INSTALLER and INSPECTOR QUICK-REFERENCE: 2022 NRCA-MCH-14-A Distributed Energy Storage Direct Expansion (DX) Air Conditioning Acceptance

Purpose and Scope of the Test

This test verifies proper operation of distributed energy storage DX systems. Distributed energy systems reduce peak demand by operating during off peak hours and storing cooling, usually in the form of ice. During peak cooling hours the ice is melted to avoid compressor operation.

Test trigger

Newly Constructed and Additions/Alterations: Applies to constant and variable volume, direct expansion systems with distributed energy storage (DES/DXAC). This acceptance requirement is an addition to economizer and packaged equipment acceptance.

Relevant Energy Code References and Required Compliance Documents

Title 24, Part 6 of the California Building Code, Building Energy Efficiency Standards (Energy Code) sections NA7.5.13.

Who Can Perform the Test

This test must be performed by an acceptance test technician certified by a CEC-approved Acceptance Test Technician Certification Provider, using compliance document NRCA-MCH-02-A.

Required Tools

Distributed energy storage acceptance tests require no additional instrumentation for testing.

Estimated Time to Complete Test

Construction Inspection: 0.5 hours
Functional testing: 2 hours

Potential Issues and Cautions

These tests only apply to systems with storage capacity less than 100 ton-hours. Systems with storage above 100 ton-hours should be modeled using the thermal energy storage compliance option. Be sure the water tank is filled to the proper level indicated by the manufacturer prior to the start of the tests. The tests require override of the system controller programming. Be sure to record the system settings prior to the start of the testing and restore the system settings to their original values upon completion of the tests.

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Inspection Enforcement

The distributed energy storage system third party submittal form should be verified, which contains the following information: testing laboratory, address, phone number, contact person, date tested, tracking number, model number, and manufacturer.

The following performance information should be recorded and reported on the document NRCA-MCH-14-A.

- The water tank is filled to the proper level.
- The water tank is sitting on a foundation with adequate structural strength to support the weight of the filled vessel.
- The water tank is insulated, and the top cover is in place.
- The DES/DXAC is installed correctly (refrigerant piping, etc.).
- The correct model number is installed and configured.

Acceptance Criteria

- Verify nighttime ice making operation.
- Verify that tank discharges during on-peak cooling periods.
- Verify that the compressor does not run, and the tank does not discharge when there is no cooling demand during on-peak periods.
- Verify that the system does not operate during a morning shoulder period when there is no cooling demand.
- Verify system is stable when controlling to the setpoint.