

# Issues with Electrification of Converted MHPs

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# Introduction

- ▶ Why electrification?
- ▶ What is the appropriate order for electrification?
- ▶ What makes MHPs a unique challenge for electrification?
- ▶ What additional costs would be incurred for all-electric?
- ▶ Why electrification of MHPs requires special consideration in the future?
- ▶ Recommendations

# Why electrification?

- ▶ Recently adopted state goals on reducing GHG emissions
  - ▶ SB 350: Reduce GHG emissions to 80 percent below 1990 levels by 2050
  - ▶ EO B-55-18: Reduce GHG emissions to net zero by 2045
- ▶ Some studies show achievement requires nearly full electrification of the building and transportation sectors
- ▶ Electrification will require considered, extended planning in any case

# What is the appropriate order for electrification?

- ▶ Begin with all-electric requirements for new buildings and new vehicles
  - ▶ May require more on-site energy generation and storage
- ▶ Vehicle retirement and replacement programs
  - ▶ Again, will require outside funding
- ▶ Adopt and implement retrofit requirements for existing buildings and certain commercial applications
  - ▶ Will require outside funding sources
- ▶ Decommissioning of existing fossil-fuel infrastructure
  - ▶ Current shareholders may require compensation of lost investment
- ▶ *Cannot require immediate electrification for existing customers without supplemental funding and viable technical solutions*

# What makes existing MHPs a unique challenge for electrification?

- ▶ Most mobilehomes originally constructed for 30 to 50 AMP service
- ▶ Most mobilehomes rely on gas for water and space heating, clothes drying and cooking to reduce electric load
- ▶ Pre-HUD code homes built prior to 1976 (24CFR 3280.801(e))
  - ▶ Use lower-load aluminum wiring
  - ▶ Lack attic space for access to replace wiring
  - ▶ Compose about 35% of homes in California
- ▶ Currently converted MHPs using 100 AMP service
  - ▶ Many master-metered MHPs that replaced systems also 100 AMP
- ▶ *All rewired homes would require HCD inspection, which is already shorthanded*

# What additional costs would be incurred in converting to all-electric?

- ▶ Adding a 200 AMP panel: \$1,500 to \$3,000
- ▶ Replacing appliances:
  - ▶ Electric stove - \$320 to \$500 for conventional, \$1,000-1,500 for induction/convection
  - ▶ Water heater - \$350-\$450 for resistance, \$2,000-3,000 for heat pump
  - ▶ Furnace - \$500-\$1,000 for resistance, \$5,000-\$8,000 for heat pump (with AC)
  - ▶ *Conventional and resistance heating appliances much more expensive to operate than gas*
- ▶ Rewiring HUD-compliant home for 200 AMP: \$12,000
- ▶ Replacing pre-HUD home (35% of mobilehomes):
  - ▶ More than \$60,000 for single-wide, more than \$110,000 for double wide
  - ▶ Cost = \$10 to \$15 billion
- ▶ *Homeowners composed of lower-income households that cannot afford these expenses without full subsidies*
- ▶ *Impedes placing new homes in converted MHPs*

# Why electrification of MHPs requires special consideration in the future?

- ▶ Standard new homes include only 100 AMP service panels
- ▶ Solar panels likely needed to supplement power production
  - ▶ Standard MHP roof construction cannot hold weight of panels, so this becomes an added cost for reinforcement
  - ▶ Many spaces tree shaded, and community solar power inhibited by current CPUC regulations, especially projects less than 500 kW
- ▶ Existing community electric grids will have to be upgraded but the master-meter discount does not clearly provide for recovery of this investment to MHP owners
  - ▶ Only electrifying converted systems could create a two-track market that limits homeowners' choices

# Recommendations

- ▶ Commission should approve to continue the conversion program as currently designed
- ▶ The Commission has not decided on appropriate policies on this issue. In D.18-12-015 in R.15-10-030, the Commission stated:

*The role of renewable energy and existing natural gas pipelines in California's 100% renewable energy future is a complex question that should be considered in a dedicated proceeding. At this time, insufficient evidence has been presented to conclude that renewable natural gas and/or existing California pipelines will have no future role in California's energy systems.*
- ▶ Mobile home electrification should be considered after policies are developed for other energy uses