

**DOCKETED**

<b>Docket Number:</b>	21-IEPR-06
<b>Project Title:</b>	Building Decarbonization and Energy Efficiency
<b>TN #:</b>	238790
<b>Document Title:</b>	Presentation - Accelerating Electrification of CA's Multifamily Buildings
<b>Description:</b>	S2.3D Ben Cooper, Stop Waste
<b>Filer:</b>	Raquel Kravitz
<b>Organization:</b>	StopWaste
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	7/9/2021 4:58:12 PM
<b>Docketed Date:</b>	7/9/2021



## Accelerating Electrification of CA's Multifamily Buildings

CEC IEPR Decarbonization Workshop

July 12, 2021

# StopWaste Residential Decarb Work

- **CEC Local Government Challenge Grant<sup>1</sup>**
  - Multifamily Electrification Readiness Report
  - EnergyPro Lite (Low-Cost Assessment Tool)
  - Multifamily Benchmarking Report
  - Rental Housing Potential Study
- **Whitepaper: “Local Government Levers for Energy Policy in the Existing Single-Family Residential Sector”<sup>2</sup>**
- **Bay Area Multifamily Building Enhancement Program (BAMBE)**



1. <https://www.stopwaste.org/accelerating-multifamily-building-upgrades>

2. [https://www.bayrencodes.org/wp-content/uploads/2020/12/EE-and-Electrification-White-Paper\\_FINAL\\_12.28.2020.pdf](https://www.bayrencodes.org/wp-content/uploads/2020/12/EE-and-Electrification-White-Paper_FINAL_12.28.2020.pdf)

## BAMBE/BayREN MF Program

Program Path	Completed Projects	Total Units	Rebate Amount
Traditional (Whole-building EE)	562	40,832	\$29,572,846 <i>(\$52,620 project, \$724/unit)</i>
Clean Heating Pathway (CHP, includes BAAQMD adder funds)	5 <i>(thru end of 2020, 19 currently in TA)</i>	351 <i>(2,116 in TA)</i>	\$303,350 <i>(\$60,670/project, \$864/unit, incl. \$40.1k in BAAQMD funds)</i>

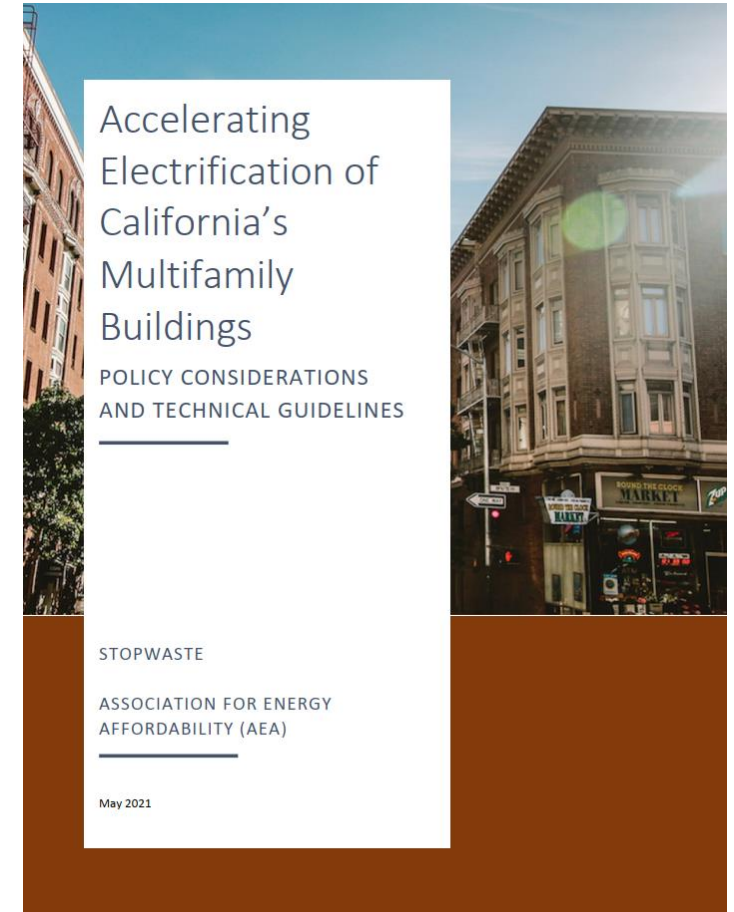
## Recommendations to Scale Electrification Programs

---

- Attractive incentives (kickers/adders for electrification)
- Robust technical assistance (TA)
- Increase education – owners, contractors, building departments
- Standardize and streamline permitting
- Bring back PV incentives for market-rate MF properties
- Emphasize health and safety/comfort advantages

# MF Electrification Report

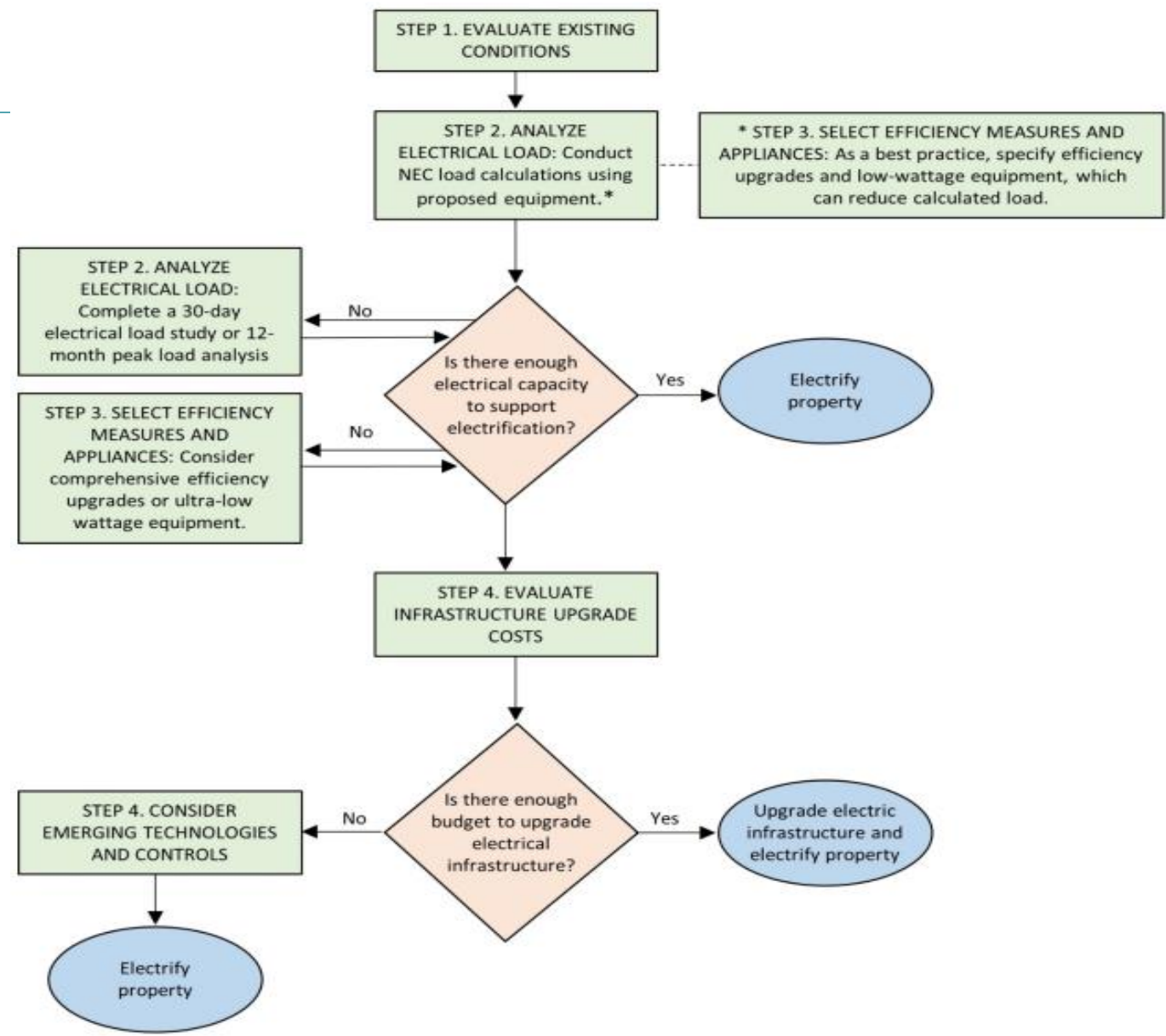
- **Recommendations for Program Administrators and Gov't Agencies**
  1. Incentivize electrical infrastructure upgrades
  2. Offset capacity increases with EE gains
  3. Take into account non-energy benefits
  4. Continue to address improvement of in-unit spaces
  5. Coordinate incentive offerings across multitude of funding sources



# MF Electrification Report

## • Recommendations for Program Implementers

- Functional technical guidelines, for implementers
- 80/20 rule
- 4-step process – Decision Tree



## Evaluate Upgrade Cost and Consider Emerging Alternatives (Step 4)

**Table 10. Estimated Costs for Electrical Infrastructure Upgrades**

<b>Electrical Infrastructure Upgrades</b>	<b>Cost</b>
Add circuits for a new electric appliance	\$500–\$2,000
Upgrade subpanels	\$1,000–\$7,000
Replace disconnects at meter bank	\$1,000–\$3,000
Upsize feeder cable	\$1,000–\$10,000
Convert from single to three phase	\$10,000–\$100,000 (depends on building size)

**Table 11. Estimated Costs for Utility Service Upgrades**

<b>Utility Service Upgrades</b>	<b>Cost</b>
Service line disconnect	\$500–\$5,000
Overhead service connection	\$3,000–\$10,000
Underground service connection	\$10,000–\$50,000
Pole-mount transformer	\$3,000–\$5,000
Pad-mount transformer	\$10,000–\$30,000
Subsurface transformer	\$40,000–\$80,000



# Flagged Electrical Infrastructure

## Appendix C: Flagged Electrical Infrastructure

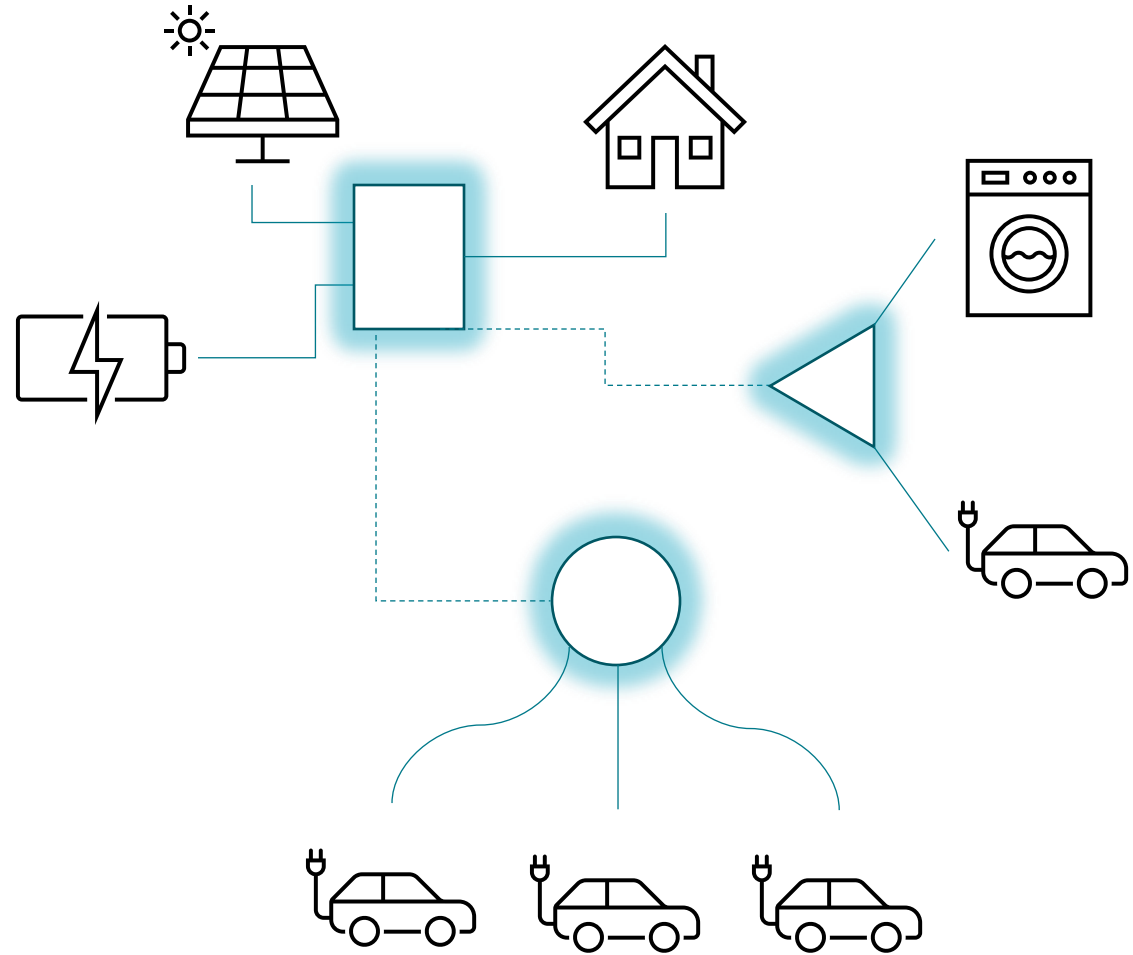
In the Data Collection Template (Figure 7), electrical infrastructure conditions that may increase a project's complexity are flagged with an asterisk. This table provides more information about those conditions and the relative ease or difficulty they present for electrification.

**Key to electrification complexity:** ○ Relatively easy    ● Standard complexity    ● Difficult

Flagged Electrical Infrastructure	Description	Action
<b>APARTMENT UNITS, COMMON SPACES</b>		
Brick or lath and plaster wall assemblies and ceiling assemblies with no cavities	Wall and ceiling assemblies that are solid or that have a cavity but are difficult to open and repair (such as lath and plaster or walls and ceilings with decorative finishes) make it difficult to conceal new circuits added during electrification.	<ul style="list-style-type: none"> <li>○ Wall and ceiling assemblies with inaccessible cavities require new circuits to be surface mounted or run through attics and crawlspaces. This makes adding new circuits easier but less aesthetically pleasing.</li> <li>● Walls and ceilings with cavities give the option of surface mounting, attic or crawlspace runs or through wall or ceiling cavities.</li> </ul>

## Emerging Tech Alternatives

- Smart Panels
- Smart Splitters
- EV dynamic load management
- **Dialogue with local code enforcement**
  - Appendix A Product Guides incl. emerging tech



# Equity and Workforce Development

---

- Electrification ≠ utility bill reduction, need more research
- Energy burden in CA<sup>1</sup>
  - 2% energy burden across all Californians
  - 60-80% AMI = 3%
  - 30-60% AMI = 4%
  - **0-30% = 9% (over 4x the State average)**
- Incentivize contractors to participate in equitable workforce development
  - e.g. MCE/AEA Workforce, Education, & Training Program (WET)<sup>2</sup>
- Tap Governor's \$1.1b Jobs Package<sup>3</sup>

1. <https://www.energy.gov/eere/slsc/maps/lead-tool> - Department of Energy Low-Income Energy Affordability Data (LEAD) Tool

2. <https://www.mcecleanenergy.org/contractors/#WET>

3. <http://www.ebudget.ca.gov/2021-22/pdf/Revised/BudgetSummary/LaborandWorkforceDevelopment.pdf> - From revised May 2021 Budget Proposal

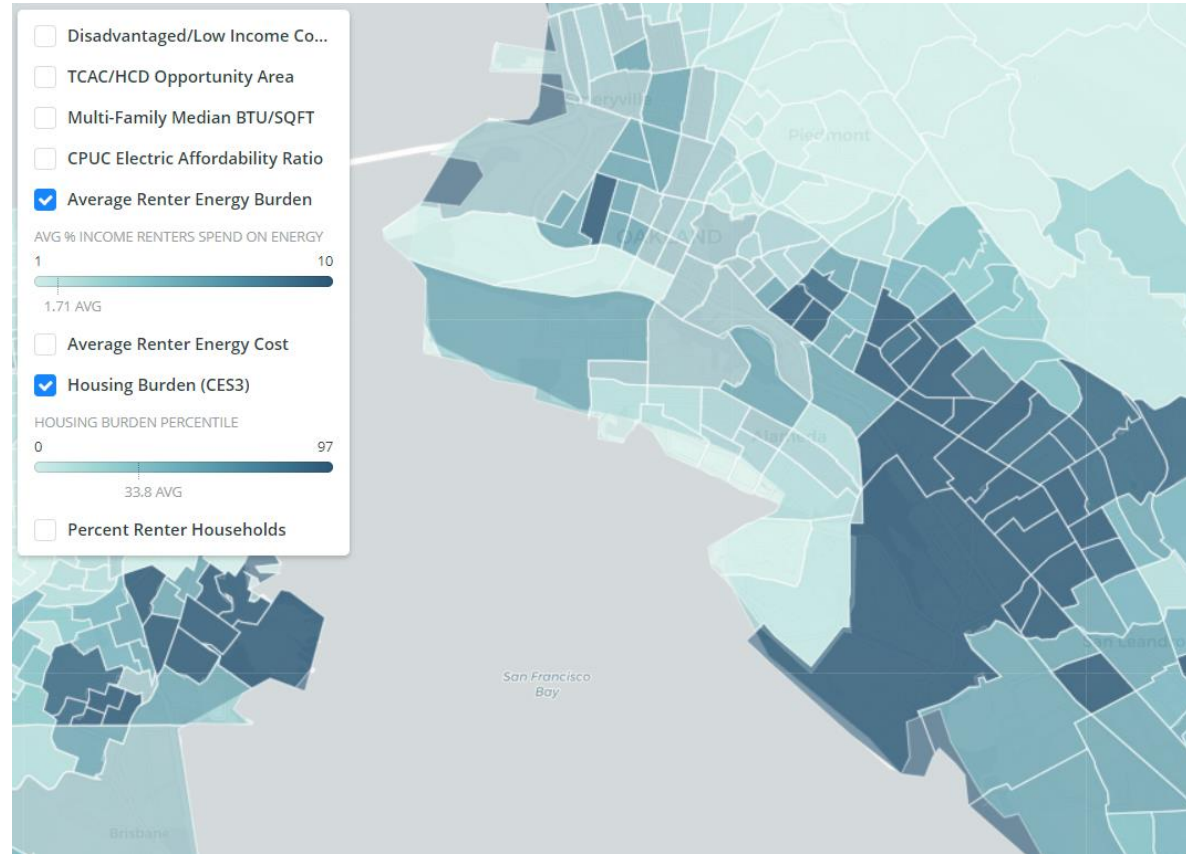
# Data and Analytical Tools

## User Manual

### Energy Pro Lite Version 4.1

Developed to model existing multifamily buildings in California

January 2021



NOAH Identification Pilots



# Thank you!

---

Ben Cooper

[bcooper@stopwaste.org](mailto:bcooper@stopwaste.org)

510-891-6511

- Multifamily Electrification Report available [here](#)<sup>1</sup>
- “Accelerating Multifamily Building Upgrades” CEC grant deliverables [here](#)<sup>2</sup>

1. <https://www.stopwaste.org/accelerating-electrification-of-california%E2%80%99s-multifamily-buildings>

2. <https://www.stopwaste.org/accelerating-multifamily-building-upgrades>