SDG&E's Energy Innovation Center (EIC) – Demonstrating DR Performance of a Variable Refrigerant Flow (VRF) – Indirect Evaporative Cooling (IEC) Hybrid System

1. Overview

Rooftop package air condition systems, or rooftop units (RTUs), are typical for many small to medium commercial office buildings. Replacing RTUs with more energy efficient HVAC alternatives, such as heat pumps, offers significant energy savings potential. Within the category of heat pumps, variable refrigerant flow (VRF) heat pumps offer even greater savings potential.

The selected vendor is also contracted with the California Energy Commission (CEC) to demonstrate the application of a hybrid system that combines VRF heat pump systems with Indirect Evaporative Cooling (IEC) units to possibly provide even greater energy savings. While the focus of the CEC project is to document the energy savings impact of the VRF-IEC hybrid system, the DR capability of this hybrid system is beyond the scope of CEC's direction.

However, the DR potential of the VRF-IEC hybrid system could be a potentially compelling value proposition that merits demonstration. Being able to understand the DR characteristics of the hybrid system regulated by a "master controller" during all modes of operation (IEC Only, VRF Only, and simultaneous IEC and VRF) is critical to validate and quantify their DR impact.

2. Collaboration

This scope of work is an add-on to a larger CEC project that is focusing on the EE potential of the same combination of equipment and controls strategy. The results are also to be shared with other CA IOUs ET-DR Leads.

3. Status

All DR testing of the controller units at both the Energy Innovation Center (EIC) and the site in SCE territory is complete. Post trending has concluded, as well as the analysis of the data. Due to an unanticipated staffing change, the vendor has continued to experience delays in preparing the final report.

4. Next Steps

The final report will be posted to the ETCC website for public review and reference.