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CPUC Refrigerant Policy Developments

California Energy Commission Integrated Energy Policy Report
Workshop Series

Panel on Refrigerants

August 26, 2021



California Public
Utilities Commission

Topics for Discussion

- Basics
 - Rationale and objectives for CPUC refrigerant policy
 - SB 1013 (Lara, 2018)
- CPUC Policy, Nuts and Bolts
 - D. 20-14-010 and the Refrigerant Avoided Cost Calculator (RACC)
 - D.21-05-031 and Direction to Energy Efficiency Program Administrators
 - Questions not yet addressed: program credit for responsible disposal, recycling, reducing leakage.
- What to Expect
 - Implications of the RACC on all distributed energy resources
 - Implications for Energy Efficiency in particular
 - Near term: cost-effectiveness assessments
 - Longer term (PY 2024+) under the new “Total System Benefit” metric: goals and cost-effectiveness

Starting with the Basics

A B Cs of Refrigerants

- Common appliances, including heat pumps and refrigeration equipment, contain Refrigerants which have global warming potential.
- A commonly-used refrigerant (R410-A) has more than 2000 times the global warming (GWP) impact of carbon dioxide.
- Refrigerant emissions due to leakage from heat pumps in all-electric buildings can be a significant portion of a building's lifecycle GHG emissions.

A B C's of Refrigerants (Continued)

- Refrigerants only contribute to global warming when they leak.
- Most refrigerant leakage occurs at an appliance's end of life, during removal/disposal.
 - Refrigerants are often vented during equipment removal/disposal, particularly for residential equipment, although venting is illegal.
- Refrigerants have some small amount of leakage that occurs during use.
- Low GWP Refrigerants are less destructive to the environment and are beginning to become more readily available in the U.S.
 - E.g., R-410A has 2000x the GWP of carbon dioxide, but R-441A has only 5x
- CARB is working on methods to reduce refrigerant leakage and policy to promote/accelerate use of low-GWP refrigerants.

Recent Legislation

- Senate Bill 1013 (Lara, September 13, 2018)
 - 76002. “The Public Utilities Commission shall consider developing a strategy for including low-GWP refrigerants in equipment funded by the energy efficiency programs overseen by the Public Utilities Commission”

Goals of Refrigerant Policy

- Tracking and Managing Refrigerant Leakage is Key to Achieving Building Decarbonization and GHG Reduction Goals.
- CPUC assessment of costs and benefits of all Distributed Energy Resources account for the GHG impacts due to use of refrigerants
 - Including consideration of the GWP of the refrigerant removed and/or installed and the details of its application.
- Policy should evolve with practices, as leakage rates may change over time and due to synergistic CA policy from CARB and CEC, et.al.
- Refrigerant-related avoided costs are clearly integral to the appropriate cost effectiveness assessment for building decarbonization and energy efficiency programs.

Nuts and Bolts

Nuts and Bolts

- Okay, but what *exactly* did CPUC do and how does it all work?
 - CPUC developed and adopted a **Refrigerant Avoided Cost Calculator** and a mandate to incorporate refrigerant impact calculations in all DER cost-effectiveness calculations. (D.20-04-010)
 - The Calculator utilizes data on equipment type, equipment size, refrigerant quantity, refrigerant type & refrigerant charge, to calculate the **net present value in dollars of refrigerant emissions over equipment lifetime**.
 - The calculator must be used when:
 - Adding new refrigerant using equipment to the grid, e.g., replacing gas-fueled equipment with refrigerant using equipment; utilizing low-GWP refrigerants in EE or other DER projects.

CPUC Direction to Program Administrators

- In accordance with SB 1013, CPUC D.21-05-031 directs the program administrators to:
 - to use the Refrigerant ACC for portfolio forecasts and filings,
 - to submit new and updated workpapers for low-GWP refrigerant measures, beginning in program year 2022.
 - to consider and incorporate strategies to support the use of low-GWP refrigerants in the upcoming business plan filings (February 2021) which set high-level portfolio strategies for program years 2024-2031.
 - encourage the program administrators to seek out all cost-effective opportunities to incorporate low-GWP measures in the energy efficiency portfolios
- Program Administrators are in the process of updating deemed measure specifications in DEER and eTRM to reflect refrigerants.

Upcoming Policy Work

- Questions Still to be Addressed
 - Determining the appropriate circumstances where program benefits can appropriately reflect the effects of **responsible disposal of used refrigerant, refrigerant recycling, or reduced refrigerant leakage**.
 - These require additional consideration and more focused stakeholder input and discussion.
- Building Code Advocacy Work
 - The EE Codes and Standards advocacy team is currently in planning stages with CEC for the upcoming (2025) code cycle. The team is considering, and will be working with the CEC, on ways to address refrigerants.

What to Expect

Take-Aways and Near-Term Implications

- CPUC adoption of the refrigerant avoided cost calculator (RACC) is critical to an informed and effective GHG reduction policy for California.
 - The RACC changes the cost-effectiveness assessment of projects to incorporate changes in the use of refrigerants.
 - Lowers cost-effectiveness for fuel substitution projects where heat pumps replace gas-fueled equipment.
 - Boosts cost-effectiveness for projects incorporating low-GWP refrigerants.
- **But there's more...**

Upcoming (BIG!) Changes: **Total System Benefit**

- EE historically used kWh, kW and therms as metrics for goals.
- In D.21-05-041 CPUC adopted a new metric for energy efficiency goals and claims, termed “**Total System Benefit**” or “**TSB**”
- Total System Benefit
 - A separate presentation on TSB was presented in the IEPR Workshop on 8/24
 - Follow up for more information: jessica.alison@cpuc.ca.gov
 - TSB will be the metric for EE goals and the submission of accomplishments (i.e., claims) starting in **2024**.
 - Reported for informational purposes in 2022 and 2023.

What is TSB and what does it have to do with refrigerant policy?

What is “TSB” and what are the Implications for the EE Portfolio and Refrigerants?

- Historically EE used kWh, kW and therms as metrics for goals and claims.
- TSB will be the new metric for EE goals and claims starting in 2024.
- TSB represents the avoided costs of operations, management, and maintenance of the energy grid. *This includes the avoided costs of emissions from refrigerants.*
 - The use of low-GWP refrigerants, and associated avoided costs, will be just as impactful in the achievement of EE goals as lowered energy use.