

M E M O R A N D U M**Addressee Information**

To: Steve B. Quintanilla, City Attorney

Client: City of Moreno Valley

Subject: Air Conditioning to Heat Pump Reach Code Cost Effectiveness Summary

Rincon Contact Information

Date: August 15, 2025

From: Rincon Consultants, Inc.

Comments

The City of Moreno Valley is considering the adoption of a reach code that encourages air conditioners to be replaced with heat pumps in existing single-family buildings. This reach code would support the forthcoming Moreno Valley Climate Action Plan (CAP) to reduce greenhouse gas emissions from existing residential buildings while also improving indoor air quality for the community. To help inform the consideration of the reach code, this memorandum summarizes the cost-effectiveness results for Moreno Valley (i.e., Climate Zone 10, Southern California Edison Company and Southern California Gas Company) from the California Energy Codes and Standards' *2025 Cost-Effectiveness Study: Single Family AC to Heat Pump Replacement*.¹

This reach code would increase the energy efficiency requirements for newly installed and replaced air conditioning systems. These requirements include increasing fan efficiency, attic insulation, and duct insulation above the requirements of the 2025 Building Code. However, heat pump units can be installed pursuant to the 2025 Building Code with no additional efficiency changes. Both the additional energy efficiency pathway and heat pump pathway have been shown to be cost effective over the lifecycle of the project. However, the heat pump pathway will be the lowest cost option after the reach code adoption as summarized in this memorandum.

The customer costs over 30 years (i.e., equipment, labor, permit fees, etc.) of replacing an air conditioning system with a heat pump system (i.e., system that keeps an existing furnace for backup heat) are expected to be lower than replacing the air conditioning system with a new air conditioner. While a heat pump system without available incentives is expected to be \$1,900 to \$2,600 more expensive than an air conditioning system, the heat pump system saves customers costs by avoiding the need for a future furnace replacement. As shown in Table 1, heat pump systems paired with existing furnaces are expected to save customers approximately \$424 over a 30-year period.

¹ Available at: https://localenergycodes.com/download/2034/file_path/fieldList/2025+Single+Family+AC+to+HP+Cost-eff+Study.pdf.

Table 1 Lifecycle Customer Cost Breakdown for Air Conditioning System vs. Heat Pump System with Existing Furnace

Year	Baseline Air Conditioner Replacement Schedule	Baseline Present Value Cost	Heat Pump Replacement Schedule	Heat Pump Present Value Cost	Incremental Present Value Cost
2026	Air conditioner fails, install new air conditioner, keep existing furnace	\$10,431	Air conditioner fails, install new heat pump, keep existing furnace	\$12,347	\$1,916
2036	Furnace fails, install new furnace	\$5,863	Furnace fails, replace fan motor	\$893	(\$4,970)
2041	Air conditioner fails, install new air conditioner	\$6,695	Heat pump fails, install new heat pump and air handler	\$9,326	\$2,631
Total		\$22,989		\$22,566	(\$424)

Notes: () indicate negative value or cost savings. Values may not sum due to rounding.
 Source: 2025 Cost-Effectiveness Study: Single Family AC to Heat Pump Replacement

The estimated on-bill costs (i.e., customer costs and energy costs which include changes in electricity and gas utility bills based on system energy use) of replacing an air conditioning system with a heat pump system (i.e., system that keeps an existing furnace for backup heat) range based on future utility rates estimates. As shown in Table 2, on-bill costs over a 30-year period without incentives are expected to range from \$833 in added costs to \$543 in cost savings based on moderate and high gas rate escalations developed by the California Public Utilities Commission and California Energy Commission, respectively. This data details on-bill costs ranging from cost savings of approximately \$2.31 per month to a cost increase of \$1.51 per month over the 30-year period.

Table 2 details the 30-year on-bill costs, the first incremental customer cost, and the first-year utility cost. While the first incremental cost is around \$1,900, available incentives will lower this cost for customers. Moreno Valley residents are eligible for a \$1,000 to \$4,000 rebate from TECH Clean California.² Residents within Moreno Valley Electric Utility’s service area will also be eligible for additional rebates that range from \$120 to \$160 per system ton.³ Table 2 shows the incremental costs and on-bill costs after these rebates, considering the low-end of the rebates to remain conservative. The results show on-bill costs ranging from total cost savings of \$167 to \$2,023 over the 30-year period when installing a heat pump compared to installing a basic air conditioning system. These cost savings are equivalent to \$0.46 per month to \$5.62 per month over the 30-year period.

² The Switch is On. Available at: https://incentives.switchison.org/residents/incentives?state=CA&field_zipcode=92553&field_zipcodes1=92553&field_functional_category=All&f%5B0%5D=building_type%3A32&f%5B1%5D=incentive_provider1%3ATECH%20Clean%20California.

³ The Switch is On. Available at: https://incentives.switchison.org/residents/incentives?state=CA&f%5B0%5D=building_type%3A32&f%5B1%5D=incentive_provider1%3AMoreno%20Valley%20Utility&f%5B2%5D=income_qualifying%3A0.

Table 2 Incremental Customer and On-Bill Lifecycle Costs for Heat Pump Systems with Existing Furnace compared to Air Conditioning Systems

Scenario	First Incremental Present Value Cost ¹	First-year Utility Costs	On-Bill Net Present Value Cost: Moderate Gas Rates Escalation	On-Bill Net Present Value Cost: High Gas Rates Escalation
No Incentives ²	\$1,916	\$79	\$833	(\$543)
With TECH Clean California Rebates ³	\$916	\$79	(\$167)	(\$1,543)
With TECH Clean California and Moreno Valley Electric Utility Rebates ^{3,4}	\$436	\$79	(\$647)	(\$2,023)

Notes: () indicate negative value or cost savings. Values may not sum due to rounding. N/A = not applicable.

Source:

1. Representative of replacements in year 2026 from Table 1.
2. For buildings with vintage from 1992-2010 from *2025 Cost-Effectiveness Study: Single Family AC to Heat Pump Replacement*
3. Applies the low end of TECH Clean California’s rebates (i.e., \$1,000 per unit) to remain conservative.
3. Applies the low end of Moreno Valley Electric Utility’s rebates (i.e., \$120 per ton assuming a four-ton system) to remain conservative.

The cost of replacing an air conditioning system with a heat pump system (i.e., system that keeps an existing furnace for backup heat) can also be analyzed using the California Energy Commission’s current lifecycle cost methodology. The California Energy Commission uses this methodology to assess the measures of the 2025 Energy Code. It includes customer costs as well as costs associated with the hourly cost of marginal generation, transmission and distribution, fuel, capacity, losses, and Cap-and-Trade based carbon dioxide emissions. Table 3 shows these systemwide costs and savings over a 30-year period. Considering these costs, heat pump systems with existing furnaces are expected to produce about \$2,444 in systemwide savings before incentives. With incentives, systemwide savings are expected to range from \$3,444 to \$3,924 over the 30-year period.

Table 3 Incremental Customer and Systemwide Lifecycle Costs for Heat Pump Systems with Existing Furnace compared to Air Conditioning Systems

Scenario	First Incremental Present Value Cost ¹	First-year Utility Costs	Systemwide Net Present Value Cost
No Incentives ²	\$1,916	\$79	(\$2,444)
With TECH Clean California Rebates ³	\$916	\$79	(\$3,444)
With TECH Clean California and Moreno Valley Electric Utility Rebates ^{3,4}	\$436	\$79	(\$3,924)

Notes: () indicate negative value or cost savings. Values may not sum due to rounding. N/A = not applicable.

Source:

1. Representative of replacements in year 2026 from Table 1.
2. For buildings with vintage from 1992-2010 from *2025 Cost-Effectiveness Study: Single Family AC to Heat Pump Replacement*
3. Applies the low end of TECH Clean California’s rebates (i.e., \$1,000 per unit) to remain conservative.
4. Applies the low end of Moreno Valley Electric Utility’s rebates (i.e., \$120 per ton) to remain conservative.