Overview of CEC Gas Assessments

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Acronyms and Initialisms

AAEE – Additional Achievable Energy Efficiency

AAFS – Additional Achievable Fuel Substitution

Aliso – Aliso Canyon

AQMD – Air Quality Management Districts

BAU – Business as Usual

CARB – California Air Resources Board

CalGEM - Geologic Energy Management Division

CEC – California Energy Commission

CED/CEDF – California Energy Demand Forecast

Comm. – Commercial Sector

DAWG – Demand Analysis Working Group

DPP – Distribution Planning Process

FSSAT – Fuel Substitution Scenario Analysis Tool

FSSAT-ZEAS AAFS – Zero-emission appliance standard modeling

GRCs – General Rate Cases

GT – Gradual Transformation (scenario)

IEPR – Integrated Energy Policy Report

IRP – Integrated Resource Plan

NC – New Construction

NOx – Nitrogen Oxides

Prog. AAEE - Programmatic AAEE

Prog. AAFS – Programmatic AAFS

Regs – Regulation

Res. – Residential Sector

RASS – Residential Appliance Saturation Study

ROB – Replace on Burnout

TPP – Transmission Planning Process

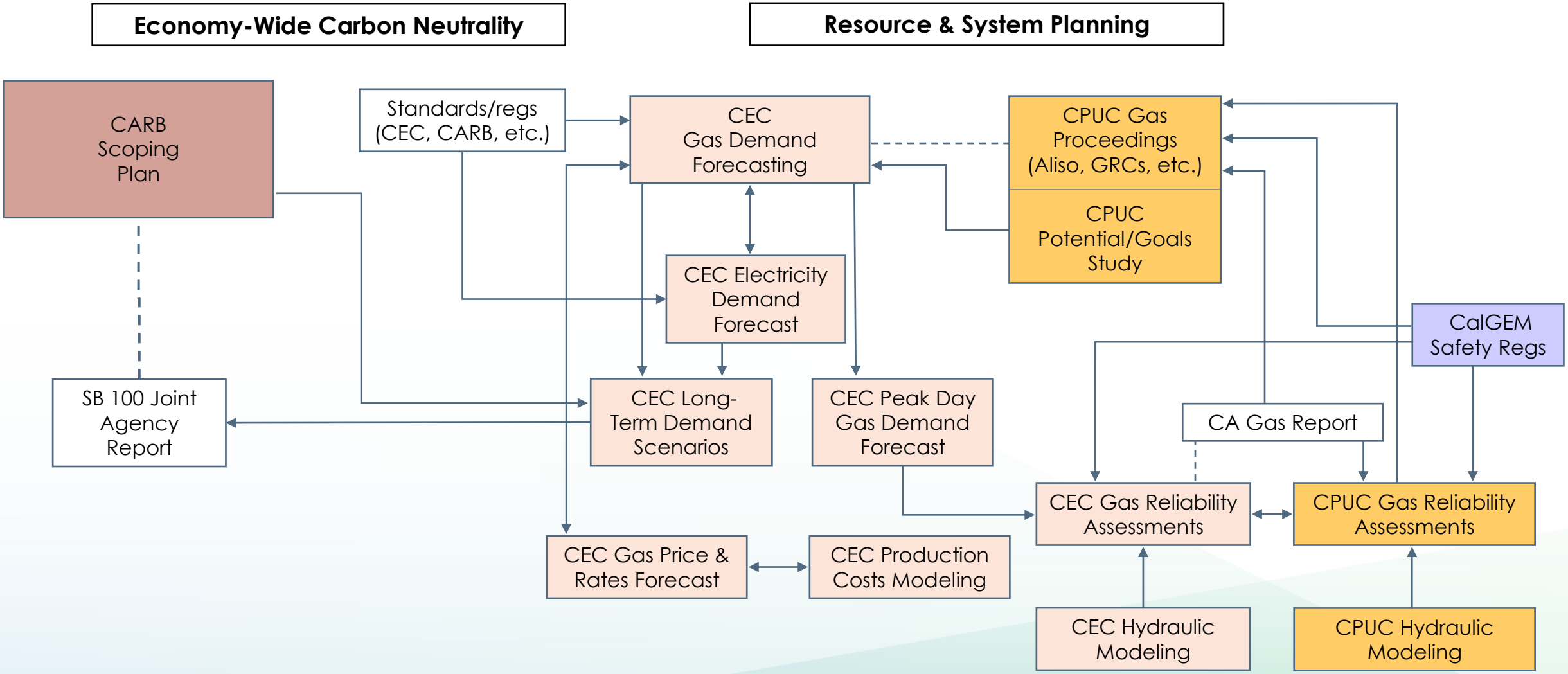
TCU - Transportation, Communication, and Utilities

ZEAS – Zero-Emission Appliance Standards

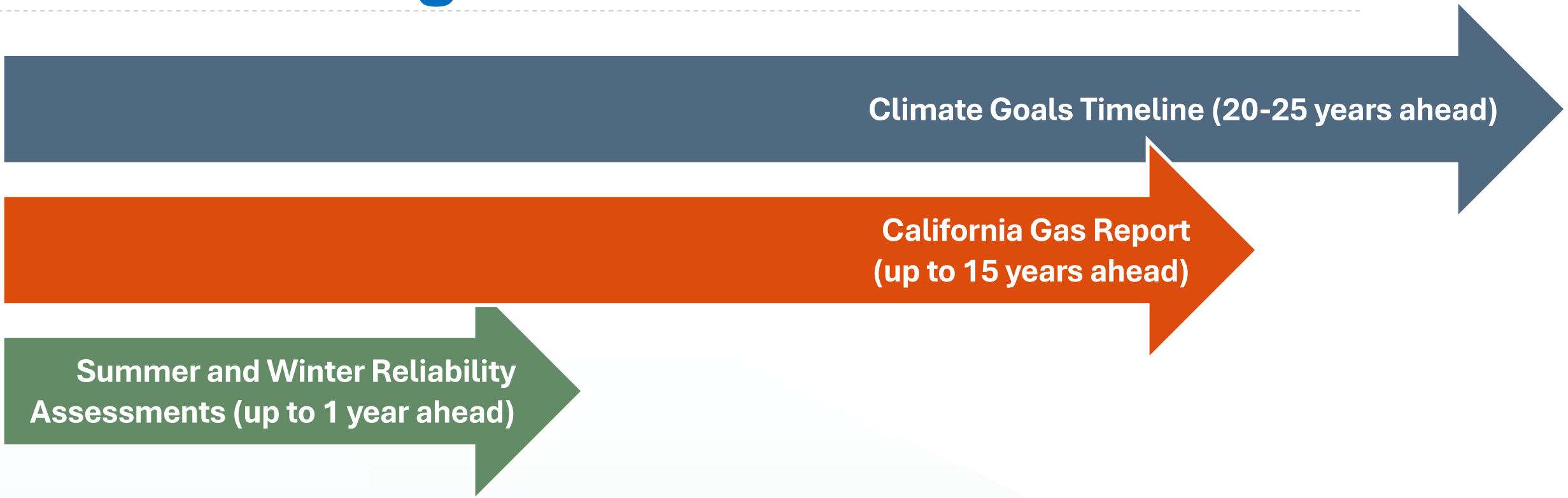
Presentation Outline

1. Statewide Gas Planning Process
2. Overview of CEC's Gas Assessments
   A. Gas System Reliability and Rates
   B. IEPR Forecast
   C. Demand Scenarios
   D. Peak Day Forecast
3. AAEE/AAFS Load Modifiers Framework
4. Summary of 2023 IEPR Forecast AAFS Results

Natural Gas Planning Process



Gas System Planning – Layered Planning Horizons



CEC Gas Assessments

Gas System Reliability and Rates

Gas Demand Forecasts

CEC Gas Analysis

Demand Forecasts

IEPR forecast, long-term demand scenarios, peak day forecast

Reliability

Seasonal gas reliability assessments - PG&E & SoCalGas

- Gas curtailment risk
- **Current:** Winter 2024-25 Gas Reliability Assessment
- **Up next:** Summer 2025 Gas Assessment - *California Energy Resource and Reliability Outlook 2025*

Rates

- Updating delivered price models (current)
  - Used in the IEPR Gas Demand Forecast
- Updated results – Jan. 2025
  - Including CA Demand Forecast Scenarios

Forecasting: A Core CEC Activity

Vetting and Engagement by Public, Partner Agencies, and Stakeholders

- IEPR Process
- Regular Joint Agency Meetings
- Demand Analysis Working Group

Used in Multiple Planning Efforts

IRP **TPP** — Planning Forecast

DPP — Local/Reliability Scenario

Broad Economic Sectors Evaluated

Agriculture

Residential

Commercial

TCU

Transportation

Industrial (+Petroleum)

All Fuels Evaluated

CEC Gas Demand Assessments

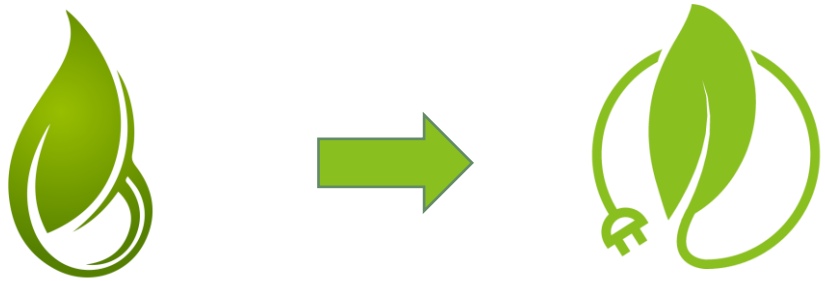
	IEPR Gas Demand Forecast	Long-Term Demand Scenarios	Peak Day Gas Forecast
Uses	Some components used by gas utilities in the CGR	SB 100 planning	CEC Gas System Reliability Assessments
Forecast period	15+ years	2050	Next winter or summer
Update cycle	Every two years	Every two years	Twice per year
Products	Annual sales and consumption	Annual sales and consumption	Monthly peak day demand; Same 1-in-X metrics reported in CGR
Scenarios	Energy efficiency, fuel substitution, transportation electrification	Energy efficiency, fuel substitution, transportation electrification, hydrogen	None
Gas for Electricity Generation	Not included	Not included	Included

AAEE/AAFS Load Modifiers Framework

AAEE & AAFS – Load Modifiers

Additional Achievable Energy Efficiency (AAEE)

Refers to the incremental energy efficiency savings from market potential that is not included in the baseline demand forecast but is reasonably expected to occur. These savings include future updates of building standards, appliance regulations, and new or expanded energy efficiency programs.



Additional Achievable Fuel Substitution (AAFS)

Fuel substitution refers to substitution of one end use fuel type for another such as changing out gas appliances in buildings for cleaner, more efficient electric appliances.

Analogous to AAEE, gas savings and incremental added electricity impacts are accounted for in AAFS. These impacts are modeled based on programmatic impacts and technology-based impacts (i.e., zero-emission appliance standards).

AA Framework & Scenarios

- **Additional Achievable framework:** is applied to energy efficiency, fuel substitution, and transportation electrification for the 2023 IEPR forecast.
- The **additional achievable** scenarios capture a range of incremental market potential impacts, beyond what are included in the baseline demand forecast, but are within the range of what is reasonably expected to occur.

Additional Achievable Scenarios

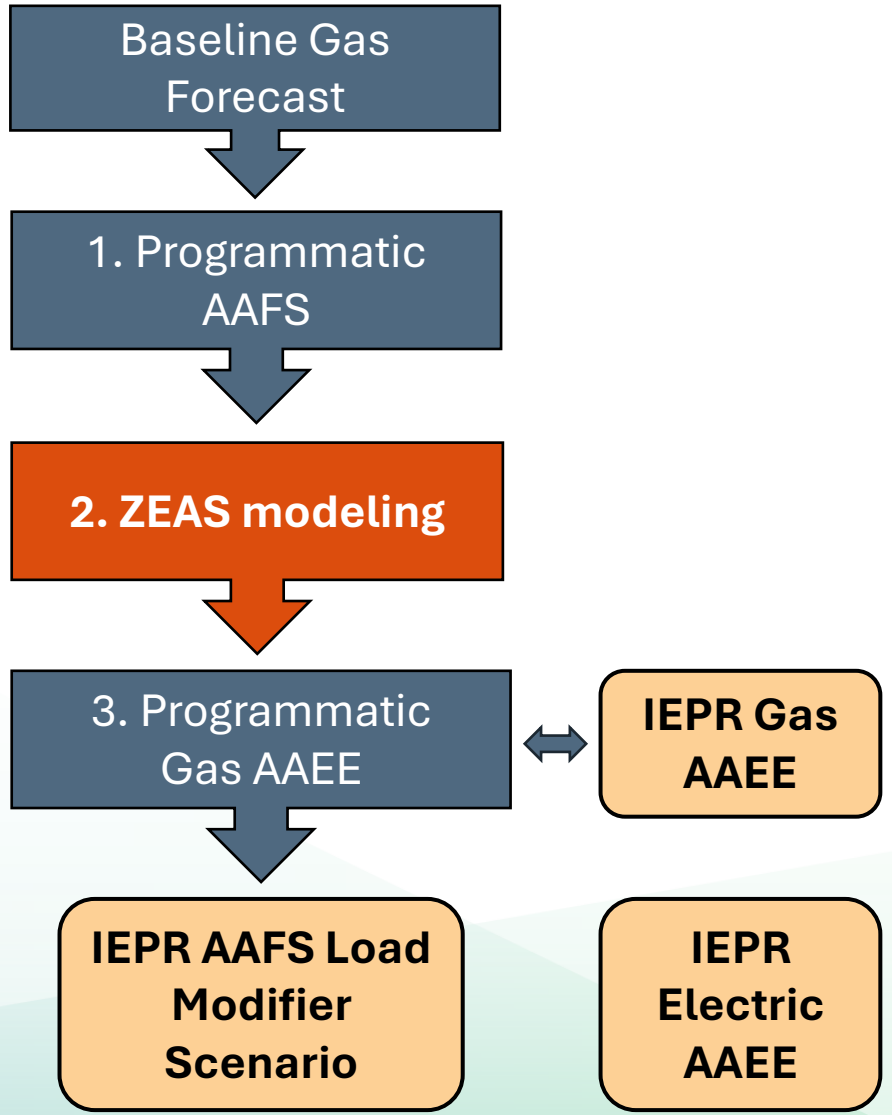
AAEE 1, AAEE 2, AAEE 3, AAEE 4, AAEE 5, AAEE 6

AAFS 1, AAFS 2, AAFS 3, AAFS 4, AAFS 5, AAFS 6

← Conservative Optimistic →

CEC's AAEE AAFS Nomenclature

- The Fuel Substitution Scenario Analysis Tool (FSSAT) creates IEPR AAFS Load Modifier Scenarios using different input scenarios beginning with the Baseline Gas Demand Forecast:
  1. Programmatic AAFS
  2. **Zero-emission appliance standards (ZEAS) modeled using FSSAT**
  3. Programmatic gas AAEE
- Because of interdependencies, the 1-2-3 order is required
- The inclusion of programmatic AAEE in AAFS **does not** imply "efficient electrification"
  - AAFS combines electricity and gas from both programmatic and FSSAT modeling and has interplay with gas AAEE
  - **IEPR Electric AAEE** is independent of AAFS process and only programmatic



Summary of 2023 IEPR AAFS Results

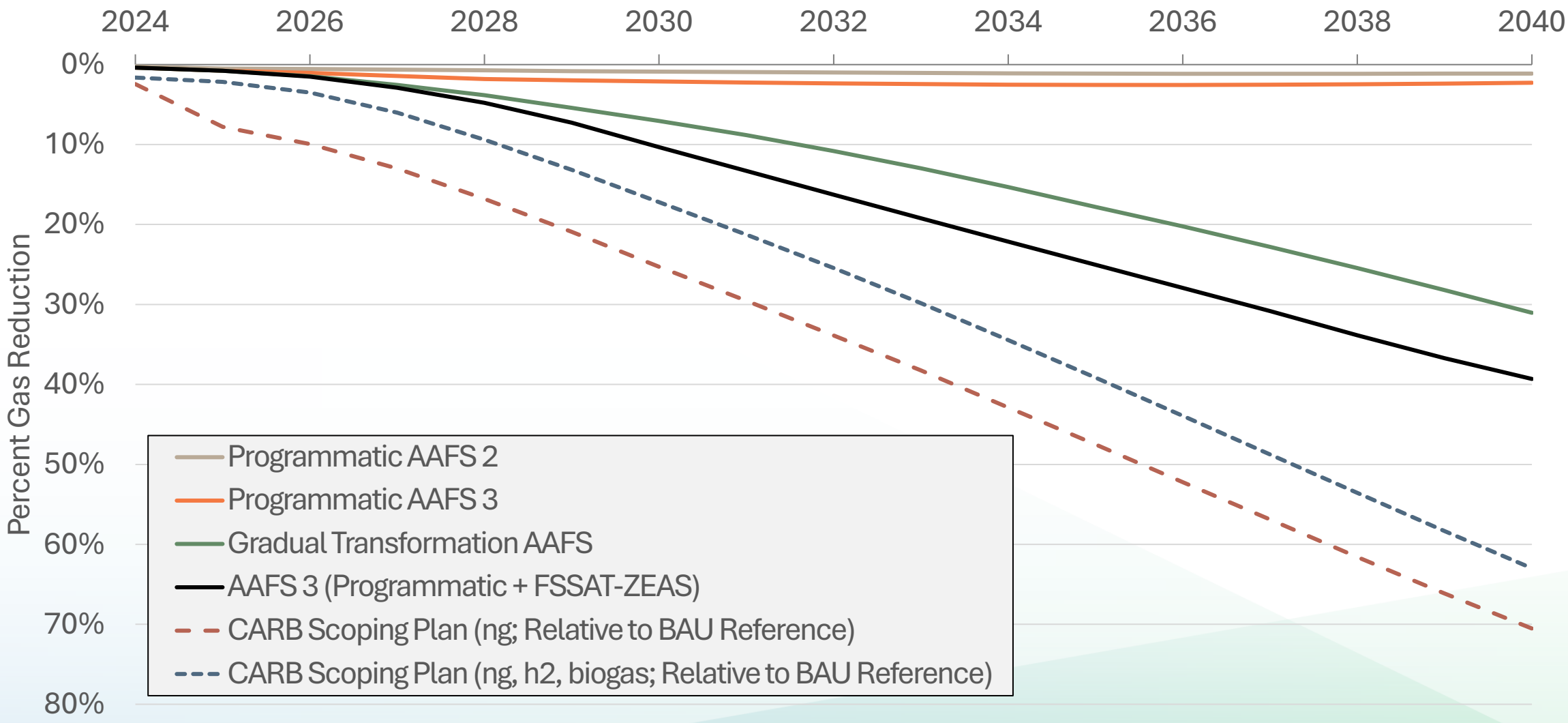
Highlighted 2023 IEPR AAFS Gas Scenarios

2023 AAFS Scenario Name	Programmatic Scenarios	FSSAT-ZEAS Scenario
Programmatic AAFS 2	AAFS 2	• Not included
Programmatic AAFS 3	AAFS 3	• Not included
Gradual Transformation AAFS ("GT AAFS")*	AAFS 3 AAEE 3 (gas and electric)	• Increasing linear statewide adoption rate, reaching 100% by 2040 • Bay Area AQMD 9-4 & 9-6 • South Coast AQMD 1146.2
AAFS 3** (Programmatic + FSSAT-ZEAS)	AAFS 3 AAEE 3 (gas and electric)	• CARB space and water heating ZEAS (Initial 2030 compliance date) • Bay Area AQMD 9-4 & 9-6

Source: CEC

*The CEC adopted the GT AAFS forecast at the May 8, 2024, Business Meeting.
**Assumed in the Reference scenario in the CEC's Demand Scenarios.

2023 IEPR Statewide Gas Impacts (Residential and Commercial Sectors)



Source: CEC

Thank you

Please send any written comments or questions to:

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