



Controls Upgrade – Lite: Requirements Checklist (10/31/2019)

See full detailed requirements in “PSE Controls Upgrades: Requirement Details 10/31/2019”

PROJECT NAME: _____ DATE: _____

REQUIRED: CONTROL/FEATURES

To qualify the upgrade must add or substantially modify 3 or more sequences with all sequences listed under the required section installed in the final system unless waived by PSE. If an item is not being added, please explain why at the bottom of this page.

Check boxes to show if existing or NA and if will be added or modified. Provide explanations at bottom.

Exists	Add	Modify	NA	General Description
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HVAC non-CENTRAL PLANT SEQUENCES

				Zone level scheduling & limited time override
				Optimum start/stop (OSS) for warm-up and for cool-down
				Unoccupied (night) set-back with zone limited time override
				Supply air temperature (SAT) reset based on load
				Duct static pressure (DSP) reset based on load
				Demand controlled ventilation (DCV) in interior spaces with single zone system
				Upgrade fan motor drives to VFD > 7.5 hp
				Zone box air & temperature controls (specifics depend on if new box/box controls)
				Air-side economizer controls (integrated, lockout based on RAT, mech. clg. lock-out)
				Room space temperatures setpoints deadband
				HEAT PUMPS ONLY: Air-side heat pumps strip heating control

CENTRAL PLANT SEQUENCES (If no Central Plant skip this section)

				WSHP loop temperature setpoints deadband and maximums
				Condenser water temperature (CWT) reset based on load
				Chilled water temperature (CHWT) reset based on load
				Hot water temperature (HWT) reset based on load
				Efficient boiler modulation and staging
				Boiler and chiller plant lockout on outside air temperature (OAT)

REQUIRED GRAPHICAL USER INTERFACE (in text - means on GUI but not adjustable by operator)

				Central plant graphic in text: final setpoints, key controlling variables
				Floor plan in text: location of remote key sensors and AHU zones
				AHU, Zone/Box, Central plant: key points, AHU serving box, schedule, design cfms

EXPLAIN: Why not adding a sequence or NA and specifics of modifications:

OTHER REQUIREMENTS for ALL PROJECTS

- OAT sensor and location check
- Determine existing and required minimum OA ventilation (see PSE form).
- Building Pressure Check: verify building properly pressurized in all modes of operation.

Required Depending on System Type & Project:

- VAV Boxes or box controls replaced: balance/calibration of box flow rates; determine ventilation rates
- Duct Static Reset: determine efficient minimum and maximum duct static setpoints
- Commissioning (digital/hardcopy)
 - Functional Performance Tests (provided by PSE)
 - Facility Guide (outline of elements required provided by PSE)
 - O&M/Staff training (based on customer needs) approved by PSE



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PROJECT NAME: _____ DATE: _____

RECOMMENDED OR ADDITIONAL: CONTROL/FEATURES

REQUIRED if used to meet minimum requirement of 3 sequences added or modified. Check boxes to show if existing or NA and if will be added or modified. Provide explanations at bottom.

Exists	Add	Modify	NA	General Description
				Demand controlled ventilation (DCV) in exterior spaces (garage etc.) – hook to DDC
				Space temperature and ventilation setback based on occupancy
				Demand controlled ventilation (DCV) for kitchen hoods
				Demand Controlled Ventilation (DCV) for multi-zone spaces (with PSE approval)
				Door contacts/switches for mechanical system shut off
				Valves to isolate plant or heat pump equipment from pumping loop when not in use
				Improved minimum outside air (OA) control: OA measuring station or DP sensors etc.
				Exterior heater occupancy controls: time switch or occupancy sensor
				Vestibule heating control: air curtain, heating shut-off and setpoint
				Improved cooling tower control: VFDs ramping controls, wetbulb control

ADDITIONAL SEQUENCES/FEATURES

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EXPLANATIONS: