**Addendum C – Minimum Electrical Requirements**

**Low voltage array requirements**

1. Low voltage conduits shall be non-ferrous material. Aluminum conduits and associated couplings and connectors are preferred.
2. Conduit racks and fasteners shall also be non-ferrous. No materials shall be buried in the land fill area.
3. Only one 3 phase circuit shall be allowed per conduit. All low voltage conductors shall be copper, with code applicable insulation (e.g. XHHW).
4. All switchgear, panelboards, and electrical enclosures shall be rainproof (NEMA 3R or better). Stainless steel is preferred.
5. Low voltage circuit breakers shall be supplied with electronic trip units. Integral power monitoring for main and branch breakers, shall be quoted as an option, if available from the manufacturer.
6. Low voltage transformers and inverters shall be mounted above grade to prevent snow from entering the cabinet.

**Medium Voltage transformer**

1. Step-up (low voltage – medium voltage) transformer(s) shall be located outside of the land fill area, if possible. The associated medium voltage circuit breaker (or fuses) with its enclosure shall be located nearby or integral with the transformer.
2. All protective devices shall be properly selected for continuous and short circuit rating and properly coordinated with one another.
3. Liquid filled transformers shall use the most environmentally friendly fluid available.
4. The pad (base) for the transformer shall contain means to capture the full contents, in the event of a transformer leak, but shall prevent the accumulation of water from rain or snow.
5. Transformer size shall be based upon the kVA rating of the proposed array. Sufficient space shall be provided next to the transformer, for a similar sized transformer, for future system expansion.
6. Bushings on the transformer shall be fully insulated in order to prevent electrical hazard and personal injury. Proper signage to prevent injury shall be provided as required by industry standards. Fencing to enclose the transformer shall be provided, as required by applicable codes.

**Medium voltage distribution and interconnect requirements**

1. Distribution from the step-up transformer shall be provided overhead on properly spaced poles. Spacing shall be such as to minimize sag and tension under worst case wind and ice conditions.
2. Conductors may either be open (uninsulated) on crossarms or insulated cables using a “Spacer Cable” system (e.g. Hendrix).
3. Conductor ampacity shall be rated to carry the full potential load of 4.5 MW.
4. The closest pole for interconnect is located near the Lagoons. This location will be reviewed during the walk through.
5. Distribution power poles from the transformer to the WWTP shall be the same as those used by the local utility, and install in accordance with their standards. Poles shall not be installed in the landfill area.
6. The overhead distribution from this pole to the Eversource Meter on Fordway road (near the dog park) is owned by the town of Derry. The Proposer shall verify the ampacity of the existing cables is sufficient to carry the anticipated initial export power. And verify the maximum rating of these cables for possible additional power export in the future.
7. Inter-connection to the “grid” shall follow applicable IEEE standard and must satisfy the Utility company requirements.
8. The interconnection shall also incorporate the existing Array at the transfer station (approximately 900 kW).
9. Any and all disconnect devices required by the Eversource shall be included in the Proposal. (e.g. Recloser for anti-islanding.)

**General requirements**

1. Design and installation must comply with the Latest edition of all applicable codes and standard; including, but not limited to, the National Electrical Code and National Electrical Safety Code.
2. An Arc flash analysis shall be performed based upon the final equipment selection. SKM software shall be utilized for this analysis. Hazard classifications shall be posted in accordance with the NEC and NFPA 70 requirements. Graphical one-line diagrams shall be submitted, showing short circuit levels, arc flash data, etc. available from the software. Time current coordination curves showing the actual breaker settings shall also be provided. *(these are required in order to calculate the Hazard classification).*
3. Submittals with RFP
   1. Equipment. Provide detailed cut sheets for all component for low voltage and medium voltage equipment as outlined above
   2. Design. Provide detailed layout, showing transformer and inverter locations, pole locations, and locations of all other devices, as may be required to meet Eversource requirements, or code requirements, or as required for a complete installation.

**END**