

# New Measures From LADWP *First POU Only Measure Packages*



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TECHNICAL FORUM

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# Presentation Overview

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## **Objective: Provide update on draft measure packages**

- Direct Evaporative Cooler, Residential
- Portable Air Conditioner and Heat Pump, Residential
- Solar Attic Fan, Residential

## **Highlights:**

- These measure packages are the first POU only
- Today is information
- Future meeting will be for Affirmation

## **Specific Feedback Request:**

We will provide some insight into why each measure is not being considered for IOU resource programs; Can/should these issues be overcome.

# Cool LA Initiative



- In July 2022, The Los Angeles Department of Water and Power (LADWP) Board of Commissioners proposed a new 'Cool LA' initiative to address extreme heat impacts faced by homeowners and renters when temperatures exceed 90° Fahrenheit and heat indexes (air temperature plus relative humidity) exceed 105° F.
- It includes increased cooling rebates on various types of energy-efficient cooling measures to help LADWP customers overcome the health risks associated with extreme heat.
- LADWP has an array of existing programs that address short-term and long-term climate change induced extreme heat that would be included in the 'Cool LA' initiative. These programs help LADWP residential and commercial customers to quickly and easily access current benefits that help them overcome the health risks associated with extreme heat, achieve greater heat mitigation efficiencies, and increased air conditioning system effectiveness



# Direct Evaporative Cooler, Residential

## Overview of Offerings

- A. Added equipment to the home
  - ❑ Not replacing the existing AC system
  - ❑ Displace the use of existing system when cooling is required, and ambient dew point is less than 55 °F.
- B. Replacing an existing AC system
- C. Added to a home with no existing cooling equipment
  - ❑ Increase occupant comfort



# Direct Evaporative Cooler, Residential

Base Case /  
Measure Case



- Base Case Description
  - ❑ Single family, mobile home or multi-family home with an existing, whole house vapor-compression air conditioning system.
  - ❑ Single family, mobile home or multi-family home with no existing cooling equipment.
- Measure Case Description
  - ❑ Installation of a direct evaporative cooler to supplement or replace cooling provided by whole house vapor-compression air conditioning system.

# Direct Evaporative Cooler, Residential

## Savings Approach



- Savings Approach:
  - Previous approach based upon DEER savings (ie, MAS control / eQUEST) with post-processing
  - Exploring a modelled approach in Energy Plus

## Direct Evaporative Cooler, Residential

Screening Committee Considerations



- Savings reproducibility due to need for controlling two systems and due to wet bulb dependency.
- Water costs should be considered, specifically cost of water, additional infrastructure, and maintenance
- Embedded energy of water should be considered
- Consider health risks if proper maintenance is not followed

# Portable Air Conditioner and Heat Pump, Residential

## Overview of Offerings

- A. Portable Air Conditioners
- B. Portable Air Conditioners w/Connected DR Enabled Controls
- C. Portable Air Heat Pumps
- D. Portable Air Heat Pumps w/Connected DR Enabled Controls





# Portable Air Conditioner and Heat Pump, Residential

Base Case /  
Measure Case



- Base Case Description
  - Governed by California Appliance Efficiency Standards (Title 20).
  - Defined as a T20 minimum CEER unit for both the NR and NC measures.
- Measure Case Description
  - There is no Energy Star Qualified Products List for portable ACs/HPs.
  - Measure case efficiency will be Title 20 Code efficiency (see above) +5%.
  - Based on an analysis of the T20 appliance database, 174 or roughly 16% of all products would be eligible for this measure case.
  - *Note that many units on the list use R32 (on EPA Snap List for low GWP).*

# Portable Air Conditioner and Heat Pump, Residential

## Savings Approach



- Savings Approach:
  - DOE/T20 has a spreadsheet based calculation methodology
    - Similar to other HVAC appliance measure, such as SWAP007, which do not use modelling.
  - Plan to adjust the DOE/T20 methodology to use cooling/heating hours based on the newest E+ models and weather files.
    - 4 modes: Active cooling/heating, Off-Cycle, Inactive, Off Mode
    - Use power per mode from T20 database
    - Percentage operating hours per mode in cooling and heating season from DOE
    - Cooling and heating season hours from CZ2022 per CZ weather files and/or E+

# Portable Air Conditioner and Heat Pump, Residential

Screening  
Committee  
Considerations



- Savings reproducibility due to manual controls
- Cost effectiveness concern (TBD)
  - Other benefits that could increase TRC include low GWP and load flexibility
- Evaluation risk if the measure is portable
- Data collection could be extensive for this type of measure

# Solar Attic Fan, Residential

## Overview of Offerings

Add a Solar Attic Fan to:

- A. Existing Attic Fan with AC (NR)
- B. No Existing Attic Fan with AC (AOE)
- C. Existing Attic Fan with no AC (NR)
- D. No Existing Attic Fan with No AC (AOE)



# Solar Attic Fan, Residential

## Base Case / Measure Case



- Base Case Description
  - Four different baselines for this measure:
    - Existing Attic Fan (standard efficiency) with AC
    - No Existing Attic Fan with AC
    - Existing Attic Fan (standard efficiency) with no AC
    - No Existing Attic Fan with no AC (Comfort only)
  - There is no specific attic fan efficiency code, so calculations will use commonly available efficiency/power obtained during online retailer cost analysis.
    - Federal motor efficiency may dictate attic fan motor efficiencies.
  - Further market research and pricing analysis to refine values.
  - Considering *whirly-bird* vents as part of the baseline. Not much literature to support values.
- Measure Case Description
  - Fully solar powered attic fan of the same CFM as existing attic fan (if applicable).



# Solar Attic Fan, Residential

## Savings Approach



- Savings Approach:
  - Modelled values will come from the Energy Plus DEER prototypes since there will be HVAC interactive effects.
  - We plan to model buildings with and without an attic fan.
  - HVAC IE savings will be the difference between the two models.
  - The solar attic fan savings over the existing attic fan will simply be the attic fan consumption.

# Solar Attic Fan, Residential

Screening  
Committee  
Considerations



- Generation related policy
- Savings variability - modelled
- Warranty considerations (best practices)
- Potential high cost / low TRC
- Additional potential benefit with connected device – some on the market