TO: Jaclyn A. Brilling, Secretary to the Commission

CC: Administrative Law Judges Stein and Stegmoeller; EEPS WG VIII Advisory Group; Raj Adepalli, Tammy Mitchell (DPS Staff); Elizabeth Fennell (Consolidated Edison)

FROM: EEPS Working Group VIII Technical Study Group

RE: Summary Report: Environmental Justice Turbine Analysis/Initial Assessment

DATE: May 27, 2009

Background

One of the charges of EEPS Working Group VIII as identified in a Procedural Ruling dated July 3, 2008[1], stemmed from a environmental justice roundtable request for consideration of a study to assess health impacts on communities that host peak generation facilities to a disparate extent, and of opportunities to render those facilities obsolete through the acquisition of energy efficiency resources. Recognizing that a health impacts study was beyond the resources of WG VIII, the charge became to investigate whether output from peak generation facilities "could be fully or partially replaced or displaced with clean demand response, load shifting and energy efficiency (collectively referred to as clean demand-side management (DSM) resources)" [2].

The Technical Study Group (TSG), made up of staff from Consolidated Edison, Sustainable South Bronx, NYSDPS, NYISO, NYSDEC and NYSERDA, was formed based on a recommendation contained in the WG VIII report[3] to the Administrative Law Judges as part of the EEPS Proceeding and was charged with assessing the potential for partially replacing or displacing the output from peak generators, with clean DSM resources. It did not, however, consider or assess transmission, distribution or generation alternatives as a further option to replace or displace a peaking unit's output.[4]

Process

The TSG conducted its initial assessment with the expectation that findings would be reported to an Advisory Committee consisting of members of Working Group VIII, the ALJs and other interested parties.[5] The purpose of this memorandum is to summarize the work conducted and the recommendations of the TSG. During the conduct of this work, the Public Service Commission established a new case, "Proceeding on Motion of the Commission to Consider Demand Response Initiatives" (Case No. 09-E-0115) to examine the potential for enhanced demand response programs in the New York Independent System Operator Zone J (Public Service Commission Order Instituting

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[1] Procedural Ruling concerning EEPS Design Issues, July 3, 2008, page 4.

[2] "Case 07-M-0548, Energy Efficiency Portfolio Standards Proceeding, Working Group VIII – Report, Demand Response and Peak Reduction", October 17, 2008, page 32. The EJ Section of the report is Attachment A to this memorandum.

[3] Ibid

[4] Attachment F, provided by the NYISO, includes a discussion of generation alternatives in the latter part of the attachment. The discussion represents the view of the NYISO alone. The full TSG did not consider or assess generation alternatives.

[5] The minutes to the January 7, 2009 and February 3, 2009 Advisory Committee meetings are attached as Appendix A and B, respectively.

Proceeding, dated February 17, 2009 - see Attachment B). Given its intent and scope, participants in this case may find this summary report informative.

The TSG collected, reviewed and assessed environmental and operational data pertaining to 86 peaking turbines (see Attachment C)[6] located within a half-mile of potential Environmental Justice (EJ) communities in New York. In a number of instances the information reviewed by the TSG was "masked" in order to respect confidentiality[7]. The analyses of historical operations conducted by the TSG focused on days when the ozone National Ambient Air Quality Standard was exceeded in the NYC metropolitan area during the 2005-2008 time period (see Attachment D). This was done for two reasons. First, high ozone days are days of poor air quality which have been linked to adverse health impacts on sensitive populations. If clean demand-side management resources could be used to offset emissions from peak generation facilities on high ozone days, concomitant impacts on air quality from peak generation facilities could also be reduced. Second, by limiting the analysis to high ozone days, the volume of data the TSG needed to review and process was significantly reduced.

The NYSDEC obtained and assembled NO_x and PM-10 emission rate data (lb/hr) based upon Emission Statements submitted by the peaking facilities. Operational data (operating hours and generation data) for the years 2005-2008 were obtained from the United States Environmental Protection Agency's Clean Air Market Division (CAMD)[8]. From the CAMD data, the average number of hours each turbine operated on days when the National Ambient Air Quality Standard for ozone was exceeded was determined (see Attachment E). In addition, the NYSDEC created maps indicating where the potential Environmental Justice communities were located within a half-mile radius of each of the seven facilities under study (see Figures 1-8).

The NYISO assembled and assessed historic operational data for the above-referenced units for the years 2005-2008. This effort also focused on days when the ozone NAAQS was exceeded. This information is presented in Attachment F.

Con Edison assembled and assessed the reliability needs, if any, addressed by each of the units to the Con Edison System. Reliability attributes were not based on historical use of the units, but instead based on system restoration or reliability role and functions, including: electric black start capability, steam black start capability, voltage support, and load pocket support. A summary of this information is presented in Attachment G.

The TSG met to review and analyze the information described above to better understand the operating characteristics and reliability functions provided by the peaking units in question. Given the commitment to avoid compromising reliability, significant time and attention was devoted to attempting to examine the extent to which the units 1) have operated for reliability purposes, or 2) provide dedicated reliability attributes. For those units not explicitly operated or committed to the two purposes identified above, an initial examination was conducted to estimate the extent to which unit operations could be displaced by clean demand side resources.

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[6] The turbines listed in Attachment C have a capacity factor of less than 10 percent and are located within a half-mile of a potential EJ community.

[7] Confidentiality includes proprietary and system security concerns.

[8] http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.prepackaged_select

Findings

As described further below and in the Attachments, the TSG found that:

- During the period 2005-2008, these peaking units had a daily median run time of 8.2 hours during ozone non-attainment days.
- There is a potential for clean demand side resources to displace the operations of some of the peaking units in question.
- In order to fulfill this potential, clean demand-side resources would need to be provided in locations and at a scale and duration sufficient to offset the full output of a unit and any real-time, ancillary service the unit may be providing when operating.
- Without knowing the specific clean demand side resources characteristics and electric system locations needed for system modeling evaluation, it is not possible to conclude that 1 MW of clean demand side reductions is a full equivalent to 1 MW of peaking supply.
- It is expected that delivering load side reductions as close as possible and electrically connected to the unit to be displaced would have the greatest operational impact.

Recommendations

Based on work conducted to date, the TSG makes several short and mid term recommendations.

Given that confidentiality issues prevent the TSG from fully assessing all pertinent reliability related information from Con Edison and the NYISO, there remains a clear need for a full assessment of the relationship of the information from each of these sources.

In the short term (within three to six months) the TSG recommends that the following elements be considered by Consolidated Edison in its response to the new DR Case (09-E-0115) and developing more detailed plans to achieve peak load reduction:

1. The emissions rates, operating hours and functions of the peaking units, and their adjacent population density
2. Incorporation of competitive markets and diverse customer segments and technical approaches to delivering load reductions
3. Inclusion of programs that may build on the prior experience established in the Consolidated Edison service territory for developing and executing demand side solutions in targeted locations.
4. Targeting clean demand side improvements to areas that will impact the highest emitting peaking units.
5. Targeting clean demand side improvements to areas that offer opportunities for co-benefits (i.e. constrained networks where distribution upgrades could be deferred).

In the mid term (within six to eighteen months) the TSG recommends that the following analyses and assessments be conducted[9]:

1. Investigate operations of peaking units based on full annual operating hours and the relationship to ozone concentration as well as other pollutants.
2. Exposure studies in affected areas to clarify and expand the depth of air quality modeling research.
3. Investigate the extent of technical and market potential for implementation of clean demand side resources in targeted locations, including those that can reduce peaking emissions.
4. Develop appropriate measurement, verification and evaluation to assess benefits and costs and in order to assure that reliability is preserved.

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[9] NYSERDA is developing plans to address item 2. Consolidated Edison is expected to address items 3 and 4. The development of all four mid term recommendations is expected to include stakeholder input, including for instance, the Environmental Justice Advisory Group.