of the fenced work area and oriented in the same direction it was walking when found;

f) All precautionary measures should be taken to avoid degradation to wetland habitats including any wet meadows and seasonal pools. No work is proposed in such areas at the Generating Facility Site;

g) Work in wetlands at the Utility Switchyard Site during the early morning and evening hours should occur with special care not to harm basking or foraging individuals;

h) No heavy machinery or vehicles shall be parked within the protected work areas, and precautions shall be taken when the machinery is traveling to the work area to avoid turtles; and

i) All silt fencing shall be removed after work is completed when soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.

(NTE 7, response 55)

452. NTE is willing to consider having little to no gap between the bottom of the facility fence and grade to reduce the risk of turtles or other wildlife from being trapped. Specifically, NTE expects that the facility fence would be designed such that the bottom of the fence would be touching grade. (Tr. 7, pp. 1076-1077)

Amphibians

Vernal Pool Species

453. Two potential amphibian breeding areas were identified early in February 2016. Specifically, these were the man-made pond, i.e. Wetland A2 and a small flooded portion of Wetland B. This small area of vernal pool embedded in Wetland B was determined to be the only viable on-site habitat for the breeding and reproduction of wood frogs and spotted salamanders, which are considered obligate "vernal pool" amphibians. (NTE 1, Vol. 1, p. 79)

454. Although the vernal pool habitat located within Wetland B does not have optimal hydrology for the reproduction of spotted salamanders, it is possible that successful reproduction could be supported during certain years. (NTE 1, Vol. 1, p. 79)

455. Development of the Project would not occur closer than 430 feet from the edge of the vernal pool habitat in Wetland B. (NTE 1, Vol. 2, Appendix F – Ecological Assessment Report, p. 17)

456. NTE performed a vernal pool analysis consistent with the *Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States 2002 by Calhoun and Klemens 2002* (C&K BDPs). C&K BDPs define the Vernal Pool Envelope (VPE) as the land located within 100 feet from the edge of the vernal pool. C&K BDPs define the Critical Terrestrial Habitat (CTH) as the land located from 100 feet to 750 feet from the edge of the vernal pool. (NTE 7, response 58; Council Administrative Notice Item No. 100 – C&K BDPs, p. 8)

457. At a distance of 430 feet, no work would be performed within the VPE. However, construction would occur within the CTH. (NTE 1, Vol. 2, Appendix F – Ecological Assessment Report, p. 17; Council Administrative Notice Item No. 100 – C&K BDPs, p. 8)

458. The vernal pool is considered a Tier I resource under C&K BDPs. No development currently exists within the VPE of the vernal pool in Wetland B. The total area of the CTH is approximately 43 acres. Post-construction, approximately 2.8 acres or about 6.5 percent of the CTH area would be impacted by construction of KEC. Thus, approximately 93.5 percent of the CTH area would remain undisturbed after the development of KEC. Post-construction development within the CTH would still be less than 25 percent of the CTH area, consistent with C&K BDPs. (NTE 7, response 58; Council Administrative Notice Item No. 100 – C&K BDPs, p. 8)

Invertebrates

Lepidoptera

459. REMA conducted a survey of moth and butterfly species on three separate nights: June 1, 2016; July 18, 2016; and July 26, 2016. REMA utilize ultraviolet, mercury vapor and white fluorescent lights to attract insects and also searched flower heads and the ground by headlamps and sweeping. REMA also observed butterfly species on June 10, 2016 and August 3, 2016. (NTE 1, Vol. 2, Appendix F – Invertebrate Survey, p. 1)

460. The purpose of the survey was to determine the presence of the following State-listed invertebrates identified by DEEP: the Fragile Dagger Moth, a State-designated Species of Special Concern; the Pink Star Moth, a State-designated Species of Special Concern; and the Frosted Elfin, a State-designated Threatened Species. (NTE 1, Vol. 2, Appendix F – Invertebrate Survey, pp. 1-2)

461. None of the three State-designated invertebrate species were found at the KEC Site during the survey. While this does not preclude their presence, their absence during the survey and the differing habitats at the reported nearby collection sites make this possibility less likely. (NTE 1, Vol. 2, Appendix F – Invertebrate Survey, pp. 1-2)

462. Subsequently, NTE received additional information from DEEP regarding the Natural Diversity Database including some additional questions relative to some of the Lepidoptera, e.g. the butterfly and moth species. NTE has ongoing design development information that would be provided to DEEP that would incorporate the wetland replication area and include an upland component that would serve as a "butterfly garden" intended to attract and support the Lepidoptera species that are of interest to DEEP. (Tr. 7, p. 1075-7076)

463. NTE would include legumes and vegetative species that would support pollinators for the wetland replication area and butterfly garden area. NTE is also willing to consider such plantings along the embankment around KEC at the Generating Facility Site. (Tr. 7, pp. 1097-1100)

Air Quality Issues

464. KEC is located in an area of non-attainment for ozone. Air quality in the Killingly area does not currently meet the National Ambient Air Quality Standards (NAAQS) for ozone, which is created by a photochemical reaction involving nitrogen oxides (NO_x) and volatile organic compounds (VOC). (NTE 1, Vol. 1, p. 43; Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #263)

465. The Project must meet air-quality requirements for non-attainment New Source Performance Standards, and Prevention of Significant Deterioration (PSD). The PSD regulations require compliance with Best Available Control Technology (BACT) emission rate limits and Connecticut Ambient Air Quality Standards (CAAQS) and NAAQS. Major new stationary sources of non-attainment pollutants in non-attainment areas must demonstrate compliance with Lowest Achievable Emission Rate (LAER) limits and obtain emission offsets. The proposed project would meet all of these requirements. (NTE 1, Vol. 1, pp. 42-45)

466. The Project would be subject to LAER for NO_x. Dry low-NOx combustion in conjunction with selective catalytic reduction (SCR) would control NOx emissions when the plant is firing natural gas. Water injection with selective catalytic reduction (SCR) would control NOx emissions when the plant is firing ULSD. (NTE 1, Vol. 1, pp. 43-44)

467. An oxidation catalyst would control emissions of carbon monoxide (CO) and volatile organic compounds (VOC). KEC would also utilize clean-burning natural gas with a maximum sulfur content of 0.5 grains per 100 standard cubic feet in conjunction with limited firing of ULSD as backup fuel, to minimize sulfur dioxide (SO_2), particulate matter (PM), sulfuric acid (H_2SO_4), lead (Pb), and hazardous air pollutant (HAP) emissions. (NTE 1, Vol. 1, pp. 43-44)

468. The proposed CTG LAER and BACT emissions rates for KEC is listed below.

Pollutant	**Emissions for Combustion Turbine Natural Gas Firing w/o duct firing**	**Emissions for Combustion Turbine Natural Gas Firing w/ duct firing**	**Emissions for Combustion Turbine ULSD Firing duct firing n/a**
NO_x	2.0 ppmvdc	2.0 ppmvdc	4.0 ppmvdc
VOC*	1.0 ppmvdc	2.0 ppmvdc	2.0 ppmvdc
CO	0.9 ppmvdc	1.7 ppmvdc	2.0 ppmvdc
$PM_{10}/PM_{2.5}$	0.0055 lb/MMBtu	0.0059 lb/MMBtu	0.0155 lb/MMBtu
SO_2	0.0015 lb/MMBtu	0.0015 lb/MMBtu	0.0015 lb/MMBtu
H_2SO_4	0.00056 lb/MMBtu	0.00053 lb/MMBtu	0.00054 lb/MMBtu
NH_3	2.0 ppmvdc	2.0 ppmvdc	5.0 ppmvdc

ppmvdc = parts per million by volume dry at 15 percent oxygen
lb/MMBtu = pound per million Btus
$PM_{2.5}$ = particulate matter with a diameter of at least 2.5 microns
PM_{10} = particulate matter with a diameter of at least 10 microns
*NTE notified DEEP that it would accept a 0.7 ppmvdc limit on VOC emissions with natural gas firing without duct burning and a 1.6 ppmvdc limit with duct burning.
**For CO emissions with natural gas firing and duct burning, NTE agreed to a 1.7 ppmvdc limit.
(NTE 15, Table 5-4; Tr. 7, pp. 1092-1093)

469. The proposed maximum annual emission for KEC is listed below.

Pollutant	Maximum Potential Emission (tons/year) for KEC*
NO_x	135.0
VOC	49.2
CO	143.1
$PM_{10}/PM_{2.5}$	102.0
SO_2	25.1
H_2SO_4	8.8
GHG**	1,991,622
NH_3	49.5

*This includes all sources such as the combustion turbine, duct burners, auxiliary boiler, natural gas heater, emergency generator, and fire pump.
**GHG is based on carbon dioxide equivalent.
(NTE 15, Table 2-2)

470. As required by the Clean Air Act, the EPA sets the NAAQS through a rigorous scientific process at levels determined to be protective of the health of the most sensitive individuals such as children, the elderly, chronic asthmatics, and people with other pulmonary diseases. Furthermore, an added margin of safety is included in calculating the standards. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact No. 272; Tr. 7, pp. 1067-1068)

471. Maximum predicted emissions impacts from the worst-case scenarios are compared to the Significant Impact Levels (SIL). SILs are used to determine the scope of the required air quality analysis that must be carried out in order to demonstrate that the source's emissions will not cause or contribute to a violation of any NAAQS or increment under the PSD program. If maximum predicted impacts are below the corresponding SILs, then compliance is demonstrated and no additional analysis is necessary. (Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact No. 273)

472. The proposed project's emissions impacts are predicted to be below the SIL for all pollutants except for 1-hour NO_2 and 24-hour $PM_{2.5}$. (NTE 1, Vol. 3, Ambient Air Quality Analysis, Attachment L, p. L-16)

473. For the pollutants with predicted modeled concentrations above a SIL, cumulative modeling with other existing regional sources, as identified by DEEP, was conducted. With such modeling, NTE confirmed that the resulting total concentrations for NO_2 and $PM_{2.5}$ are below their corresponding NAAQS concentration standards. (NTE 1, Vol. 3, Ambient Air Quality Analysis, Attachment L, pp. L-16 to L-19)

474. NTE would procure emissions reduction credits (ERCs) to offset the NO_x emissions from KEC. Since NTE would purchase NO_x ERCs to offset emissions at a ratio of 1.2 to 1, the total regional NO_x emissions would decrease as a result of KEC. (NTE 1, Vol. 1, p. 45)

475. NTE modeled $PM_{2.5}$ concentrations in the vicinity of the proposed KEC facility. Conservatively assuming 8,260 hours of ULSD firing in a year, even though ULSD usage is limited to 720 hours per year, the proposed facility's maximum worst-case modeled annual $PM_{2.5}$ would be on the order of 0.287 micrograms per cubic meter ($\mu g/m^3$). This level would occur very close to the vicinity of the Utility Switchyard area and industrial uses area slightly to the north. That would be the so-called "point of maximum impact", and would drop off with distance. However, in all areas, it would be less than the SIL of 0.3. See $PM_{2.5}$ Concentration Map on Figure 7. (Tr. 2, pp. 198-199; NTE 7, response 49)

476. KEC would improve regional air quality by displacing older, inefficient, and higher-emitting plants in the market, resulting in further regional air quality improvements. (NTE 1, Vol. 1, p. 45-46)

477. As a thermal power plant greater than 25 MW, the Project would be subject to the Regional Greenhouse Gas Initiative (RGGI). The addition of KEC would not impact the overall emissions reduction goals of RGGI because its emissions are already accounted for under the RGGI cap. (NTE 1, Vol. 1, p. 13)

478. The status of the EPA Clean Power Plan (CPP) is highly uncertain at this point and still under legal challenge. (Tr. 7, pp. 1058-1059)

479. Via the DEEP Air Permit process, NTE would commit to reducing its GHG emissions 80 percent from the time KEC is operational to 2050 in order to reduce its GHG emissions consistent with Connecticut's Global Warming Solutions Act. In order to accomplish this, NTE would commit to operating KEC less frequently in the later years. In other words, after 30 years of operation, KEC's GHG emissions would be 20 percent of the GHG emission in the first year of operation. (Tr. 7, p. 1129-1130)

480. NTE is also looking at some potential offset mechanisms that could allow KEC to operate more frequently such as, for example, acquiring additional RGGI offsets, or perhaps a renewable energy credit type of offset. While the final details are being worked out, if the Project is approved, NTE's commitment to an 80 percent reduction in GHG emissions from approximately 2020 to 2050 still stands. (Tr. 7, pp. 1129-1130)

Water Use

481. The ACC design utilizes approximately 95 percent less water than a conventional wet-cooled facility. It relies on indirect heat transfer with the ambient air, thereby eliminating the need for the substantial water requirements typical of many water-cooled power generating facilities in which conventional forced-draft wet cooling towers result in substantial evaporative cooling losses (NTE 1, Vol. 1, pp. 35-36)

482. The project would require water primarily for the following uses: steam-cycle makeup, water injection during ULSD firing to control increased nitrogen oxides (NO_x) emissions versus when consuming natural gas, evaporative cooler, and potable water. (NTE 1, Vol. 1, p. 46 and Figure 2-11b – KEC Water Balance)

483. The Project's evaporative cooler would be a humidification system that lowers the combustion turbine inlet temperature to help power output and efficiency. The evaporative coolers would generally operate at temperatures above 59 degrees F. (NTE 1, Vol. 1, p. 46; Council Administrative Notice Item No. 48 – Docket No. 192B, Finding of Fact #283)

484. NTE considered inlet air chilling versus evaporative cooling of the incoming air to the combustion turbine to reduce water consumption. However, inlet air chilling was not selected due to significant parasitic load associated with the chilling and piping system, which would have a negative effect on plant efficiency (which affects GHG reduction), as well as increased cost. (NTE 7, response 47)

485. KEC's water supply would be provided by the Connecticut Water Company (CWC), Crystal Water Division, a subsidiary of Connecticut Water Service, Inc. CWC currently serves the Town and would require no increase in permitted capacity of existing wells to meet KEC's water needs. However, the Eastern Regional Distribution Improvements (ERDI) would also be required. (NTE 1, Vol. 1, p. 46; NTE 1, Vol. 1, Figure 2-10, p. 47)

486. The following wellfields are either proximate to KEC or anticipated to be used to provide water to KEC: Killingly Industrial Park Wellfield; Philip B. Hopkins Wellfield; Brooklyn Wellfield; and Plainfield Division Wellfield. (NTE 1, Vol. 1, p. 106)

487. ERDI would include a new 12-inch water line approximately 12,000 feet long and running in roughly a north-south direction from the Crystal System in Killingly to the Crystal-Plainfield System in Killingly (NTE 1, Vol. 1, Figure 2-10, p. 47; NTE 7, response 48)

488. The potable water consumption rates for the proposed facility in gallons per day (gpd) from CWC, based on various conditions, are listed below.

Operating Conditions	KEC's Potable Water Consumption in gpd
Natural Gas Winter Temperatures Full Load Evaporative Cooler Off Duct Burner Off	~41,700 gpd
Natural Gas Average Ambient Temperature Full Load Evaporative Cooler Off Duct Burner Off	~40,000 gpd
Natural Gas Summer Temperatures Full Load Evaporative Cooler On 12hrs/day Duct Burner On 12hrs/day	~70,000 gpd
ULSD Winter Temperatures Full Load Evaporative Cooler Off Duct Burner N/A (Off)	~327,600 gpd
ULSD Summer Temperatures Full Load Evaporative Cooler On 12hrs/day Duct Burner N/A (Off)	~345,400 gpd

(NTE 1, Vol. 1, Figure 2-11b – KEC Water Balance)

489. The worst-case water consumption rate of KEC would be approximately 345,400 gpd under ULSD operating conditions with evaporative cooling, but NTE utilized 400,000 gpd as a conservative round number. (Tr. 2, p. 191; NTE 1, Vol. 1, Figure 2-11b – KEC Water Balance)

490. NTE is willing to comply with DPH recommendations as outlined in DPH's comments dated October 20, 2016. (Tr. 2, pp. 193-194; DPH Letter dated October 20, 2016)

491. A safe yield analysis was performed, and it was determined that CWC would have adequate water supply to serve KEC once the two water systems are connected, i.e. ERDI are completed. CWC also considered drought conditions in its analysis. (Tr. 3, p. 406)

Gray Water Alternative

492. Gray water is essentially treated wastewater or treated sewage. NTE could potentially source the gray water from the Killingly Water Pollution Control Authority (KWPCA). (Tr. 7, p. 1071; NTE 22, Late Filed Exhibit – Gray Water, p. 2)

493. The water consumption rates for the proposed facility in gallons per day (gpd) if KEC utilizes gray water based on various conditions are listed below.

Operating Conditions	Gray Water Consumption in gpd	KEC's Potable Water Consumption in gpd
Natural Gas Winter Temperatures Full Load Evaporative Cooler Off Duct Burner Off	~71,000 gpd	~2,900 gpd
Natural Gas Average Ambient Temperature Full Load Evaporative Cooler Off Duct Burner Off	~67,700 gpd	~2,900 gpd
Natural Gas Summer Temperatures Full Load Evaporative Cooler On 12hrs/day Duct Burner On 12hrs/day	~131,300 gpd	~2,900 gpd
ULSD Winter Temperatures Full Load Evaporative Cooler Off Duct Burner N/A (Off)	~416,300 gpd	~2,900 gpd
ULSD Summer Temperatures Full Load Evaporative Cooler On 12hrs/day Duct Burner N/A (Off)	~457,300 gpd	~2,900 gpd

(NTE 22, Late Filed Exhibit – Gray Water, Water Balance Diagram)

494. Although the KWPCA facility treated effluent or gray water supply option is technically feasible for KEC, it has several drawbacks as noted below:
   a) KWPCA is not obligated nor under contract or letter of agreement to provide such gray water;
   b) It would involve infrastructure development that supports a single use (i.e. KEC's gray water supply), rather than the broader benefit associated with the CWC water system connection;
   c) There is unknown variability of the treated effluent water quality;
   d) There is reduced reliability due to the increased complexity and extent of water treatment equipment;
   e) It would require increased makeup water flow;
   f) It would involve increased wastewater discharge flow;
   g) Flow to the Quinebaug River would decrease;
   h) Installed costs would be higher due to pump and pipeline infrastructure;
   i) Installed costs would be higher to accommodate KEC's facility makeup water treatment system; and
   j) KEC would have higher water treatment operating and maintenance costs.

   (NTE 22, Late Filed Exhibit – Gray Water, pp. 8-9)

Water Discharge

495. The KEC project is proposed to discharge wastewater to the Killingly sewer system. (NTE 1, Vol. 1, p. 51)

496. The wastewater that NTE would discharge from the proposed KEC facility would be associated with five sources listed below.

   a) Operation of the reverse osmosis demineralizer water treatment system includes a reject stream which concentrates any impurities existing in the raw water source;
   b) Equipment drains and floor drains receive wastewater from equipment drains and washdowns. These wastewaters would be directed to an oil/water separator prior to discharge;
   c) Sanitary wastewater from toilet flushes, sink drains, shower drains, and drinking fountains would be directly discharged into KEC's sewer connection;
   d) In order to maintain safe and reliable operation, the HRSG must "blow down" water from the steam cycle; and
   e) Also for safety and reliability, the CTG evaporative cooler must "blow down" water from the sump.

   (NTE 1, Vol. 1, p. 51)

497. These five wastewater sources would flow directly via an approximately 3,100-foot sewer interconnection to the existing sewer system in Lake Road. (NTE 1, Vol. 1, p. 51)

498. The total proposed wastewater discharges per day for KEC are listed below.

	Natural Gas Operation of KEC	**ULSD Operation of KEC**
Discharge to Sewer (gpd)	30,000 to 45,000	Up to 90,000

(NTE 1, Vol. 1, p. 51)

499. Wastewater generated by KEC would be pre-treated to the extent required to assure compliance with sewer discharge requirements of the Town of Killingly's sewer system, operated by Suez. Use of the oil/water separators for the building drains would ensure compliance with such criteria. (NTE 1, Vol. 1, p. 51)

500. NTE has received confirmation of the existing sewer system's ability to accept and treat the required volumes of wastewater discharge. (NTE 1, Vol. 1, p. 51)

Wastewater Discharge associated with the Gray Water Alternative

501. Wastewater discharge back to the KWPCA facility would be approximately 60,000 gpd to 106,000 gpd if KEC were operated using gray water. (NTE 22, Late Filed Exhibit – Gray Water, p. 5)

Solid and Hazardous Waste

502. During the construction of KEC, solid waste would be generated that is typical of normal construction efforts including, but not limited to, packing materials, office waste, scrap lumber, metals, cables, cardboard containers, and debris from lunches, catering, and vending machines. In addition, during construction and pre-operational cleaning, some solvents and flushing materials would be used. Solid waste that can be neither recycled nor reused would be stored in on-site containers for disposal. (NTE 1, Vol. 1, p. 62)

503. During the operation of KEC, generated solid waste would be anticipated to consist of office waste, including paper and miscellaneous trash, as well as plant operations wastes such as spent chemical and lube oil containers, water treatment waste, spare parts, packaging, etc. Any solid waste generated would be removed by a licensed hauler. (NTE 1, Vol. 1, p. 62)

504. SCR catalysts would be removed and returned to a catalyst vendor for regeneration, salvage, or disposal. (NTE 1, Vol. 1, p. 62)

505. Programs would be developed to ensure that potentially hazardous wastes are separated from normal waste, including segregation of storage areas and proper labeling of containers. (NTE 1, Vol. 1, p. 62)

506. All waste would be removed from the KEC site by licensed contractors in accordance with applicable regulatory requirements and managed in licensed facilities. (NTE 1, Vol. 1, p. 62)

Neighborhood Concerns

507. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public comment session on Thursday, October 20, 2016 at 6:30 p.m. at the Killingly High School, Auditorium, 226 Putnam Pike, Killingly, Connecticut. The public comment session concluded at 9:41 p.m. (Council's Hearing Notice dated September 16, 2016; Tr. 1)

508. During the public comment session, 75 interested persons provided oral limited appearance statements and while the record was open, 78 interested persons provided written limited appearance statements. (Tr. 1; Public Comment Record)

509. Of the approximately 53 oral and written limited appearance statements in favor of the proposed facility, concerns include, but are not limited to, the following:
- creation of local jobs;
- cleaner source of energy;
- tax revenue;
- reliable energy generation;
- economic growth for the area;
- lower energy costs; and
- proximity to existing electric transmission and natural gas infrastructure.

(Tr. 1; Public Comment Record)

510. Of the approximately 91 oral and written limited appearance statements in opposition to the proposed facility, concerns include, but are not limited to, the following:
- air emissions;
- lack of need for the energy;
- impacts to wetlands and watercourses;
- noise;
- increased traffic;
- diminished water supply;
- impacts to wildlife;
- visibility;
- threat of spills and explosions;
- property values; and
- construction impacts.

(Tr. 1; Public Comment Record)

511. State Representative Danny Rovero of the 51st Assembly District provided a limited appearance statement at the Council's public comment session on October 20, 2016 and submitted a written copy of such comments on October 25, 2016. Specifically, Representative Rovero expressed concerns about another power plant being constructed in Killingly besides the existing LRGF. He noted that Frito Lay and also an asphalt plant are located nearby. Rep. Rovero further noted that the KEC project would be located near a lake, wetlands, the Quinebaug River and several schools and believes the Project would be unwise environmentally. Lastly, Rep. Rovero is concerned that this quiet corner of the State can only handle so much and possible health effects. (Rep. Rovero Comments submitted on October 25, 2016)

512. State Senator Mae Flexer of the 29th District provided a limited appearance statement at the Council's public comment session on October 20, 2016 and provided a written copy of such comments at that time. Senator Flexer notes that the LRGF is approximately one mile from the proposed KEC and has a nominal capacity of 792 MW. Thus, the addition of the approximately 550 MW KEC would make Killingly the largest natural gas power generating site in all of Connecticut and the second largest generating site in all of Connecticut – second only to Millstone Nuclear Power Plant in Waterford. Senator Flexer believes that is an enormous burden to place on the people of Killingly, and it would be unfair to concentrate a large fraction of the State's electric power generation emissions in Killingly. She is also concerned that the dedication of large quantities of local water to the proposed KEC facility would constrain the use of those resources for other purposes, both in the present and the future. Senator Flexer further notes that the community's willingness to support LRGF should not be exploited or taken advantage of to force yet another large-scale facility on the Town. (Sen. Flexer Comments received on October 20, 2016)

513. If the Council decides to approve KEC, Senator Flexer urges the Council to only approve such a project if there is a guarantee of a Project Labor Agreement. This agreement would ensure that the facility would be built by the most highly trained workers and would provide these workers with quality wages. Senator Flexer is concerned that NTE is promising many of Killingly's residents a PLA when only a MOU has been signed. (Sen. Flexer Comments received on October 20, 2016)

514. With regard to a potential project labor agreement (PLA), NTE has had discussions with labor unions. KEC would be a union project. NTE is in the process of selecting an engineering, procurement and construction (EPC) contractor. Such contractor would work with the unions to put an agreement in place under which the project would be completed. (Tr. 7, p. 1046)

515. NTE responded to a public comment concern regarding why a baseload facility such as KEC would be needed in the same vicinity of the existing LRGF which is believed to currently operate on an intermittent basis. NTE notes that KEC would have a lower heat rate than the LRGF and thus it would have a different ISO-NE dispatch profile and would be expected to operate more than LRGF. (Tr. 7, p. 1049)

516. NTE responded to a public comment concern about whether or not NTE had considered a Carbon Capture and Sequestration System (CCSS) for KEC. NTE notes that it did consider a CCSS as part of its BACT analysis for its Air Permit Application. However, such technology is intended more for coal-fired power plants with greater carbon dioxide emissions and larger exhaust flows than a combined-cycle plant. (Tr. 7, p. 1049)

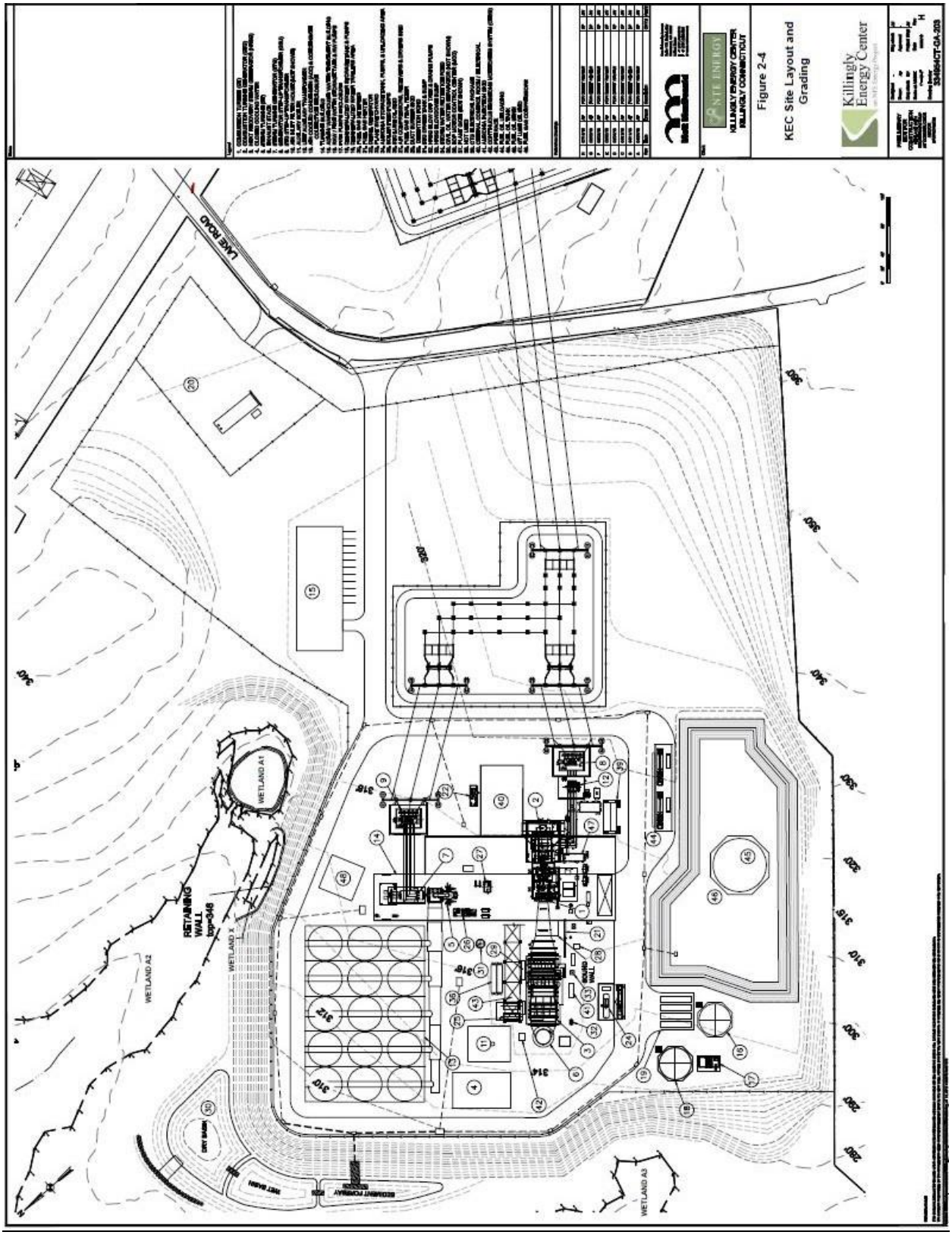
517. NTE responded to a public comment concern regarding the possibility of runoff water from the KEC switchyard and parking area being contaminated with de-icing chemicals, oils and other possible contaminated and potentially affecting an adjacent farm where cattle drink from streams. Specifically, NTE notes that the KEC stormwater management system has been designed to collect and control stormwater on the site. There would be best management practices in place where fuel loading or storage would occur that would protect such areas. The parking areas would have curbing and drainage that would direct de-icing materials into the stormwater management system for treatment as well. (Tr. 7, p. 1071-1072)

518. NTE responded to NAPP's concerns regarding impacts to wells and foundations associated with blasting for the Project. NTE would conduct pre-blast surveys in the weeks leading up to a blasting event by licensed independent inspectors. The State of Connecticut does not define a lateral distance limit for performing a pre-blast survey. However, NTE would provide pre-blast surveys for all structures within an approximately 250-foot radius of the blasting location. (NTE 16, response 26; Tr. 6, p. 880)

519. Pre-blast surveys would provide detailed room-by-room, wall-by-wall video documentation of all existing defects visible throughout the interior and exterior of the structures, as well as well water quality tests, which would be offered to nearby residents. Both pre and post-blast surveys would be offered by NTE to the homeowners within the 250-foot radius. (NTE 16, responses 26 and 27; Tr. 6, pp. 880-881)

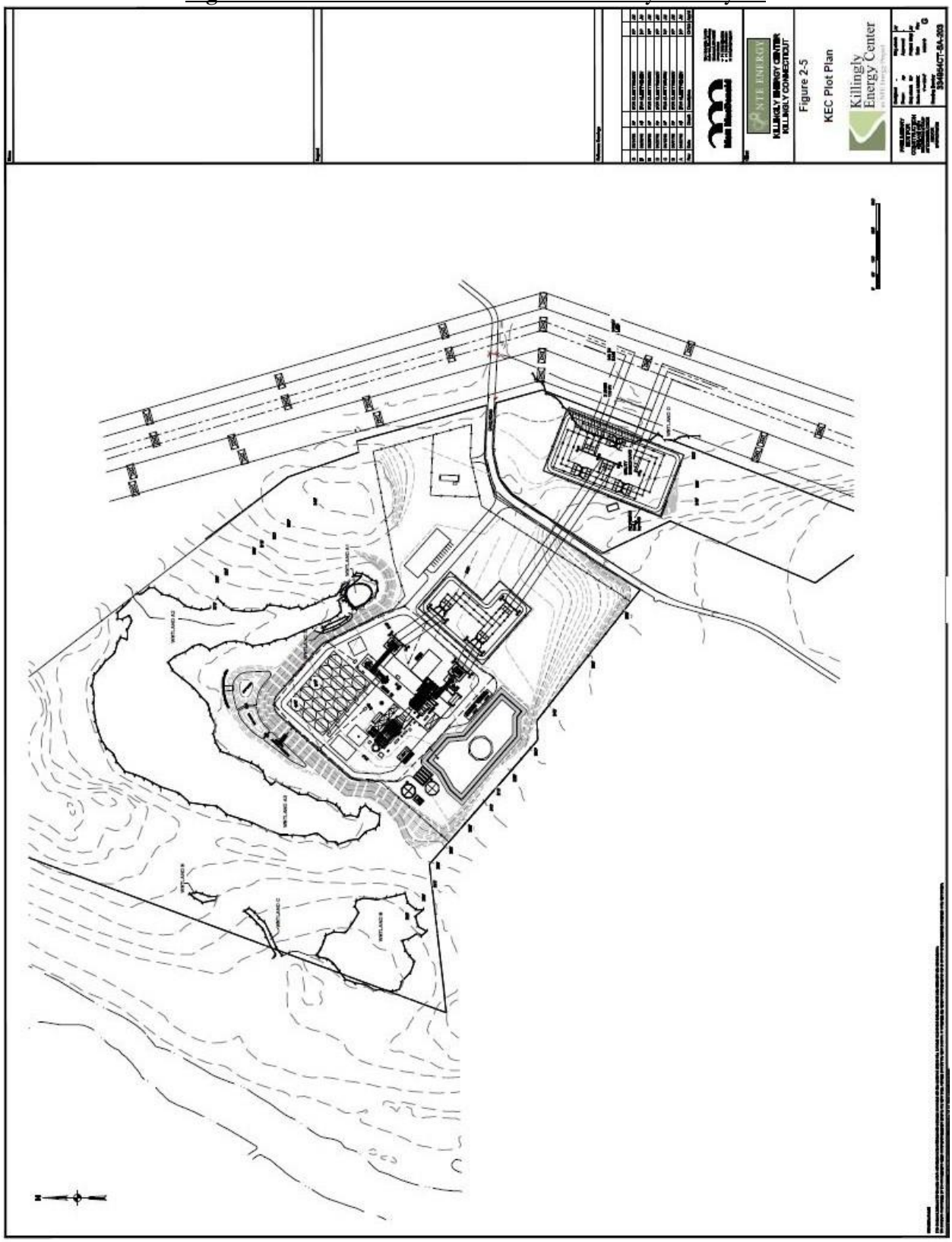
520. Drilled wells are typically hundreds of feet deep to reach aquifers below the earth's surface. The blasting activities at KEC are for removing rock just below the earth's surface and should have no impact on aquifers below. While no studies have been performed, given that the proposed blasting activities are a considerable distance from the nearest residence, it is unlikely that blasting activities would result in increased radon levels within nearby wells and residences. Notwithstanding, NTE would be responsible for any costs to mitigate such impacts to the extent that they are caused by blasting or other construction activities at KEC. (NTE 16, response 28; Tr. 6, p. 878)

Figure 1 – Proposed Site Plan



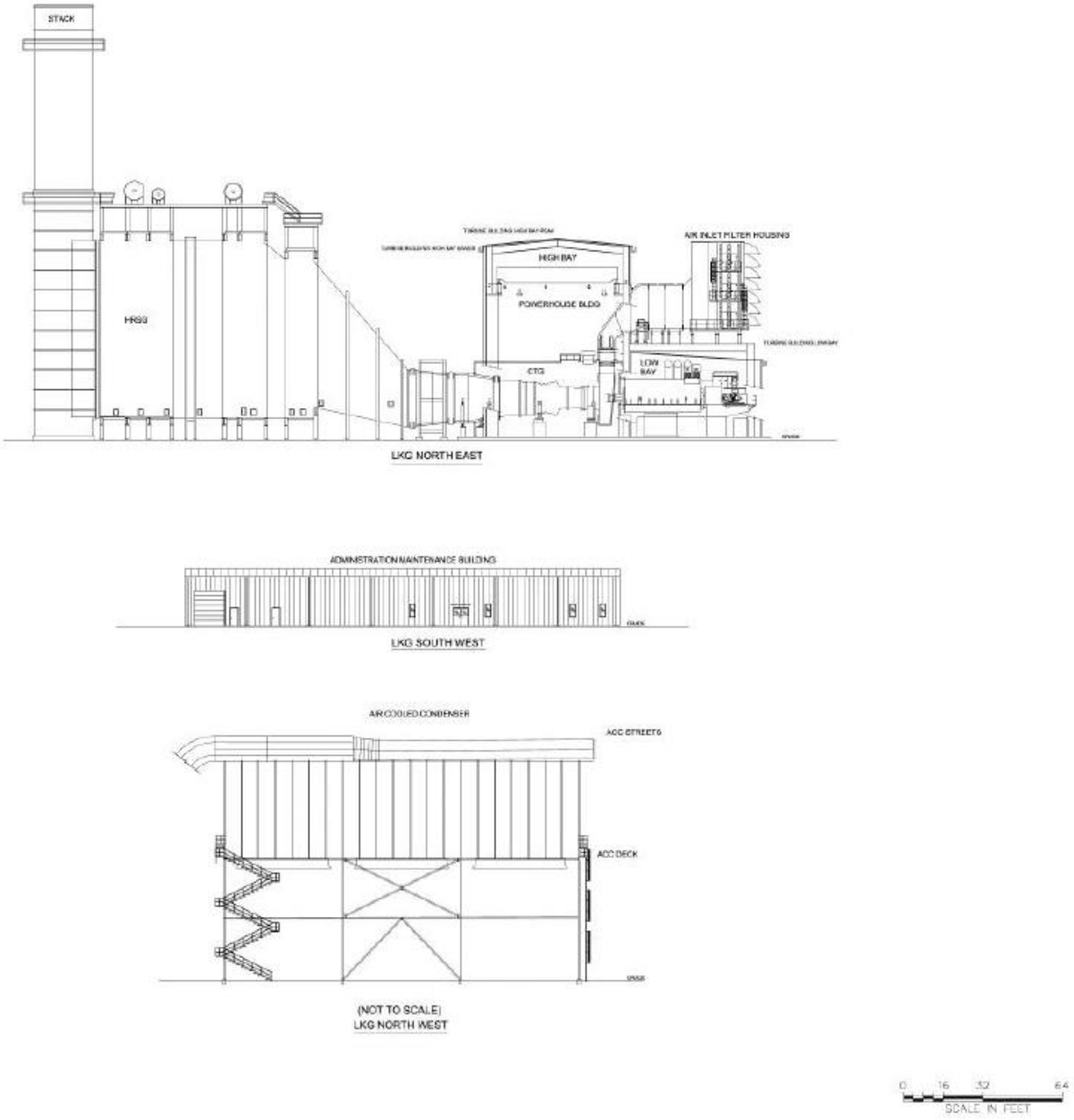
(NTE 1, Vol. 1, Figure 2-4)

Figure 2 – Site Plan with future Eversource Utility Switchyard



(NTE 1, Vol. 1, Figure 2-5)

Figure 3 – Proposed Site Plan Elevation View

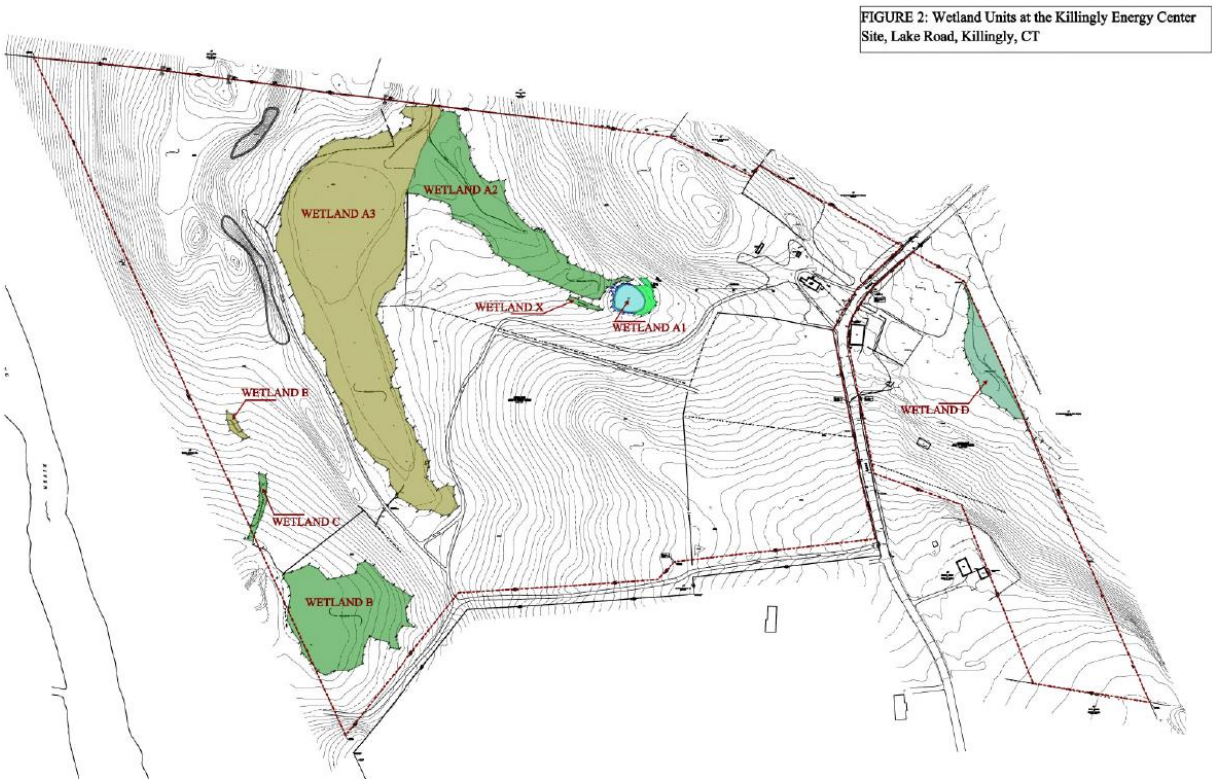


(NTE 1, Vol. 3, Appendix G-4, Permit Application for Stationary Sources of Air Pollution – New Source Review, Elevation Drawing)

Figure 4 – Photo Rendering of Proposed Plant

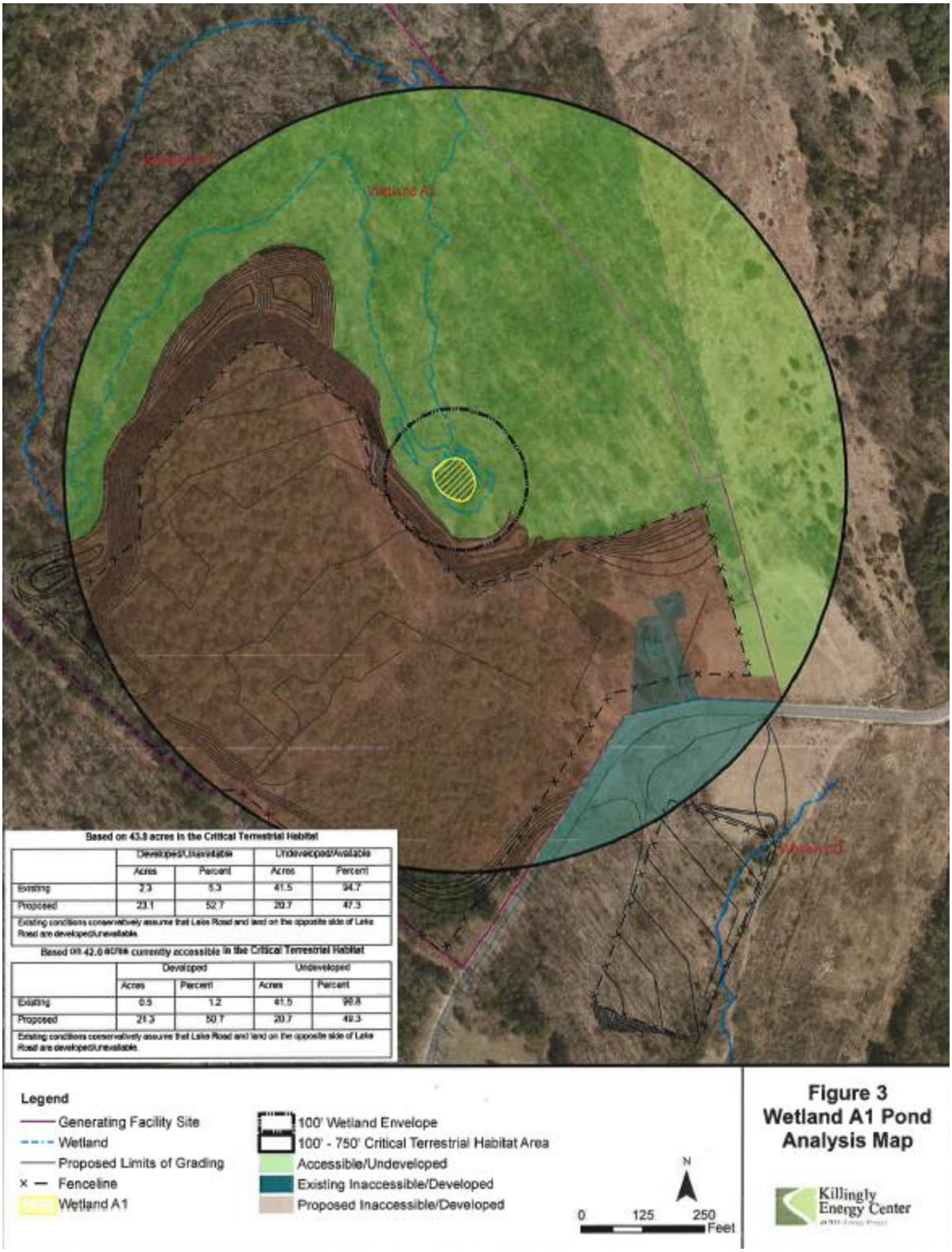
(NTE 1, Vol. 1, Figure 2-6)

Figure 5 – Wetland Map



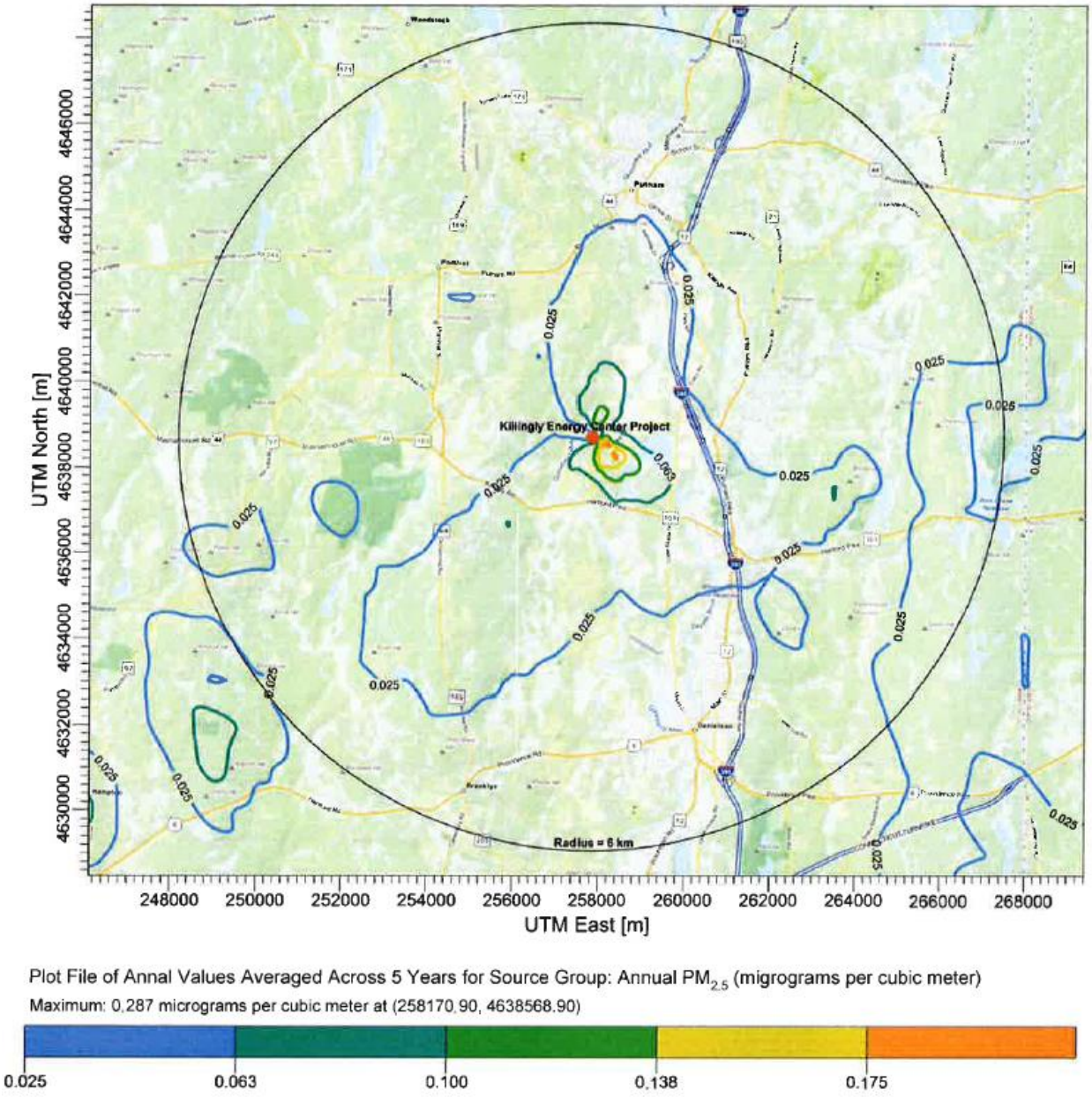
(NTE 1, Vol. 2, Appendix E – Wetland Report: Proposed Conditions, Figure 2)

Figure 6 – Vernal Pool Analysis



(NTE 21, Figure 3)

Figure 7 – $PM_{2.5}$ Dispersion Map

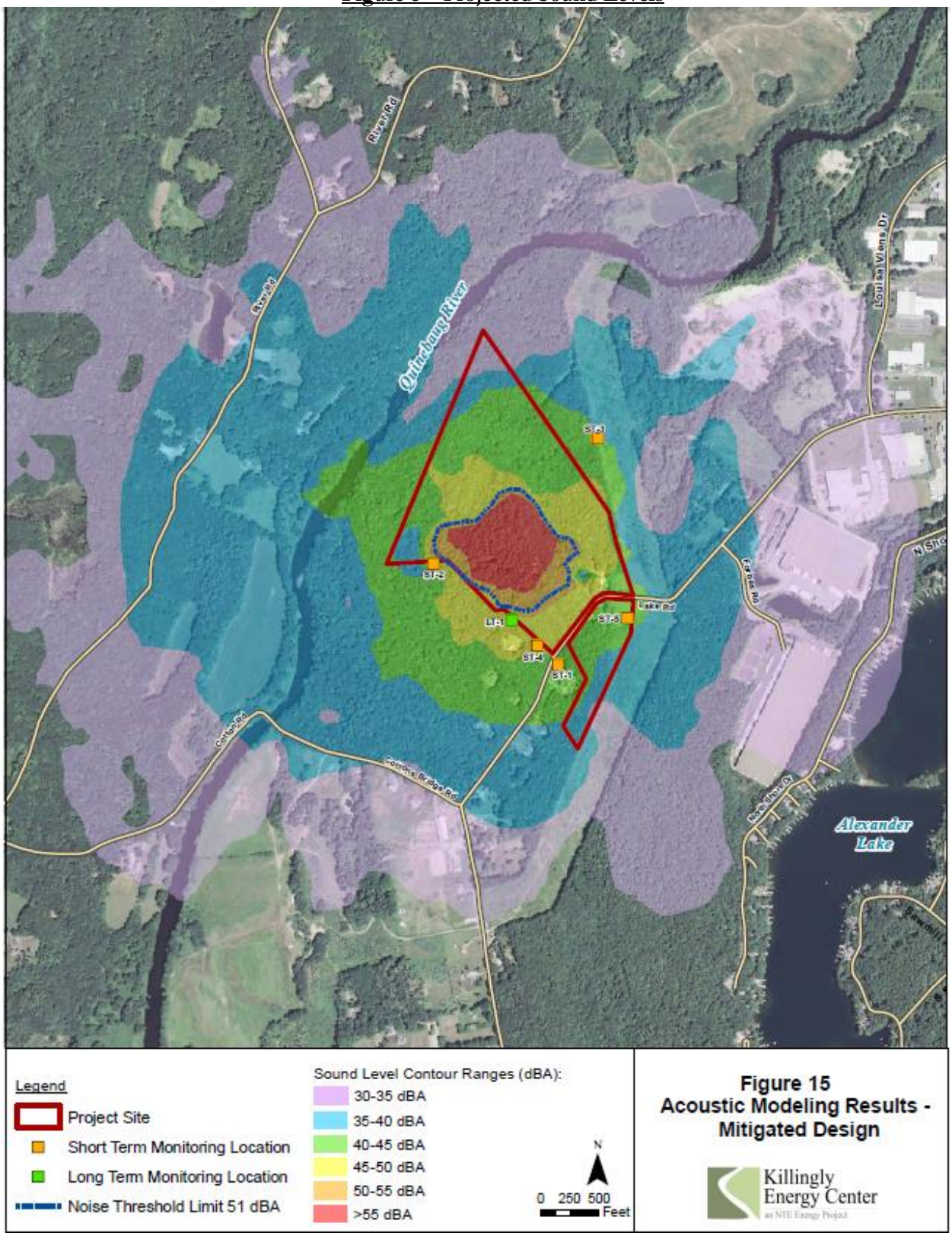


Plot File of Annal Values Averaged Across 5 Years for Source Group: Annual $PM_{2.5}$ (migrograms per cubic meter)

Maximum: 0.287 micrograms per cubic meter at (258170.90, 4638568.90)

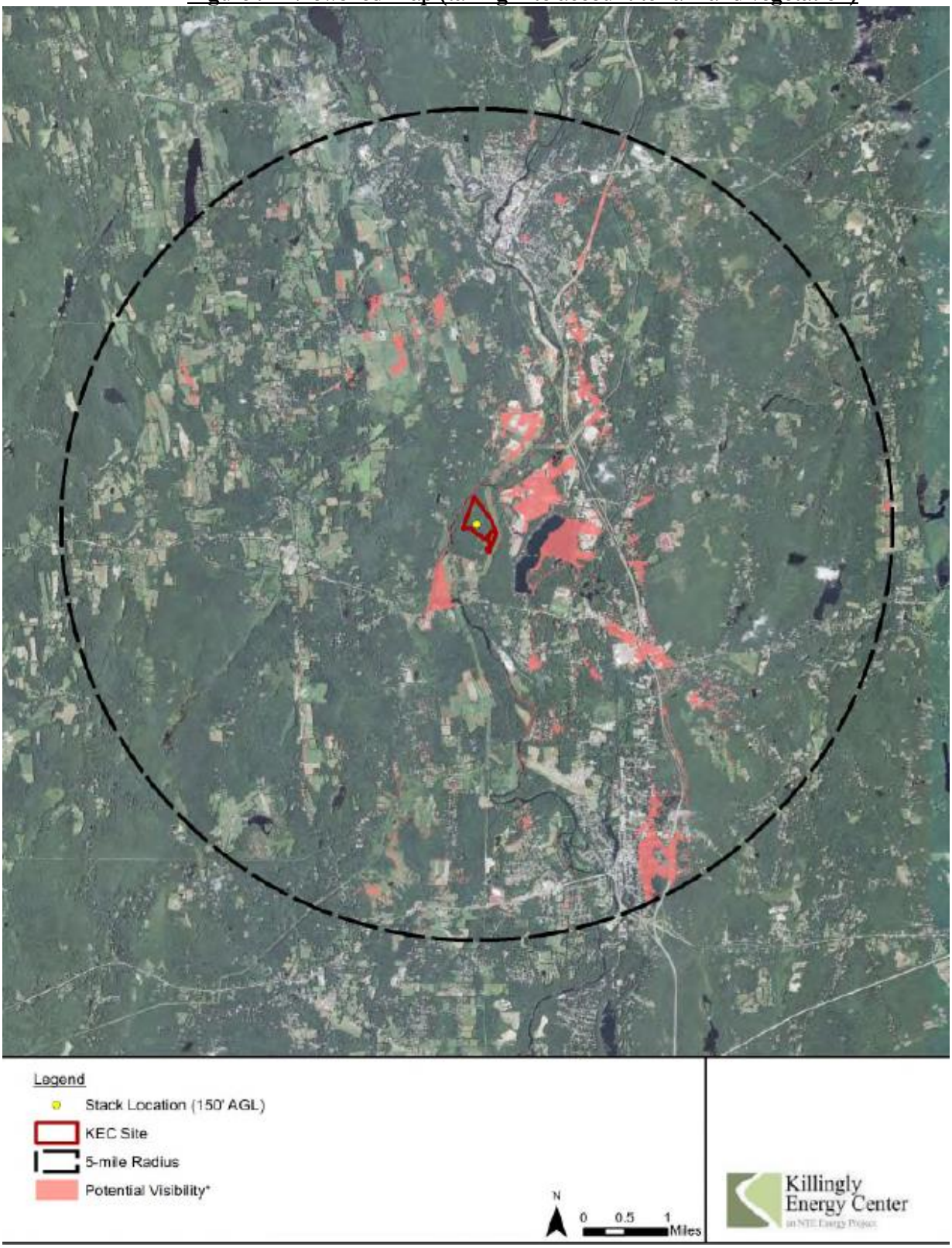
(NTE 7, response 49)

Figure 8 – Projected Sound Levels



(NTE 1, Vol. 4, Appendix L – Sounds Survey and Analysis Report, p. 22, Figure 15)

Figure 9 – Viewshed Map (taking into account terrain and vegetation)



(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 10 – Photo-simulation of Stack Height – 154 Lake Road

(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 11 – Photo-simulation of Stack Height – Island Road

(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 12 – Photo-simulation of Stack Height – Route 101

(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 13 – Photo-simulation of Stack Height – Kearny Fork

(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 14 – Photo-simulation of Stack Height – Route 44

(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

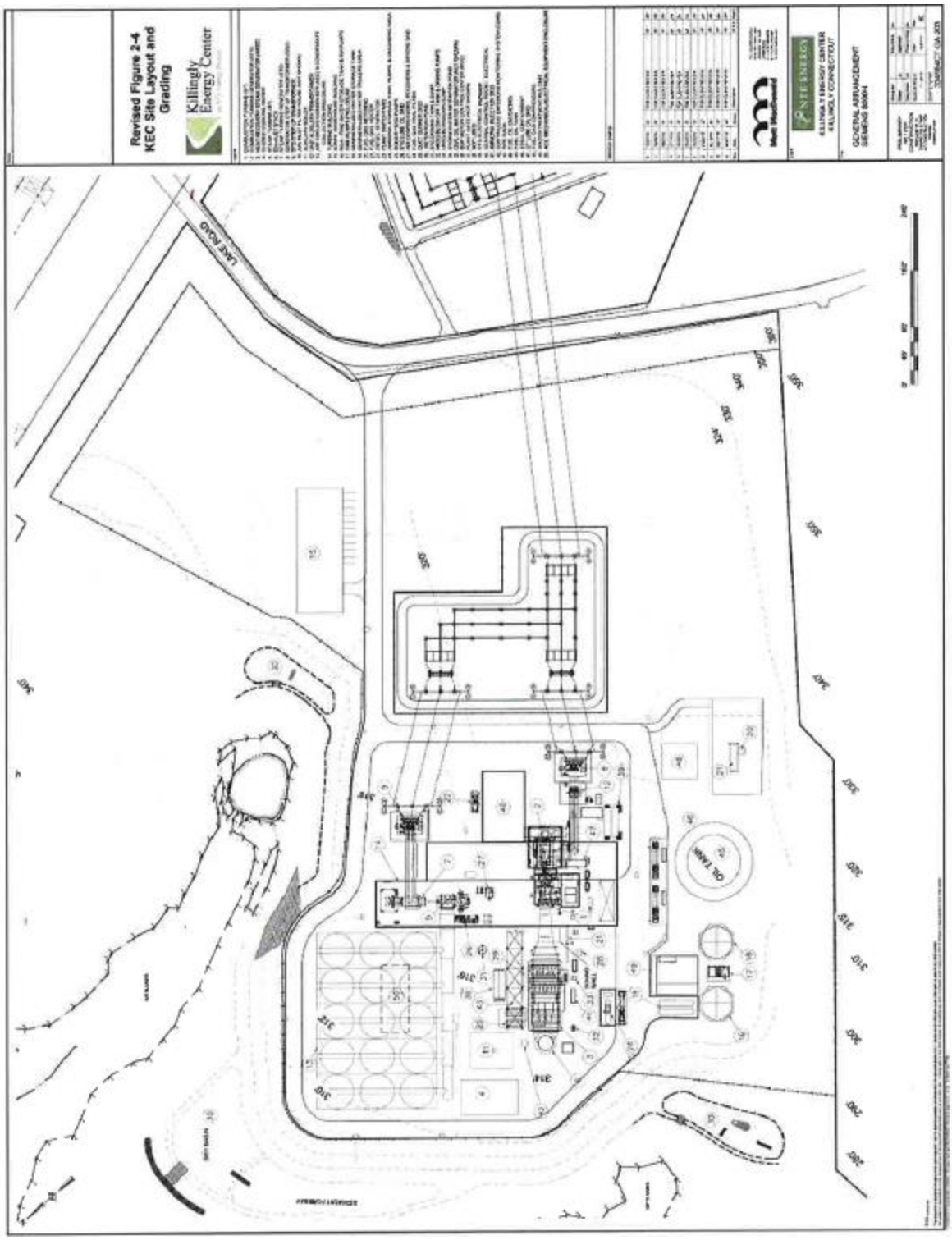
Figure 15 – Photo-simulations of Stack Height – Louisa Viens Drive

(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 16 – Photo-simulation of KEC Plume

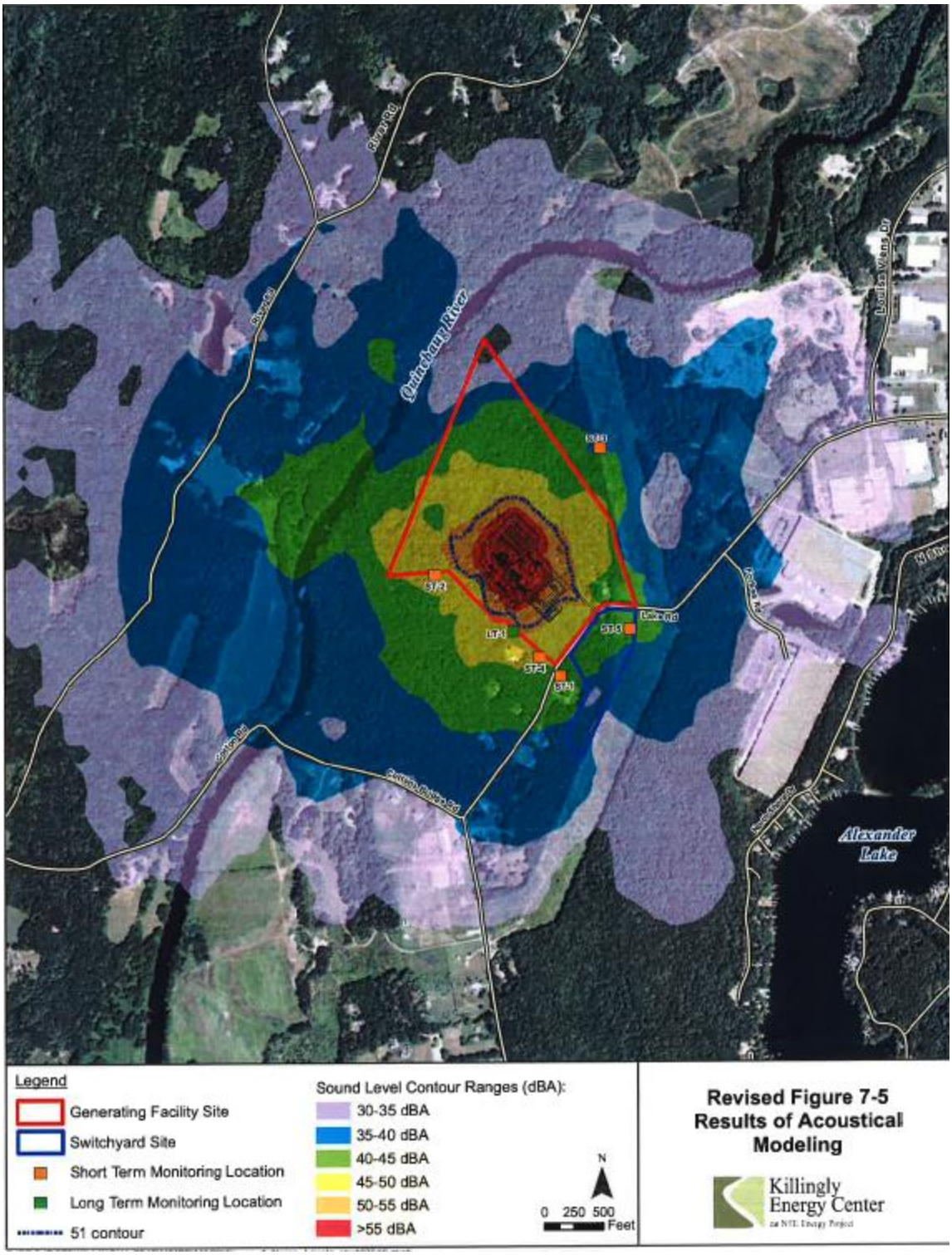
(NTE 1, Vol. 4, Appendix K – Visual Impact Assessment)

Figure 17 – Site plan with NTE's Appeal of Municipal Regulate and Restrict



(NTE 15)

Figure 18 – Projected Sound Levels with NTE's Appeal of Municipal Regulate and Restrict



(NTE 15)