

Empirical Validation & Uncertainty Update: SSPC-140 St. Louis, June 27 2016

Flow-Thru HVAC Loop, NREL



FY17: Test SEER 17 and SEER 20 RTUs

NREL HVAC Test Loop

- Measure 3 full performance maps for com bldg cooling systems (< 10 tons)
 - FY17: SEER 17 (Trane® Precedent)
 - FY17: SEER 20 (Lennox® Emergence)
 - FY18: Indirect/Direct Evaporative Unit (or desiccant)
 - Maps are suitable for input to BEMs
 - Maps include realistic Part Load curves
 - Measured data consistent with SPC-205 criteria and Western Cooling Center criteria where appropriate
- These maps will be added to the Technology Performance Exchange (TPEX) and Building Component Library (BCL) in Open Studio so they are available to all BEMs as default generic maps for high efficiency and variable equipment
- Future Work: Use measured performance maps from this project for an update to the test suites in HVAC BESTEST Vols 1 & 2

SEER 17 & 20

Trane® Precedent SEER 17

- Multi-stage scroll compressor R-410A and single speed condenser fan
- Direct drive variable supply air fan with hi efficiency motor
- Low Leak Dampers
- Hot Gas Re-heat advanced humidity control
- Economizer

Lennox® Emergence SEER 20

- Variable speed scroll compressor R-410A
- Variable speed condenser fan
- Variable speed direct drive supply fan with internal logic for max efficiency and humidity control
- Whole system internal logic