Article 97 Land Disposition

Town of Wakefield, Massachusetts

Alternatives Analysis

Wakefield Municipal Gas and Light Department Energy Park
Hemlock Road, Wakefield, Massachusetts

Respectfully Submitted To:

Commonwealth of Massachusetts General Court

Prepared By:

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WMGLD
WAKEFIELD MUNICIPAL GAS AND LIGHT DEPARTMENT

Date: January 23, 2022

Introduction & Background:

Wakefield Municipal Gas and Light Department (WMGLD) seeks to reduce carbon emissions in conjunction with the Commonwealth of Massachusetts' decarbonization goals of reducing greenhouse gas emissions and achieve net-zero emissions by 2050. WMGLD has identified areas of opportunity for reductions in emissions associated with natural gas usage, peak electric consumption and backup power generation associated with the proposed Northeast Metropolitan Technical High School (NEMT) construction project and future opportunities with the proposed Wakefield Memorial High School (WMHS) through the creation of an Energy Park. The Energy Park will solar installations on the roofs of both schools, utility grade battery storage and a back-up natural gas generator life safety and emergency electric supply to both schools. The purposes of this park are multiple:

In line with the Massachusetts 2050 Decarbonation Roadmap, the Energy Park will provide the following benefits:

1. Ensure that both schools will be served by all electric heating and cooling systems.
2. Provide uninterrupted back up power to the proposed school(s), as required by code, without the need for diesel generators.
3. Utilize battery technology, solar and natural gas generator to provide peak shaving capabilities under peak system loads
4. Utilize available rooftops for solar installations to provide electricity to both schools.
5. Integrate distributed generation systems to work effectively as a micro-grid with energy storage, roof top solar, natural gas generation and the utility grid.
6. Provide educational opportunities to the students of both NEMT and WHS, including the concepts of energy management & distributed generation technologies such as solar, energy storage and natural gas generators into vocational and STEM programs. WMGLD has been awarded a $125K grant[1] as seed funding to help develop these programs. This grant was awarded by the American Public Power Association (APPA) in 2022.

[1] Funding is based on final project approvals.

Both the existing and planned NEMT and WMHS are located off of Hemlock Road in Wakefield. To properly site the Energy Park in support of the goals identified above, WMGLD requires a site that is geographically in between both proposed school locations. WMGLD reviewed its property inventory for a site near the schools, with proximity to the necessary electric infrastructure required to handle the proposed load, design & engineering requirements for a micro-grid and with suitable topography. WMGLD did not own any such site. The closest property owned by WMGLD is 163 Farm Street, approximately one mile (4,700± feet) from the proposed school locations. WMGLD also considered school property in its analysis of potential sites. The WMGLD consulted with the design teams for both the proposed schools to identify a possible location for the energy park on either school's property. Neither of the school sites could provide an area large enough for the Energy Park, see attached letters from NEMT and WMHS (Appendix 1 & 2). WMGLD subsequently review all the land on Hemlock Road between the two schools andidentified an approximate 1-acre portion of a 10-acre parcel of land owned by the Town of Wakefield that satisfied all necessary criteria (see Appendix 3). At the November 19, 2022, Fall Town Meeting, the citizens of Wakefield voted to grant an easement for the selected property from the Town to the WMGLD for the purpose of the Energy Park. In exchange WMGLD and the Town would provide real estate of equal or greater financial and natural resource value as an offset. WMGLD received unanimous approval from the Town Administrator, the Town Council, the Planning Board and the Finance and Advisory Board for the project and the easement. The WMGLD committed to work with Wakefield Conservation Commission to identify additional available land options to offset the 1-acre parcel on Hemlock Road. A package of offerings has been offered as offset including a 2.5 acre parcel of land in an Area of Critical Environmental Concern (ACEC) and WMGLD would also convert 8488 square foot parcel on Ballister Street, site of a retired electric substation, into a public park. In addition, working with the Conservation Commission, WMGLD has identified potential sites to restore lost tree canopy due to the removal of trees from the proposed acre for the energy park. Together, these proposals exceed the intent of the EOEA Article 97 Land Disposition Policy. A summary of the offerings includes;

1. Provide a 2.5± acre parcel of land owned by WMGLD within an Area of Critical Environmental Concern (ACEC) to remain undeveloped in perpetuity (Figure 2, Appendix 5 & Appendix 6)

2. WMGLD will construct a park at the recently decommissioned Burns Substation on Ballister Street, being a 8,455 sq ft parcel (see Figure 4 & 4a) within a heavily developed area of Wakefield with little open space opportunities

3. WMGLD will replant trees on previously cleared land at Maple Way and other public ROWs to offset the loss of trees at the proposed Energy Park (Figure 5)

WMGLD has completed the alternative analysis as required to complete the transfer under Article 97 of the Constitution of the Commonwealth of Massachusetts approval by the Commonwealth's Legislature is required. In accordance with the recently promulgated Chapter 274 of the Acts of 2022, Section 5A of this report constitutes, *"...an alternatives analysis demonstrating that all other options to avoid or minimize said Article XCVII disposition or change in use have been explored and no feasible or substantially equivalent alternative exists;"* that will, *"...identify replacement land or an interest in land, which is not already subject to said Article XCVII, in a comparable location and that is of equal or greater natural resource value, as determined by the secretary of energy and environmental affairs, and acreage and monetary value."*

WMGLD has carefully reviewed the need and benefits for the approximately 1-acre of land area sought for the construction of the Energy Park and has offered land of greater environmental significance, land area, and value to offset this land disposition and to further the goals of Article 97 promoting the right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment.

Summary of Alternatives Locations Studied:

1. Without available land, Energy Park project is cancelled, negative overall environmental impact due to schools using non electric heating and cooling resources and forcing the use of diesel backup generators rather than the combination of battery and natural gas generation.
2. Installing a battery storage only at the Ballister Street substation- no benefits to the WMHS and NEMT school projects.
3. Other non-municipal land – No land is available fitting the goals and requirements of the project.
4. 163 Farm Street Beebe substation - no benefits to the WMHS and NEMT school projects
5. Hemlock Road area
    a. NEMT property – no land available
    b. WMHS property – no land available
    c. Hemlock Road Land opposite proposed energy park site – unsuitable topography and on-site protected resource areas

d. Municipal property on Hemlock Road – meets all of the design and engineering requirements, inline with the Mass 2050 Decarbonization Roadmap goals and meets the sustainability and environmental goals of WMHS, NEMT and the Community.

Alternatives Analysis Details:

1. **If no land is available that meets the design and engineering requirements for the Energy Park, the project will be cancelled.**
   If the energy park project is cancelled, it will result in significant financial and environmental impacts to both school building projects. Both school projects will need to include emergency diesel generators as part of their design and roof top solar will be eliminated at the projects outsets. No action does not result in improvements to furthering WMGLD meeting the State's decarbonization goals. No reductions to peak loads are achieved and one significant opportunity to reduce carbon emissions would be lost and ultimately result in higher consumer rates. NEMT mechanical equipment would revert to natural gas for heating and hot water. No action would decrease WMGLD grid reliability and at best maintain or most-likely increase carbon output. Without this project no advancements to net-zero goals are made and additional carbon offsetting projects would be required. Negative fiscal impacts to the community would also result as NEMT and WMHS would be required to individually purchase and install backup diesel power generators at an individual cost of approximately $1.2M each ($2.4M total). WMGLD rate payers would absorb the lost opportunity to reduce peak power costs through increased consumer rates. There would also be no immediate solar opportunities for Schools, impacting stainability goals.

2. **Battery Storage only installed at Burns substation, Ballister Street**

   WMGLD would use its existing Ballister Street property to construct an energy storage facility (Battery Storage) only. This property would no longer be converted from industrial use to a community park. Some progress towards net-zero emissions goals would be met and the batteries would be used for peak shaving. This option will **not** result in a common location for an uninterruptable emergency backup supply for WMHS and NEMT schools. NEMT and WMHS would be required to individually purchase and install backup diesel power generators at an

individual cost of approximately $1.2M per school. No immediate solar opportunities from Schools are part of this option. This option would not provide any environmental or energy benefits to the schools. This design has a negative carbon impact and will require high-carbon emission diesel generators at proposed schools and revert the NEMT heating system from all electric to natural gas. This project would continue to have electric utility equipment located within the current substation location.

3. **Other Non-Municipal Land**
   Procure other property that is not municipally owned (Private Property). There is no non-municipal land available in this area. Due to the lack of available land, this option is not feasible.

4. **163 Farm Street Beebe Substation**

   Forested land in the identified ACEC area. Area is 4,700'+/- from the WMHS and NEMT. This distance would not support the design of the micro-grid and would not support the technical requirements for emergency back-up and micro-grid design. The location and distance from Hemlock Road does not meet the design requirements for providing normal and emergency service to the schools and is not a suitable site for an Energy Park with Battery Storage. Natural Gas supply is not available at the Farm Street site for the natural gas generator. The cost of installing overhead and underground medium voltage lines to Hemlock Road and extending the gas supply is prohibitively expensive, $8 M +/-

5. **Hemlock Road area**
   a. **NEMT property -** Evaluate land for the Energy Park on NEMT property. This would be an option if land is available. Land is not available. NEMT has responded to our inquiries during our site evaluation process and has provided a written response dated 1/19/2023 regarding this issue. (see Appendix 1)

   b. **WMHS property -** Evaluate land for the Energy Park on WMHS property. This would be an option if land is available. Land is not available. WMHS has responded to our inquiries during our site evaluation process and has provided a written response dated 1/18/2023 regarding this issue. (see Appendix 2)

   c. **Hemlock Road Land opposite proposed energy park site -** Additionally, the WMGLD evaluated the parcel on the northerly side of Hemlock Road but ruled the location out due to the presence of protected resource areas and steep topography.

   d. **Municipal property on Hemlock Road -** Proposed land swap for Hemlock Road Parcel would protect a portion of land at 163 Farm Street, 2.51+/- acres, Mapleway (rear of park) and Ballister Street (former electric substation). This option has a substantial impact on WMGLD's progress to net-zero emissions goals, allows for peak shaving

reducing the reliance on the utility grid during high demand and high-cost hours. Siting the energy park on the Hemlock Road parcel results in an uninterruptable supply for the proposed schools; supports a micro-grid design that can operate independently from the utility grid in emergency situations; and supports electrification at both school locations. The use of the Hemlock Road site allows WMGLD to convert former Burns substation to park land. WMGLD will also provide a re-forestation project at the Maple Way parcel to offset the loss of vegetation at Hemlock Road. This option results in over 2.5-acres of land within an Area of Critical Concern being protected in perpetuity and the inclusion of Burns substation land park and reforestation of Maple Way parcel providing substantial benefits to the environment and community.

Alternatives Analysis Sq-Ft Summary:

109,389±sf.	WMGLD Land 163 Farm Street, Conservation of ACEC Land (Figure 3)
8,488±sf.	WMGLD Land Burns Park, Ballister Street (Figure 2)
38,000±sf.	Town Land Reforestation at Maple Way (figure 4)
155,877±sf.	**Improvements**

The proposed net improvement of 112,317-sf. in excess of the 43,560-sf. parcel to be disposed of on Hemlock Street (figure 1 and Appendix 3) is of greater total value.

Parcel Descriptions:

Parcel for Disposition by Town of Wakefield and easement granted to WMGLD:

The Parcel for Disposition is approximately 1-acre of land within a 10-acre municipally owned parcel that was obtained by the Town of Wakefield in July of 1955 (see Middlesex South Registry of Deeds Book 8526 Page 287) for playground purposes. (see Appendix 3)

(Figure 1 – Hemlock Road, Proposed Energy Park Location)

Recommended location of the proposed Energy Park:

Options / alternatives 1-5a,b,c,d were all evaluated, option / alternative 5d was selected due to the following;

Parcel of land on Hemlock Road was selected based upon the alternatives identified above and specifically due to the location being:

1. Proximate to and in between both the NEMT and WMHS school sites **(Requirement)**
2. Ability to be constructed without interrupting school operations **(Requirement)**
3. Close to a roadway with moderate to level topography and limited ledge outcrops **(Preferred)**
4. As WMGLD strives to meet the MA 2050 Decarbonization emissions goals, this location meets the full design and engineering criteria to have the most significant impact on reducing carbon emissions **(Requirement)**
5. This location can be easily integrated into the campuses of both the NEMT and WMHS as a learning lab for vocation and STEM programs providing education focused on energy management, sustainability and decarbonization **(Preferred)**

Parcels to be conveyed to the Town of Wakefield from WMGLD:

A portion of the 163 Farm Street property owned by WMGLD:

The Parcel of comparable value was selected from unimproved WMGLD holdings. The site is located within an identified Area of Critical Environmental Concern (ACEC) with high habitat value. The site is currently wooded with ledge outcrops. A portion of the site has an isolated wetland area with vernal pool characteristics. The site has similar vegetation and topography as the Energy Park site and is approximately 2,800 feet due south of the proposed Energy Park. WMGLD is providing this land at a ratio of approximately 3:1 for the Energy Park parcel.

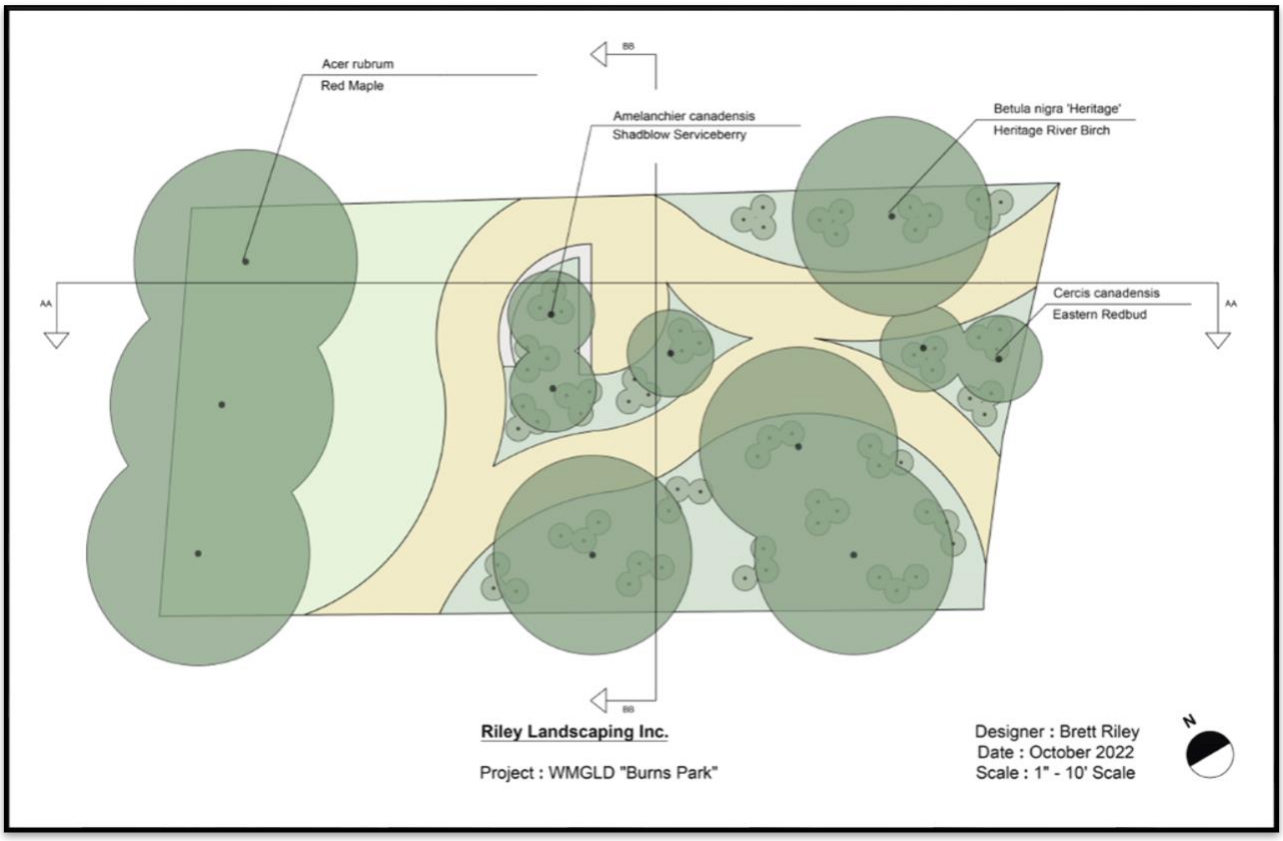
(Figure 2- WMGLD owned land, 163 Farm Street part of the Beebe Substation property)

(See Appendix 5 – 163 Farm Street plot plan showing 2.51+/- acres for land to be transferred)

The selected parcel will further the goals of Article 97 promoting the public's right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment.

Ballister Street, Burns Substation Parcel of Land Owned by WMGLD:

WMGLD is also seeking to construct an approximately 8,488± sf. park in the downtown area at the existing Burns substation at Ballister Street. This substation is currently being decommissioned. This parcel is zoned General Residence and could be developed. The WMGLD improvement will provide additional heat island dissipation in the thickly developed area and mitigates loss of vegetation at the Hemlock Road site through the inclusion of maple, birch, and serviceberry plantings (see below).



(Figure 4 – WMGLD owned land 8,488 sqft, decommissioned electric substation on Ballister Street, predicated on land swap approval. If land swap is not approved the property will remain as a electric distribution center with upgrade equipment)

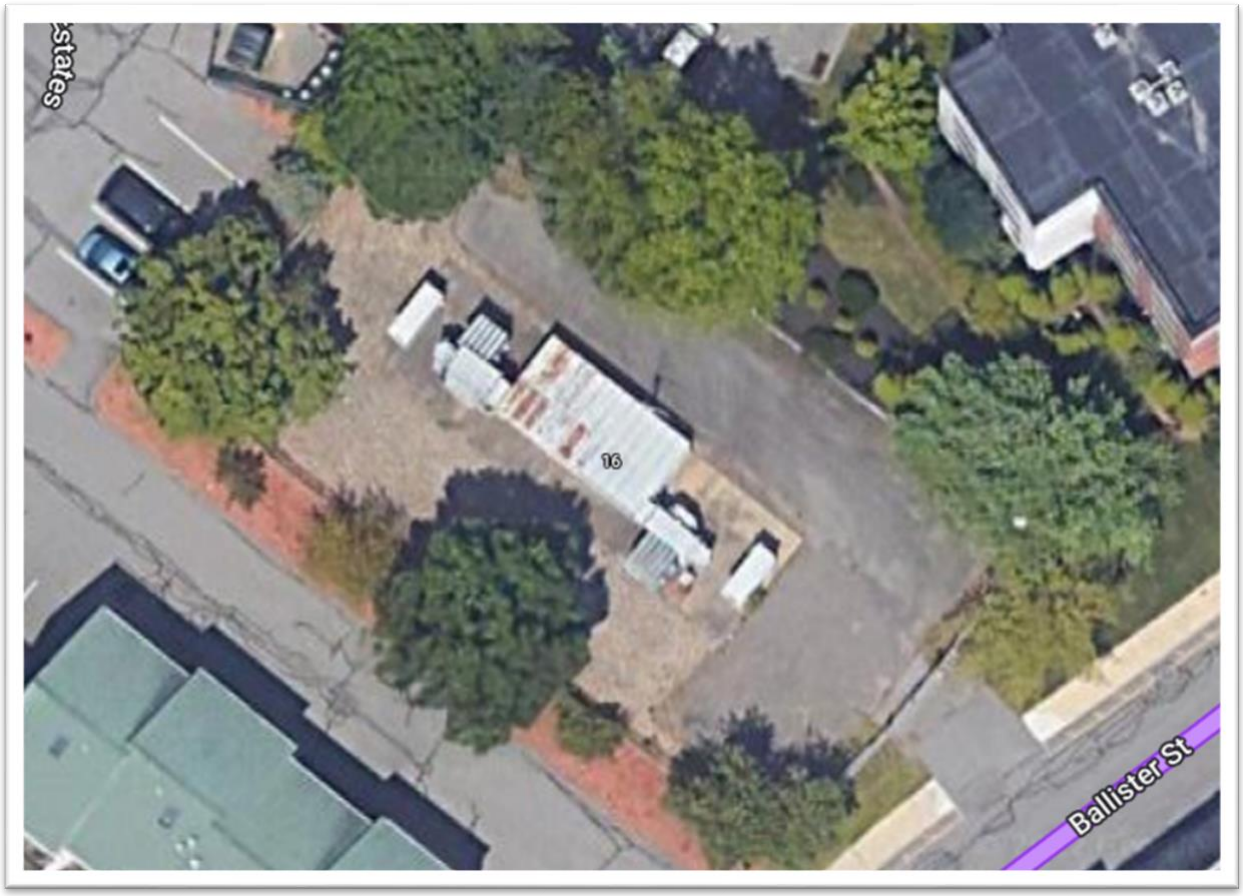
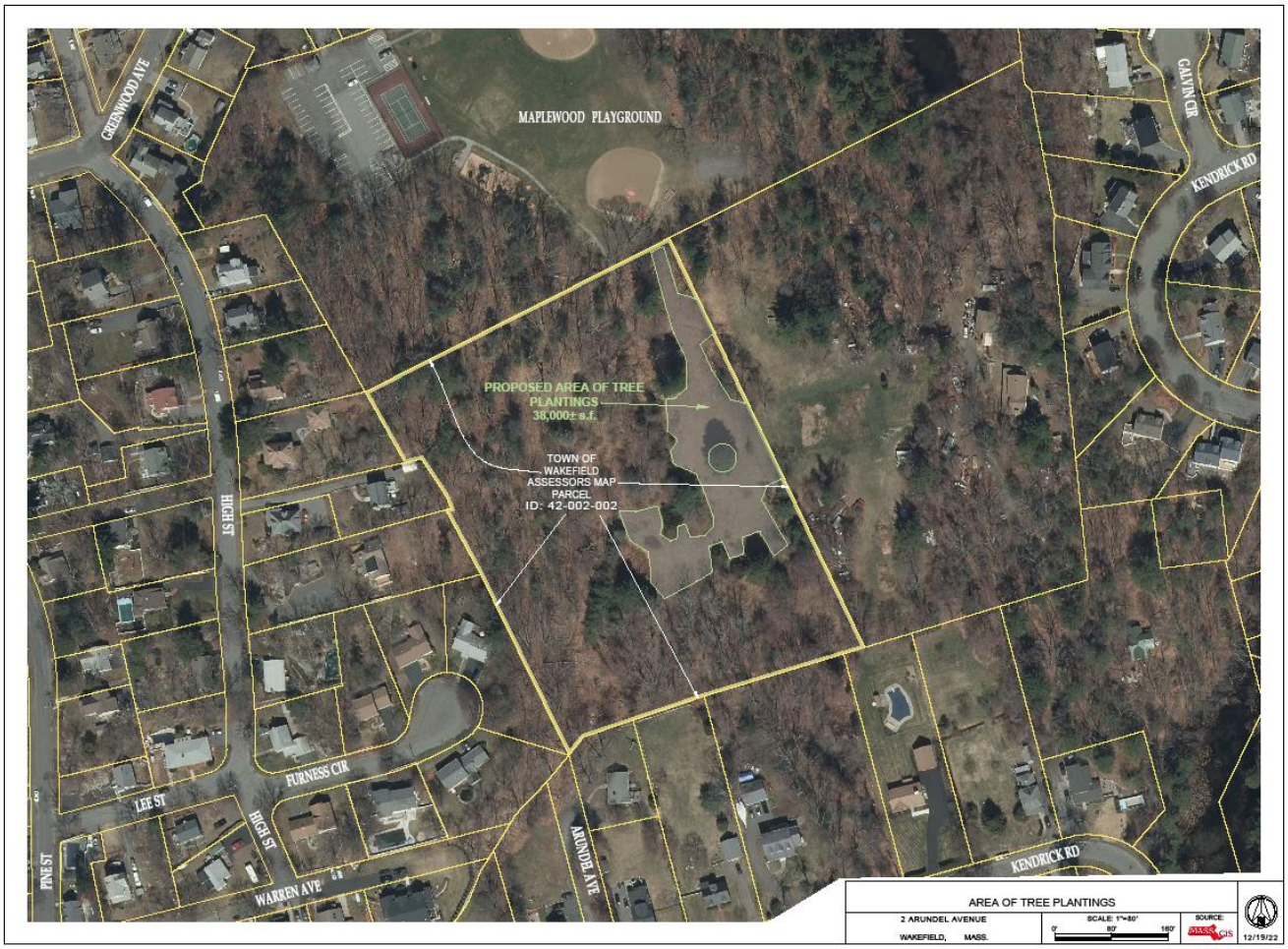


Figure 4a – Existing Burns Substation on Ballister Street



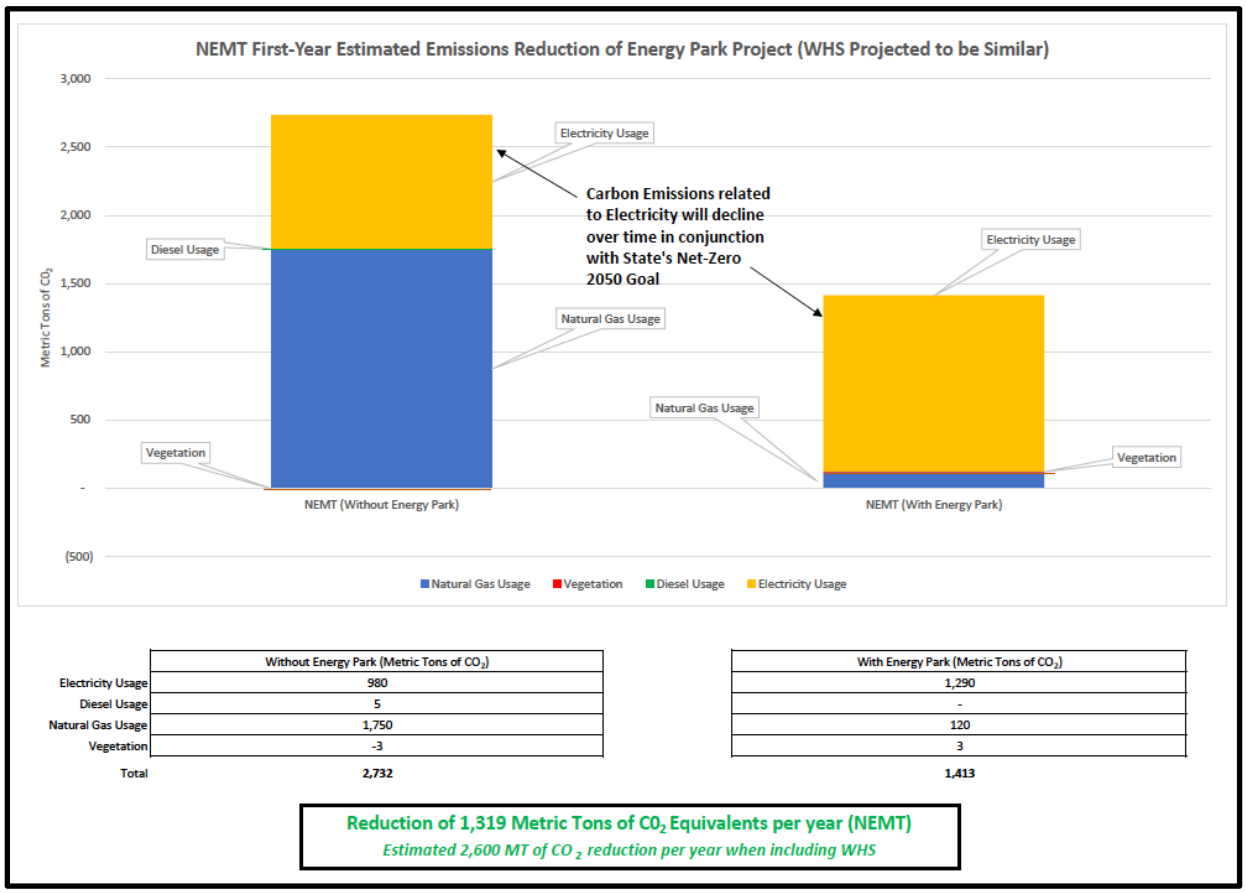
(Figure 5 – Mapleway parcel, Town owned land)

Mapleway Parcel of Town Owned Land Identified for Re-Forestation:

This parcel of land consists of forested land with 38,000+/- s.f. of open, grassed fields suitable for re-forestation (identified by the shaded area in Figure 5). This land is a continuation of the Town Forest and also within the Area of Critical Environmental Concern (ACEC) identified by the State and Town. The Wakefield Tree Warden and Parks Department supports this effort.

Conclusion:

WMGLD, Town of Wakefield Taxpayers, WMGLD customers, and the environment will yield the most beneficial results through the implementation of alternative5d resulting in a land swap between the Town of Wakefield and WMGLD. Savings associated with the NEMT and WMHS construction costs, rate payer peaking costs and preservation of land within an ACEC are benefits in addition to the carbon offsets realized by all stakeholders. The project will result in the reduction of 1,319 Metric Tons of CO_2 Equivalents per year upon completion of the NEMT construction and could nearly double to approximately 2,600 Metric Tons of CO_2 Equivalents per year upon completion of the new WMHS (see figure 6). This is based upon the assumption that without the ability to offset the cost through solar power and battery back-up the schools will remain using natural gas for their heating source.



	Without Energy Park (Metric Tons of CO_2)	With Energy Park (Metric Tons of CO_2)
Electricity Usage	980	1,290
Diesel Usage	5	-
Natural Gas Usage	1,750	120
Vegetation	-3	3
Total	2,732	1,413

Reduction of 1,319 Metric Tons of CO_2 Equivalents per year (NEMT)

Estimated 2,600 MT of CO_2 reduction per year when including WHS

(Figure 6 – Estimated Emissions Reduction)

Community support and communications:

1. Town Council – Meeting on 9/28/2022 vote taken on 10/24/2022 ***unanimous support*** for the project
2. Public meeting held on 11/16/2022 reference attached presentation
3. Planning Board – Meeting on 10/11/2022 ***unanimous support*** for the project
4. Finance Committee – Meeting on 11/10/2022 ***unanimous support*** for the project
5. Town Meeting on 11/19/2022 – Residents ***overwhelmingly voted (145 to 12) to approve*** the use of the proposed land on Hemlock Road for the Energy Park project.
6. Conservation Commission meeting – WMGLD has met on the following dates both virtually and at site meeting seeking their support.
    - Tuesday, December 6, 2022 – Virtual meeting
    - Sunday, December 18, 2022 – Site meeting Hemlock Road, 163 Farm Street & Ballister Street
    - Tuesday, December 20, 2022 – Virtual meeting
    - Monday, January 2, 2023 – Site meeting Maple Way Park
    - Tuesday, January 17, 2023 – Virtual meeting

APPENDICIES

NORTHEAST METROPOLITAN REGIONAL VOCATIONAL SCHOOL DISTRICT

100 HEMLOCK ROAD · WAKEFIELD, MASSACHUSETTS 01880-3597
781-246-0810 · FAX 781-246-4919

NEW ENGLAND ASSOCIATION OF SCHOOLS AND COLLEGES ACCREDITED MEMBER

January 19, 2023

Mr. Peter Dion,
General Manager, Wakefield Municipal Gas & Light Department
480 North Avenue
Wakefield, MA 01880

RE: Land Availability for Energy Park at Northeast Metropolitan Regional Vocational Technical School

Dear Mr. Dion:

I want to thank you for partnering with the NEMT School District on our exciting new project. Over the past two years the input and cooperation received from you and your team at WMGL, I believe, will result in a project that embraces the Commonwealth's and our twelve sending communities desire to embrace sustainability and result in an energy efficient and LEED certifiable school.

Relative to any potential land being available within the NEMT District property for WMGL use, our design and construction teams have analyzed site options required by the MSBA through the Preliminary Design Process and the Preferred Schematic Report and found there is no land that is not required for the school operation and is outside of the wetland resource areas, and clear of trees that may be available on the NEMT property for the energy park.

As you are aware, the project is currently in the Construction Documents Phase for the design for a new vocational high school. The new school building is located within the same property bounds that were transferred to the District back in 1960's. Once the new school is built, the old will be demolished to accommodate new or replacement playing fields and parking.

In summary, the District based on the advice from the Project Team has determined that there is no portion of the Northeast Metropolitan Vocational Regional School District site that is available on the NEMT property for the energy park construction. The energy park is planned to serve the two school facilities, Wakefield High School, and our district school. The location for the energy park proposed by Wakefield Gas & Light between the two sites appears to be the best solution. We appreciate the continued coordination and support from Wakefield Municipal Gas & Light and look forward to a successful project.

Sincerely,
Northeast Metropolitan Regional Vocational Technical School

David DiBarri, Superintendent

CHELSEA · MALDEN · MELROSE · NORTH READING · READING · REVERE · SAUGUS · STONEHAM · WAKEFIELD · WINCHESTER · WINTHROP · WOBURN

Appendix 1 – NEMT Letter, Land Available for Energy Park

LeftField

THE RIGHT CHOICE IN PROJECT MANAGEMENT

January 18, 2023

Peter Dion
General Manager
Wakefield Municipal Gas & Light Department
480 North Avenue, Wakefield MA 01880

RE: WMHS Project and Site Constraints

Dear Mr. Dion:

On behalf of the Owner's Project Manager, LeftField, and Design Team, SMMA, we are providing this letter of support for the planned Energy Park in Wakefield. This planned project will support our project, a new Wakefield Memorial High School (WMHS), and contribute to our sustainability goals in meaningful and measurable ways, including emergency system back-up, rooftop photovoltaics (PV) and electric vehicle chargers (EV).

At your request, we are providing information about the WMHS site constraints based on recent public inquiries questioning why WMGLD's proposed Energy Park could not be sited on the WMHS property. Through the Feasibility Study and Schematic Design phases of the WMHS project, the Design Team has been challenged by accommodating the building, sports fields, outdoor learning spaces and required parking on the extremely constrained, 21-acre existing school site. The team has developed a Schematic Design for the high school that meets all of the District's educational needs with a new, 259,847 GSF, 3-story building to be located on the existing track and field, the Beasley Oval. Once construction of the new building is complete, the existing high school will be demolished, and a new track and field created in its place. The new building will also house District Offices and WCAT as the existing building does today. During design, the staff, students, and District administration were surveyed to develop a parking program for the new school. The project will provide 330 spaces, 61 more than the current site accommodates. In order to meet these needs, additional parking is required above and beyond what can be accommodated adjacent to the new high school. To that end, the project includes an expansion of the existing parking lot on the north side of Hemlock Road,

main: 617-737-6400 fax: 617-217-2001
101 federal street, boston, ma 02110

Appendix 2 – WMHS Letter, Project and Site Constraints 1 of 3

across from Landrigan Field. As part of the WMHS project, the town's longstanding roadway safety concern will also be addressed by realigning Hemlock Road with Nahant Street and creating a new roundabout at this intersection. Because the relocated Hemlock Road will shirt north into the project site, this imposes further limitations on potential land area that could be developed as parking for the project.

The attached site plan illustrates how all of the required programmatic elements have been accommodated on an extremely constrained site making it impossible to accommodate the Energy Park on the WMHS site.

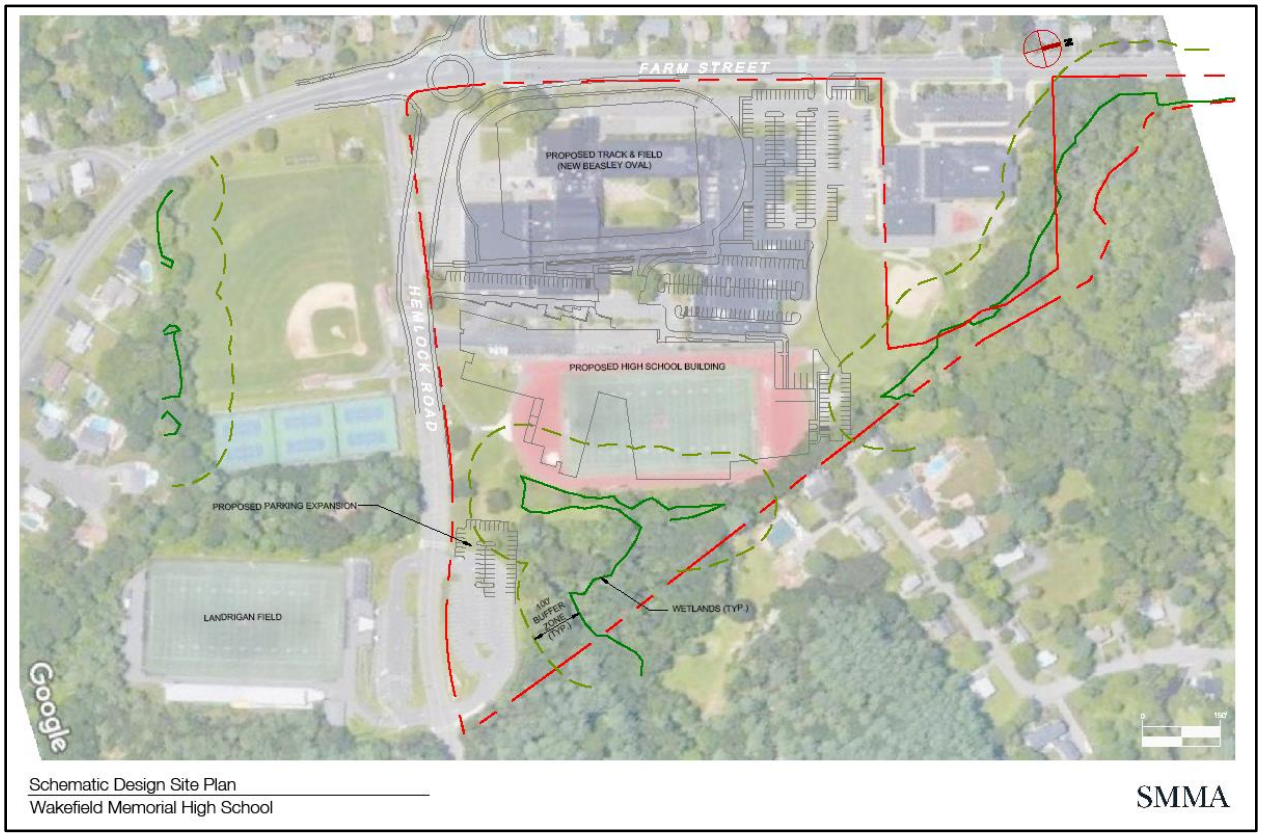
Sincerely,
LeftField Project Management

Lynn Stapleton
Project Director

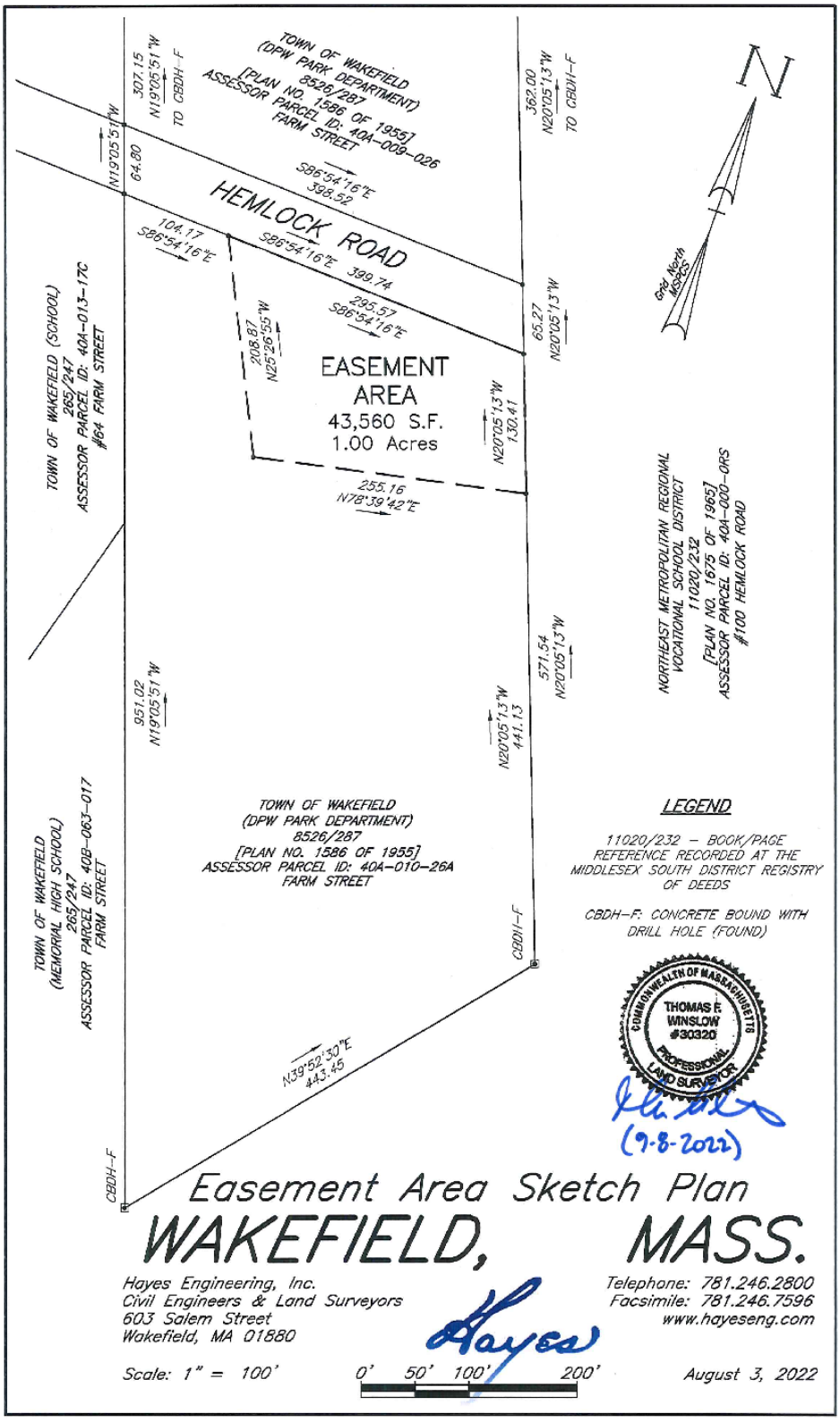
Attachment: WMHS Site Layout

cc: David Polson, WGMLD
Vincent McMahon, WGMLD
Douglas Lyons, PhD., Superintendent of Schools, Wakefield Public Schools
Joseph B. Bertrand, PBC/SBC Chair
Stephen Maio, Wakefield Town Administrator
Helen Fantini, Project Manager, SMMA
Erin Prestileo. Director of Site Design, SMMA

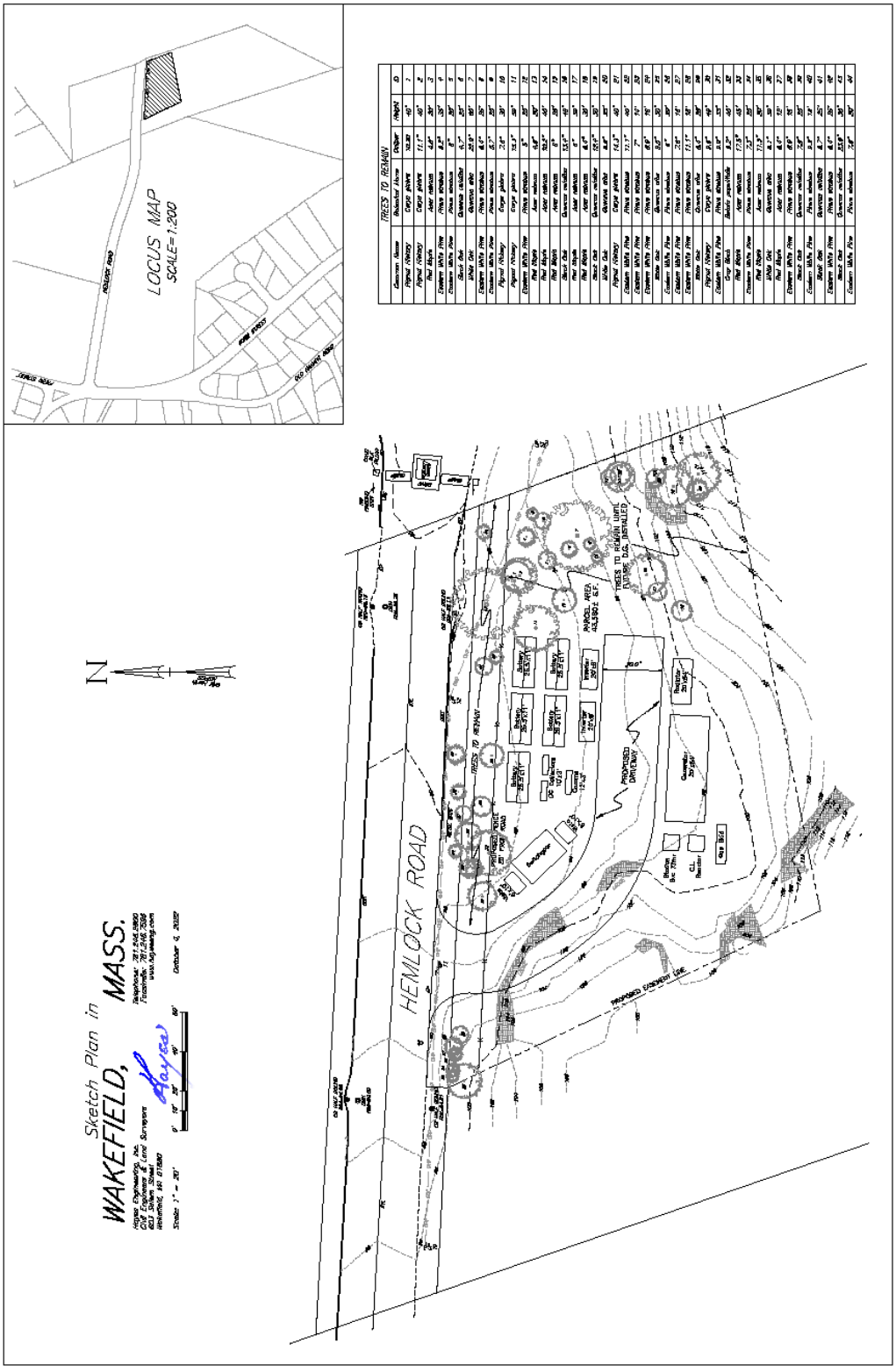
Appendix 2a – WMHS Project and Site Constraints 2 of 3



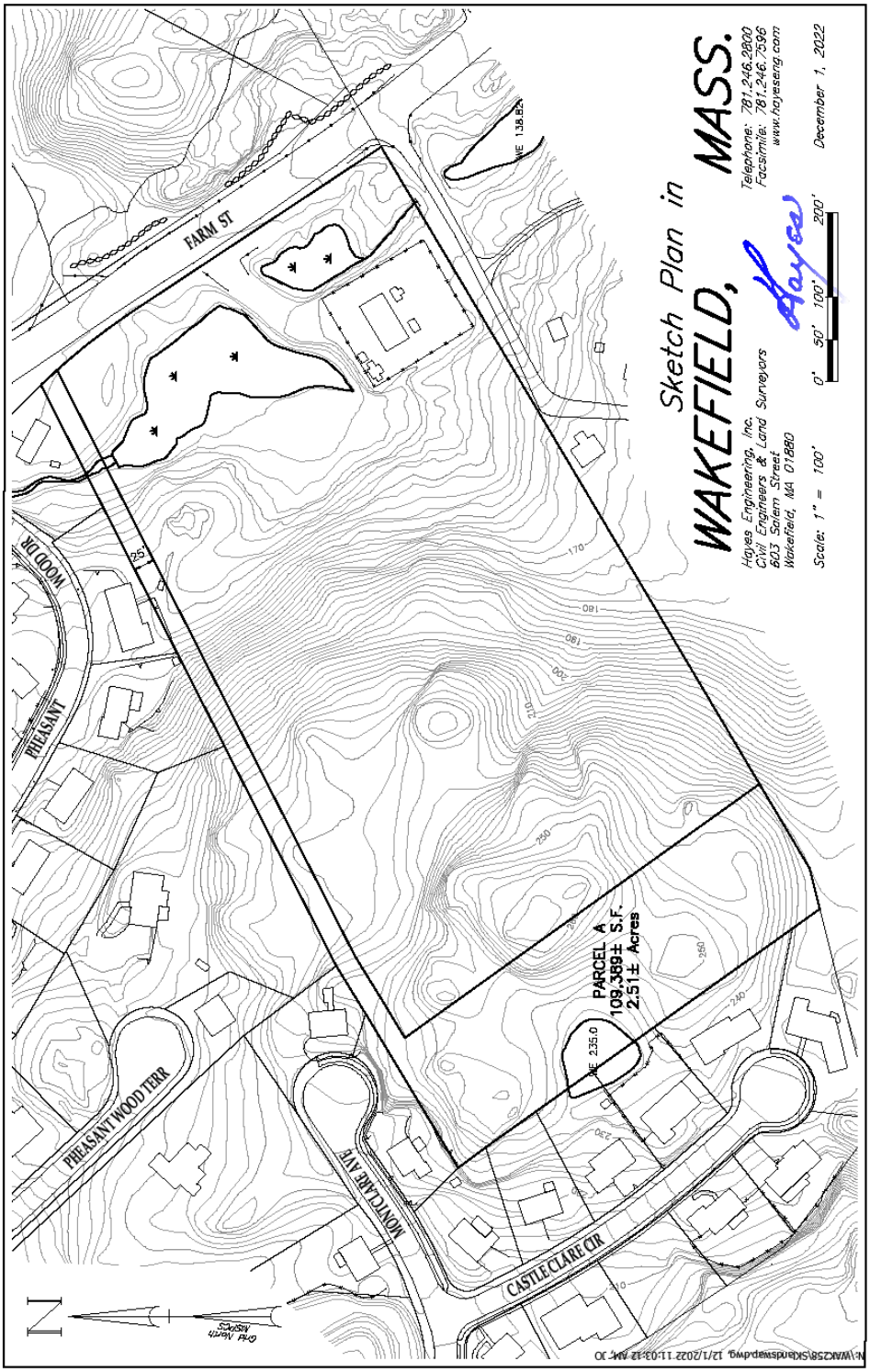
Appendix 2b – WMHS Project and Site Constraints Drawing 3 of 3



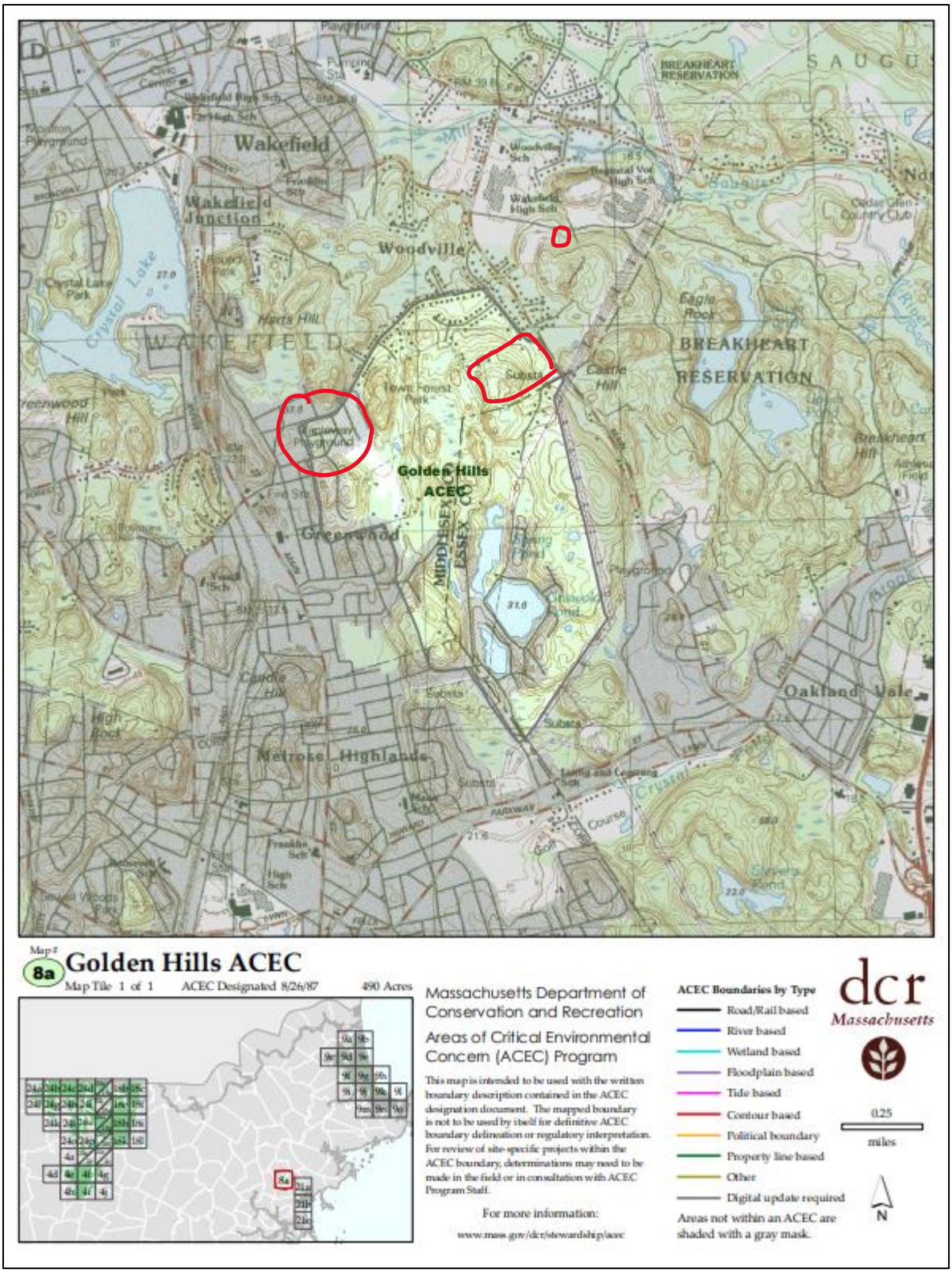
Appendix 3 – Hemlock Road Energy Park Easement Plan



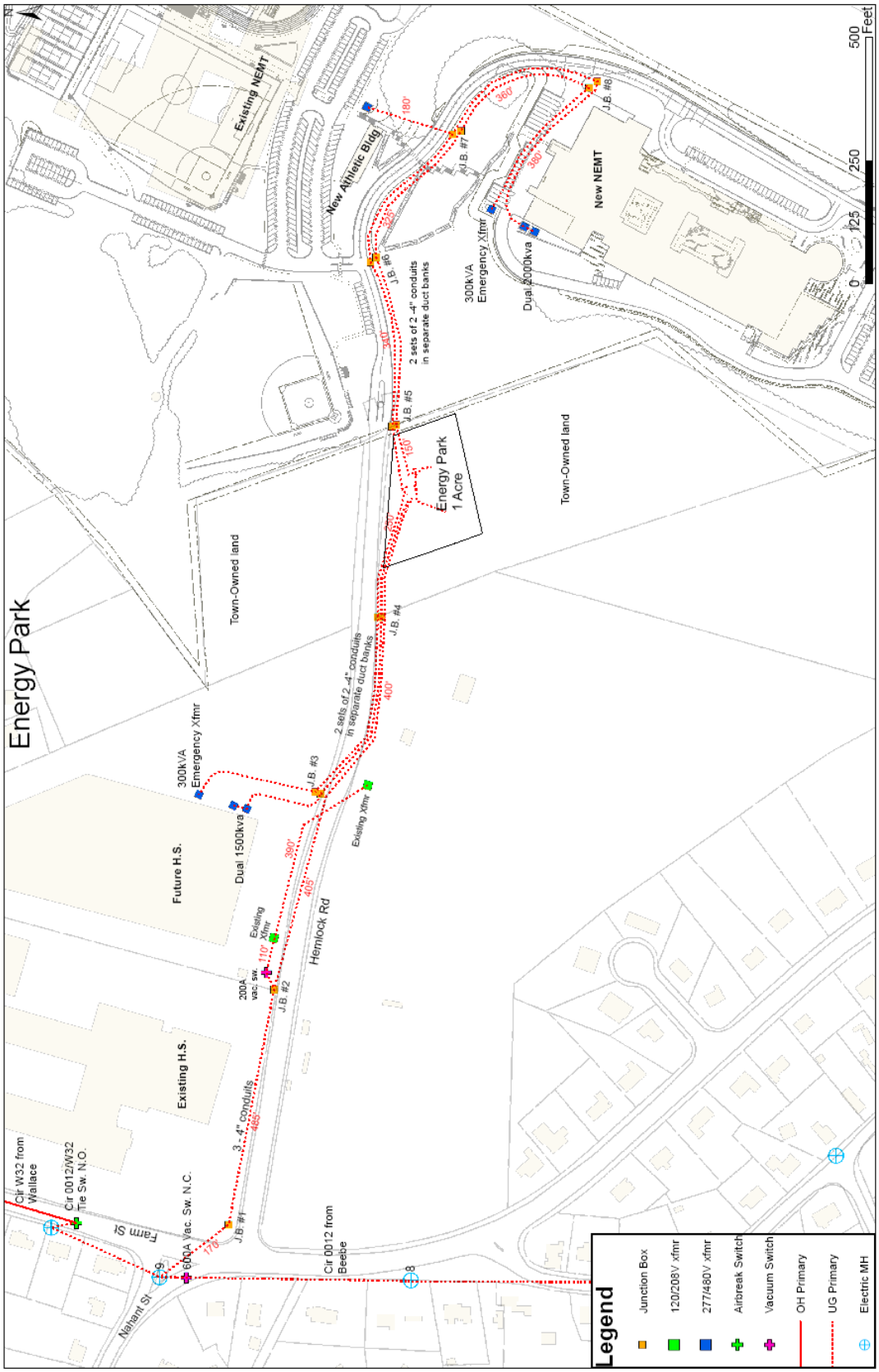
Appendix 4 – Hemlock Road Energy Park Equipment Layout



Appendix 5 – 163 Farm Street, WMGLD Beebe Substation, Parcel “A” 2.51+/- Acres identified for land off set for the Hemlock Road property. The remaining land owned by WMGLD is needed for future substation expansion based on future load growth driven electrification as identified in the 2050 decarbonization roadmap.

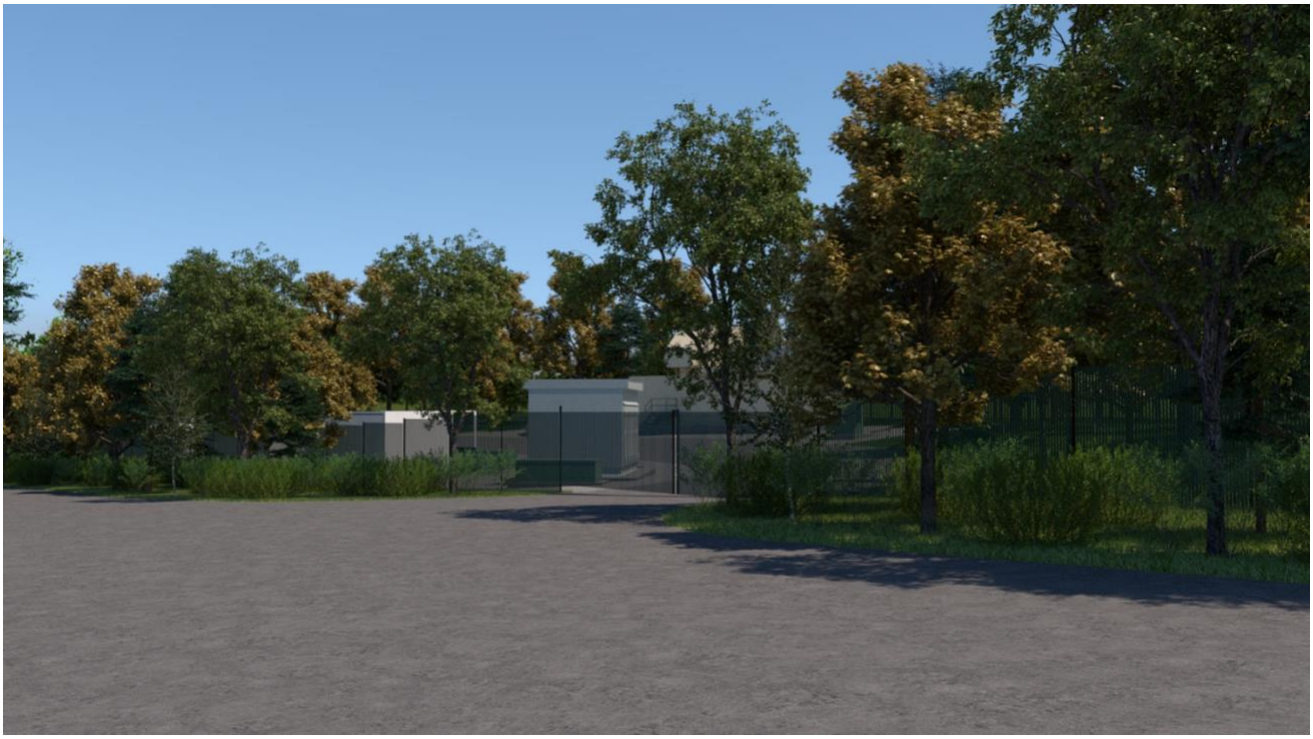


Appendix 6 – DCR Golden Hills ACEC – showing 163 Farm Street (Beebe Substation) area, Mapleway Playground area and Proposed Energy Park Location



Appendix 7 – Energy Park Electric Schematic

Appendix 8 – Proposed Energy Park – Aerial View



Appendix 9 – Street View / Driveway of the Proposed Energy Park – Looking east towards Metro Tech