



BUILD (SB 1477) Public Workshop

Draft Guidelines

December 6, 2021





Agenda

- Welcome
- Program Overview
- Eligibility Requirements
- Technical Assistance & New Adopters
- Incentive Structure
- Program Participation
- Evaluation, Measurement & Verification
- Public Comment
- Next Steps





Welcome

Commissioner J. Andrew McAllister, Ph.D.





Virtual Housekeeping

- Webinar conducted remotely via Zoom and is being recorded
- 3 ways to comment
 - Use the "raise hand" feature in Zoom
 - Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
 - Type your question in the Q&A window
 - Limit comment to 3 minutes per commenter or organization per topic
- Written comments due **December 15, 2021**
 - Submit through the [e-commenting systems \(20-DECARB-01\)](https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-DECARB-01):
<https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-DECARB-01>
 - Subscribe to the [BUILD List Serve](https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program): <https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program>

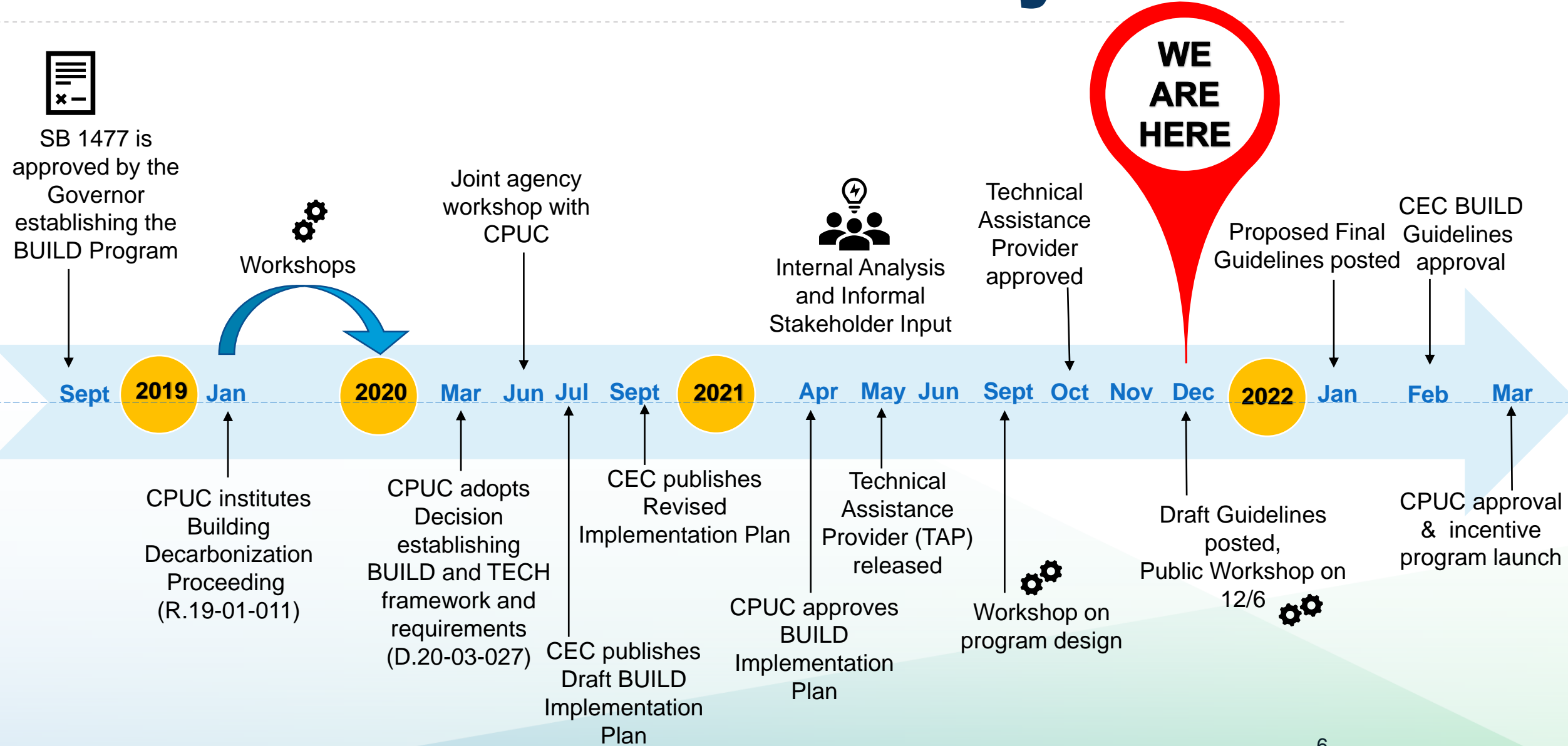


Program Overview



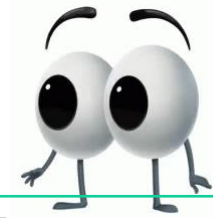


BUILD's Path to Today





BUILD Program: “At A Glance”



Goal	Deploy near-zero emission building technologies to reduce GHG emission -- while ensuring no negative bill impact for low-income occupants.
Eligibility	<ul style="list-style-type: none">• All-electric new construction• Located in gas IOU territory
Budget	\$80 million
LI/DAC Component	<ul style="list-style-type: none">• ≥ \$60 million for new low-income residential housing incentive• Technical assistance• Education and Outreach
Eligibility	<ul style="list-style-type: none">• Multifamily:<ul style="list-style-type: none">• At least 2 deed-restricted units AND• In DAC/LI community OR 80% of units are 60% or less AMI• Individual low-income residence (<i>Public Utilities Code §2852(a)(3)(C)</i>)



BUILD Budget

Budget Item	Amount
Program Costs: Incentives for Low-Income Housing Developments	\$60 Million (no less than)
Program Costs Other	\$10 Million
<ul style="list-style-type: none"> • Technical assistance Provider - up \$8 Million over 6 years • New Adopter Award –up to \$1 Million 	
Administrative Costs	\$8 Million (no more than)
Joint Evaluation Cost Share	\$2 Million (no more than)
Total	\$80 million

Incentives must be proportional to each gas corporation's contribution:




Gas Territory	Percentages
SCG	49.26%
PG&E	42.34%
SDG&E	6.77%
SWG	1.63%



Eligibility Requirements



Eligibility

Applicant Eligibility	Project Eligibility	Projects may include...
<p>Building owners or developers of low-income housing</p> <ul style="list-style-type: none">• 5 years experience; and• At least one completed project 	<ul style="list-style-type: none">• Low-income residential housing (single family and multifamily)• All electric and have no hookups to the gas distribution grid• Demonstrate Modeled Resident Utility Cost savings 	<ul style="list-style-type: none">• New residential buildings• Structural renovation ($\geq 50\%$ of exterior walls replaced)• Repurposed buildings• Projects in tribal areas 



Low-Income Residential Housing

Multifamily deed-restricted low-income residential rental building (2+ units)			Residential (condo or single-family)
Type 1 Disadvantaged community	Type 2 Low-Income community	Type 3 80% of the households with income at or below 60% AMI	Type 4 <ul style="list-style-type: none">- Sold to low-income buyers at an affordable cost- Resale restriction or equity sharing agreement
Flexibility in Affordability Limits Income limits and affordable rents defined by PUC 2852 (a)(3)(A) to be consistent with affordable financing sources.			



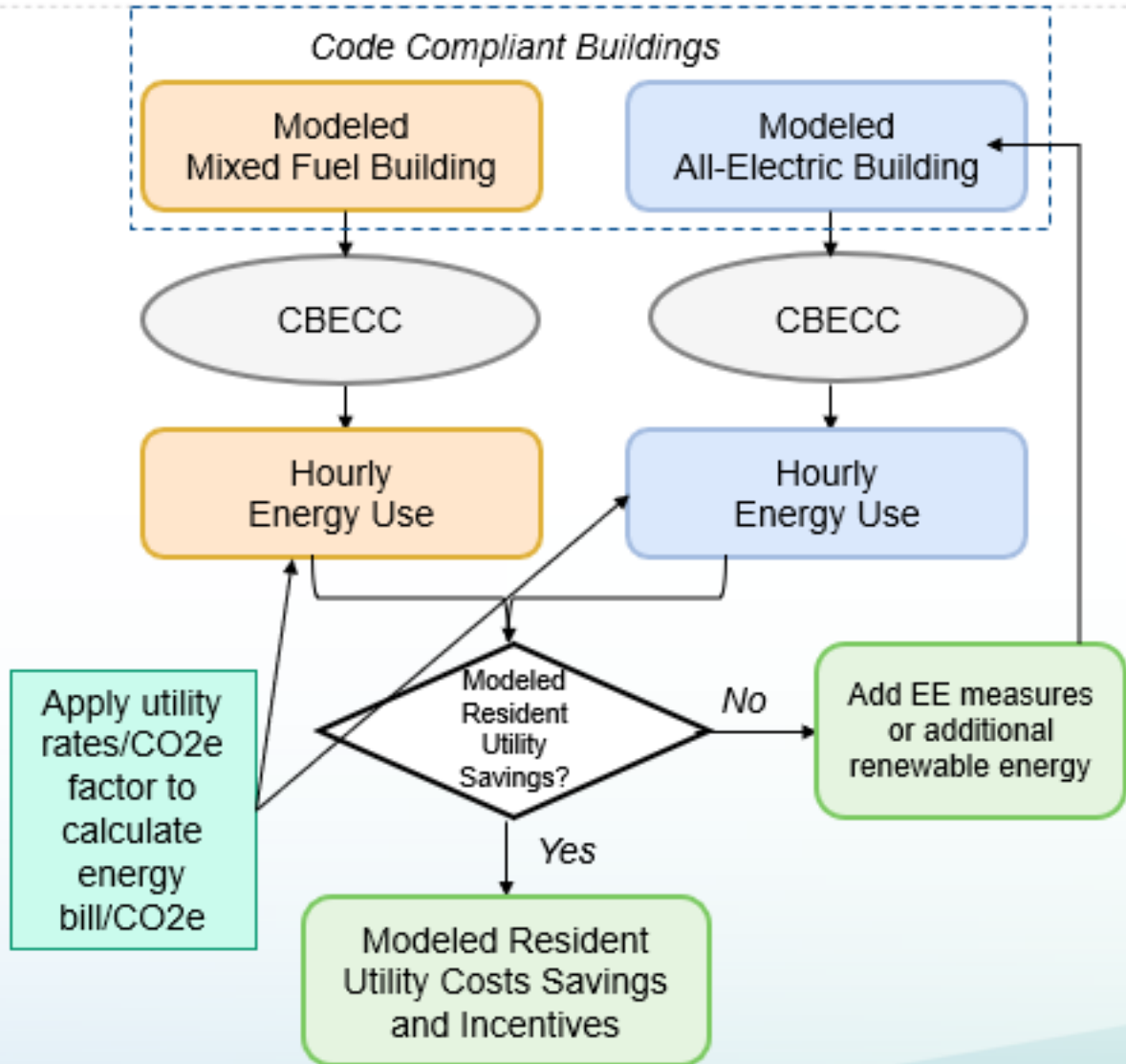
Statutory Requirement: Resident Utility Cost Savings

Ensure that new low-income residential housing projects receiving incentives through the BUILD Program **do not result in higher utility bills** for building occupants (*Public Utilities Code §921.1(c) and (d)(3)*)

- To implement this requirement, BUILD requires each project to demonstrate through a modeling methodology, that the project design provides at least 5% of bill savings compared to a mixed fuel code compliant building design



Methodology to Calculate Modeled Resident Utility Cost Savings



Modeled Resident Utility Costs

- Low income or CARE rates
- Used default low-income Time of Use (TOU) rates when applicable
- Requires savings year one
- Requires utility cost savings (at least 5%) and not just bill neutrality

Calculation will vary by building design, utility territory and rates



Meeting the Modeled Resident Utility Cost Savings Requirement

- To ensure this project requirement is met, Applicants will:
 - consider a combination of efficiency measures and PV in their design, and
 - if PV is used to meet the requirement, the calculated solar benefits must be assigned to the residents





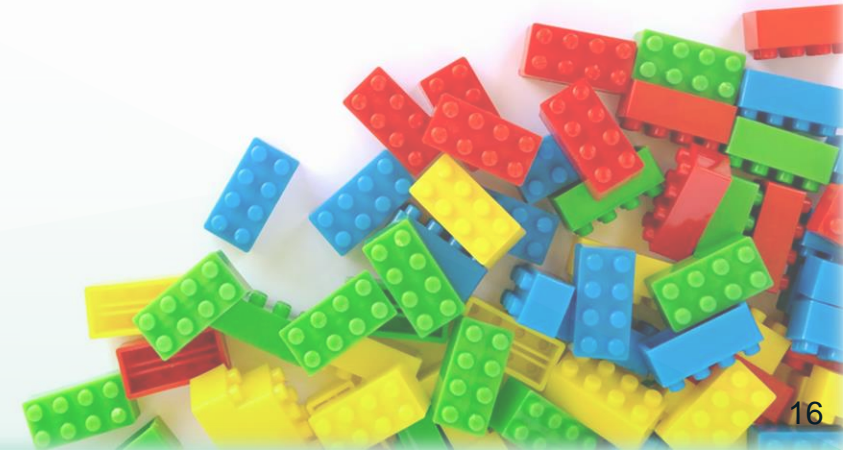
Eligible Costs

- Eligible Applicants limited to \$3 million total BUILD incentives
- Eligible Costs: Reimbursement for costs associated with the development and construction of all-electric low-income housing, including:
 - design
 - associated third-party fees (e.g., architecture, engineering, electrician, energy consultants)
 - local permitting,
 - gas-disconnection and safety measures (if applicable),
 - construction, alteration, demolition, installation,
 - materials, appliances, equipment, technologies, and
 - labor costs



BUILD, Public Works Requirement & Green Jobs

Recipients – of technical assistance and incentives – are required to comply with public work requirements, including prevailing wage, pursuant to Labor Code Section 1720 et seq.





Q's & Comments: Eligibility Requirements



3 ways:

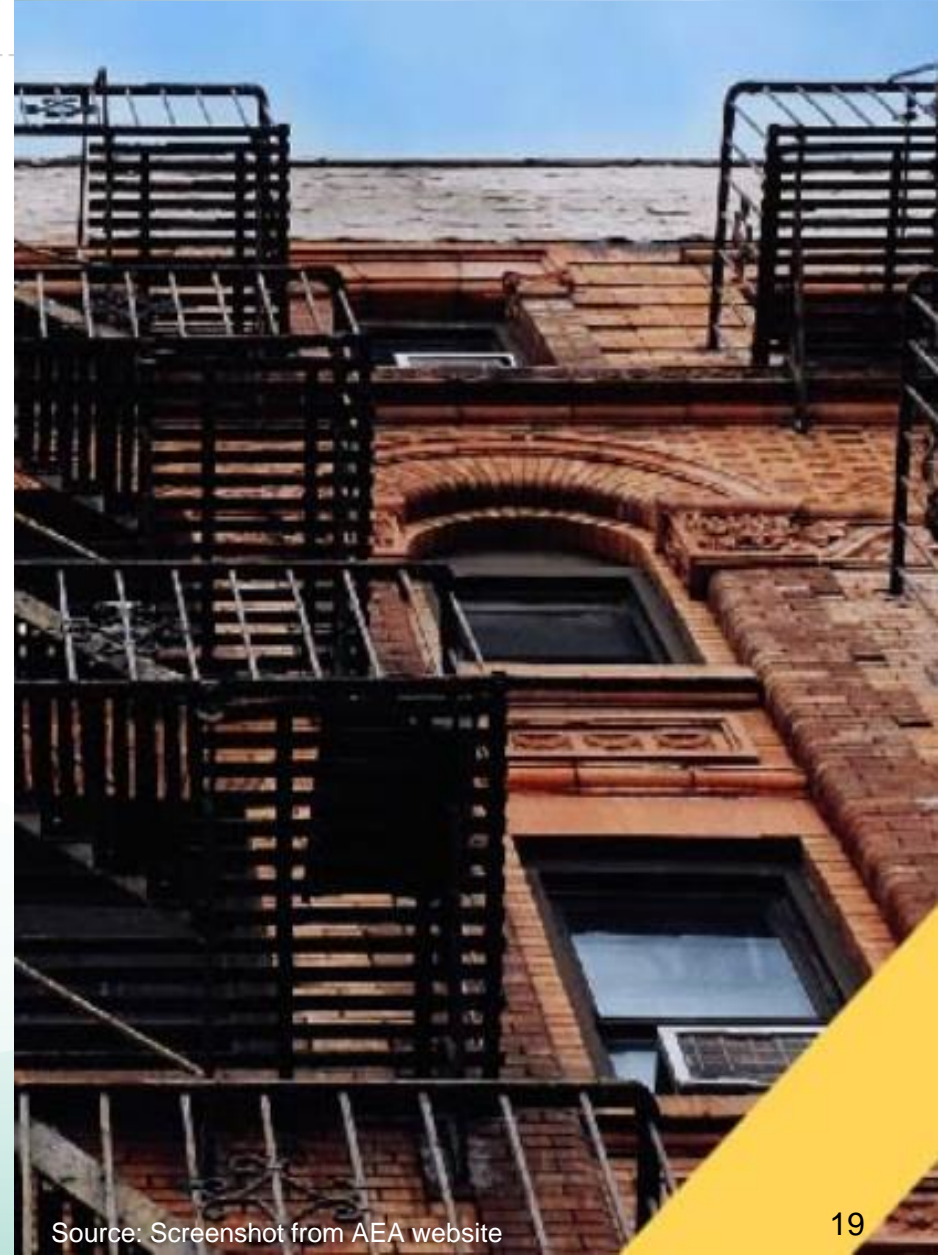
- Use the "raise hand" feature in Zoom
- Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
- Type your question in the Q&A window



Technical Assistance & New Adopters

Technical Assistance

- Association for Energy Affordability (AEA)
 - Awarded Contract September 8, 2021
- Launch of Technical Assistance
 - Initial activities, testing and development Q4, 2021
 - Application process will be outlined in Technical Assistance Manual, under development
- Provide developers unlimited hours of assistance for first two projects
 - Limit next two projects to 50 hours



Technical Assistance



- The BUILD TA team is **here to help** your new affordable housing development go all-electric, accelerating market transformation.
- Experts in funding, design, construction, and operation of all-electric housing ready to assist with any issue you are facing.



New Adopter Design Award

\$1 Million in funding available for New Adopter Design Awards, available on a first-come first-serve basis



- Eligible BUILD applicant, that:
 - has never previously built an all-electric building, and
 - is developing a multifamily project of at least 10 units
- Up to \$25,000 to reimburse direct design costs (e.g., architectural or engineering costs)
- Requested at the time of submitting an incentive reservation
- Requires:
 - receiving a reservation
 - submission of paid invoices demonstrating direct design costs

Q's & Comments: Technical Assistance & New Adopter Design Award

3 ways:

- Use the "raise hand" feature in Zoom
- Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
- Type your question in the Q&A window



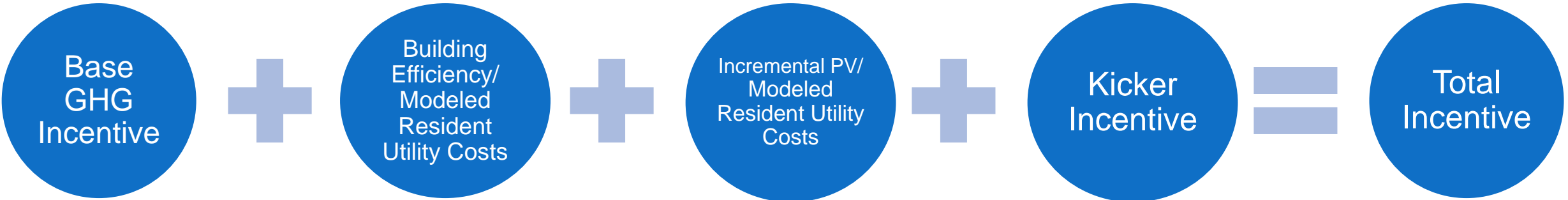


Incentive Structure





Incentive Types



- Based on GHG emissions
- *\$150/MT CO₂e*

- Based on % above code
- Up to \$1,000 per bedroom

- Based on a flat rate for PV above code
- *\$1.3/watt (low rise) or \$3/watt (mid/high rise)*

- Incentive for additional GHG reduction technologies



Kicker Incentives



Grid Flexibility

- \$50 / smart thermostat
- \$100 / HPWH CTA-2045 wi-fi module



Lower-GWP Refrigerants (GWP < 750)

- TBD*
- \$1,500/lb refrigerant



Induction Cooktop

- \$300 / induction cooktop unit



Heat Pump Clothes Dryer

- \$150 / heat pump clothes dryer



On-Site Energy Storage

- \$250 / kWh



EV Charger

- \$200/charger (single family)
- \$300/charger (multi)

Smart EV Charger

- \$500/charger (single family)
- \$600/charger (multi)

*The incentive amount for heating and cooling technologies using refrigerants of GWP 150-750 is in anticipation of these products becoming available and a signal to manufacturers and building developers that BUILD will offer incentives for these technologies.



Sample Hypothetical Project: Mateo Valley Garden

Low-Rise: 2-story, 48 units, 72 bedrooms

Climate Zone 13

PG&E

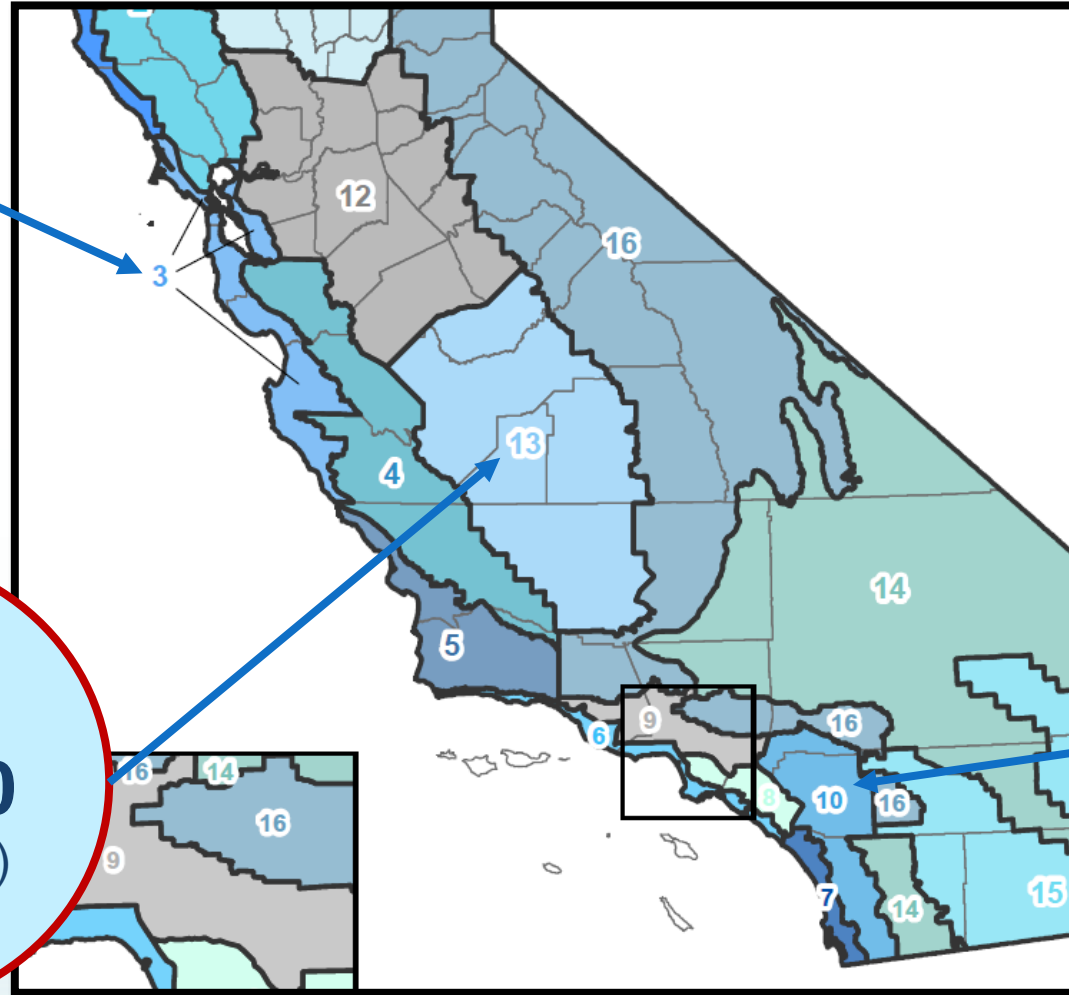
Incentive Type	Incentive Level	Project Incentives
Base Incentive (GHG-based)	\$150/MT Avoided GHG	\$146,070
Building Efficiency Incentive	\$830/bedroom	\$59,760
Incremental PV Incentive	\$1.30/W	<i>none</i>
Kicker Incentives - Low-GWP HPWH (18.7 lb CO ₂)	\$1,500/lb refrigerant	\$28,050
TOTAL		\$233,880 (\$3,248 per bdrm)

Split HP (HSPF = 9 SEER =15 EER =12.44), Central Sanden HPWH, Title 24 Prescriptive Envelope

Sample Hypothetical Project: Mateo Valley Garden

CZ 3:
\$267,360
(\$3,713/bdrm)

CZ 13:
\$233,880
(\$3,248/bdrm)



CZ 10:
\$229,038
(\$3,181/bdrm)



Q's & Comments: Incentive Structure



3 ways:

- Use the "raise hand" feature in Zoom
- Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
- Type your question in the Q&A window



Participation Process





Three Step Participation Process

STEP
1

Incentive Reservation

(Valid for 18 months)

Submit

- Reservation Application (project timeline, utilities, units and income limits, developer experience, project funding source)
- Calculation of Incentive Reservation (BUILD Calculator or Custom Energy Model)
- Preliminary Title 24 Certificates of Compliance (CF1R / PRF01)
- Low-income eligibility

Modeled Estimated Incentive
Reservation

STEP
2

Construction Reservation

(Construction completed within 36 months)

Submit

- Updated project information (# of units, bedrooms, and income limits)
- Proof of Financing
- Updated Title 24 Certificate CF1R / PRF01 and energy model
- Building Permit

Energy Models Reviewed & Incentive
Amount Updated

STEP
3

Project Completion & Remaining Funding

Submit

- Certificate of Occupancy
- Recorded Deed Restriction
- Permission to Operate PV
- Completed CF2R & CF3R

Final Building Models Reviewed and
Incentive Amount Checked, Final
Payment to Applicant



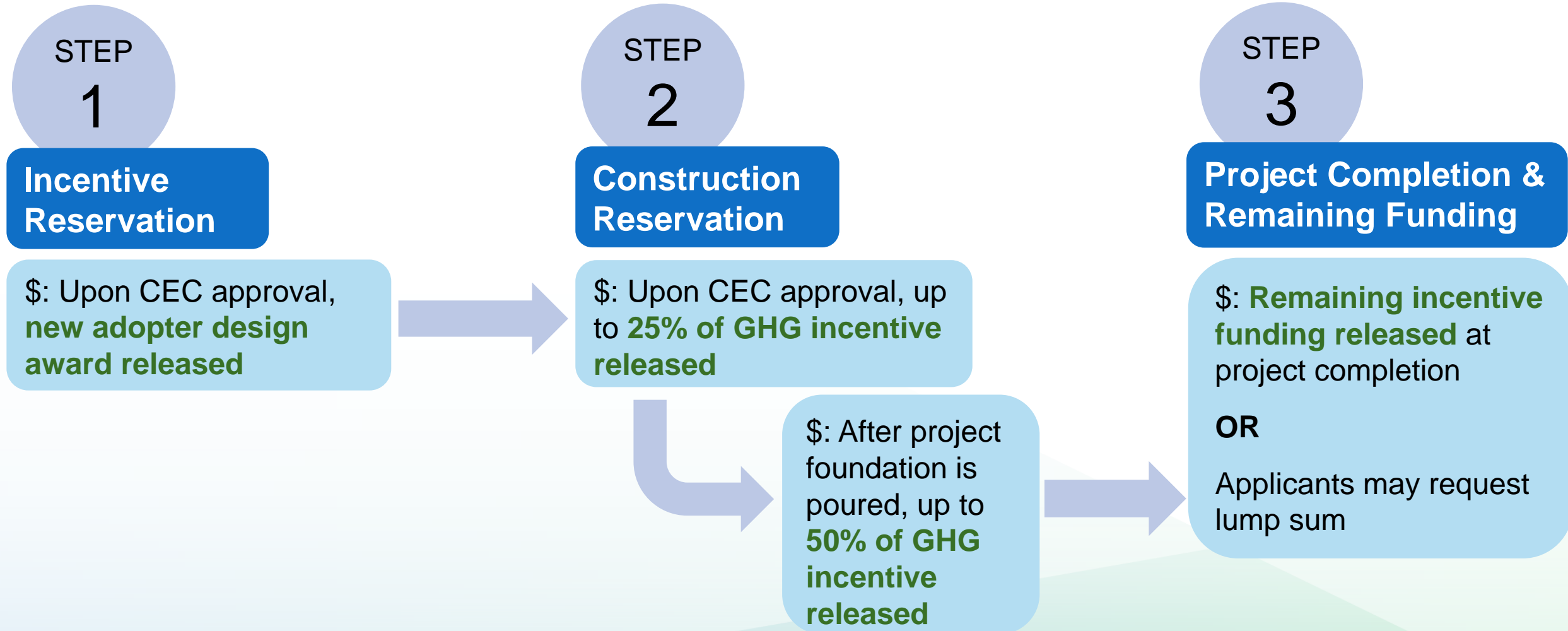
Program Participation, Cont.

- **Step 1: Incentive Reservations.** Applicants can request:
 - Transfer of Incentive Reservation to other projects in portfolio
 - If funds are available
 - If new project meets all program requirements
 - Extension request of 6 months may be approved by staff
- **Step 2: Construction Reservation.** Applicants can request:
 - Extension requests of 12 months may be approved by staff
 - Additional extension requests may be considered by the Commission





Progress Payments



Approved payments may be released to third-parties, as identified by the applicant.



Sample Hypothetical Project: Mateo Valley Garden

Low-Rise: 2-story, 48 units, 72 bedrooms
 Climate Zone 13
 PG&E

\$36,518 (25%)
 at Construction
 Reservation

\$73,035 (50%)
 at poured
 foundation

Incentive Type	Incentive Level	Project Incentives
Base Incentive (GHG-based)	\$150/MT Avoided GHG	\$146,070
Building Efficiency Incentive	\$830/bedroom	\$59,760
Incremental PV Incentive	\$1.30/W	<i>none</i>
Kicker Incentives - Low-GWP HPWH (18.7 lb CO ₂)	\$1,500/lb refrigerant	\$28,050
TOTAL		\$233,880 (\$3,248 per bdrnm)

After Project
 Completion,
\$124,327

Split HP (HSPF = 9 SEER =15 EER =12.44), Central Sanden HPWH, Title 24 Prescriptive Envelope

Calculation of Incentive Reservation

Applicants can use one of the following pathways to reserve BUILD incentive dollars:

BUILD Calculator

Custom Energy Model

Based on applicants' building design choices (e.g., type of HVAC, incremental PV), the calculator estimates the modeled GHG reduction, incentives values, and Modeled Resident Utility Costs.

Applicants provide specific building model – created with CEC approved compliance software -- and energy performance data to demonstrate Modeled Resident Utility Costs and Incentive Values



CEC Confirms Calculations

CEC, with support from the Technical Assistance Provider, will assist to simplify this process



Example: BUILD Calculator

Provided for Illustrative Purposes Only

BUILD Calculator																
Low Rise Residential Multi-Family																
<p>1. Select the climate zone, utilities, and proposed building features from the pull-down menus.</p> <p>2. The Calculation Tool will calculate the extra PV (PVx) needed to offset the energy equity gap.</p> <p>3. % Better than T24 is automatically determined from the pull-down selections. The selections must be greater than 0%</p> <p>4. The Total BUILD Incentive is calculated based on all the selections and calculations.</p> <p>The calculations and incentives are based on the building performance of predetermined outcomes using CBECC-Res 2019 v1.3 SP1 for the combinations selected. Prescriptive assumptions that are not selectable below have been used in the models that, if different from the applicant's building, will change the results and incentive amounts.</p>											<p>As Modeled Prior to Incremental PV</p> <p>Monthly Modeled Resident Utility Cost Difference = \$12.59</p> <p>Modeled Utility Cost Savings = -44%</p>					
											<p>As Modeled with Identified Incremental PV, if chosen</p> <p>Monthly Modeled Resident Utility Cost Difference = -\$1.42</p> <p>Modeled Utility Cost Savings = 5%</p>					
Select Climate Zone	Select Gas Utility	Select Electric Utility	Select Heat Pump Efficiency	Select AC Efficiency	Select Window U-Factor	Select Ext. Wall Foambd	Select DHW TIER	Select DHW Location	Select Battery Upgrade kWh	Incremental PV for Utility Cost Savings (per Bldg)	% Better Than T24	Avoided GHG / Yr	Avoided GHG / Yr Incentive x 30 yrs	Increm. PV Incentive	High Efficient Building Incentive	Total BUILD Incentive
CZ	Gas Utility	Elec Utility	HSPF	SEER	Window	Wall	DHW	DHW Loc.	Battery	+kW	%	(MT)	\$150/MT	\$1.30/W	\$1000/bd	\$
10	SCG	SCE	8.2	14	0.30	R-4	TIER 3	IN	0.00	4.51	5.1%	4.50	\$20,235	\$5,862	\$6,085	\$32,183
																<-- Entire Building
																\$2,682 <-- Per Bedroom

* Percent modeled utility cost savings must be greater than 5% to qualify

This tool is based on 2-story 8-Unit, 12-Bedroom Multi-Family 6,960 ft2 building

The calculator will assist applicants in identify the amount of PV required to be assigned to residents to meet the modeled resident utility costs savings requirement.



Q's & Comments: Program Participation



3 ways:

- Use the "raise hand" feature in Zoom
- Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
- Type your question in the Q&A window



Evaluation, Measurement and Verification (EM&V) Process



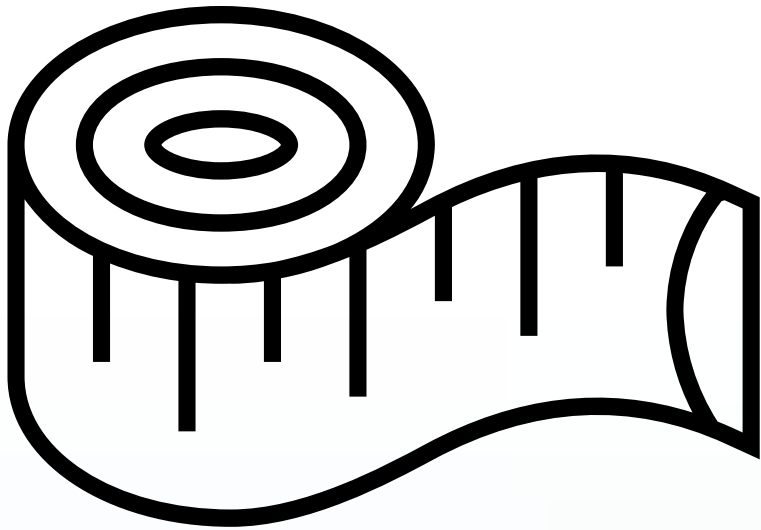
Program Evaluation

- SB 1477 requires that evaluation metrics, at a minimum, include:
 - the number of low emissions systems installed in each type of building,
 - projected utility bill savings,
 - the cost per metric ton of avoided GHG emissions.





Program Evaluation



- Data collected through the program (e.g. technical assistance activities and applications) and other CEC data collection efforts – including interval metered data – will be used in program evaluation
- BUILD Program and TECH Initiative have a single program evaluator, Opinion Dynamics



EM&V: Presentation of Proposal by CPUC & Opinion Dynamics

Introducing

- Abhilasha Wadhwa, California Public Utilities Commission, Energy Division
(abhilasha.wadhwa@cpuc.ca.gov)
- Ellen Steiner, Opinion Dynamics
(esteiner@opiniondynamics.com)



Q's & Comments: EM&V

3 ways:

- Use the "raise hand" feature in Zoom
- Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
- Type your question in the Q&A window





General Public Comments

- Limited to 3 minutes per comment
- To comment or ask questions:
 - By computer: use the "raise hand" feature in Zoom
 - Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
 - Type your comment in the Q&A window

3-MINUTE TIMER





Next Steps

Target Dates*	Milestone
December 6 th	Public Workshop
December 15 th	Public Comments Due
December – January	Staff Consideration of Comments
Mid-January	Post Final Guidelines for Consideration for Adoption by the CEC • written public comment period
February	CEC Consideration of Guideline Adoption at Business Meeting
February (following adoption)	Guidelines submitted to CPUC for Approval
March	Anticipated CPUC Approval
March	Program Launch, dependent on CPUC Approval

*Future dates are subject to change.

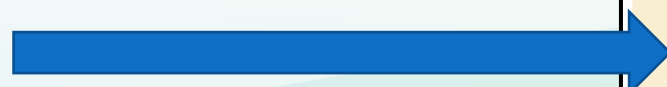


Don't forget.....

Submit written comments by
December 15, 2021.



Subscribe to the list server to
receive BUILD Program updates



RELATED LINKS

[Docket Log \(20-DECARB-01\)](#)

[Submit e-Comment \(20-DECARB-01\)](#)

SUBSCRIBE

Building Initiative for Low-Emissions
Development Program

First Name *

Last Name *

Email *



Thank You



Email & BUILD Webpage:
BUILD@energy.ca.gov

<https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program>



Appendix: Eligible Technologies





Low-Rise Residential

Energy End Use	Core Technologies	Minimum Requirements
Space Conditioning	Air-source split central heat pump ¹	HSPF ≥ 8.2
	Packaged terminal heat pump ²	COP ≥ 3.0
	Variable capacity heat pump ³	Per publication CEC-400-2019-012
Water Heating	Unitary heat pump water heater	NEEA Tier 3
	Central on-site heat pump water heater	UEF ≥ 3.75
	Drain water heat recovery	Unequal to shower, 43% CSA Rated Efficiency

1. Qualifying Air-Source Heat Pumps shall have ANSI/AHRI Standard 210/240 rating
2. Qualifying Packaged Terminal Heat Pumps shall have ANSI/AHRI Standard 310/380 ratings at 47F dry-bulb
3. Qualifying Variable Capacity Heat Pumps shall be per publication [CEC-400-2019-012](#)



Mid- and High-Rise Residential

Energy End Use	Core Technologies	Minimum Requirements
Space Conditioning	Air-source split central heat pump ¹	HSPF ≥ 8.2
	Variable refrigerant flow ²	HSPF ≥ 7.7, COP ≥ 3.3
	Variable capacity heat pump ³	HSPF ≥ 7.7, COP ≥ 3.3
Water Heating	Unitary heat pump water heater	NEEA Tier 3
	Central on-site heat pump water heater	UEF ≥ 3.75 CEC Certified ⁴
	Drain water heat recovery	Unequal to shower, 43% CSA Rated Efficiency

1. Qualifying Air-Source Heat Pumps shall have ANSI/AHRI Standard 210/240 rating
2. Qualifying Variable Refrigerant Flow systems shall have ANSI/AHRI Standard 1230 rating at 47F dry-bulb
3. Qualifying Variable Capacity Heat Pumps shall have ANSI/AHRI Standard 1230 rating at 47F dry-bulb
4. Qualifying central heat pump water heater shall be certified and on the CEC's [certification list](#).



Process for Evaluating New Technology

Must be available to be modeled within approved compliance software.

Energy Code Updates

- 3-year Energy Code update process
- New technologies are vetted
- Integrated into software with updates

OR

Compliance Option

- Present technology to CEC Energy Code staff
- At least 1-year performance data based on field studies
- Data vetted by CEC Energy Code staff