**Facility:**

**Commissioning Provider: Date:**

DIRECTIONS: Address each item listed or note why it was not tested/investigated. Add other items that were tested/investigated. Note what testing/investigation was done, how these were conducted and results of the testing/investigation. Indicate any operating parameters found. Put in EEI# for improvements to resolve items that are not optimal or explain why no improvements are recommended. Complete full EEI description and information in PSE NC Post Occ EEI Details form. Include other capital improvements that may be cost effective. Expand to fit information or note specific location of information. (Handwritten legible notes are acceptable.)

**SYSTEM TYPE (radiant): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ID#:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**EQUIPMENT & SEQUENCES INVESTIGATED** *(be specific)***:**

**Equip ID#s:** *Example: RD-1-30*

**Describe System:** *Example: HW radiant unit heaters with OA ventilation dampers*

**Area Serves/occupancy type:** *Example: elementary school classrooms*

**Sequences:** *Example: On/Off Schedule, temperature control, ventilation; sampled 15% of units – Rm.s 303, 201, 110,103*

**FINDINGS, TESTS and INVESTIGATION RESULTS:**

**Working Optimally?**

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **GENERAL SYSTEM CONDITION**: Equipment is generally in good shape and does not exhibit any abnormal nose or vibration. System is not in need of over-all replacement in the near future. Safety guards are in place. Working on and around equipment can be done safely.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **SENSOR CALIBRATION & PT-to-PT**: Key controlling sensors are calibrated and in appropriate locations. Points are mapped correctly to the DDC front-end. Other sensor outputs seem reasonable.

Sensors checked: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **PT-to-PT OTHER**: Other critical points (enable, OA damper etc.) are mapped correctly to the DDC front-end and reflect actual system condition.

Points Checked: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tests Conducted /Results/Findings:

**Yes No N/A EEI#\_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **VENTILATION**: Outside air ventilation is minimum needed – not too much. OA dampers are closed when the space is unoccupied. Damper leakage is at minimum.

Required min OA cfm\_\_\_\_\_\_\_\_\_ Found min OA cfm \_\_\_\_\_\_\_\_\_

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **AIR CIRCULATION/BLOCKAGE**: There are no major restrictions of air flow or other blockages around radiant surfaces which would increase energy use and/or decrease comfort.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **SCHEDULING**: Operating schedule matches occupancy schedule including holiday scheduling. Equipment shuts down when unoccupied as evidenced by energy internal data or walk-through (night typically).

Schedule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **OPTIMUM START/STOP – WARM-UP/COOL DOWN**: System is on as little as possible prior to occupancy to warm or cool the building. Outside air damper: closed for warm-up; open for cooling (when appropriate). System start time adjusts based on minimum time required to get spaces to temperature setpoints by occupancy.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **SPACE TEMPERATURES**: Space temperatures and setpoints are as efficient as possible – day, night setback, unoccupied, standby. Setpoints have proper deadband to prevent simultaneous heating and cooling. There are no comfort complaints from occupants. Temperature Setpoints: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **NIGHT MODE & SETBACK**: System shuts down completely with all outside air dampers closed and heating and cooling off.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **ROOM THERMOSTATS**: Room thermostats are in appropriate locations and not influenced by non-room temperature heating or cooling elements (example: stat is right above a light) or blocked.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **NON-DDC TEMPERATURE CONTROL**: Non-DDC thermostats are connected and programmed properly to match the occupancy schedule including holidays. Heating and cooling setpoints and deadband are appropriate. Temperature Setpoints: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **OVERRIDES:** Controls, setpoints and equipment that can be easily overridden or circumvented are in normal/automatic operating mode. (Examples – enable, temperature setpoints.)

Tests Conducted /Results/Findings:

**Yes No N/A EEI#\_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **INSULATION**: All pipes and valves not used to condition space are insulated. Insulation is around valves but with removable covers so it can be replaced easily after accessing valves.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **CLEANINESS**: Radiant surfaces are clean and can radiant well.

Tests Conducted /Results/Findings:

**Yes No N/A EEI# \_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  [ ]  **LOOP TUNING**: Loops are adequately tuned to prevent equipment breakdown and poor control.

Tests Conducted /Results/Findings:

**Yes No EEI#\_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  ***OTHER****: Describe other things tested/investigated.*

Tests Conducted /Results/Findings:

**Yes No EEI#\_\_\_\_\_\_\_ Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  ***OTHER:*** *Describe other things tested/investigated*

Tests Conducted /Results/Findings:

**CAPITAL EE IMPROVEMENTS**

**EEI# \_\_\_\_**  *Brief Description of Capital Improvement*

Notes/Comments:

**EEI# \_\_\_\_** *Brief Description of Capital Improvement*

Notes/Comments:

**TRAINING**

**Yes No Date(s)/time(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[ ]  [ ]  **Staff (occupants and O&M) fully understands how the system works.**

[ ]  [ ]  **Staff (occupants and O&M) fully understands how to run the systems efficiently.**

Specific Staff evaluated:

Comments:

**Specific Training needs of staff (occupants and O&M):**

**Ideas for Facility Guide/Operational Aides/Persistence:** What needs to be added (for example: sensors or specific trends, explanation on DDC graphic, or signage), provided (for example: table of VAV box CFM) or done (for example: putting check in maintenance schedule) to help the operators keep the systems operating efficiently over time?