Title 24 Update

Senior Management Team Meeting
9/22/2014

Southern California Gas Company
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- Title 24, the CEC codes and standards that govern new construction and typically precede changes to the retrofit market, is a critical driver of SoCalGas residential market share

- Current Title 24 update changes under discussion by the CEC regarding water heating standards will reduce customer choice, disadvantage many of our customers and potentially impact revenues in the future

- The immediate impact of the current Title 24 changes to SoCalGas is minor; however, over time the impacts will compound

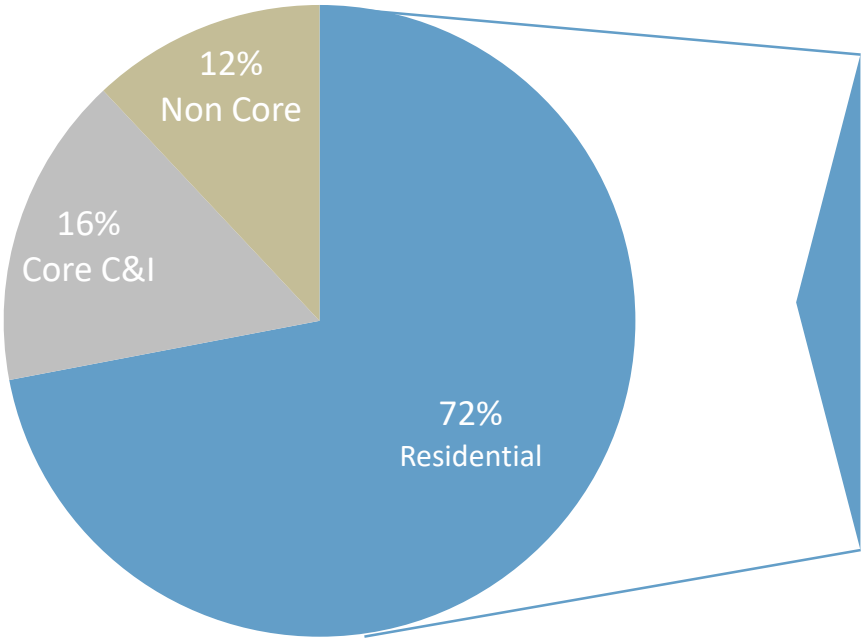
- The changes move in a direction that tends to support electric equipment and over time will disadvantage natural gas water heaters, especially impacting economically challenged and rental communities

- These changes are driven by the State's path to Zero Net Energy homes, an aspirational policy which seeks to minimize fossil fuels and drive solar PV / renewables

- We are taking aggressive steps to address the proposed changes

The Residential Market Drives Over 70% of SCG Base Margin.

Figure 1: Annual Base Margin Contribution by Segment (%)



Title 24 is a Primary Driver of Gas Penetration in the Residential Market.

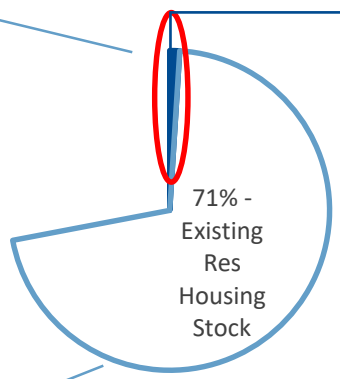
Title 24 governs building construction and is a bellwether for Title 20 and EE standards in existing construction.

Title 24

Title 20 & EE Programs

Title 24 *Immediately* Impacts a Fraction of Our Business.

The immediate annual risk is .2% of the res. market, or ~$1.6m in incremental annual revenues.



Annually, new construction represents 1% of the residential market (units). Of this 1%, about 20% of new homes will have solar PVs installed. Those will go electric water heating under the new changes.

Title 24 impacts multiply over the mid- and long-term as housing stock refreshes and PV saturation increases in new and existing construction.

The Proposed Changes Would Effectively Drive Electric Choice.

Title 24 Consists of 12 Parts

1: Admin Code
2: Building Code
3: Electrical
4: Mechanical
5: Plumbing
6: Energy
7: Elevator
8: Historical Bldg
9: Fire
10: Existing Bldg
11: Green Bldg
12: Reference Std.

Part 6: Energy is where the concerning changes are.

- Require gas water heaters to meet DOE standard for TANKLESS water heaters (.82 Efficiency Factor.).
- Effectively eliminate non-condensing gas storage water heaters as a qualified Title 24 water heating end use. The highest Efficiency Factor for AQMD-compliant gas storage is .67.
- Mandate for water heating:
  - Tankless water heaters; or
  - Gas storage water heaters that meet or exceed DOE tankless standard = condensing water heaters; or
  - High efficiency gas storage water heaters that meet DOE minimum (.67) WITH solar fraction of .55; or
  - ***Electric heat pump water heaters with solar fraction of .55***
- **Related CEC proposal would eliminate current requirement for gas water heating to be installed when there is a gas stub**

The Longer Term Business Impact Would Be Significant.

- Left unchecked, the proposed changes would have a growing impact on SoCalGas:
  - Residential water heating accounts for ~$800m of revenues/year
  - **New construction opportunity cost: Up to $12m per year by 2020**
    - Adoption of these proposals would lead to new construction opportunity cost of $1.6m in the first year (2016), as .2% of the market (new construction homes with PV) migrates to electric
    - By 2020, the new construction opportunity cost would be at least $4.8m annually. If PV installations accelerate from 20% to 50% of new construction, the annual opportunity cost would be $12m/year by 2020.
  - **Existing construction lost revenues: ~$4.8m per year by 2020**
    - Extrapolated to retrofit standards, the first year replacement rate of gas storage or tankless by electric heat pump would result in an additional $1.6m in lost revenues from current market the first year (2016) (2% of homes have solar PV; of those, 10% will have to replace water heater per year).
    - Assuming average water heater life of 10 years and that homes with solar PV will switch to electric water heating (2% of existing homes are solar), our gas water heating revenues would decline by an incremental $1.6m/year, or up to $4.8m annually by 2020
  - Total impact by 2020: Up to $17m in lost revenues and opportunity cost annually
  - As gas water heating erodes in new construction, space heating, cooking, clothes drying, etc., are all put at risk due to dominant role of water heating in cost justifying the gas houseline
  - The loss of residential water heating revenues will cause rates to rise across other customer segments

- **A CEC history** of trying to force broad social change through building codes, appliance standards, etc.
  - CEC changes are often ahead of available technology (i.e., ZNE homes by 2020)
  - CEC changes are often indifferent to customer economic conditions – leading to an expanding network of special programs and subsidies that mask true costs

- **Anti-fossil fuel sentiment** among some policy makers that burning any fuel, no matter how clean or necessary, must be "bad."

- Desire by some **electric utilities** to:
  - Return to the days of "Gold Medallion" all-electric homes as a way of counteracting the effects of growing distributed generation.
  - Preclude future gas fuel-based innovation (such as fuel cells, microturbines, NGV, etc.) that could impact electric sales

- **Delay implementation of tankless water heaters** / .82 EF standard to next cycle (2019)
  - Keeps .67EF storage water heaters as option
  - Allows time for further analysis - SCG will take lead on that
  - Allows time for market maturation for tankless water heaters
  - Also positions California to NOT go against DOE standards; to stay aligned with manufacturers and support broader consumer choice. Currently, the CEC expects a lawsuit because the proposed changes would pre-empt the DOE standard.

- **Delay implementation of electric heat pump water heaters** to 2019 cycle
  - Allows time for that technology to go through appropriate process and vetting that technologies usually do before becoming code

- **Strategy 1: Shape Report Recommendations before Submittal to CEC** (Completed)
  - Conducted aggressive analysis to expose challenges in CASE Study
  - Educated Energy Solutions, joint utilities and CEC staff on challenges of proposed recommendations
  - Successfully delayed publication of draft report

- **Strategy 2: Partner and Influence to Shape Outcome** (Underway)
  - Engaging coalition partners who have common cause, for public hearings (BIA, AGA, APGA, AWHI)
  - Identifying additional coalition partners in the economic justice arena
  - Beginning to engage detractors to educate and influence further (NRDC)
  - Engage / educate / advocate with CEC staff
  - Onboarded consultant to develop advocacy strategy
  - If needed: Develop public advocacy approach / engage public affairs early

- **Strategy 3: Get Ahead of 2019 Title 24 Cycle** (Underway)
  - Launch zero net energy advocacy strategy to argue for specific gas role in ZNE
  - Focus Emerging Technology investments on defining gas options that compete with electric heat pump
  - Develop EE programs that support favorable gas alternatives
  - Take leadership role in related codes and standards proceedings

Appendix

Timing

	Title 24 Cycle Milestone	Projected Date
Joint Utility / Study Phase	2nd draft of CASE report ready for IOU team review opposition	August 2014
	IOU Team review of CASE Report finished	September 19
	Energy Solution Deliver Final Draft CASE Report to CEC	September 19
Rulemaking / Public Engagement Phase	CEC Releases staff report with proposed standards	Beg – October 2014
	CEC holds first rulemaking workshop	Mid – October 2014
	CEC releases first draft of code language	December 2014
	CEC releases 45-day language	January 2015
	CEC releases 15-day language	April 2015
	CEC Adopts Standards	May 2015
	Standards Take Effect	January 1, 2017

Table 1: Builder First Cost Water Heater Comparison

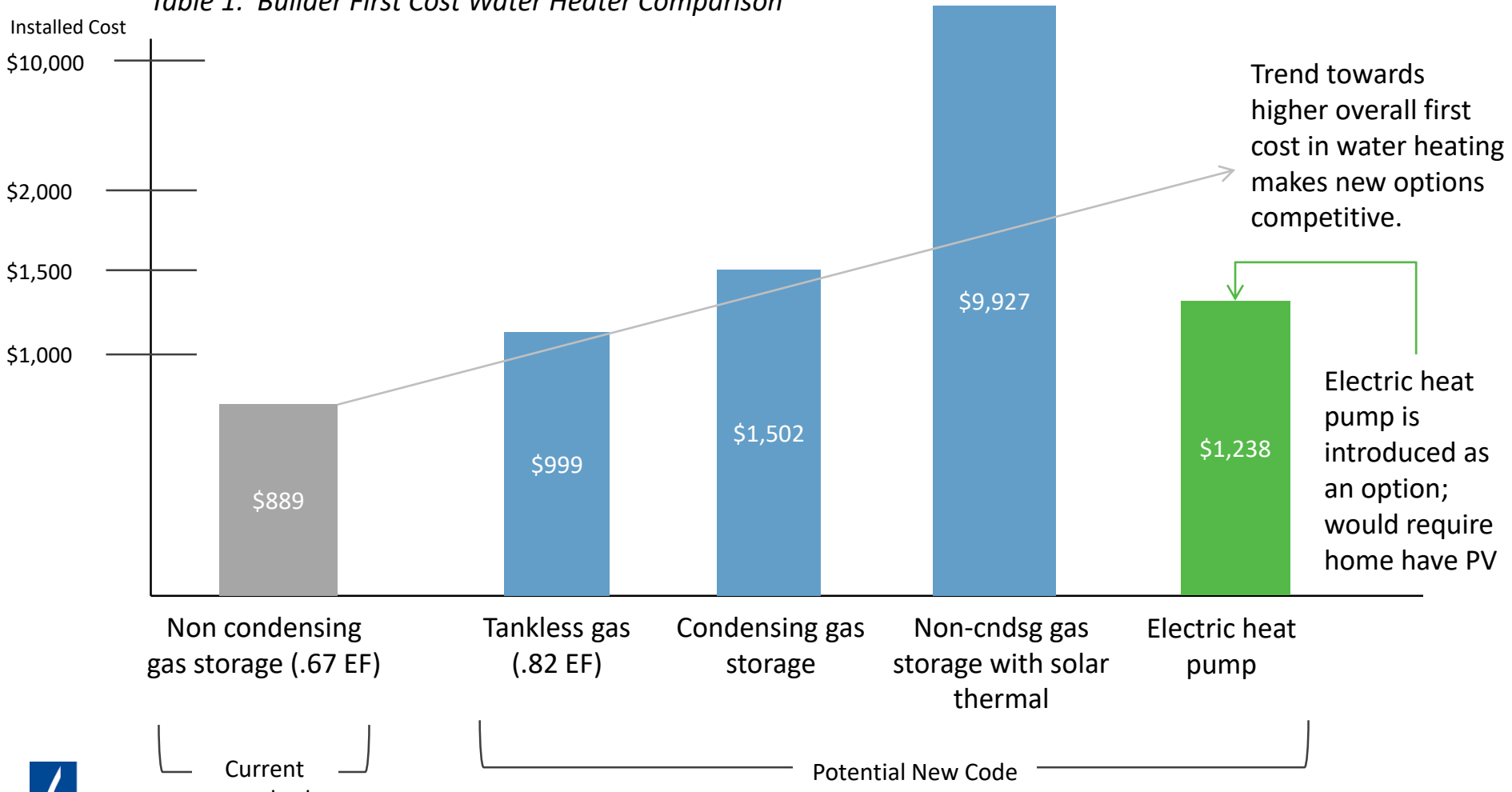
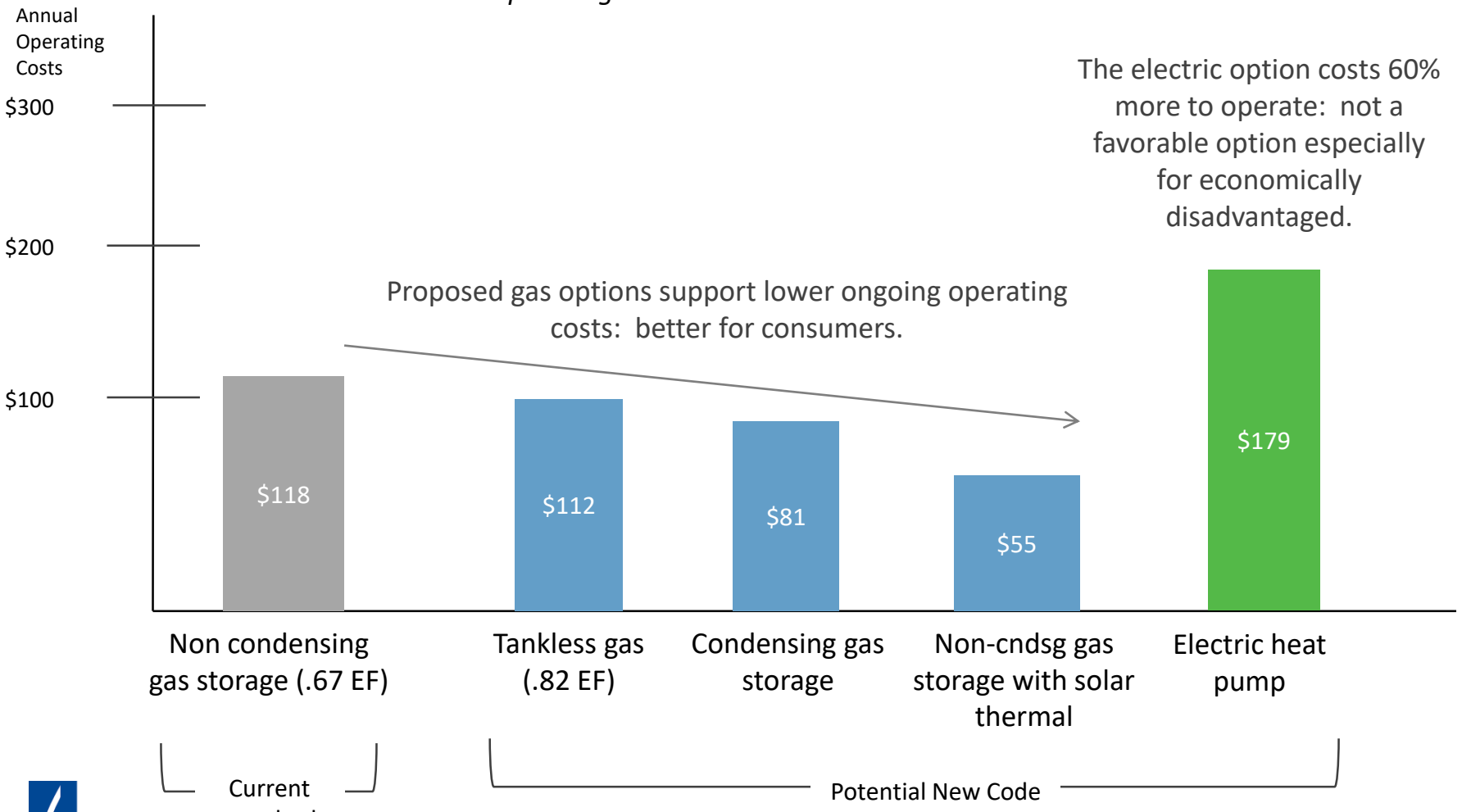


Table 2: Annual Consumer Operating Cost



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The proposed movement of tankless to standard would create a gap in program goal attainment, but would still help portfolio cost effectiveness.

Energy Savings(1) (Annual)

EE Programs:	- 320,000 Therms
EE Codes & Standards:	+780,000 Therms
Total Portfolio:	460,000 Therms (Net Gain)

Because progress towards goal would be diminished, there is an associated negative shareholder impact related to EE earnings.

Shareholder Earnings(2) (Annual)

EE Programs:	- $64,000
EE Codes & Standards:	N/A
Total Portfolio:	$64,000 (Net Loss)

Notes:

1 - GOAL ATTAINMENT: The EE Portfolio goal is bifurcated between EE Programs and EE C&S so any gain in C&S savings would not have an impact on the ability to achieve the EE Program goal.

2 - EE Programs: Calculated from the loss in therm savings associated with the water heater unit forecast.

EE Codes & Standards: The C&S mechanism component is expenditure based so there is no impact to earnings from an increase in C&S therm savings. The SoCalGas co-fund portion of the study was $102k so we would earn roughly $12k from funding that study in 2015.

Detailed Costs by Water Heater Type

Water Heater Type	Storage Capacity	EF	Equipment Cost (List)	Installation Labor (List)	Volume Discount (Y/N)	Total first cost (builder)	Annual Electricity use [kWh]	Annual Gas use [therms] (CZ10)	Total Annual Operating Cost
Gas Storage, Std Eff (EF 0.62)	50	0.62	$579	$480	Y	$741	0	141	$128.00
Gas Storage, Std Eff (EF 0.67)	50	0.67	$805	$480	Y	$899	0	130	$118.00
Gas Storage, Condensing High Eff (EF 0.90)	50	0.90	$1,665	$480	Y	$1,502	0	90	$81.00
Electric Resistance Storage WH	50	0.90	$376	$480	Y	$599	2847	0	$399.00
Electric Resistance IWH	0	0.98	$469	$480	Y	$664	2614	0	$366.00
IWH, Std Eff (EF 0.82)	0	0.82	$947	$480	Y	$999	57	115	$112.00
IWH, Condensing High Eff (EF 0.91)	0	0.91	$1,141	$480	Y	$1,135	57	104	$102.00
2-flat panel glass Solar Thermal System with Gas Storage WH (EF 0.62-0.67)	50	0.62+	$9,927	$0	N	$9,927	0	61	$55.00
2-flat panel glass Solar Thermal System Gas Storage Condensing (EF 0.91)	50	0.90	$10,900	$0	N	$10,900	57	40	$45.00
2-flat panel glass Solar Thermal System IWH Std Eff (EF 0.82)	0	0.82	$10,182	$0	N	$10,182	57	52	$55.00
2-flat panel glass Solar Thermal System IWH Condensing High Eff (EF 0.91)	0	0.91	$10,376	$0	N	$10,376	0	47	$42.00
2-flat panel glass Solar Thermal System Electric resistance Storage WH (EF 0.90)	50	1.00	$9,611	$0	N	$9,611	1281	0	$179.00
2-flat panel glass Solar Thermal System Electric resistance IWH (EF 0.98)	0	1.00	$9,704	$0	N	$9,704	1176	0	$165.00
Electric heat pump WH storage (EF > 2)	50	2.00	$1,168	$600	Y	$1,238	1281	0	$179.00
Electric Heat Pump with Tank (EF > 2) for Charging at Night	80	2.00	$1,668	$1,000	N	$2,668	1281	0	$102.00

ZERO NET ENERGY(ZNE) & T24

ZNE (Zero Net Energy) is an aspirational goal of the California Long-Term Energy Efficiency Strategic Plan

ZNE has evolved from aspirational to commonly known as a "mandate"

All residential new construction must be ZNE by 2020

T24 is the pathway to ZNE – hence the acceleration of IWH to standard far ahead of the DOE