1. **Why are reach codes important?**
   a. As PG&E, the state, and the nation transition away from fossil gas, reach codes help communities slowly and cost-effectively upgrade to efficient, pollution-free buildings and transportation. Additionally, reach codes that require pre-wiring prepare homes for the Bay Area Air District's amended Rules 9-4 and 9-6 which limit the sale of gas equipment.
   b. While rebate programs and education are essential, they aren't nearly sufficient on their own. Building codes help ensure property owners electrify at the easiest and lowest cost time.
      i. Silicon Valley Clean Energy (SVCE): It is estimated that there are approximately 10,000 more heat pump water heaters planned in Santa Clara County today because of reach codes.
      ii. Peninsula Clean Energy (PCE): 20 member agencies have adopted reach codes that have resulted in over 2,000 heat pump water heaters and 4,000 EV charging ports.
   c. Buildings account for 25% of California's greenhouse gas emissions and gas appliances are responsible for more NOx (the gas that causes smog) than all the power plants in the state.

2. **What is a heat pump?**
   Heat pumps are similar to normal air conditioners except that they have a valve that allows the equipment to both heat and cool a building. Heat pumps transfer heat from a colder place to a warmer place. Specifically, the heat pump transfers thermal energy using a heat pump and refrigeration cycle, cooling the cool space and warming the warm space. As they transfer heat rather than generating heat, they are much more energy-efficient than heating with a gas furnace or using an old-style electric resistance water heater.

3. **What is the cost differential between a traditional air conditioner and a heat pump?**
   There can be a wide range in cost estimates for this work based on the contractor and the quality of the equipment. Based on SVCE program data, it is estimated that the initial average cost differential (before rebates) is $2,000. Installing a heat pump now, however, reduces utility costs and saves thousands of dollars on eventual future equipment replacements. Since an air conditioner and a heat pump are mechanically very similar, it is likely that this cost differential will shrink as the market continues to mature.

4. **Why is electric readiness so important?**
   a. Since buildings will transition to all-electric in the future, it makes sense to prepare for this transition when opportunities arise. Prewiring a part of a building for future electric equipment is most efficiently done when work is already being conducted in that part of the building. By requiring prewiring during renovations, this reduces costs as contractors are already onsite performing work.
   b. **Are there incentives to help residents meet these requirements?** Yes! SVCE has rebates for both heat pumps and electrification readiness. The rebate is currently $2,500 for a heat pump and $500 per new circuit (up to $2,000) for electric readiness. There are often additional rebates available from regional, state, and federal agencies. SVCE's Board of Directors recently approved an additional $4M in rebates for home electrification, which could fund more than 500 heat pump water heaters and 1,100 heat pump HVACs. Peninsula Clean Energy (PCE) offers a $1,500 rebate for heat pumps. There are often additional rebates available from regional, state, and federal agencies.

5. **What have other cities done?**
   a. In Santa Clara County, all jurisdictions adopted some form of reach code impacting the 2022 Building Code Cycle.
   b. In San Mateo County, 95% of jurisdictions adopted some form of reach code impacting the 2022 Building Code Cycle.
   c. Many agencies are currently evaluating reach code opportunities for 2025. Since the 2025 California Building Code already requires new buildings to be constructed with nonpolluting equipment and requires prewiring, this year's reach code effort focuses on the opportunities available in existing buildings.
   d. Jurisdictions that have recently adopted reach codes include:
      i. **San Francisco:** All Electric Major Renovations (September 2025)
      ii. **Menlo Park:** Single Family FlexPath, Single Family Two-Way AC, Electric Readiness (August 2025)
      iii. **Sunnyvale:** Single Family Two-Way AC and Electric Readiness (August 2025)
      iv. **Mountain View:** Single Family Two-Way AC and Electric Readiness (September 2025)
      v. **Ojai:** Single Family FlexPath (August 2025)

6. **Can an existing air conditioner be fixed if it is broken?**
   Yes! There is nothing in the Two-Way AC ordinance preventing the repair of existing equipment.

7. **Does the proposed reach code mandate a heat pump or require the replacement of a natural gas water heater with a heat pump water heater?**
   No. The proposed reach code is only triggered by a planned AC installation or replacement and has nothing to do with water heating. It requires either a heat pump installation or an AC with additional efficiency measures. The electric ready reach code, if applicable, would promote the future installation of a heat pump water heater, but also does not require the transition to a heat pump water heater.

8. **How will the reach code be implemented during permitting?**
   a. Neither the Two-Way AC nor Electric Readiness codes introduce new permitting requirements. Permits are already required for this work by state codes.
   b. If installing a heat pump, there is no change to the permitting process. If installing a traditional AC, the city will implement the requirements according to typical city processes. This may include additional inspection for efficiency measures, review of manufacturer specifications and electrical load calculations, or submittal of a self-certification from the permit applicant.

9. **Can the grid handle electrification?**
   a. Yes. The CEC and CPUC expect SVCE's territory will only see a 9% increase in load due to building and transportation electrification by 2030. Additions to the grid, including new clean generation and energy storage, are happening each and every day.
   b. Electrification is key to transitioning to a cleaner, safer, reliable grid.
      i. Electric appliances are flexible which means they can be controlled and timed to help reduce strain on the grid at critical times – like during extreme heat.
      ii. Modern electric heat pumps provide efficient heating, air conditioning, and water heating without consuming large amounts of electricity.
      iii. Electric appliances can be powered by residential solar and battery systems. Allowing them to still operate during grid power outages.
   c. Climate-fueled extreme heat, wildfires, and drought are already straining the energy system. The only long-term solution is to reduce dependence on the fossil fuels that cause climate change. Reach codes are a sensible way to do this.

10. Are there contractors available to install heat pumps?

As the work is very similar to normal air conditioning installation, there are many contractors available to install heat pumps.

11. Does it cost more to operate a heat pump?

No. Most modern heat pumps are much more efficient than old air conditioning units and are less expensive to operate, resulting in average bill savings of $25-$50 per month based on recent studies. Heat pumps with higher efficiency ratings and variable-speed capability generally result in higher bill savings.

12. Will costs of compliance be passed onto renters?

Regardless of whether the AC installation is two-way or one-way, the cost is tens of thousands of dollars, and tenant protection policies are the only way to ensure no cost pass-throughs. Tenants, however, are likely to benefit from on-bill savings with a two-way AC installation as compared to a gas furnace. This can be extra beneficial if the home is inefficient and a large energy consumer, due to heat pumps being multiple times more efficient than furnaces.

13. Will a heat pump be cost-effective for seniors with limited payback periods?

Compared to a gas furnace, heat pump space heating can save $300-$600 a year. Incremental costs vary widely but at roughly $1,500 incremental cost compared to an AC and gas furnace, the payback would be 2.5-5 years. There are also added air quality benefits and safety benefits from not combusting fuel inside the home, the value of which is not considered in traditional payback calculations.

14. Will the electric readiness reach code trigger electrical upgrades/prewiring throughout a resident's home during a remodel?

Reach codes will require electrical readiness in the parts of the home that are being altered, remodeled, or added, and not in the whole home, unless the whole home is being remodeled.

15. Will a heat pump be required when a furnace breaks?

No. This policy relates to AC installation, not furnace installations. However, the Bay Area Air District will require that all furnace replacements to be zero-emissions beginning in 2029, and the Two-Way AC policy helps residents avoid missed opportunities to pre-comply with those regulations.

16. Will reach codes require panel upgrades?

a. Reach codes themselves do not explicitly require a panel upgrade. They typically provide exceptions to projects that would require a panel upgrade to meet their requirements.
b. The vast majority of electric homes can be operated on 100-amp panels, including older homes and those that don't currently have air conditioning.
    i. Peninsula Clean Energy studied over 100,000 single-family homes and found that 99% never use more than 100-amps all year. Over 80% never use more than 40-amps.
    ii. Silicon Valley Clean Energy studied over 115,000 single-family homes and found that 90% could add two new heat pumps on 100-amp panels without requiring a panel or service upgrade - even if they are older homes that didn't previously have air-conditioning.
c. If the heat pump is replacing an existing air conditioner, the reach code should not require any additional wiring because the power requirements for a heat pump are typically very similar to those for an air conditioner.
d. If this is a new installation where there was not an air conditioner present before, any upgrades needed for the heat pump should be identical to those needed for an air conditioner. Homes looking to add a heat pump HVAC may need an evaluation of the home's electrical load to assess whether the proposed heat pump HVAC can be accommodated within the existing panel capacity; if not, as determined by a contractor, a panel upgrade may be required. In SVCE and PCE's experience, fewer than 20% of the 1000+ projects completed through rebate programs have required panel upgrades, indicating that panel upgrades are not commonly necessary.
e. Electrification readiness codes do require the extension of new wiring in a building, but it does not require a panel upgrade. Many of these additions can likely be handled within the building's existing panel capacity.
    i. PCE offers a $1,000 electrical panel rebate.
    ii. SVCE offers a $1,000 electrical panel rebate with specific eligibility requirements.

17. What is Silicon Valley Clean Energy and Peninsula Clean Energy's role in reach codes?

a. They provide technical support to member agencies considering reach codes. This includes model code language, outreach, presentation support, and code customization.
b. They do not advocate for any particular code but support each jurisdiction in adopting the code that is best for their community.