

SMUD's All-Electric Smart Homes & Neighborhood SolarShares Programs

Decarbonization for New Residential Construction

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Building Decarbonization Incentives presented by CBIA

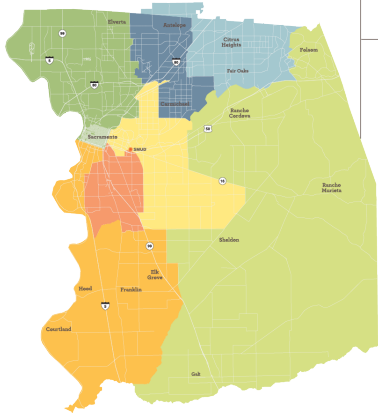
Powering forward. Together.



About SMUD

SMUD is your community-owned, not-for-profit electric service.

6th largest
community-owned
in the U.S.



75+
Years
Est. 1946

Power mix
that's on average
about
50%
carbon-free*



The most
ambitious goal
of any large
utility in the
United States

~**645,000** Customers

~**2,300** Employees



7 member
Elected
Board of Directors

Rates among the lowest in CA. On average **45%** lower than PG&E

SMUD's 2030 Zero Carbon Plan

Most ambitious carbon reduction plan by a large utility in the nation

4 Main Focus Areas



“The threats to our region are real and unacceptable. Sacramento consistently ranks as one of the dirtiest air basins in the country and it disproportionately impacts our most disadvantaged residents. Although we have had one of the most aggressive carbon-reduction plans in the nation, we realized we must do more.”

2021 Board President Nancy Bui-Thompson

Smarthome Program

Electrification of New Residential Construction

86 Area Builders/Developers in the Program

93 Active Developments

- 63 Single Family Neighborhoods
- 30 Multifamily Developments

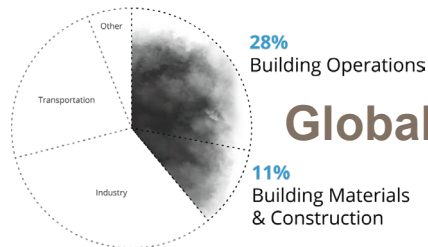
Progress to Date:

- **3,656 Homes Completed**

- 1,483 Single Family Homes
- 2,173 Multifamily Homes
 - » Mid 2018-2021: 979 total completed
 - » 2022: 1,868 total completed
 - » 2023: 1,600 forecast, 808 completed to date

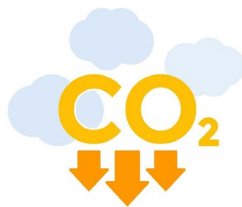
- **4,886 Active, in que through 2025**

Annual Global CO₂ Emissions



Global CO₂

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Data Sources: Global ABC Global Status Report 2018, EIA



47,130 Tonnes

Amount of Avoided Carbon-Lifetime for SMUD customers



5.57 GWh G2E

Savings

Annual energy savings for SMUD customers

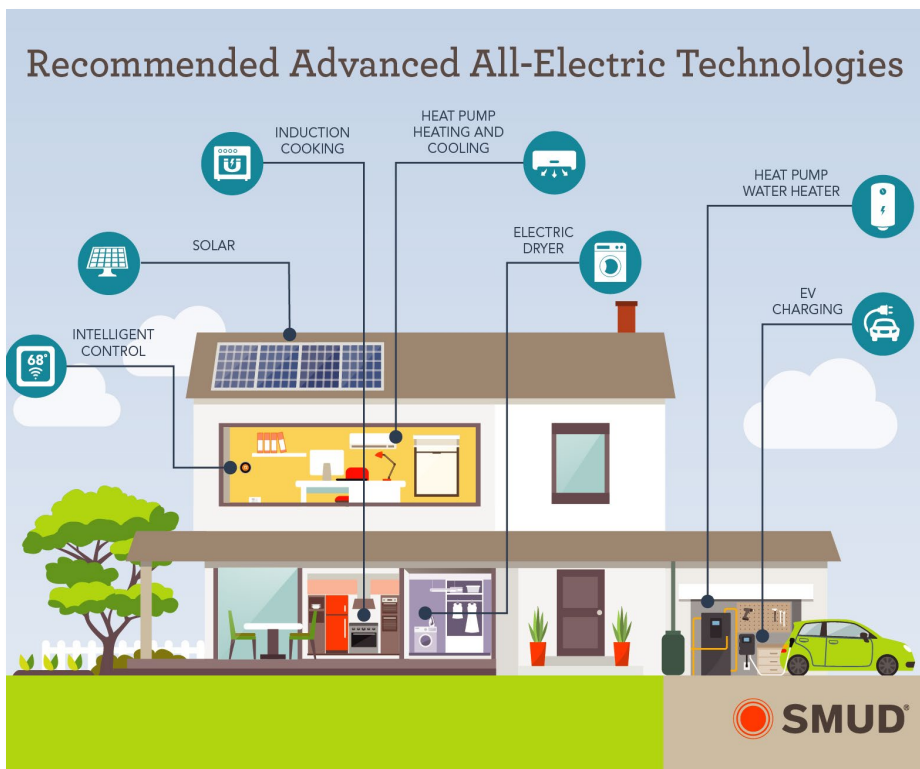


New Technologies and Business Models

The Smarthome Program is SMUD's primary tool to influence production home builders to adopt electrification, storage, renewable electricity, and EV's. Electrification of buildings and vehicles is a priority for SMUD today to support the decarbonization of these sectors, which are the largest carbon emitters in California.



Technologies

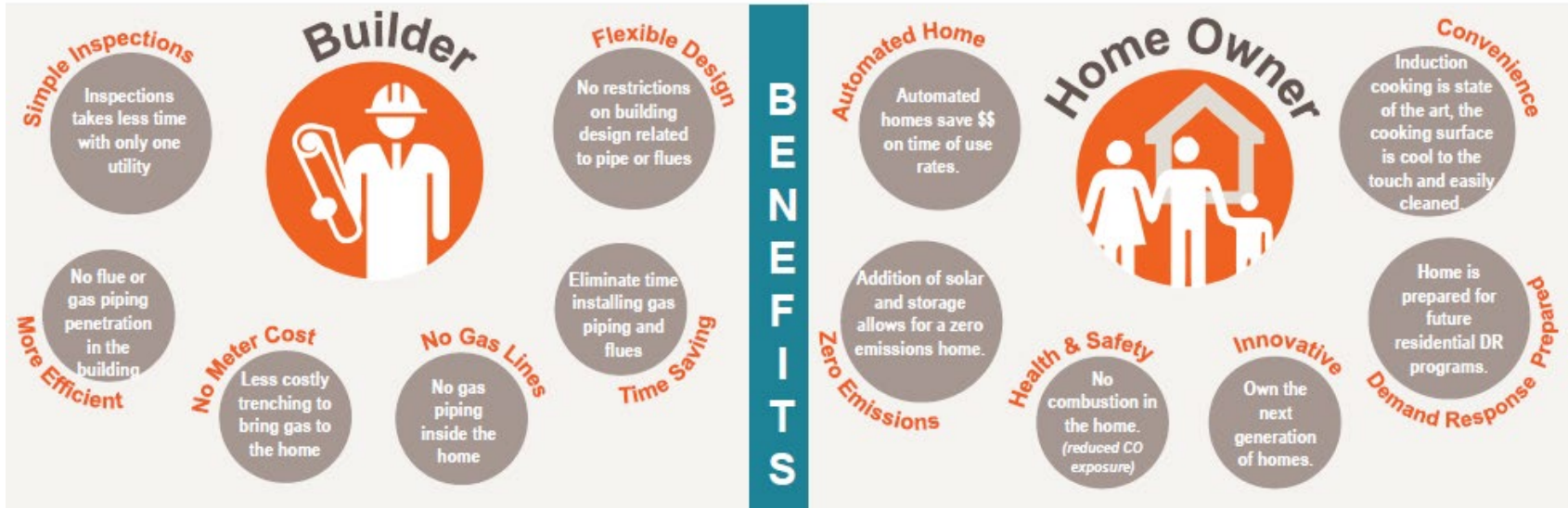


- Heat pump HVAC system - Required
- Heat pump water heater- Required
- Thermostatic mixing valve - Required
- Heat pump dryer - Optional
- Induction cooking – Bonus 2023 then Required
- Electric vehicle charging – Bonus thru 2025
- SMUD’s Neighborhood SolarShares or Rooftop PV – Compliance Option
- Battery storage - Optional

Builders agree to segregate circuits by the following types:

- **Lighting** including exterior lighting
- HVAC systems and components
- Domestic and **service** water systems
- **Plug load** including appliances rated less than 25 kVA.
- Charging stations for electric vehicles

Benefits to Builder & Homeowner



*Graphic: TRC Companies Inc.

Smarthome Program Incentives

Table 1 – Single Family, All-Electric Incentives

2023 Incentive	Amount Available
Base Incentive for All-Electric Home – requires heat pump water and space heating and eligible smart thermostat	\$3,500
Induction Cooktop	\$500
Level II EV Charger	\$400
Total 2023 All-Electric Incentive per Home	Max \$4,400
2024 Incentive	Amount Available
Base Incentive for All-Electric Home – requires heat pump water and space heating, induction cooktop/stove, and eligible smart thermostat	\$3,250
Level II EV Charger	\$400
Total 2024 All-Electric Incentive per Home	Max \$3,650
2025 Incentive	Amount Available
Base Incentive for All-Electric Home	\$2,500
Level II EV Charger	\$400
Total 2025 All-Electric Incentive per Home	Max \$2,900

Table 2 – ADU* and Multifamily, All-Electric Units

2023 Incentives	Amount Available
Base Incentive for All-Electric Unit – requires heat pump water and space heating	\$1,250
Induction Cooktop Bonus	\$500
SMART Thermostat Bonus	\$50
Total All-Electric Incentive per Home	\$1,800
2024-2025 Incentives	Amount Available
Base Incentive for All-Electric Unit – – requires heat pump water and space heating, induction cooktop/stove, and eligible smart thermostat	\$1,500

*Accessory Dwelling Unit

A 25% bonus is also available for affordable housing developments

Electric Vehicle Supply Equipment (EVSE)

Bonus – Single Family Homes

The EVSE \$400 bonus incentive offered for the installation of a qualified hard-wired Level 2 charger in single family all-electric developments. To qualify the Builder must install a qualified Level 2 charger in every home of the all-electric development. The most up-to-date equipment requirements can be found at smud.org/en/Going-Green/Electric-Vehicles/Residential, with the addition of a hard-wired specification. The requirements include:

1. Equipment must be new and installed for the first time, hardwired installed on a wall or pedestal mounting.
2. Charging Current: Supply an output current up to 32 amps maximum (7.7 kW) served by a maximum 40-amp breaker.
3. Units with adjustable power output are eligible as long as maximum kW output can be safely served by a 40- amp circuit breaker
4. Equipment must be new and installed for the first time, either hardwired installed on a wall or pedestal mounting or plug-in unit, at the corresponding eligible SMUD service address.
5. Vehicle Connector: Utilize an SAE J1772 compliant charging connector
6. Safety Certifications: UL or equivalent certified by Nationally Recognized Testing Laboratory (NRTL)
7. EPA Certification: ENERGY STAR® Certified
8. Warranty: Minimum 3-year
9. Limit – 1 (one) charger per home



Building Electrification – High-Rise Mixed-Use Example

No Cost Design Assistance provided: Central HPWH solution

Proven technology

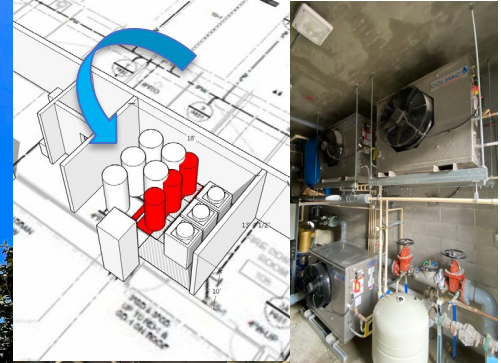
- These photos are from D & S Development's 17 Central 111-unit all-electric Multifamily in mid-town Sacramento
- More projects on the way

Benefits of the design

- Uses 1/3 the energy as central gas system
- Repurposes waste heat
- Protects from volatility of gas prices
- Maximizes use of renewable energy
- In alignment with future direction of energy codes and policies
- City of Sacramento requires all-electric construction starting
 - 2023 for residential, 3-stories and less
 - 2026 for all building types

Excellent example of central heat pump water heater design

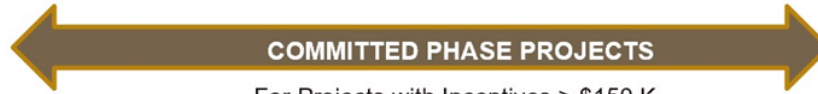
- Does not use a swing tank or electric resistance
- SMUD as a design partner



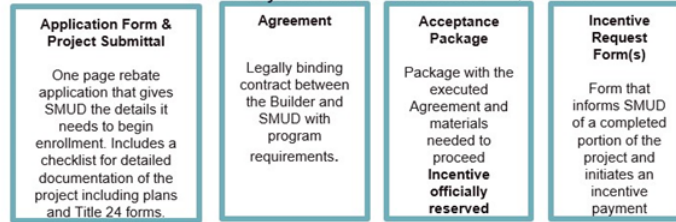
Path to Completion

Pre-Application

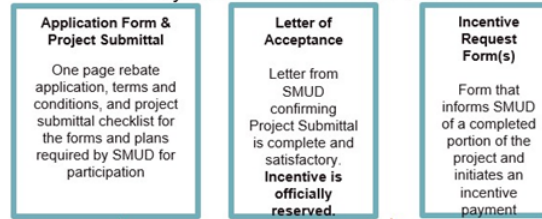
- Multiple meetings with decision making leadership, management and design staff.
- Unit count and completion schedules have been discussed in detail
- Decision to participate made in principle. Applications, Program Manual and Draft agreements have been sent for completion.



For Projects with Incentives > \$150 K



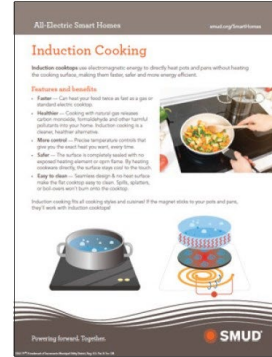
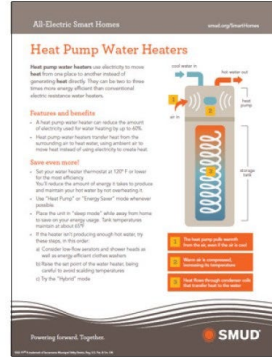
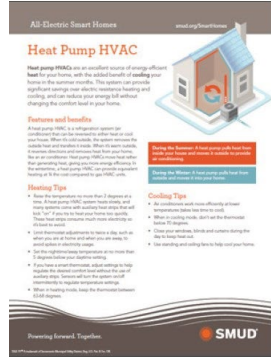
For Projects with Incentives < \$150 K



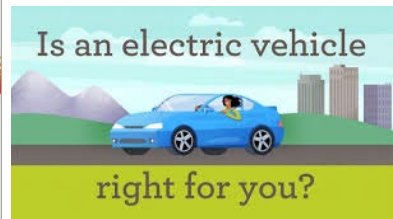
Builder Support & Homeowner Experience

- Homeowner Informational flyers available
- Opportunity to link development websites on Smarthomes page at SMUD.org
- Homeowner Welcome Kit Available on Request

Model home handouts



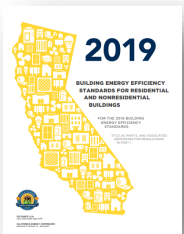
SMUD Videos



Construction banners



Complimentary Program: SMUD's Neighborhood SolarShares®



As of January 1, 2020, all building permits for new homes in California must include solar power

10-115(a) A community shared solar system, other community shared renewable system, community shared battery storage system, or combination of the aforementioned systems (hereinafter referred to as a community shared solar or battery storage system) may be approved by the Commission as **a compliance option to partially or totally meet the onsite solar electric generation system and/or battery storage system that is otherwise required by Section 150.1(b)1.**

•**2022 Code:** All SF, MF-LR, **MF-HR, and mixed-use multifamily** buildings shall have a newly installed photovoltaic (PV) system or newly installed PV modules meeting the minimum qualifications as specified in Joint Appendix JA 11

○**SF exception:** Prescriptive requirements for PV systems do not apply if the minimum system size is less than 1.8kW (ex. ADUs)

Builders in SMUD territory have a **zero-cost compliance option** for new homes and low-rise multifamily buildings under the 2019 Code & 2022 Editions of Title 24

1 On-site solar



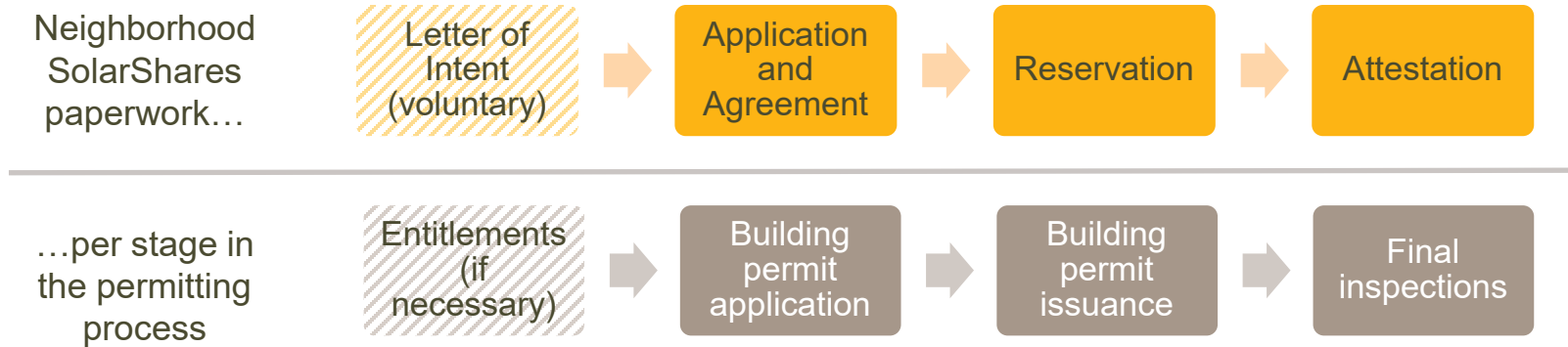
2 SMUD Neighborhood SolarShares



Local, utility-scale solar installation



Neighborhood SolarShares Application process



Neighborhood SolarShares benefits



Builder, developer & customer choice



Potentially lower cost of home construction – zero cost enrollment option available.



No maintenance, monitoring and repair costs for customers & avoided decreased generation from rooftop solar systems that deteriorate over time



Rain or shine, customers receive consistent, reliable solar energy and reliable bill savings for 20 years



Allows for more or taller trees to sequester carbon and provide shade, which can result in less energy use



No upfront costs and no credit arrangements

Questions

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www.smud.org/en/Going-Green/Smart-Homes

www.smud.org/en/Business-Solutions-and-Rebates/Neighborhood-SolarShares-for-developers