2027 EE Potential and Goals Study: Draft Work Plan Workshop

September 03, 2026

CPUC Leads:

Study lead: Hanna Navarro Goldberg

Study Co-Lead: Will Graswich

Contractor: Guidehouse, Inc.

California Public Utilities Commission

Conference Call Etiquette

- If you have a question or comment -
- We are actively monitoring the chat window; feel free to submit questions/comments via chat at any time.
- **Use the "raise hand" feature to request to be unmuted.**
- Once unmuted, please hold your question for the end of each section.
- Webinar is being recorded

CPUC EE Potential & Goals Study Team

- Study Lead: Hanna Navarro Goldberg
- Study Co-Lead: Will Graswich
- Supervisor: Leanne Hoadley

Background and Webinar Objectives

Today's Focus:

Present Draft Workplan for Stakeholder Feedback

Objectives

- Communicate 2027 P&G Study workplan
- Present 2027 Study timeline and Stakeholder engagement milestones
- Ensure PG Study priorities align with Stakeholder objectives
- Understand gaps and opportunities to reduce uncertainty

Stakeholder Asks

- Comment about the schedule
- Confirm CPUC needs and expectations align with your priorities
- Review the identified modifications to the 2027 study approach and scope
- Provide responses to our questions and proposed plans

Income-Qualified to be addressed at a separate time,
managed by CPUC lead Kapil Kulkarni (Kapil.Kulkarni@cpuc.ca.gov)

Stakeholder Engagement Opportunities

- Study-related comments are informal
  - Comments on today's presentation are due **Friday, Sept 18, 2026,** via e-mail to:
    - Hanna.NavarroGoldberg@cpuc.ca.gov
    - William.Graswich@cpuc.ca.gov
  - Next stakeholder engagement opportunity will likely be scenarios webinar in December
  - Stay informed: 2027 Potential and Goals Study

Estimated Schedule for this cycle

Activity	Estimated Timeline
Final Workplan	October 2026
Measure Characterization	November 2026
Scenarios	January 2027
Draft Report	April 2027
Proposed Decision	TBD
Decision on Goals Adoption for 2026 & Beyond	TBD

*Comments throughout **study development are informal** and submitted via email.

Comments in response to the **ruling and proposed decision are formal**, and should be submitted under Rulemaking R-25-040-10

Email informal comments to Hanna and Will:
hanna.navarrogoldberg@cpuc.ca.gov
william.graswich@cpuc.ca.gov

Primary Uses for the EE Potential and Goals Study

- Develops estimates of total system benefit, energy savings, and peak demand reduction potential in the service territories of California's major investor-owned utilities (IOUs)
- Forecast from **2028-2039**, reporting net market achievable Total System Benefit and energy (kWh and therm) impacts. Results have multiple uses:
  - Informs the CPUC goal setting process
  - Informs Portfolio Administrators' EE program portfolio planning, budget setting, and procurement efforts
  - Supports planning efforts of the CPUC, CEC, CAISO
  - Informs strategic contributions to Demand Forecast, IRP, SB350 targets
  - Develops estimates of energy efficiency and fuel substitution savings opportunities
- *The PG Study itself does not set goals; Guidehouse does not make recommendations to CPUC regarding goal setting.*

Guidehouse

SEPTEMBER 3, 2026

2027 Potential and Goals Study Work Plan

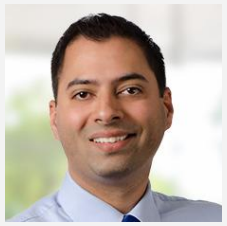
Neil Podkowsky
Associate Director, Project Manager

outwit complexity™

Guidehouse Team

Neil Podkowsky
Associate Director

Project Manager



Amul Sathe
Director

Project Director

Brian Chang
Managing Consultant

PG Study Lead

Yamini Arab
Managing Consultant

Modeling Lead and
QC Manager

Juwairia Beg
Consultant

Deputy Project
Manager

Agenda

1. 2027 PG Study: At-a-Glance

2. Detailed Study Approach
   I. Potential Study Overview
   II. Market and Measure Characterization
   III. Modeling Methodology
   IV. Post-PG Study Support

3. Recap & Questions for Stakeholders

Group E Contract Elements

Primary focus of today's webinar:

2027 Potential and Goals Core Study Work Plan (EE and FS Potential Forecast) - Core effort includes model development and producing scenario results.

Market and Measure Characterization; Technical, Economic, Achievable Potential; Fuel Substitution; Codes & Standards

Planned and potential activities for 2027 cycle beyond Core Potential and Goals Study:

Post Processing - Post process the EE and FS potential forecast to meet needs beyond the goal setting process (e.g., CEC IEPR)

Primary Research – Additional research (e.g. baseline and market studies) to support refinement of future planning and recommendations

Quantifying Equity and Market Support Goals (pending CPUC approval) **–** Research and analysis to quantify portfolio administrator (PA)-specific goals for Equity and Market Support portfolio

Guidehouse

2027 PG Study: At-a-Glance

Potential and Goals Study Overview

The 2027 Potential and Goals (PG) Study builds upon refinements and improvements of past study cycles to inform the goals and related policy questions that CPUC staff are considering.

- Stakeholder feedback provided during and in response to the 2025 PG Study informed the development of the Draft 2027 PG Study Workplan

Multiple activities make up the 2027 PG Study:

- Developing core forecasts to inform the IOU energy efficiency (EE) and fuel substitution (FS) goal setting process managed by the CPUC
- Providing forecasts in a format that can be useful for other state planning processes (e.g. the CEC's IEPR), portfolio administrators, and program implementers
- Supporting as needed other forecasting, planning, and policy related efforts at the CPUC

2027 Study: Major New Elements

Refine and improve on past study cycles to inform the goals and related CPUC staff policy questions

1. Gaps & Emerging Issues effort (currently underway): targeted analysis of portfolio claims, forecasts, filings, and CPUC and stakeholder engagement to inform 2027 Study priorities and approach
2. Updated FS & gas appliance policy assumptions: given current uncertainty in CARB Clean Space and Water Heater Standards and CPUC Viable Electric Alternatives (VEA) policy, revisit 2025 Study approach that included extensive future electric baseline characterizations for gas/FS measures
3. Measure package coordination: deeper integration with Group A team overseeing measure package updates to provide insight on incorporating as many DEER 2028 updates as possible; streamline low-impact measures
4. Achievable potential: earlier development and review of calibration parameters; update to include CCA/REN achievements in calibration targets

Planned Stakeholder Engagement

Q3 2026	Work Plan Webinar (today's meeting)
	Input on Proposed Measure List (via e-mail to Service List)
Q4 2026	Income Qualified Work Plan Webinar*
	Scenarios Webinar
Q2 2027	Draft Results Webinar
	Draft results formal comments

*2027 Income Qualified Potential Study timeline is still in development and will be conducted and presented separately

Guidehouse

2. Detailed PG Study Approach

Detailed PG Study Approach: Outline

I. Potential Study Overview
II. Market and Measure Characterization
III. Modeling Methodology
IV. Stakeholder Questions
V. Post-PG Study Support

I. Potential Study Overview

Potential Study Overview

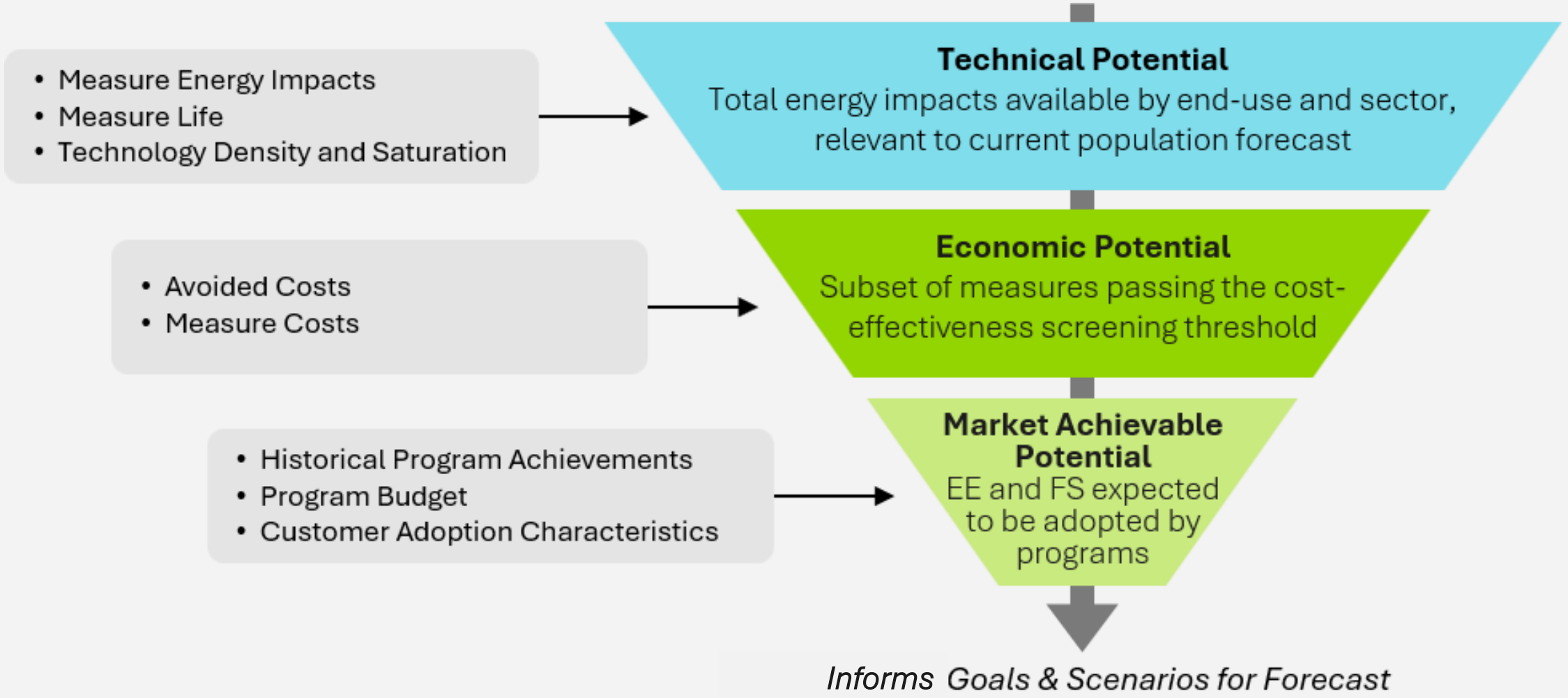
This section covers:

- What a potential study is and the major steps to conducting a study
- Planned approach for the 2027 Study
- Highlight areas of emphasis and changes versus prior Study

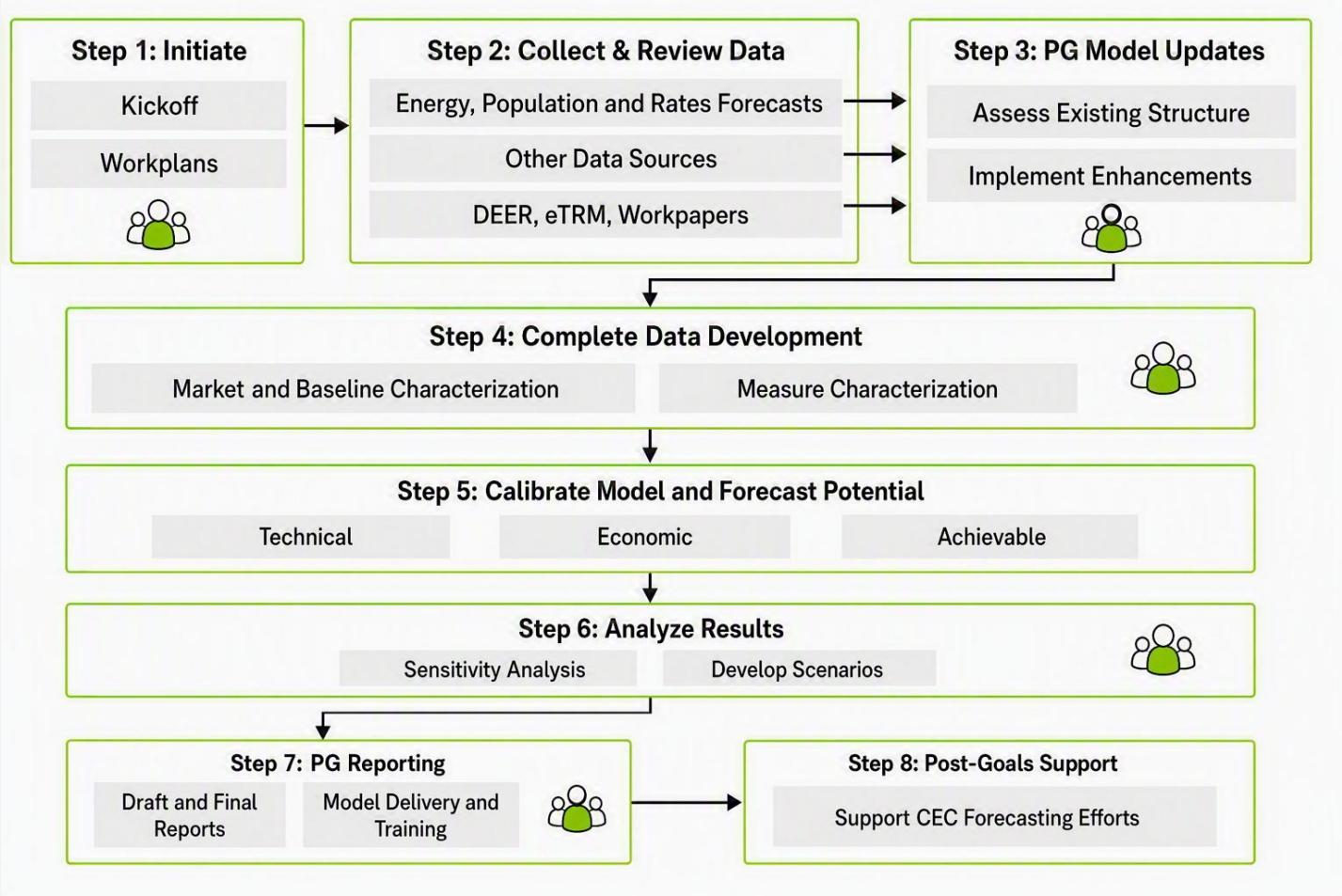
Please consider:

- Are the priorities and scope in line with your needs and expectations?
- Where else can or should stakeholders be involved in the process?
- Are there issues or 2027 PG Study elements that should be prioritized (or de-prioritized)?

What is a Potential Study?



2027 PG Study Process Overview



Planned Stakeholder Engagement

Assessment of Gaps & Emerging Issues

Emerging Issues Identification & Prioritization

- Describe emerging cross-cutting issues or policy drivers and identify potential changes to the PG Study framework in response to these issues
- Solicit and document CPUC staff and stakeholder input on the issues and prioritization
- Incorporate decisions on any changes to study framework into the Final Work Plan along with stakeholder feedback

Early Diagnostics for Calibration Analysis

- Assess recent TSB trends and key variances
- Analyze 2025 PG Study market potential vs 2025 claims and 2026-2031 filings, at PA, sector, measure type and end use level
- Leverage existing EE Portfolio dashboards and recent evaluation insights for streamlining data integration from CEDARS

Guidehouse

II. Market and Measure Characterization

Market and Measure Characterization

This section covers:

- Characterizing technologies that have the potential to save electricity and/or natural gas, or represent electrification of natural gas consuming equipment
- Market and measure data needed for the study

Notable changes for 2027 Study:

- Updated assumptions for FS baseline changes from future policy (CARB Clean Space and Water Heating Standards and CPUC Viable Electric Alternatives)
- Deeper integration with team overseeing ex ante measure package updates to provide insight on incorporating as many DEER 2028 updates as possible; streamline low-impact measures
- Removal of IRA tax credit assumptions

Market Data & Global Inputs

- Market data consists of non-measure-specific inputs to the model
- Key types of market data, and their sources, include the following:

Market Data Input	Source
Customer retail rates forecast ($/kWh, $/therm)	CEC – 2025 Integrated Energy Policy Report (IEPR) and associated California Energy Demand (CED) forecast CPUC Cost Effectiveness Tool
Energy sales forecasts (GWh, MW, and therm)	
Building Stocks (households, floor space, consumption)	
Avoided energy and capacity costs	CPUC Cost-Effectiveness Tool
Historic Program Accomplishments	CPUC CEDARS Database CPUC Low Income Oversight Board Monthly & Annual Reports IOU Business Plans
Non-Incentive Program Costs	
Inflation Rate	CPUC's IRP Model
Discount rate	Utility WACC (as used in the ACC)

Residential and Commercial Deemed Measures

Measure Characterization

Overall process remains consistent with previous studies, with increasing integration with DEER/eTRM data and ex ante measure packages.

ResCom Measure Characterization – General Approach

- **Measure List** Development and Prioritization
  - Leverage the vetted 2025 ResCom measure list as starting point
  - Review eTRM and consult with CPUC and stakeholders to determine additions/removals *[Proposed measure list will be delivered via email to stakeholders for review along with the Work Plan]*
  - Develop measure prioritization using previous study results, recent claims, and portfolio forecasts
- Measure Characterization
  - Update measure data (savings, costs, applicability, baseline/efficient conditions, EUL, NTGR, etc.) using latest feasible measure package versions
  - Use measure prioritization framework and coordination with ex ante measure package team to understand DEER 2028 updates in progress and incorporate as many PY2028 updates as possible within PG Study time constraints
- Planned change for 2027 Study: Removal of IRA tax credit assumptions (across EE and FS measures)

Fuel Substitution Measure Characterization

Integrated EE + FS Measure Characterization Approach

Aspects of FS characterization consistent with previous studies:

- **Competition groups** where FS competes with gas EE measures (see example to right)
- Include FS **infrastructure costs** (representing no upgrade, panel optimization, and panel upgrade cases)
- Include refrigerant avoided cost inputs where relevant for heat pump technologies

Aspects of FS characterization new/different for 2027 Study:

- Future baseline assumptions resulting from policy *(next slide)*
- Differentiation of 120V and 240V heat pump water heaters

Example Competition Group with EE and FS

Technology Group	Technology	Description
Small Gas Water Heaters	Gas Storage WH	Code Level
	Condensing Gas Storage WH	Efficient Gas Level (EE)
	Tankless Gas WH	Efficient Gas Level (EE)
	Heat Pump Water Heater	Efficient Electric Level (FS)

2025 Study FS Infrastructure Cost Assumptions*

Sector	End Use	Frequency %		Cost Adder	
		No Upgrade	Upgrade	No Upgrade	Upgrade
Res	HVAC	47.0%	53.0%	$1,704	$2,349
Res	WaterHeat	50.0%	50.0%	$2,804	$2,627
Com	HVAC	81.4%	18.6%	$2,099	$2,627
Com	WaterHeat	54.6%	45.3%	$3,430	$6,139
Com	FoodServ	37.8%	62.2%	$3,372	$4.469

*Based on 2024 Viable Electric Alternatives (VEA) Working Group report recommendations

Future Baseline Assumptions & Policy Impacts

Affecting FS and Gas EE Measures

- The 2025 Study included extensive characterization of then-anticipated impacts from **CARB Zero Emission Appliance Standards (ZEAS)** in the Base scenario and additional scenarios
  - This was incorporated via specification of **future baseline** changes, i.e., future years where the modeled baseline for affected measures changed from a **gas** equipment baseline to an **electric** equipment baseline
  - 2025 Study Base scenario assumed implementation of ZEAS for space- and water-heating technologies in 2030 ("ZEAS 2030"). An alternate assumption set ("ZEAS Phased") had phased implementation dates ranging from 2027 to 2031.
- Uncertainty remains around the potential future implementation and effective dates for **CARB Clean Space and Water Heater Standards** along with **CPUC Viable Electric Alternatives (VEA)** policy
- **Therefore, for the 2027 Study, we propose removing the characterization of gas → electric future baseline changes resulting from CARB Clean Space and Water Heater Standards or VEA from the Base scenario**
  - Future baseline assumptions may still be considered in additional scenarios beyond the Base scenario
- **Q for stakeholders:** do you agree with the proposed removal of CARB Clean Space and Water Heater Standards or VEA impacts on future baselines in the base scenario?

Top-Down Analysis (Custom, NMEC, SEM, etc.)

Large Commercial, Industrial, and Agricultural Sectors

- The 2025 PG Study introduced a **top-down analysis** of custom opportunities in the large commercial, industrial, agricultural, and mining sectors
  - The top-down analysis was introduced to better reflect intended to reflect evolving IOU portfolios and empirical custom program performance
  - Potential in these sectors are often site-specific and not well represented by bottom-up technology-level adoption models
- Guidehouse will continue the top-down approach for the 2027 PG Study
  - Custom, NMEC, SEM, retrocommissioning, optimization, and process improvement activities will be represented at sector and program-category levels
  - Savings will be estimated **as a percentage of sector or subsector energy consumption**, based on recent IOU program data and **calibrated to historical net achievements**
  - The approach includes steps to avoid double counting with prescriptive measures

Questions for Stakeholders

Market and Measure Characterization

- Do you have any program or measure data to share that's not available via DEER/eTRM or CEDARS?
- Are there any specific FS programs that should/should not inform inputs for FS measures?
- What impacts would fuel switching have on potential?

- **Upon delivery of proposed measure list, please consider:**
  - Which measures are highest priority?
  - Are there additional measures or technologies that should be included in the study?

Five-minute stretch break…

Guidehouse

III. Modeling Methodology Overview

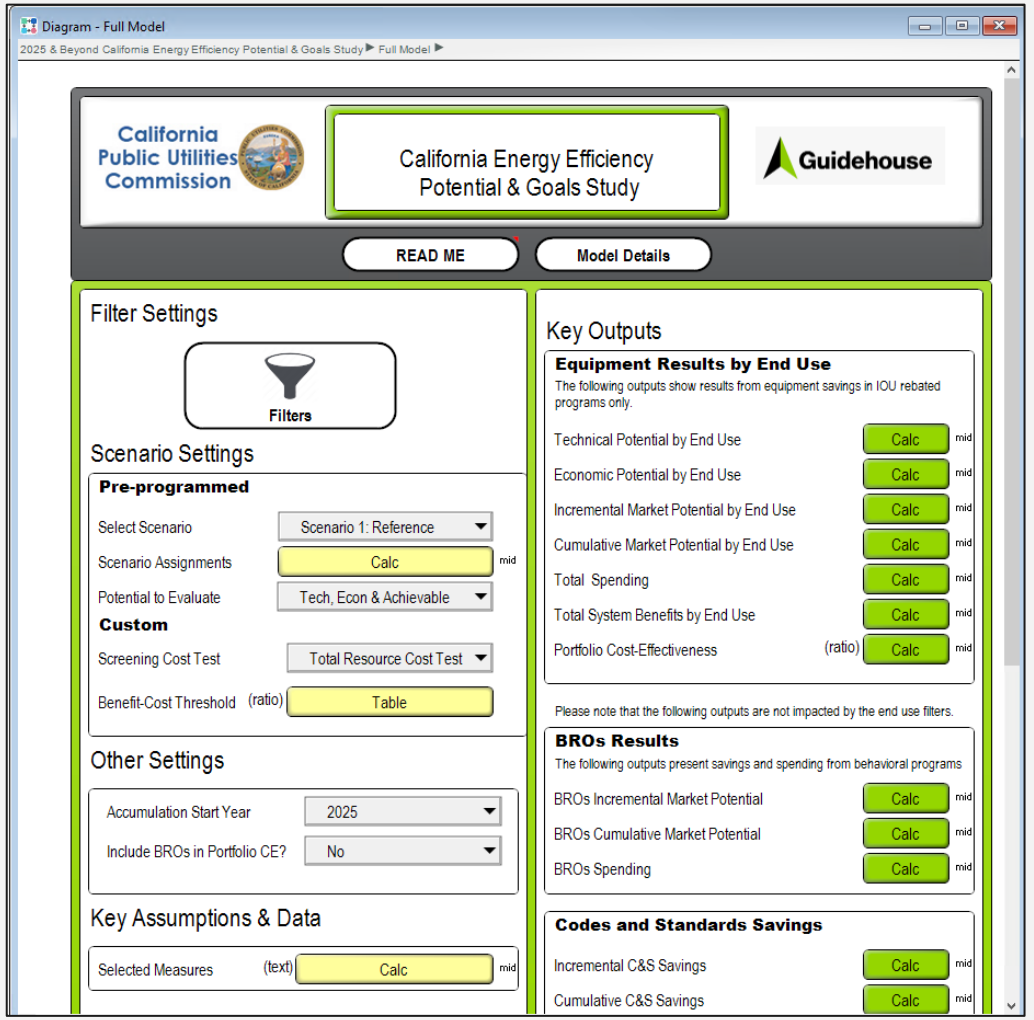
Modeling Methodology Overview

This section covers:

- Modeling platform overview
- Key Technical, Economic and Achievable potential analysis elements
- Approaches for BROs and Codes & Standards

Modeling Platform

- Continue using the Guidehouse Analytica model last used in the 2025 PG study with necessary revisions. This is largely bottom-up model already capable of:
  - Estimating Technical, Economic and Market Potential
  - Providing results with measure-level granularity
  - Explicitly modeling fuel substitution
  - Assessing cost effectiveness of individual measures and report portfolio cost effectiveness
  - Distinguishing between rebate program savings, codes and standards savings, and low-income program savings
  - Outputting annual savings, cumulative savings, and TSB
- Details output spreadsheets and results viewers will be made available to stakeholders as in the past.
- The typical stakeholder should not have to download and run the model.



Technical Potential for Rebate Programs

Assumes ALL eligible customers adopt ALL of the highest TSB measures available within a technology group, regardless of cost effectiveness.

Estimated by:

- Sizing the total population for each individual measure in specific sectors and territories using building stock and appliance saturation data.
- Estimating the number of annual installation decisions is based on replacement type, using either a measure's burnout rate, number of retrofittable measures, or new building stock.
- Assuming all annual installations have the largest TSB.
- Multiply number of installations by unit energy savings to establish energy impact.

Technical Potential
Total System Benefit available by end-use and sector, relevant to current population forecast

Economic Potential
CPUC Cost-effectiveness Screen

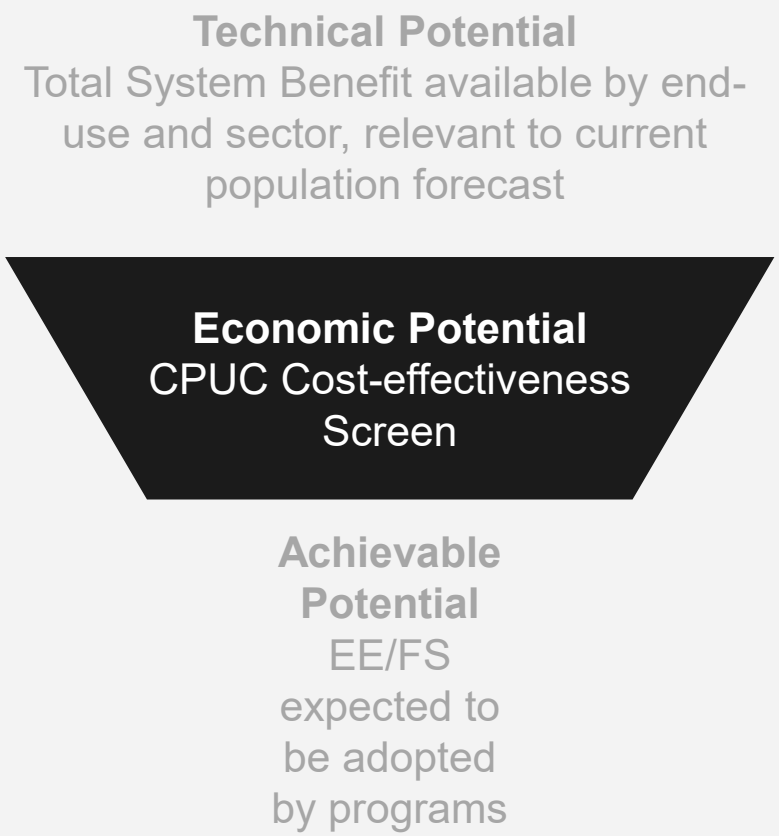
Achievable Potential
EE/FS expected to be adopted by programs

Economic Potential for Rebate Programs

Calculated as the total potential available when limited to only cost-effective measures. All components of economic potential are a subset of technical potential.

Estimated by:

- Applying a cost effectiveness test to each measure.
- Set a threshold definition of “economic” across scenarios, below which a measure is deemed not cost effective.
- Remove all non cost-effective measures from the analysis and recalculate potential.



Achievable Potential for Rebate Programs

The Total System Benefit ($) that could be expected in response to specific levels of program incentives and assumptions about existing CPUC policies, market influences, and barriers.

Estimated by:

- Calculating the market share, or penetration of measures based on customer awareness of the measure and customer willingness to adopt the measure. Willingness is determined in one of two ways:
  - Multi-attribute-based: Predicts consumer behavior by weighting multiple value factors that customers use to decide whether to adopt a more efficient measure.
  - Payback-based: Compares payback time associated with efficient measure against competing measures.
- Calibrating forecast using historic program data. Includes IOU, CCA, and REN-administered programs.

Behavior, Retrocommissioning, and Operations (BROs)

Residential and Commercial Sectors

- The approach to estimating BROs potential will remain consistent with previous Studies
  - Focused on the highest-priority interventions
  - Incorporate any new data on existing or planned programs, including EM&V, program rollout data, and benchmarking if needed
- Priority BROs Interventions
  - Home Energy Reports
  - Strategic Energy Management
  - Retrocommissioning

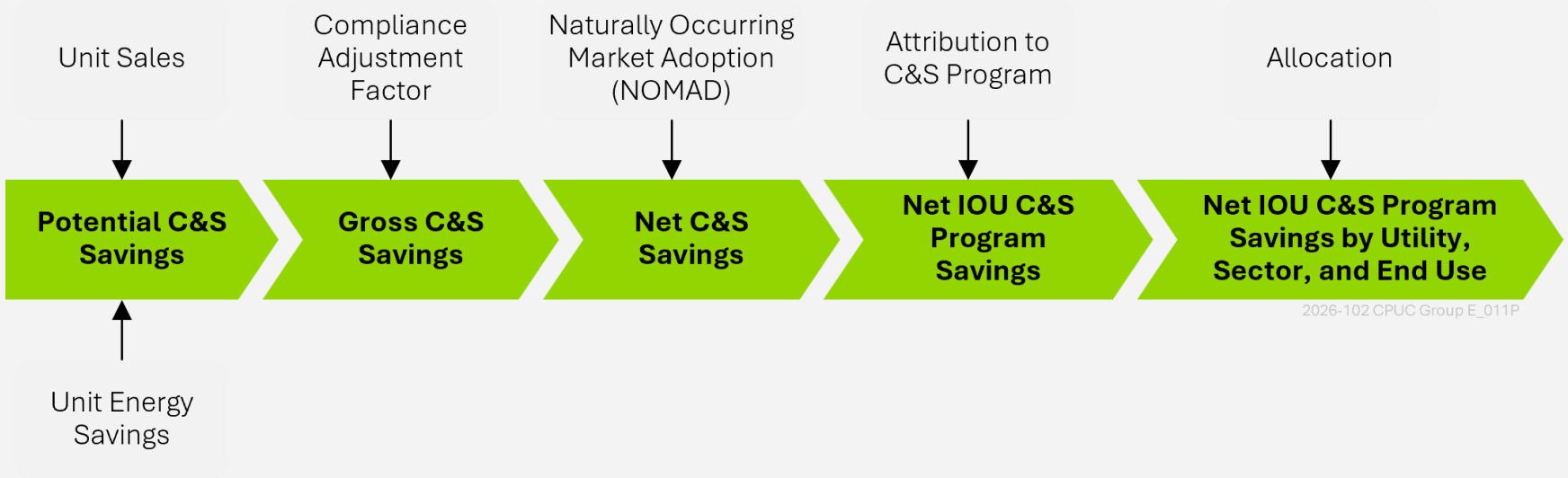
- **Q for stakeholders:** are there any other behavioral interventions or programs that should be prioritized in the 2027 Study?

Codes & Standards

No significant changes planned to overall C&S approach

Overview of C&S calculation steps:

- Adjust code baseline for rebated measures
- Calculate net C&S Savings – subtracts naturally occurring market adoption of code-compliant technologies
- Calculate net IOU C&S Savings – portion attributed to advocacy work



Data request to the IOUs on C&S is expected in the coming months.

Scenarios

- Plan to analyze up to four scenarios (Base scenario + three additional scenarios) to inform the goal setting processes
- Scenarios address differences based on internally-influenced variables, i.e., policy and program decisions under control of the CPUC and IOUs.
- Scenarios will adjust multiple variables and test combined effects
- Specific scenarios will be defined with consideration of stakeholder input via 2027 PG Study Scenarios webinar

Reference: Scenario Variables Analyzed in 2025 PG Study
• Cost-effectiveness tests and thresholds • Incentive levels and adoption parameters • CARB Zero Emission Appliance Standards (ZEAS) implementation scenarios • IRA and statewide non-IOU program influences • Total System Benefit optimization

Modeling Methodology Questions for Stakeholders

- What time period of historic program data is reasonable for use in calibrating the rebate program model?
- Should CCA and REN-administered program data be considered in model calibration?
- Should alternative cost effectiveness (TRC) thresholds or other B/C tests be considered for Economic or Achievable Potential determination?
- Did stakeholders find the 2025 PG study online results viewer valuable? Or would you prefer a spreadsheet-based viewer?

Guidehouse

IV. Post-PG Study Support

Post Potential & Goals Study Support

Planned Tasks

- Additional Achievable Energy Efficiency (AAEE) and Fuel Substitution (AAFS) Scenarios
- SB350 IOU Territories Updates

Other Tasks *(pending CPUC approval)*

- Industry and Market Studies - Baseline Characterization
- Industry and Market Studies – Market Effects Studies
- Quantifying Equity and Market Support Goals

Guidehouse

Recap & Questions for Stakeholders

2027 PG Study High-Level Estimated Timeline

Activity	Estimated Timeline
Study Launch Workshop & Workplan	September 2026
Technical Potential	November 2026
Economic Potential	December 2026
Achievable Potential & Scenarios	February 2027
Draft Report released by Ruling	April 2027
Proposed Decision and Final Report	TBD
Decision on Goals Adoption for 2028 & Beyond	TBD

Q for stakeholders: Are there any questions or concerns with the project timeline?

Reprise: Planned Stakeholder Engagement

Q3 2026	Work Plan Webinar (today's meeting)
	Input on Proposed Measure List (will be shared via e-mail to service list)
Q4 2026	Income Qualified Work Plan Webinar
	Scenarios Webinar
Q2 2027	Draft Results Webinar
	Draft results formal comments

Summary of Questions for Stakeholders (1/2)

- Are the priorities and scope in line with your needs and expectations?
- Where else can or should stakeholders be involved in the process?
- Are there issues or 2027 PG Study elements that should be prioritized (or de-prioritized)?
- Do you agree with the proposed removal of CARB Clean Space and Water Heater Standards or VEA impacts on future baselines in the base scenario?
- Do you have any program or measure data to share that's not available via DEER/eTRM or CEDARS?
- Are there any specific FS programs that should/should not inform inputs for FS measures?
- What impacts would fuel switching have on potential?

Summary of Questions for Stakeholders (2/2)

- Upon delivery of proposed measure list:
  - Which measures are highest priority?
  - Are there additional measures or technologies that should be included in the study?
- Are there any other behavioral interventions or programs that should be prioritized in the 2027 Study?
- What time period of historic program data is reasonable for use in calibrating the rebate program model?
- Should alternative cost effectiveness (TRC) thresholds or other B/C tests be considered for Economic or Achievable Potential determination?
- Did stakeholders find the 2025 PG study online results viewer valuable? Or would you prefer a spreadsheet-based viewer?
- Are there questions/concerns with the project timeline?

Q&A and Open Discussion

What additional questions/comments do you have that haven’t already been covered today?

Guidehouse

Thank You

Neil Podkowsky
Associate Director
npodkowsky@guidehouse.com
(602) 528-8040

Amul Sathe
Director
amul.sathe@guidehouse.com
(415) 399-2180

Brian Chang
Managing Consultant
brian.chang@guidehouse.com
(415) 356-7145

Yamini Arab
Managing Consultant
yarab@guidehouse.com
(415) 356-7180

outwit complexity™

Reminders and Next Steps

Stakeholder engagement is critical and CPUC and the Potential and Goals Study team values the input and direction provided

- Study-related comments are informal
- Study-related comments on Workplan are due **Friday, Sept 18, 2026** via e-mail to:
- hanna.navarrogoldberg@cpuc.ca.gov,
- william.graswich@cpuc.ca.gov

Stay informed

CPUC's 2027 Energy Efficiency Potential & Goals Webpage: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/energy-efficiency/energy-efficiency-potential-and-goals-studies/2027-potential-and-goals-study

California Public Utilities Commission

CPUC Leads:
hanna.navarrogoldberg@cpuc.ca.gov
william.graswich@cpuc.ca.gov