

RAIDERS OF THE LOST POTENTIAL

UNDERSTANDING ENERGY EFFICIENCY
POTENTIAL RELATIVE TO EXISTING
CONDITIONS BASELINE

AUGUST 24, 2016

NAVIGANT

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INTRODUCTION TO CALIFORNIA EE AND AB 802

- Long history of robust potential studies and goal setting process in California
- Limited historic inclusion of:
 - Early retirement/dual baseline
 - Behavior and Operational Efficiency
- Assembly Bill (AB) 802 significantly changes scope of California's energy efficiency (EE) programs:
 - Energy savings based on reduction in normalized metered energy consumption (i.e., savings relative to existing baseline)
 - Encourages operational, behavioral, and retrocommissioning activities
- AB 802's aim is to capture the lost or stranded potential that is not happening due to existing program design



SCOPE OF ANALYSIS

- **How can the EE potential under AB 802 policies be forecasted?**
- Develop preliminary technical analysis of AB 802's effect on EE potential
- Develop and test model methodology changes to accommodate AB 802 analysis
- Used to inform the California Public Utilities Commission staff white paper
- Modify previous forecasting model:
 - Includes the above code savings from all sectors
 - Adds new savings in select areas due to AB 802
 - Residential and commercial below-code savings
 - Operational efficiency savings

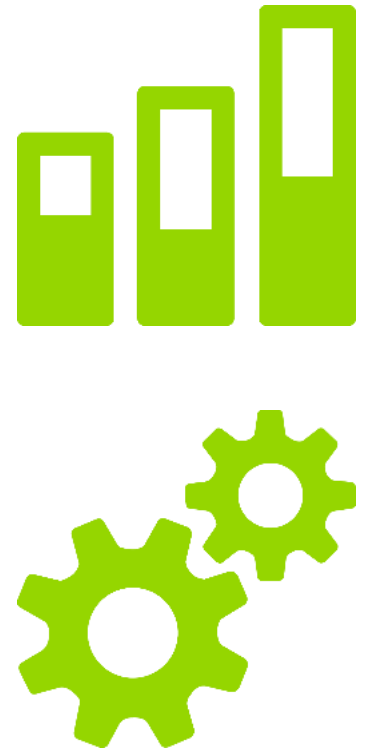
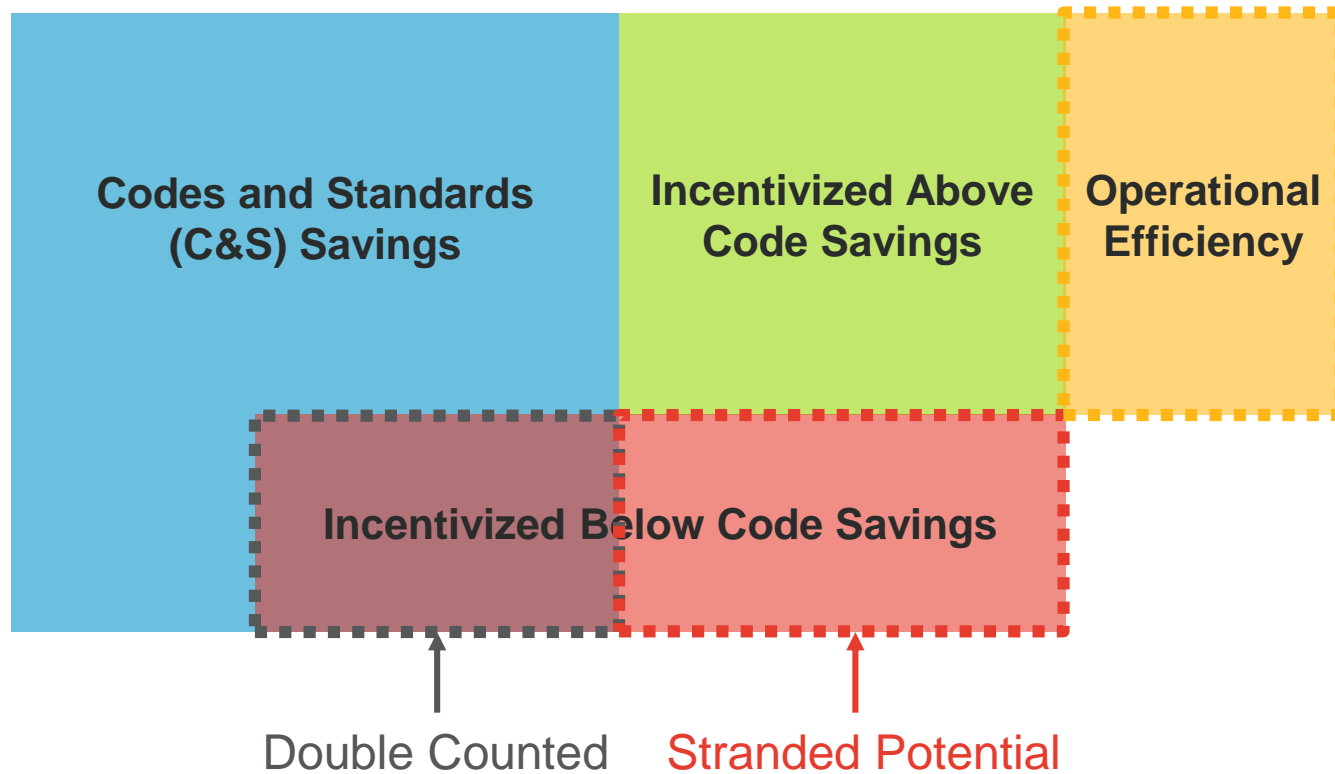


ILLUSTRATION OF SAVINGS CATEGORIES



Note: Illustrative, not to scale

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EXISTING CONDITIONS BASELINE DEFINITION

TERM	DEFINITION	PRECEDENT
Code* Baseline	Minimum level of efficiency required for new units that go into service	Set by the governing regulatory body or other industry standards
Existing Conditions Baseline	Level of efficiency of units going out of service (being replaced by new units)	A range set by historical markets; is generally a mix of technologies below current code

**Note: Code is used as a short form to mean either building code or appliance standard.*

STRANDED POTENTIAL

WHAT?

- Opportunities for EE that are not currently captured by rebate programs or C&S

WHY?

- A subset of customers maintain certain equipment well beyond its useful life
- No incentive for the customer to upgrade existing equipment

WHERE?

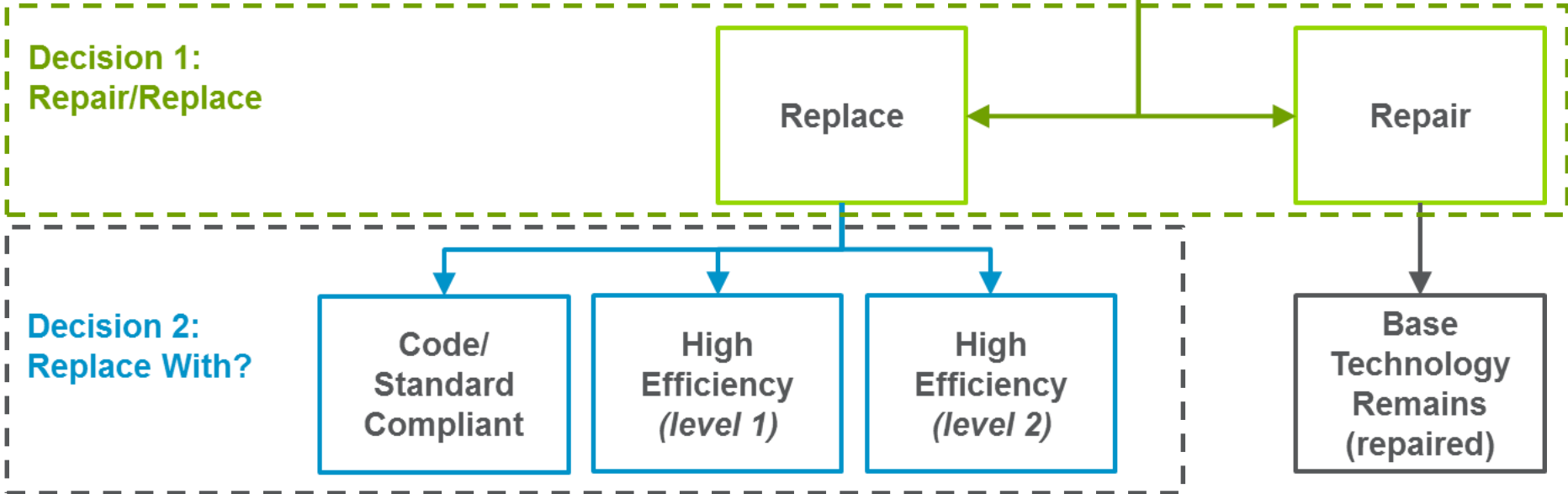
- Certain measures offer truly incremental, stranded potential
- Removing functional equipment from the market

STRANDED POTENTIAL METHODOLOGY

Equipment Fails



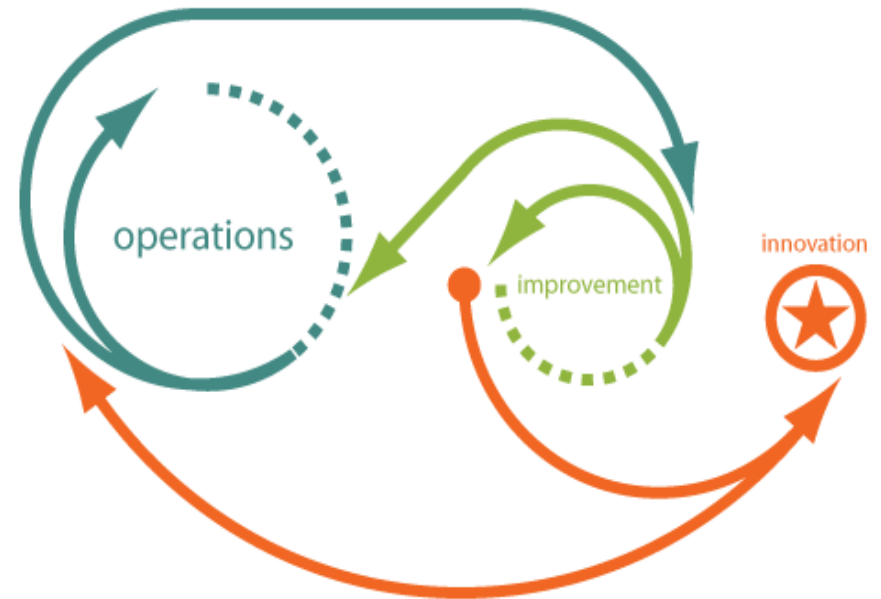
New considerations



Typical potential studies

OPERATIONAL EFFICIENCY

- Operational efficiency (OE) is a system or building approach to energy savings, not necessarily at an individual measure level
- Includes:
 - **Type 1:** Operator Behavior
 - **Type 2:** Autonomous Machine Control
 - **Type 3:** Building Tenant Engagement



DOUBLE COUNTED SAVINGS

- Below code savings generated from rebated equipment that would be realized even in the absence of rebate programs
- Equipment regularly gets replaced
- How much of the savings already being attributed to C&S is at risk of being double counted?
- Calculated based on the savings expected from C&S

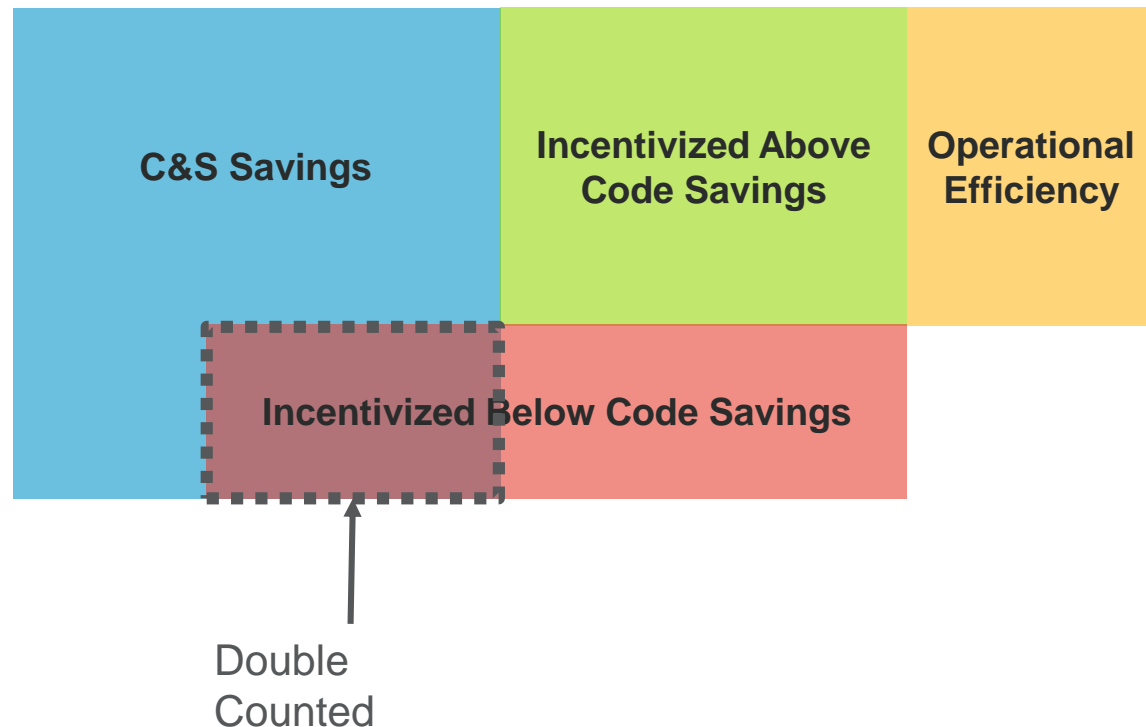


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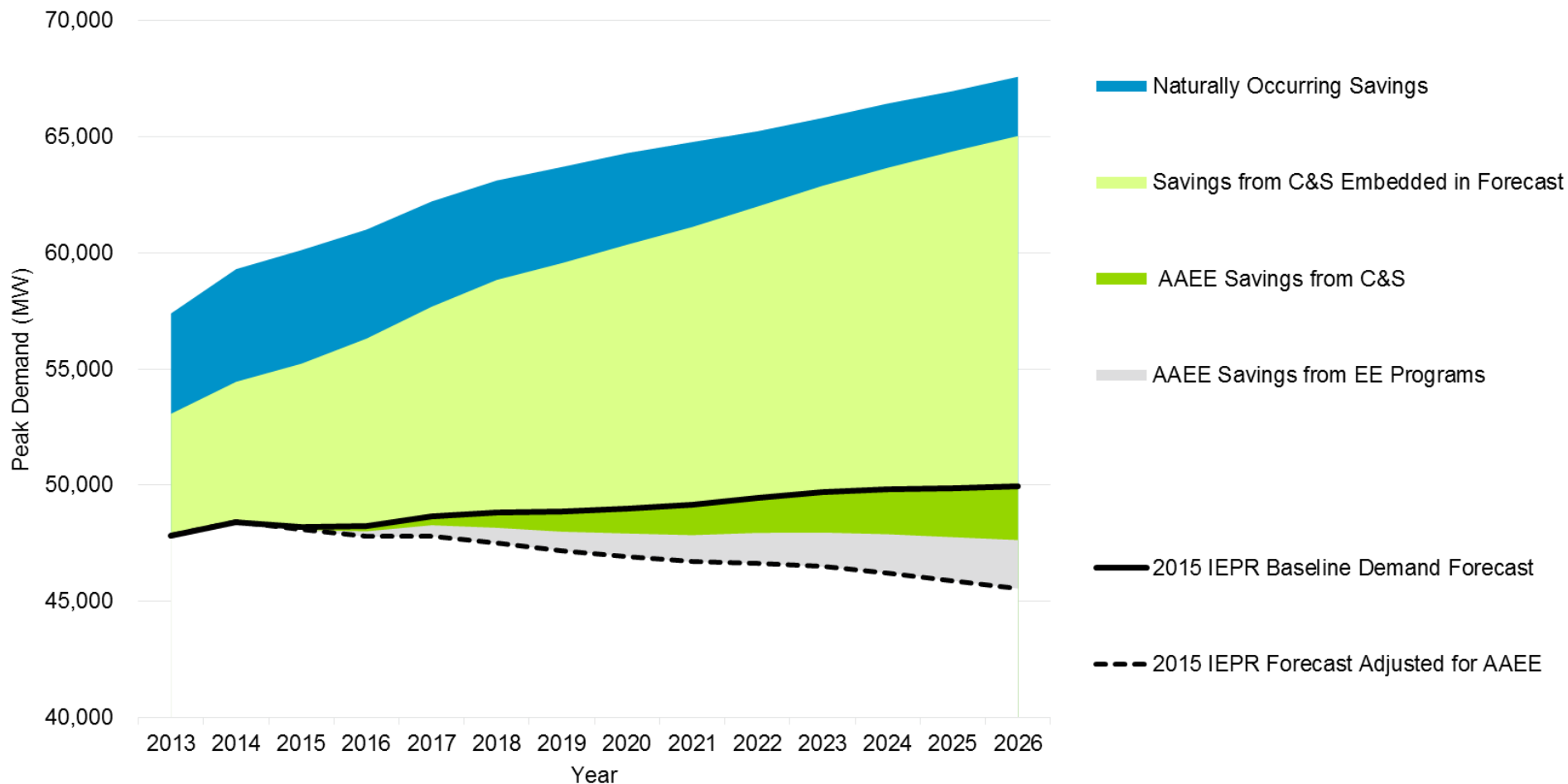
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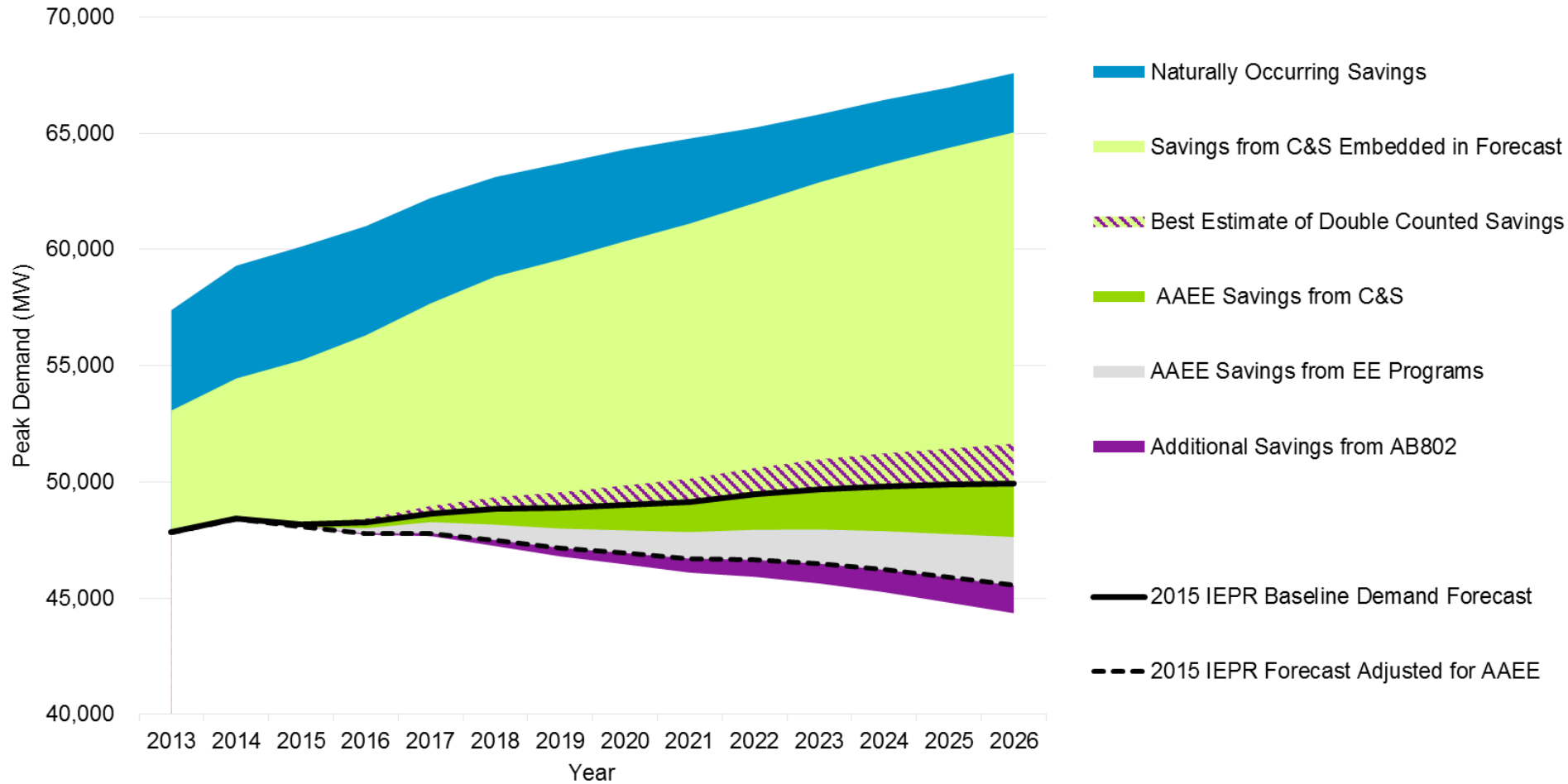
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ADDITIONAL ACHIEVABLE ENERGY EFFICIENCY (AAEE) AND THE CALIFORNIA DEMAND FORECAST



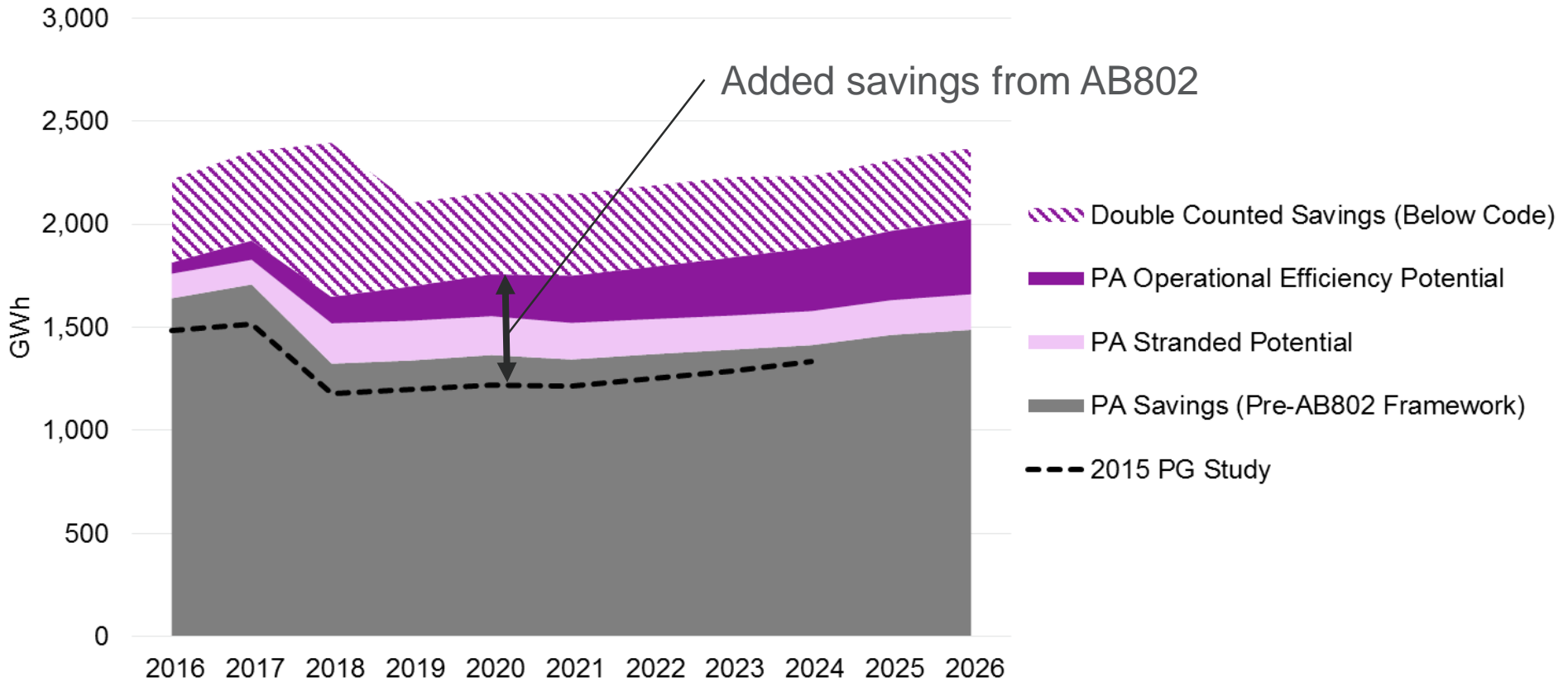
(Source: Navigant. AB802 Technical Analysis. March 2016)

AB 802 IMPACTS ON THE CALIFORNIA DEMAND FORECAST



(Source: Navigant. AB802 Technical Analysis. March 2016)

STATEWIDE INCREMENTAL ELECTRIC SAVINGS

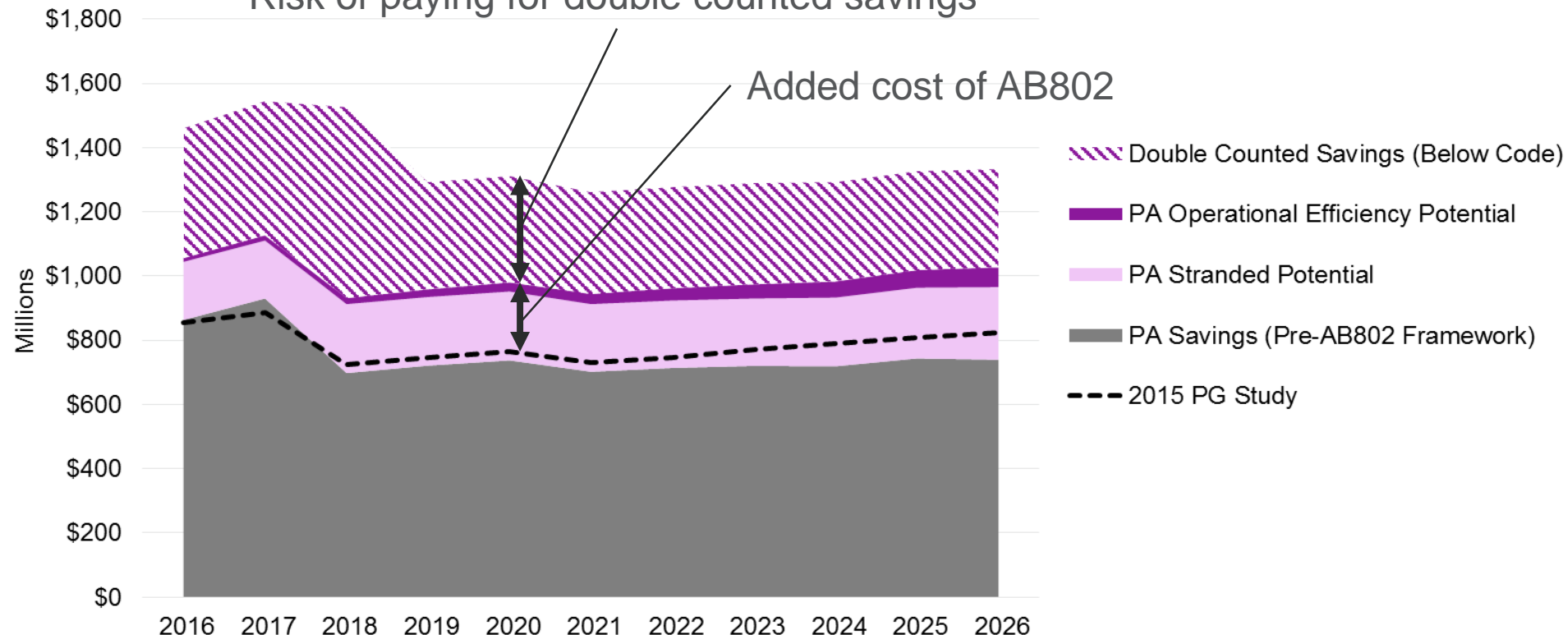


(Source: Navigant. AB802 Technical Analysis. March 2016)

STATEWIDE IMPACTS ON PROGRAM BUDGET

Risk of paying for double counted savings

Added cost of AB802



(Source: Navigant. AB802 Technical Analysis. March 2016)

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RECOMMENDATIONS

- Next potential study should:
 - Characterize additional residential and commercial equipment
 - Characterize below code savings opportunities in the agriculture and industrial sectors
 - Further research on operational efficiency savings
 - Further refine double counted savings approach
- Other studies and efforts could collect data that would better inform future modeling of below-code savings:
 - Expand saturation studies to consider a broader list of technologies and end uses
 - Collect data (age, condition, efficiency level) on equipment removed by program participants
 - Research measure repair characteristics (cost, life extension, etc.)

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