Electric Readiness

Background, Policy Description, Resources, Discussion

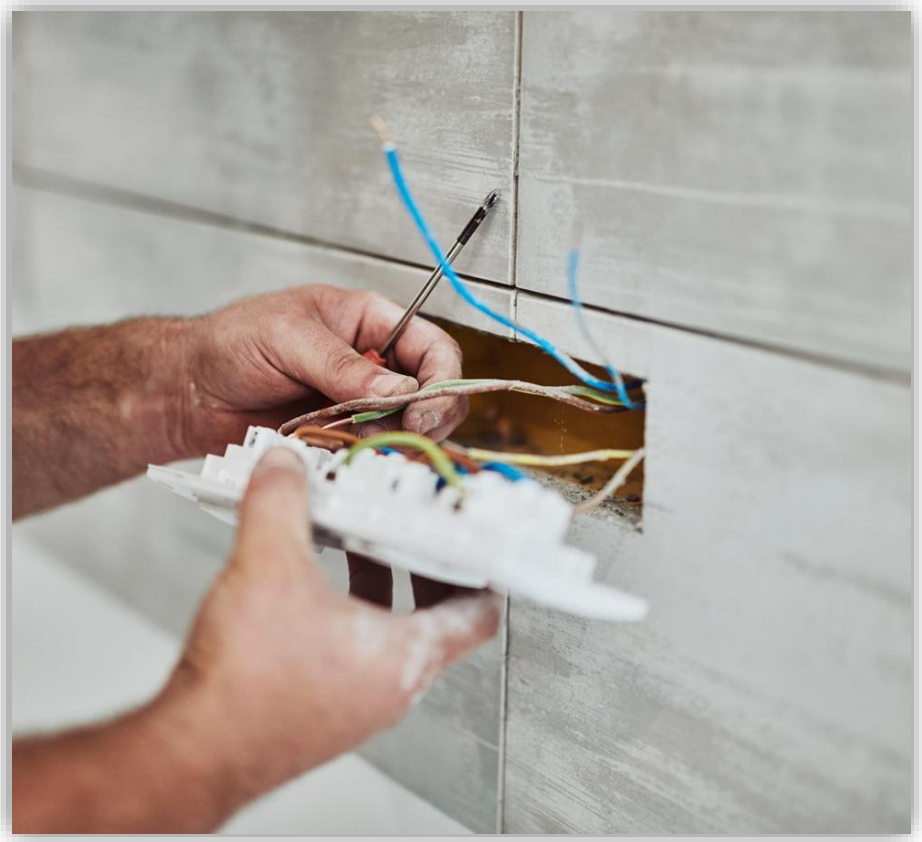
Purpose

Understand the steps and decisions you need to make to develop a electric readiness ordinance

Ordinance Objectives

Require some **electrical infrastructure** during major projects to eliminate rework and cost later

- Options for all gas appliances
- Two methods
  - Extra unused conductor
  - Conduit



Policy Context

Air Quality Regulations

- Beginning in 2027, water heater sales will be restricted by by various regional and state agencies

Cost-effectiveness

- **Unnecessary** as it does not require energy conservation or efficiency
- **Cost savings** from an extra contractor visit and repeated demolition

Technology

- Does not require electric appliances
- **120V appliances** are available for almost all end-uses, needs flexibility

Local Adoption

- Atherton
- Fairfax
- Mountain View
- Portola Valley
- San Anselmo
- San Luis Obispo
- San Mateo

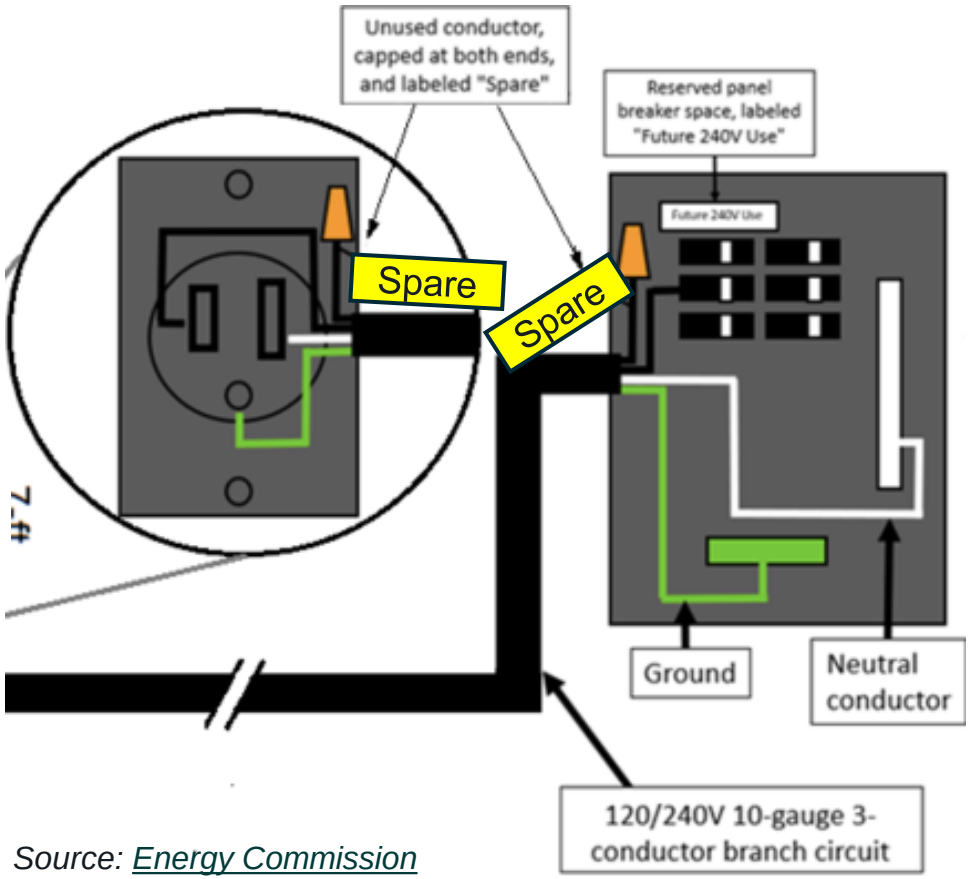
Policy Requirements and Exceptions

Electric Readiness - General Concept

Feature	120V circuits	240V circuits
# of “hot” wires	1	2
Neutral wire	Always	Sometimes
Ground wire	Always	Always
Amperage	15-20	20-50

Two compliance pathways:

1. 120-volt receptacle that is upgradable to 240 volts by installing an extra (unused) “hot” conductor, each at 120V;
   OR
2. Empty conduit



Source: Energy Commission

Electric Readiness for Kitchens

Trigger: Electrical permit scope includes circuits or receptacles in the kitchen

Install:

- Reserved breaker space, AND
- Either
  - 120-volt, 20-amp receptacle with three conductors (1 unused) at 50 amps within 3 feet of the appliance; OR
  - Pathway for raceway/conduit for 240V / 50-amp circuit from the main electrical service panel to the appliance

Electric Readiness for Dryers

Trigger: Electrical permit scope includes circuits or receptacles within 3’ of a gas clothes dryer

Install:

- Reserved breaker space, AND
- Either
  - 120-volt, 20-amp receptacle with three conductors (1 unused) at 30 amps within 3 feet of the appliance; OR
  - Pathway for raceway/conduit for 240V / 30-amp circuit from the main electrical service panel to the appliance

Electric Readiness for Water Heating

Trigger #1: Wall framing is removed or replaced within 3’ of a gas water heater

- **Install:** Space suitable for future heat pump water heater (2.5’ x 2.5’ x 7’) + condensate drain

Trigger #2: Electrical permit scope includes circuits or receptacles within 3’ of existing water heater or 10’ of a future HPWH location above

- **Install:**
  - Reserved breaker space, AND
  - Either
    - 120-volt, 20-amp receptacle with three conductors (1 unused) at 30 amps within 3 feet of the appliance;

    OR
    - Pathway for raceway/conduit for 240V / 30 amp circuit from the main electrical service panel to the appliance

Electric Readiness for Space Heater

Trigger: If a gas space heater is replaced

Install:

- Nothing!
- But, do designate location for future heat pump outdoor unit (compressor)

Electric Readiness for Outdoor Appliances

Trigger: When a gas line is extended to outdoor appliances (pools, spas, fireplaces, BBQ)

Install:

- Reserved circuit breakers
- Conduit to serve future electrical appliances

Readiness for Electric Power Upgrades

Trigger: Electrical permit increasing capacity to the building

Requirements

Calculate electrical panel size according to *both* 220.83 and 220.87 of the Electrical Code

and include one of

1. A power management or circuit controlling device serving
   - Water heater
   - Clothes dryer
   - Range
   - EV Charger

or

2. At least one 120-volt electric appliance
   - Water heater
   - Clothes dryer
   - Range

or

3. Circuit control between whole home load and EV charger

Rationale

- Contractors may not consider both electrical code calculation options
- Panel upgrades are often unnecessary and expensive
- Alternatives can reduce cost of electrification and reduce coincident peak load

Electric Readiness Exceptions

1. No electrical permit otherwise required for the project
2. Reach measures trigger electrical service upgrades
3. Repairs, safety improvements
4. New attached ADUs
5. Mobile homes, manufactured housing

Cost Estimates

- **Reserved Breakers or Space:**
  - $0 for physical space
  - $50 for breaker
- **Circuits:**
  - ~$150 for extra conductor incremental if already running a circuit
  - $500 - $1,000 if running a dedicated circuit
- **Conduits:**
  - $500 - $1,000 installed without significant demolition necessary

Source: RSMeans

Suggested next steps

- Circulate the policy concept with key decision makers
- Analyze property database and last few years of permits to estimate:
  - # of existing single family homes, duplexes and townhomes
  - # of annual permits for kitchens, laundry rooms, water heater alterations, furnace replacements, and electrical service upgrades
  - % of projects affected annually by proposed requirements