Single-Family Two-Way AC Staff Report Version Tracking

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| **Date** | **Version** | **Description of Changes** |
| 6/21/25 | 1.0 | Followed modified version of the FlexPath draft |
| 8/8/25 | 1.1 | Updated to match LEC template V1.1, added highlights for CZ4, footer and page number |
| 8/13/25 | 1.2 | Style updates for consistency with other staff reports |
| 9/30/25  | 2.0  | Updated “Impacts section”, name change from “AC to HP” to “Two-Way AC”, other wording improvements  |

***Introduction***

*This is a customizable template for completing a two-way AC staff report. Blue in-line text needs customization- things like dates, local legislation, staff, and ordinance-specific references for your customized reach code. Complete these sections to customize this staff report to reflect your local context and reach code.*

**FROM:**  *[Department Head Name, Title]*

*[Other Contributor(s), Title]*

**Prepared By:** *[Report-writer Name, Title]*

*[Other Contributor(s), Title]*

**SUBJECT: *[****Two-Way AC policy FOR residential installations, replacements, and alterations]*

**RECOMMENDATION**

Adopt an ordinance amending [Jurisdiction Municipal/County] Code Section [xxx] to require that projects in single-family homes, duplexes and townhomes involving replacement or alteration of an existing air conditioning system or installation of new air conditioning systems must either include a heat pump space conditioner (including using the heat pump as the primary heating system) or install specific energy efficiency measures in addition to a new air conditioner.

BACKGROUND

Include local policy that is relevant in this section. Some common examples are Climate Action Plans, legislation, Council climate action goals, commission findings, mayoral direction, local referenda, or any other reason a reach code was pursued by this jurisdiction.

***State Building Code Cycles and AB 130***

The State updates its Building Standards Code every three years. Local governments have historically been able to adopt “reach codes” that go beyond State minimums provided the local governments state their findings that the reach codes address a local necessity. However, Assembly Bill 130 (AB 130) that was signed into law on June 30, 2025, prohibits local jurisdictions from adopting amendments to the residential code between October 1, 2025, and June 30, 2031, unless they qualify for an exemption.

One exemption allows jurisdictions to adopt local amendments if they are consistent with their General Plan goals for Greenhouse Gas (GHG) reductions. *[Jurisdiction’s]* General Plan and Climate Action Plan (CAP) supports reductions in air pollutants and GHG emissions:

* *[Include General Plan details]*
* *[Include CAP details]*

Staff believe the General Plan and CAP provide a clear pathway to pursue the proposed reach code.

***Policy Context***

*[In 2022, the City adopted a Reach Code requiring electrification of new buildings. Following the Ninth Circuit ruling in* [*the California Restaurant Association v. City of Berkeley (2019)*](https://www.publichealthlawcenter.org/litigation-tracker/california-restaurant-association-v-city-berkeley-2019)*, the City…]*

The proposed policy builds on *[past reach codes, General Plan goals, CAP targets]* by encouraging, rather than requiring, electrification. It targets air conditioner replacements and additions as a strategic intervention point to reduce emissions in a cost-effective way. Air conditioners are the intervention point because they represent a common-sense and cost-effective time to implement decarbonization solutions in single family buildings. Many other alternatives, such as stand-alone furnace replacements, are more expensive options. Focusing on air conditioners results in benefits for residents and the environment.

Additionally, the proposed policy aligns with upcoming Air District [Rule 9-4](https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces/2021-amendments/documents/20230127_factsheet_rg09040906-pdf.pdf?rev=d9742b53163040889754f9dd0744351a&sc_lang=en), which will phase out the sale and installation of natural gas furnaces in the nine-county Bay Area beginning in 2029. While the proposed reach code does not add requirements on furnaces, adding a heat pump enables heating in addition to cooling. This means that when a furnace no longer functions, there is no need to replace it as the heat pump can already provide heat to the home in a way that aligns with the Air District’s rules.

***Technology Definitions***

A summary of common home heating and cooling systems is provided below to support understanding of the proposed policy:

* *Furnace*: Provides space heating only and can be gas-powered or electric.
* *Air Conditioner (AC)*: Provides space cooling only. It does not supply heat.
* *Heating, Ventilation, and Air Conditioning (HVAC) System*: Generally refers to a combined furnace (heating) and central air conditioner (cooling) that share ductwork and controls. The furnace portion often uses natural gas.
* *Heat Pump (HP)*: Functions as both an air conditioner and a heater in a single system, using electricity only. A heat pump transfers heat rather than generates it, which makes it highly efficient and climate-friendly.

**DISCUSSION**

**Proposed Policy**

Projects can comply with the proposed ordinance by choosing one of two pathways:

1. Installing a heat pump (which both cools and heats the home) and no other measures other than those that are required under the California Energy Code. The heat pump could be installed in the following two ways:
	* 1. In place of the furnace, removing the existing furnace.
		2. In place of the air conditioning unit. In this case, the furnace stays in place and serves as the air handler for the heat pump, and as a back-up heating system.
2. Installing an air conditioner (AC) and additional energy-related measures above what is required under the California Energy Code. Table 1 presents the compliance requirements, showing where new requirements are added. These requirements ensure the new system will operate in an energy-equivalent way relative to the heat pump.

**Table 1. Summary of Requirements if Installing an Air Conditioner**

|  |  |  |
| --- | --- | --- |
| **Ducts** | **State Code Requirements** | **Reach Code Requirements** |
| Existing Ducts | * Duct sealing (10% leakage)
* Airflow efficiency (300 CFM/ton)
 | * Refrigerant charge verification
* Fan efficacy (0.45 watts/CFM)
* Attic insulation (R-49)
* Air sealing
 |
| New Ducts | * Duct sealing (5% leakage)
* Airflow efficiency (350 CFM/ton)
* Fan efficacy (0.45 W/CFM)
* Attic Insulation (R-49)
* Air sealing
* R-6 Duct insulation [CZ 3]
* R-8 Duct insulation [CZ 4]
 | * Refrigerant charge verification
* Fan efficacy (0.35 watts/CFM)
* R-8 Duct insulation [CZ 3]
 |

The benefits of the proposed ordinance are as follows:

* *GHG Reductions*: Heat pumps are significantly more efficient than gas furnaces and use California’s increasingly clean electricity grid.
* *Air Quality*: Heat pumps prevent the generation of harmful air pollutants and align homes with *[the Bay Area Air District* [*Rule 9-4*](https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces/2021-amendments/documents/20230127_factsheet_rg09040906-pdf.pdf?rev=d9742b53163040889754f9dd0744351a&sc_lang=en) *,which phases out natural gas furnaces.]*
* *Resident Utility Bill Savings*: *[*[*Studies*](https://bayareareachcodes.org/wp-content/uploads/2025/08/Bill-Impacts-of-Home-Electrification-Across-the-Bay-Area.pdf) *show savings of approximately $300 per year.]*
* *Incentives*: State and local rebates are available and reduce net costs. *[Silicon Valley Clean Energy, the non-profit community-owned utility serving the City, provides $2,500 for heat pump heating and cooling. / Peninsula Clean Energy, the non-profit community-owned utility serving the City, provides $1,500 for heat pump heating and cooling.]*
* *Future Proofing:*Help residents get homes ready during common-sense upgrades.

**Impacts**

The proposed policy was evaluated across four primary metrics:

1. *Up-Front Costs*: The initial expense of purchasing and installing equipment.
2. *Bill Savings:* Yearly utility bill changes based on equipment choices.
3. *Lifecycle Savings:* Cumulative 30-year costs and savings, such as installation, equipment replacement, maintenance, and on-bill impacts.
4. *Greenhouse Gas (GHG) Emissions:* Estimated reductions in emissions.

*Up-Front Costs*

As shown in Figure 1, upfront costs are a key consideration for the feasibility of the proposed policy. Path 1 to compliance is to replace cooling equipment with a heat pump. This is a lower up-front cost as compared to Path 2, which involves replacing the AC with a new AC and installing energy efficient measures. Path 1 is cost-effective, and Path 2 is an energy equivalent alternative.

**Figure 1. 1-Way AC Costs More for Same Efficiency[[1]](#footnote-2),[[2]](#footnote-3)**

*Bill Savings*

Monthly bill impacts are significant for residents. *[A* [*Bill Savings Study from Peninsula Clean Energy and Silicon Valley Clean Energy*](https://bayareareachcodes.org/wp-content/uploads/2025/08/Bill-Impacts-of-Home-Electrification-Across-the-Bay-Area.pdf) *shows that households will save approximately $300 per year on their energy bill by installing a heat pump.]*

*Lifecycle Impacts*

Another way to assess the impact of this proposed policy is to look at lifecycle costs. Lifecycle costs factor in equipment operation and replacement over a 30-year lifecycle, assuming one equipment replacement during that time. When installing a heat pump at time of air conditioner replacement, it will also provide heating to the home during the colder months. If there is a secondary gas heating source, it will not need to be replaced when it fails. Lifecycle costs show significant savings when installing a heat pump as compared to replacing the AC unit with another AC unit.

**Table 2. Economic Costs and Savings**[[3]](#footnote-4)

|  |  |
| --- | --- |
| **Approach** | **Lifecycle** **Savings** |
| Base case (Replace AC) | $0 |
| Heat pump & new air handler (no furnace) | $(572) - $10,753 |
| Heat pump with existing furnace as backup | $1,955 - $10,123 |

*GHG Emissions*

Heat pumps can provide significant reductions in greenhouse gas emissions over air conditioner replacements. This is because heat pumps provide heating more efficiently than gas furnaces (and electric resistance heat). Table 4 shows greenhouse gas reductions for heat pump approaches, as compared to the base case of an AC replacement in metric tons (for the first year) and as a percentage of total emissions. These estimations are conservative; the actual impact is likely greater because *[Jurisdiction]* receives clean energy from *[Peninsula Clean Energy / Silicon Valley Clean Energy]*, resulting in very low GHG emissions from electricity use.

**Table 3. Greenhouse Gas Reductions[[4]](#footnote-5)**

|  |  |  |
| --- | --- | --- |
| **Approach** | **Metric Tons** | **Percentage** |
| Heat pump & new air handler (no furnace) | 0.69 – 0.94 | 22% - 26% |
| Heat pump with existing furnace as backup  | 0.97 – 1.30 | 32% - 37% |

**Exceptions**

The proposed policy offers two general exceptions. The first is for situations where the electrical panel capacity is insufficient to meet the load of a heat pump. The second is where the heat pump would need to be sized more than 12,000 Btu/hr (1 ton) over the air conditioner that would be installed in order to meet the heating load. There are also exceptions to the duct sealing and airflow requirements that specify alternative methods of compliance. All applicable exceptions in the California Energy Code apply.

Public Engagement

[Summarize public outreach and engagement activities.]

Policy Implementation Considerations

The policy would be implemented via an [additional/modified] intake form required at time of building permit submittal. Building staff would review the application for consistency with the policy and field verification would happen as part of the typical inspection process.

ScHedule and Next Steps

Should Council approve staff’s recommendations, work would proceed on the timeline provided in Table 4 below.

**Table 4. Schedule and Next Steps**

|  |  |
| --- | --- |
| **Task** | **Timeframe** |
| Second reading of the draft Ordinance (Attachment A) and submittal to the California Energy Commission and California Building Standards Commission |  |
| Develop implementation forms, training, and help desk services |  |
| Receive approval from the California Energy Commission and California Building Standards Commission approves for filing |  |
| Policy goes into effect | [No sooner than 1/1/26] |

ENVIRONMENTAL REVIEW

[This text should be prepared by qualified staff and should read the same as the ordinance. Two samples are provided below. Edit as needed]

Staff recommendations are found to be exempt from CEQA under the general rule, 15061(b)(3), because it can be seen with certainty that the provisions contained herein would not have the potential for causing a significant effect on the environment. Further, this ordinance is also exempt from CEQA under the categorical exemptions in Section 15308 of the CEQA Guidelines in that the proposed ordinance would institute regulatory requirements intended to protect the environment and natural resources.

This ordinance is exempt from CEQA under 15061(b)(3) on the grounds that these standards are more stringent than the State energy standards, there are no reasonably foreseeable adverse impacts and there is no possibility that the activity in question may have a significant effect on the environment.

ALTERNATIVES

1. *[XXXXXX]*
2. *[XXXXXX]*

ATTACHMENTS

1. Ordinance Adopting the [Policy name]
2. [2025 Single Family AC to Heat Pump Cost-Effectiveness Study](https://localenergycodes.com/download/2034/file_path/fieldList/2025%20Single%20Family%20AC%20to%20HP%20Cost-eff%20Study.pdf)
3. Version of the Ordinance Showing Markup of State Energy Code
1. Table 9 and 20 of the 2025 [Single Family AC to HP Replacements](https://localenergycodes.com/download/2034/file_path/fieldList/2025%20Single%20Family%20AC%20to%20HP%20Cost-eff%20Study.pdf) Cost Effectiveness Study [↑](#footnote-ref-2)
2. This example scenario uses standard efficiency equipment, assumes the project reuses existing ducts and uses a vintage-averaged cost of efficiency measures. [↑](#footnote-ref-3)
3. Table 12 and 13 of the 2025 [Single Family AC to HP Replacements](https://localenergycodes.com/download/2034/file_path/fieldList/2025%20Single%20Family%20AC%20to%20HP%20Cost-eff%20Study.pdf) Cost Effectiveness Study [↑](#footnote-ref-4)
4. Ranges reflect differences in home vintages, [↑](#footnote-ref-5)