

2025 Energy Efficiency Potential & Goals Study

January 24, 2024

CPUC Planning Workshop



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

- Hanna Navarro Goldberg – study lead
- Alex Moisa
- Will Graswich
- Leanne Hoadley – supervisor
- Low-Income study lead: Kapil Kulkarni

Background and Webinar Objectives

Today's Focus:

EE & FS Potential Forecast – Introduce ideas for changes to methodology and input assumptions

Objectives

- Communicate proposed updates
- Present 2025 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 2025 study approach and scope
- Provide responses to our questions and proposed plans

Stakeholder Engagement Opportunities

- Study-related comments are informal.
 - Comments on today's presentation are due **February 7, 2024** via e-mail to:
 - hanna.NavarroGoldberg@cpuc.ca.gov
 - npodkowsky@guidehouse.com
 - William.Graswich@cpuc.ca.gov
 - Alex.Moisa@cpuc.ca.gov
 - Stakeholders will also have an opportunity to comment on the **draft workplan** which is anticipated to be published in **March, 2024**.

What is the Energy Efficiency Potential and Goals Study?

- Develops estimates of total system benefit, energy impact, and demand impact potential in the service territories of California's major investor-owned utilities (IOUs)
- Forecast from 2026-2037, reporting net impacts
- Results have multiple uses:
 - Informs the CPUC goal setting process
 - Informs Program 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
 - Identifies new 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.

EE Potential and Goals Legal Basis

- Public Utilities Code 454.55-56
 - (a)(1) The commission, in consultation with the Energy Commission, shall identify all potentially achievable cost-effective electricity efficiency savings and establish efficiency targets for an electrical corporation to achieve
 - (a) The commission, in consultation with the Energy Commission, shall identify all potentially achievable cost-effective natural gas efficiency savings and establish efficiency targets for the gas corporation to achieve



CPUC 2025 Potential and Goals Study Updates Stakeholder Webinar

Agenda

Study Overview

Timeline Adjustments

Fuel Substitution

Industrial & SEM

**Total System Benefit &
Policy**

**Summary & Final
Questions**

Guidehouse Team



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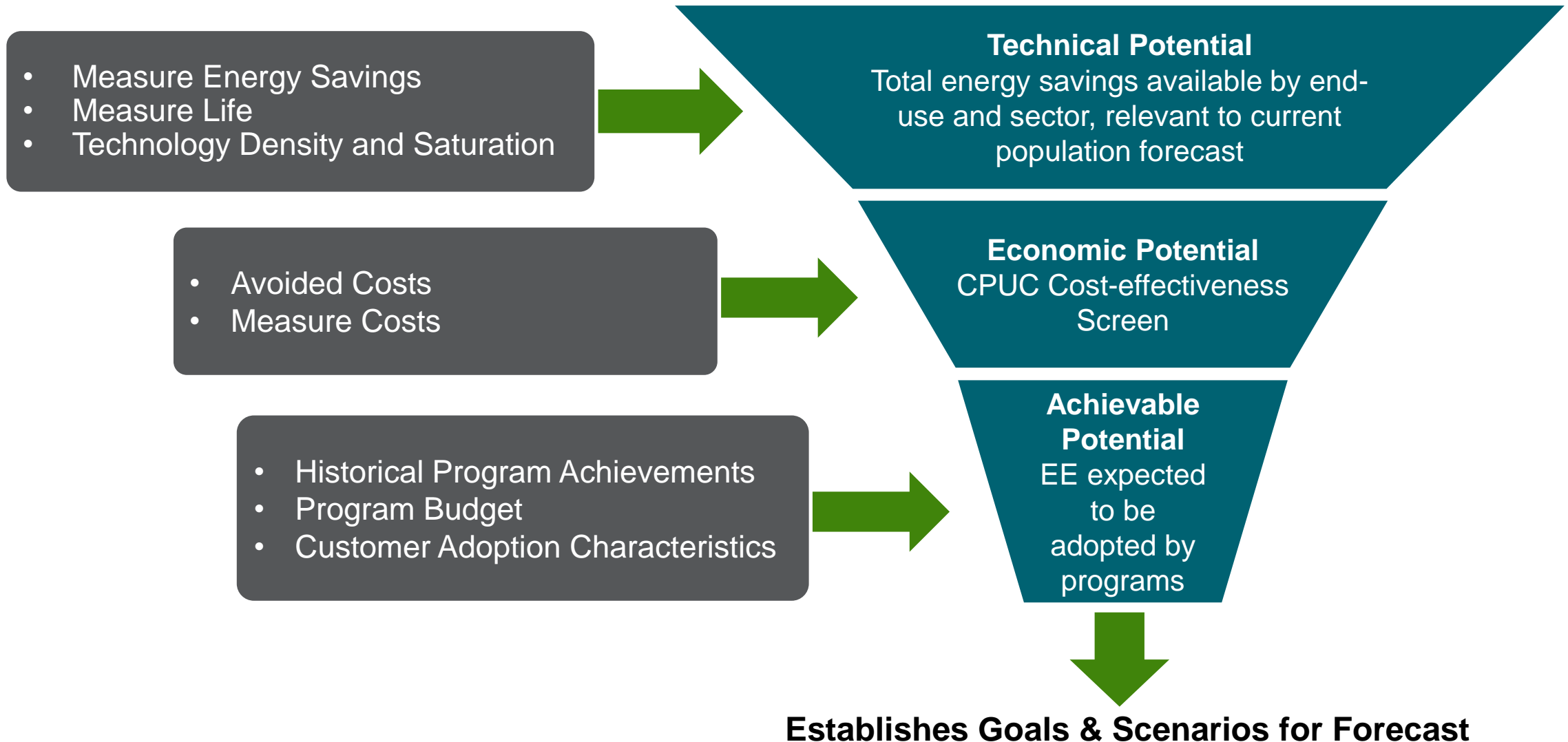
Amul Sathe

Director
Project Director



Study Overview

What is a Potential Study?



2025 Potential and Goals Timeline

Separate timeline and process for low-income

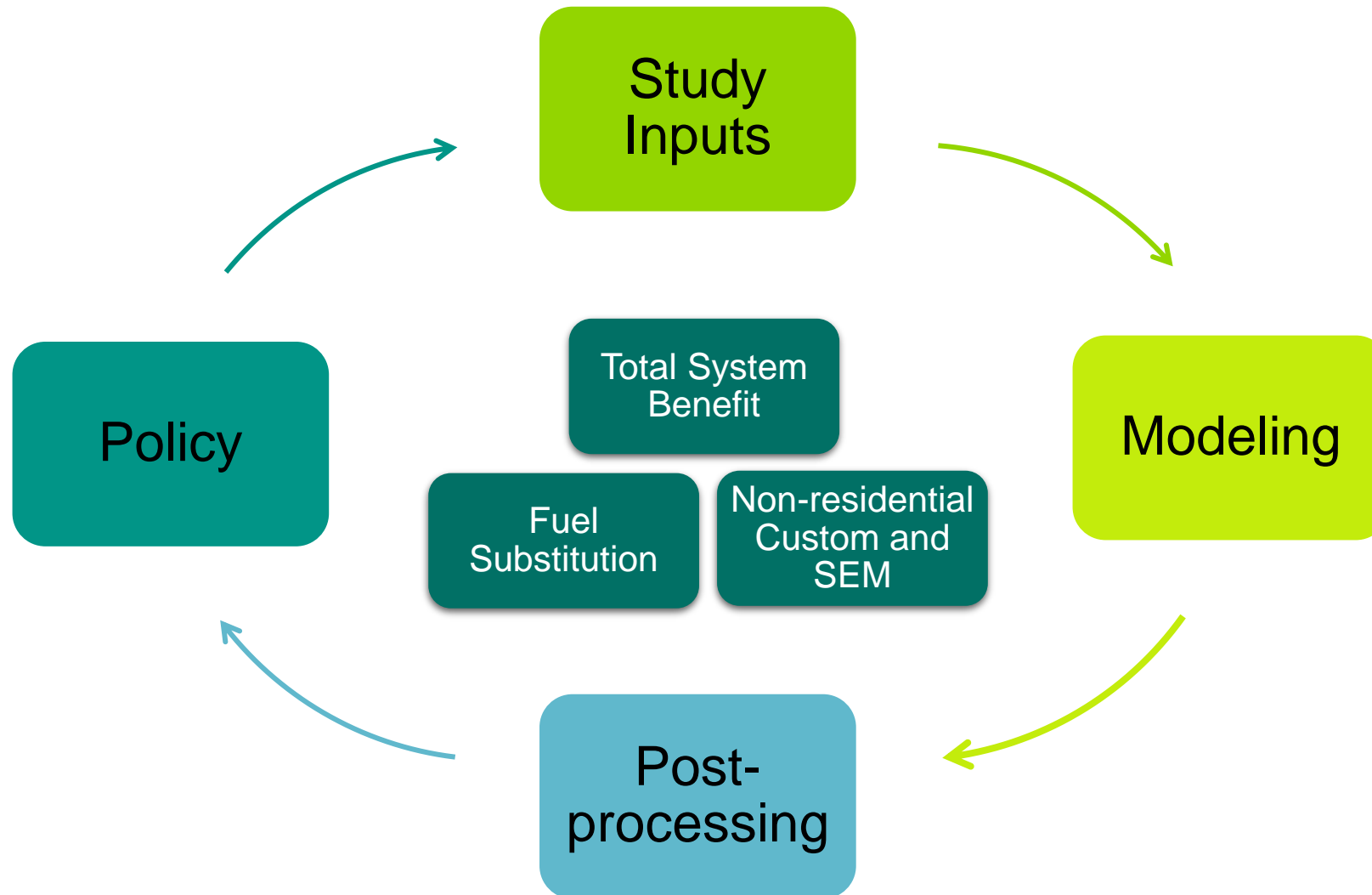
Activity	Estimated Timeline
Study Launch Workshop & Workplan	March 2024
Measure Characterization	May 2024
Scenarios	August 2024
Draft Results	January 2025
Draft Results Comment Period	January 2025
Proposed Decision Mailed	March-April 2025
Decision on Goals Adoption for 2026 & Beyond	April-May 2025

What to expect for the 2025 Study

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

- **Earlier project timeline** with continued commitment to stakeholder engagement
- **Fuel substitution** characterization improvements
- **Ind/Ag sector measure re-categorization**
- Analysis for policy targets, i.e. **What-if scenarios**
- Application of **Total System Benefit metric as model driver**
- Right-sizing the model and analysis granularity to balance scope and budget:
 - Emphasis on characterization & analysis of **high priority/high impact measures**
 - **Continuing using past methodologies** in other areas (Residential/Commercial, C&S, BROs)

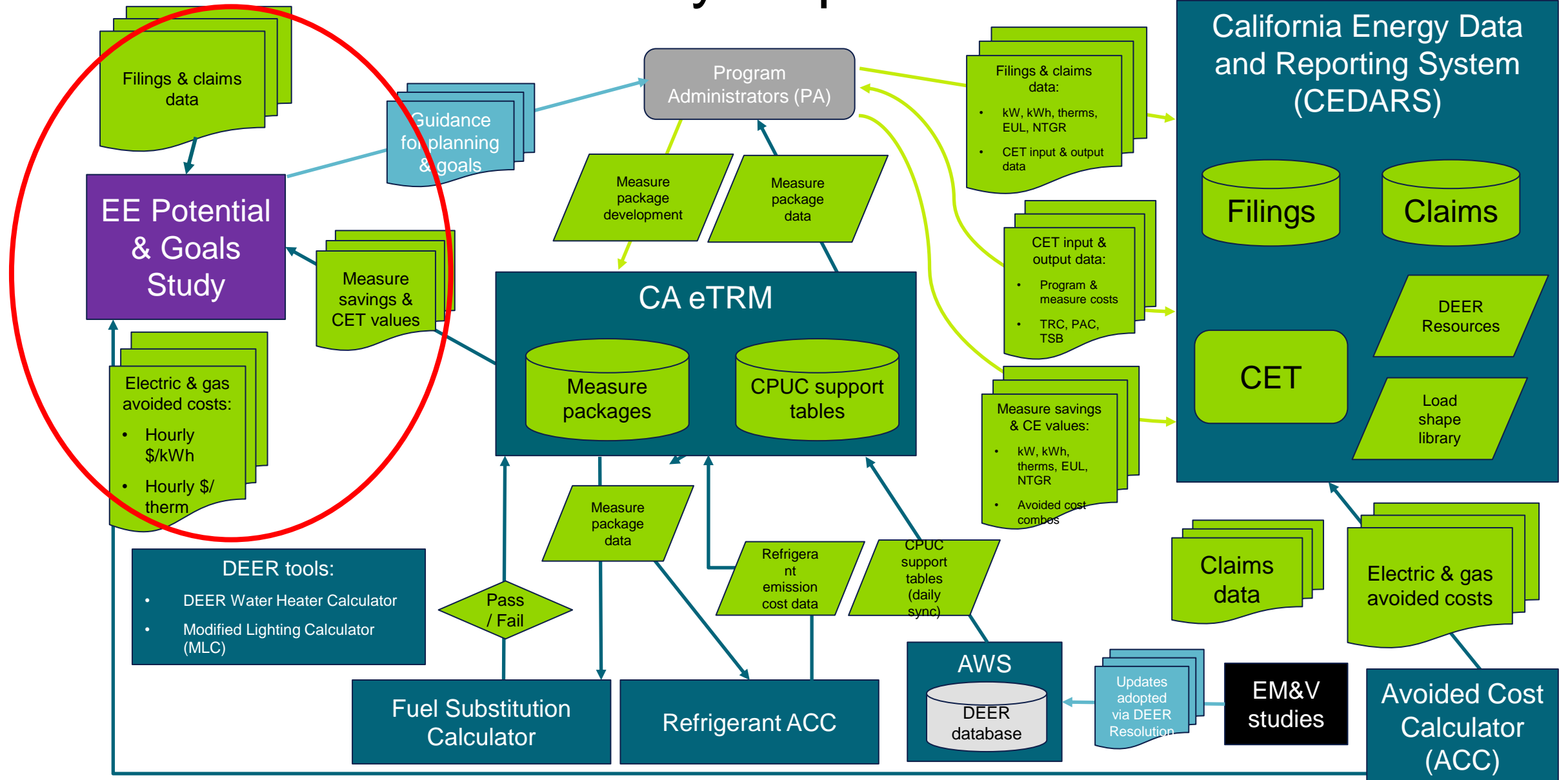
Areas of focus within the study lifecycle





Timeline Adjustments

Potential & Goals Study Dependencies



2023 vs. 2025 Timeline

Timeline changes:

Milestone	2023 Study	2025 Study
Launch	Late summer 2022	Early spring 2024
Measure review	Fall 2022	Spring 2024
Draft results	Spring 2023	January 2025
Decision	August 2023	No later than June 2025

Allows for more time of downstream PG study use cases to incorporate the study results

- Portfolio planning
- Resource procurement
- IEPR

Study dependencies:

- Measure related data must be available by **June 1, 2024**
 - eTRM/DEER: Unclear if will have sufficient updates to the DEER database
 - CEUS: Delays in releasing study results
 - Any other data – from evaluation or other sources
- Model inputs must be available by **July 1, 2024**
 - Avoided costs – expected no later than **July 31, 2024**
 - CEDARs (2023 accomplishments) – typically by July 1, 2024
 - IEPR data (retail rates, consumption, stock) – Feb 2024

Timeline and Budget Constrain Depth of Scope

Seeking stakeholder input on priorities to inform workplan emphasis

For example...



Enhanced analysis of custom & SEM
non-residential savings and whole building (for residential and commercial) comes at the cost of reduced effort on updating rebated technologies



Simplified **locational analysis** using existing data from other studies reduces budget needed for this effort (relative to a completely new study/effort) freeing up funds for additional study enhancements



Conduct analysis of **public sector and equity segments** depending on existing data availability, without readily available data this effort can be costly

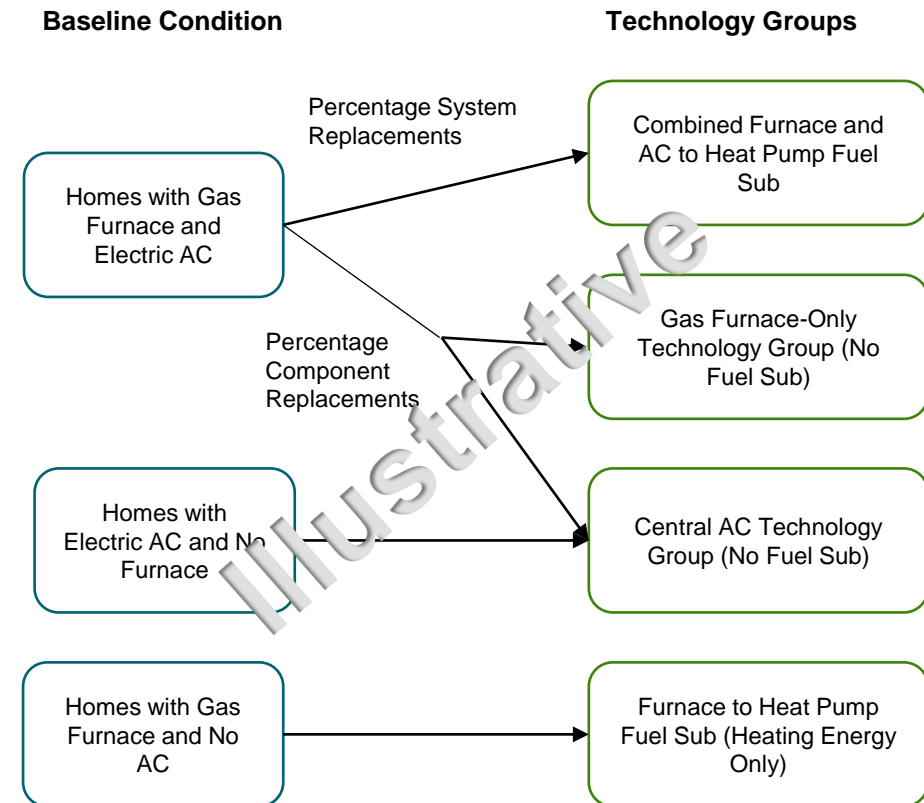


Fuel Substitution

2023 Fuel Substitution (FS) Approach

Gas to electric substitution in HVAC, water heating, food service, and appliance end uses

- FS infrastructure cost inputs considered only electric panel upgrades
- Technical and economic potential (kWh/Therms) assigned to the IOU serving new electric load
- FS adoption employed same adoption modeling framework as EE with the following additions:
 - Lower identified familiarity with FS technology, impacting willingness
 - Calibration parameters based on historical adoption which was in its nascent stage
 - 2030 phaseout of gas technologies (CARB SIP)



Fuel Substitution

Inputs - Measure Characterization

Objective	Enhance the FS measure and market characterization
Considerations	Insights gained through 2023 Group E Market Studies will improve accuracy and relevance of analysis for total FS measure costs. Other potential area for consideration: AC load impacts
Approach Options	Incorporate findings from the FS market studies, refining infrastructure requirements and parameters including cost. Other data will be included, as available.
Stakeholder Questions	<ul style="list-style-type: none">• <i>Does having AC shift decisions and impact savings claims when customer originally had no AC?</i>• <i>What other data sources may be available to enhance the characterization?</i>
Recommended Plan	<ul style="list-style-type: none">• Measure Costs using the research on infrastructure needs and costs• Incorporate AC load impacts, if available in eTRM by June 2024

Fuel Substitution

Modeling - Calibration of Market Achievable Potential

Objective	Incorporate broader FS program data in the calibration process
Considerations	TECH program has experienced significant activity and uptake since inception. 2025 Study should assess the feasibility of including TECH & other program data in addition to IOU FS programs to calibrate modeled achievable potential.
Approach Options	<ul style="list-style-type: none">• Low/Med-effort – Non-IOU program data analysis• Med/High-effort – primary data collection and analysis
Stakeholder Questions	<ul style="list-style-type: none">• <i>Do infrastructure upgrade requirements and associated costs represent a gap in understanding measure adoption and cost effectiveness?</i>• <i>Do market limits such as technology, work force education, and competing non-IOU programs impact market uptake?</i>
Recommended Plan	Leverage additional program data for calibration of market status by incorporating non-IOU program – both the POU and TECH data

Fuel Substitution

Modeling - Scenarios

Objective	Assess alternative FS incentive structure
Considerations	2023 Study based incentive levels based an adjustment to EE. Instead use existing FS-specific data
Approach Options	Conduct benchmarking/secondary research and analysis for all funding streams and impacts to programs/customers
Stakeholder Questions	<ul style="list-style-type: none">• <i>Would it be beneficial to explore a broader set of incentive assumptions?</i>• <i>Based on experience as program administrators, what are seen as feasible incentive levels?</i>• <i>What analysis or studies exist that explore/evaluate impacts from stacking or layering incentives or other benefits?</i>• <i>Are there specific examples and data on how external factors (such as other programs) may impact achievable potential?</i>
Recommended Plan	Incentive and other financial parameters stacked or layered into FS. Validate analysis with other studies or market data.

Fuel Substitution

Policy – CARB SIP 2030 Zero Emission Standard

Objective	Improve approach to accounting for CARB SIP Standard
Considerations	<p>If the gas technology phaseout plan changes, then how should the PG study consider the impacts</p> <ul style="list-style-type: none">• Shift in baseline to IOU programs – changing timelines and technology applicability• Anticipation may impact adoption, grow a secondary market, supply uncertainty, and out of state purchases• Changes to avoided costs and retail rates for natural gas in particular
Approach Options	<ul style="list-style-type: none">• Investigate the different scenarios considered by CARB• Review literature for changes in adoption due to phaseout plans (T12s, LEDs, other) and adjustments to baseline• Consider accelerated replacement valuation of savings• Check for CEC and IRP analysis on scenarios for impacting costs
Stakeholder Questions	<ul style="list-style-type: none">• <i>Does the CARB SIP rollout uncertainty merit alternative scenario analysis?</i>• <i>Should accounting metrics align to CARB's metrics?</i>
Recommended Plan	<ul style="list-style-type: none">• Low-effort to assess a shift in baseline and addressing laggards.• Incorporate sensitivities/scenarios to address CARB SIP implementation timeline delays

Fuel Substitution

Post Processing – Locational Analysis

Objective	Post-process study results to a locational analysis for quantifying geographic and grid forecasting. As FS grows, the impacts are more pressing.
Considerations	Further break-out IOU service territories to help with NG phase out strategizing and grid impact analysis.
Approach Options	<ul style="list-style-type: none">• Use Electrification Impact Study feeder level disaggregation factors; or• Use IOU disaggregation factors for DPP – GNA analysis; or• Base on historical program penetration and conduct some analytics on future adoption propensity by geography
Challenges	Maintain consistency across analysis methods within CPUC and across other state entities
Stakeholder Questions	<ul style="list-style-type: none">• <i>What is the preferred level of granularity?</i>• <i>More interest in grid vs. geographic analysis or both?</i>
Recommended Plan	Be consistent with other forecasting in statewide plans. Therefore, no new analysis recommended and only applying available disaggregation factors.

The top-left corner of the slide features a series of thin, light blue lines that form an abstract, geometric pattern. These lines intersect to create several irregular polygons, with the largest one being a triangle that points towards the top-right. The lines extend from the left edge and top edge of the slide towards the center.

Industrial and SEM

Non-residential Custom and SEM

Focused Analysis

- Past potential analysis rooted in historical savings, costs, and trajectory in a top-down type of analysis
- Need to explore new options as a large amount of TSB comes from a limited number of measures

2023 PG Study Results

Measure	% of Total TSB in 2024
Res HERs	12.3%
Ind & Ag Generic Custom	11.7%
Ind & Ag SEM	6.5%
177 other measures	69.5%

} ~18%

2023 Study Ind/Ag Measure Types and Approach

Measure Type	Approach
Characterized Custom	Bottom-up - Deemed measure characterization process using CEDARS, 2021 primary data collection, and secondary source data
Generic Custom	Top-down analysis leveraging historical program trends and consumption forecasts
Emerging Technologies	
Strategic Energy Management (Including Retrocommissioning and Optimization)	Top-down - BROs approach

Recategorizing Industrial and Agricultural Measures

2025 analysis only using top-down

Industrial & Agricultural Savings

CEDARS Data

Custom

Deemed

SEM (capital & non-capital)

2023 Study Approach

Generic Custom

Emerging Tech

Characterized Custom

BROs: SEM

2025 Study Approach

Capital non-SEM & SEM

End use 1

End use 2

End use 3

End use x...

Non-Capital SEM

Redefining Industrial and Agricultural Measures

Plan for implementing the recategorization and adoption model

Objective	Re-categorizing quantified savings to the program delivery approach of measures implemented
Considerations	<ul style="list-style-type: none">• SEM was considered a standalone BRO measure, but program also includes capital measures• Identifying true potential is challenging in the Ind/Ag sectors due to lack of extensive baseline/saturation studies• Mitigating double counting across SEM and custom while appropriating capturing potential
Approach/ Recommended Plan	<ol style="list-style-type: none">1. Categorize CEDARs measures and incorporate evaluation findings2. Quantify the BRO (non-capital) vs. capital measure penetration to date3. Extrapolate in a top-down based approach <u>or</u> explore other forecasting method options
Challenges	<ul style="list-style-type: none">• Sufficient data to differentiate non-capital vs. capital (by end use) measures• Forward looking adoption analysis grounded in data under new program paradigm

Redefining Industrial and Agricultural Measures

Plan for implementing the recategorization and adoption model (cont'd)

Stakeholder Questions

Should we consider the possibilities that the shift in program design from incentives to performance-based using an NMEC approach:

- 1. Delivers more savings per site by encouraging sites to implement more measures with to-code and BROs-type savings?*
- 2. Allows programs to deliver savings to more customers by reducing the administrative burden of calculating and reporting savings?*

SEM evaluation will differentiate between capital and non-capital measures. What are the existing challenges in implementation and administration to capture savings by category?



Total System Benefit & Policy

Total System Benefit

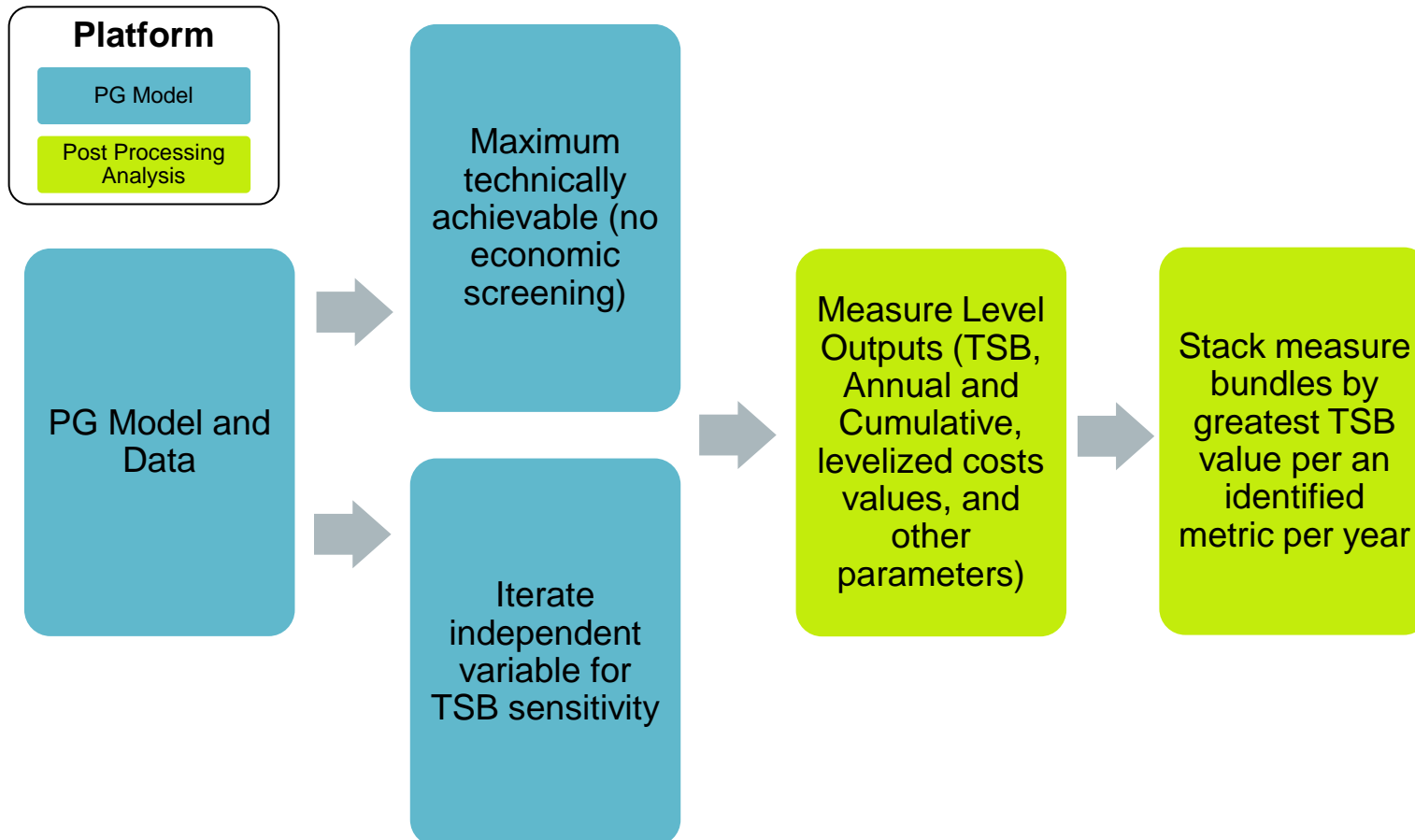
Study Element - Modeling

Objective	Better align 2025 study with TSB as the statewide Goal Setting metric
Considerations	2021 and 2023 PG Study used kWh and Therms as a primary study metric. Shift potential analysis to analyze around TSB.
Approach Options	<p>Low-effort: Modify existing potential modeling approach to develop Technical, Economic and Achievable potential using TSB as the key output instead of first year energy impacts, including calibration by TSB.</p> <p>Medium effort: Conduct a post processing “pseudo-optimization” analysis using existing model and secondary regression analysis to derive supply curves*</p>
Stakeholder Questions	<ul style="list-style-type: none">• <i>Based on experience as program administrators, what program design and implementation elements most directly impact TSB?</i>
Recommended Plan	Conduct both approaches. The low-effort is for the standard potential study analysis. The medium-effort is to explore the range of potential when optimizing to TSB to align to implementation behaviors.

*See next slide for description.

Post processing TSB “pseudo-optimization” analysis

Process



Must define the parameter to stack TSB values against:

- Measure incentives
- Measure first year savings
- Program cost
- Other

Policy and Regulatory Coordination

Emerging and Continued External Influences

IRP Process

- 2021 and 2023 PG Studies planned for coordination
- CPUC prioritized other emerging needs over this post-goals activity for 2023
- Stakeholder Question: *Is direct application of the PG model to develop IRP Supply Curves of sufficient value to prioritize and coordinate this task as part of the 2025 study?*

2045 CA Statewide Net Zero Goal

- Opportunity to leverage PG Study Model to assess long term aspirational objectives with a more aggressive EE and FS scenario
- Use the PG model to analyze what it would take to achieve that target. The results would be positioned along the lines of “we need \$XB and Y installations of technologies to achieve that goal” and less an analysis of “will the market be able to move this fast to actually adopt at this level”
- Stakeholder Question: *Does this potential “Reach” goal provide meaningful direction?*



Summary

Summary of 2025 Priorities

Revisiting Fuel
Substitution

Reframing
Industrial and
Agricultural
Savings

Adapting to a
TSB-based
metric

Expanding
policy-based
analysis

Reminders and Next Steps

- Stay informed: [Energy Efficiency Potential and Goals Studies \(ca.gov\)](https://www.cpuc.ca.gov/energy-efficiency-potential-and-goals-studies)
- Study-related comments are informal.
 - Comments on today's presentation are due **February 7, 2024** via e-mail to:
 - Hanna.NavarroGoldberg@cpuc.ca.gov
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 - Stakeholders will also have an opportunity to comment on the **draft workplan** which is anticipated to be published in **March, 2024**.



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Thank You

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