

X380 Review Notes

10/25/2013

HVAC project

1. Provide a status update for the HVAC portion of the project. Has design been completed? Has equipment been ordered? When is installation expected to begin?
2. ED cannot fully comprehend the scope of the HVAC project. A detailed description of the existing and proposed systems has not been provided.
3. For each affected system, provide a description of the existing and proposed equipment, system type and configuration, numbers of units, capacity, hours of operation, controls, set points, reset and lockout strategies, normal hours of occupancy for areas served by the affected equipment, etc. Provide the age and condition of the affected equipment.
4. Describe the existing control system, age, condition, manufacturer, capabilities, etc. Describe the data collection capabilities of the building automation system. Provide a screen shot graphics of the chiller plant components and other affected system components if available.
5. Provide control sequences of operation if available.
6. Describe the proposed control system that will be used to optimize the chiller plant. Is a proprietary chiller plant optimization strategy proposed? Provide proposed sequences of operation if available.
7. Discuss the pre-project measurements that were used in the analysis. Explain the difference between the measured and calculated chiller kW data for chillers 100 and 200 shown in the analysis spreadsheet. Describe the type of data loggers used for the analysis. Provide the raw data files, the .CSV files and the logger set up file. Explain why only two chillers were logged over the three month period. Explain why the kW data for chiller 100 are negative.
8. Some measures appear to be incorrectly classified. For instance replacing an existing chiller is shown as “retrofit add-on”. This is likely “normal replacement” or “early retirement”. Review the measure type for each measure and revise as appropriate.
9. Some of the measures appear to be retrofit measures, other measures appear to be retro commissioning measures. Explain why the measures are combined into a single project or how their impacts will be separated.
10. There are likely interactive effects between the measures. Explain how interactive effects have been accounted for in the analysis.
11. If applicable, provide impacts for the EUL-RUL period for early replacement measures.
12. The IOU documents state that post installation measurements will be taken for some aspects of the HVAC measures. Provide an M&V plan showing how the data collected will be used to verify/adjust the ex ante impacts for this project. Describe critical assumptions and measurements used in the analysis and how assumptions will be verified by post installation measurement.

13. Explain why the estimated cost of installing VFDs on chilled water and condenser water pumps (\$600,264 and \$ 662,707) exceeds the cost of installing two new chillers (\$465,213). Explain how the final measures costs will be verified.
14. Please provide an estimate of the remaining useful life of the pre-existing equipment that is to be replaced or upgraded and the effective useful life of the measures

Lighting projects

1. Please provide a facsimile of the original application form signed and dated by the customer representative. Please provide evidence of program influence to support the early retirement claims for the lighting retrofits.
2. Please provide an unlocked version of the modified lighting calculator or the password to unlock the spreadsheet.
3. Provide a site-by-site status update for the lighting portion of the project. Has equipment been ordered? When is installation expected to begin?
4. Please provide the date of construction (or installation date for portable buildings) and the date of the most recent major lighting retrofit for each building, or an area-weighted average age for each campus. These data are needed to verify that the RUL for early retirement measures is valid.
5. Please provide the lighting power density calculations with plans or annotated aerial photographs to support the building footprint area calculations, as described in the Application Review.
6. Savings for measures associated with custom hours of use account for 39.2% of the overall lighting projects. Please provide the raw and cleaned logger data for the site pre-installation inspection activities. Please provide a document which catalogs these data files and associates each one with the site, building, DEER occupancy type (or measure id) to support the exceptional hours of use and sensor occupancy control savings. Did any of the logger data files indicate hours of use should be less than what the DEER occupancy type prescribes? Custom calculations should include significant discrepancies that are either greater or less than the prescribed amount.
7. For occupancy sensor savings measures are 6.7% of the overall project savings claim. The pre-existing type of controls is not specified in the modified lighting calculator, and; the PA review documentation does not include findings from the site pre-installation inspections which describe the type of pre-existing controls. Do any of these facilities have a building energy management system or time clock to shut off the lights after hours or when not in use? In the absence of documentation to support “no control” or “manual control” in these rooms, no savings for occupancy sensors can be claimed.
8. Occupancy sensor savings range from 15 to 30 percent of the post-upgrade lighting kWh usage depending upon the occupancy type specified in the modified lighting calculator column labeled “Space Area for Occupancy Sensor”. Of these occupancy sensor measures, 52.8% of the savings use custom hours of operation. ED requires post-

installation data collection to verify the kWh savings and coincident peak demand reduction for occupancy sensor measures applied to custom hours of use.

9. Also, 40.6% of the occupancy sensor savings are for measures that were flagged “Yes” in the modified lighting calculator column labeled “Did this measure trigger code requirements for the occupancy sensor?” However, all of the records for all measures are flagged “No” to the question “Are there other controls that override the Occ loading order for savings?” ED does not understand exactly what this field is intended to capture, but finds it implausible that all of the spaces where the lighting upgrade triggers Title 24 lighting minimum mandatory requirements would be eligible to claim savings for occupancy sensors, as found in this project. ED requires post-installation documentation to support the baseline control types (or lack thereof) and to demonstrate savings are appropriate considering where spaces/measures where T-24 requirements are triggered. If none of the measures would trigger T-24 requirements that would mandate the installation of upgraded lighting controls, then please provide documentation to support this claim. ED suggests data collection to verify post-installation hours of operation savings due to occupancy sensors, or to use the DEER approved default values for hours of use to calculate occupancy sensor savings.

ED will perform a comprehensive review of these projects pending receipt of additional information.