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Judith F. Judson
Commissioner

6 July 2017

Matthew Beaton, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Sudbury to Hudson Transmission Reliability Project

Cc: Arah Schuur, Director of Energy Efficiency Programs, Department of Energy Resources
Judith Judson, Commissioner, Department of Energy Resources

Dear Secretary Beaton:

The DOER commends the proponent for the decision to submit an Environmental Impact Report (EIR) notwithstanding that the as-proposed project does not exceed any of the mandatory thresholds which would require the submittal and approval of an EIR.

The DOER is tasked with the review and comment on EIR related submittals to the MEPA office with regard to compliance with the portions of the MEPA Greenhouse Gas (GHG) Protocol and Policy (the Policy) which address stationary sources.

Although the Massachusetts electric supply system (ESS) (both transmission and distribution) represents a sizeable stationary source of GHG emissions, the DOER notes that the topic of the project's estimated GHG emissions was not included in the ENF.

The stationary source GHG emissions of the ESS are primarily due to

- Transmission Lines and Substations are Indirect Stationary Sources of GHG emissions due to the added fuel consumption by the grid generators in order to make up for parasitic line and other operating energy (MWH) losses.
- Fugitive emissions of SF6 insulating gas, a potent GHG, from substations are a Direct Stationary Source of GHG emissions

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The Energy Section of the ENF cites consistency with state, municipal, regional and federal plans and policies for enhancing energy facilities and services.

Among those cited are:

- The Restructuring Act which mandates the minimization of environmental impacts consistent with cost impacts.
- The Green Communities Act – which "can be expected to result in greater renewable supplies"
- The Global Warming Solutions Act – which sets state-wide emission reduction targets.

In order to extend the consistency of the EIR, regarding matters related to GHG emissions, with the statutes cited, and to comply with the Policy, the DOER suggests that the proponents include a section addressing GHG emissions in the next submittal. This section should include information about the projected emissions of GHG and efforts included in the design and/or operation that will mitigate emissions and further enable the interconnection of more distributed renewable energy projects to the distribution systems which will be connected to the proposed transmission line.

The following comments are intended to provide guidance for the content and organization of a GHG section.

Description of a Base and mitigated As-proposed Case:

The Base Case predicated on meeting only the regulatory and company standards currently in force related to the design and construction of this both the T-line and the related substation scope.

The As-proposed Case should include a description of any measures included in the as-proposed design which will mitigate the emission of greenhouse gases beyond the level by the Base Case

Mitigation

The mitigated as-proposed case should include a discussion of available mitigation measures that could be applied to the project. This discussion should also include a statement of any measures that will be implemented, further evaluated, or will not be implemented. Measures that will not be implemented should be accompanied by an explanation with enough detail to demonstrate a justification. For example, a simple statement that the option would cost too much should be accompanied with supporting details.

The DOER offers several potentially applicable measures for consideration:

- T-line Related:

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- Increase the operating voltage in order to decrease the losses per linear foot.
- Increase the conductance (reduce the impedance).

- *Substation Related:* The need to do substantial work on both substations represents a significant opportunity to implement measures which would directly reduce stationary emissions and would offset emissions by displacing fossil fuel generated energy with energy generated using renewable sources.
  - Direct Reduction
    - Install equipment and institute special measures to prevent fugitive emissions of SF6 insulating gas both during the construction and operation of the two substations.
    - Replace older non-premium efficiency substation transformers and any other components with substantial parasitic losses with new premium efficient units.
  - Reduction of emissions from fossil fueled generation from their displacement by lower emitting generation using renewable fuels such as solar and wind.
    - Upgrade the capacity of the substations to accommodate the interconnection of an additional amount of distributed renewable energy generation (e.g. increasing the ground fault rating of relays and breakers; increasing the capacity of transformers; upgrading grounding for step down transformers; automation to track minimum load; any other measures to accommodate reverse power flow from distributed generators)

Estimated Emissions and Reductions:

For each of the cases above the proponent should provide a calculation of the estimated annual GHG emissions in US short tons per year.

In converting the MWH losses to tons of GHG the proponent should use the most recent published GHG emission factor for marginal emitting generation as published by the ISO-NE.

Suggested methods for computing the estimated GHG emissions and reductions:

T-Line Emissions = (L x lpf x GEF / 2000)
L = length of service in linear feet; lpf = MWH per year loss per linear foot of the service; GEF = Grid Emission Factor

Substations Emissions = Sum of annual MWH losses for each significant component x GEF

SF6 emissions = Sum of projected fugitive emissions x SF6 emission factor

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Increasing the substations' capacity for the interconnection of additional distributed renewable generation:

Reduced Emissions = (MWHap-MWHb) x GEF

Where
MWHb = MWH renewable distributed generation which could be added to the distribution circuits which are connected to the base case substations

MWHap = MWH renewable distributed generation which could be added to the distribution circuits which are connected to the the as-proposed substations.

Estimated Reductions:
Provide a table showing the estimated emissions for the base and as-proposed case for each measure and for the entire project.

John Ballam

John Ballam, P.E.
Manager of Engineering and CHP Program
Massachusetts Department of Energy Resources