

The Next Level: An Integrated Approach to Energy Efficiency

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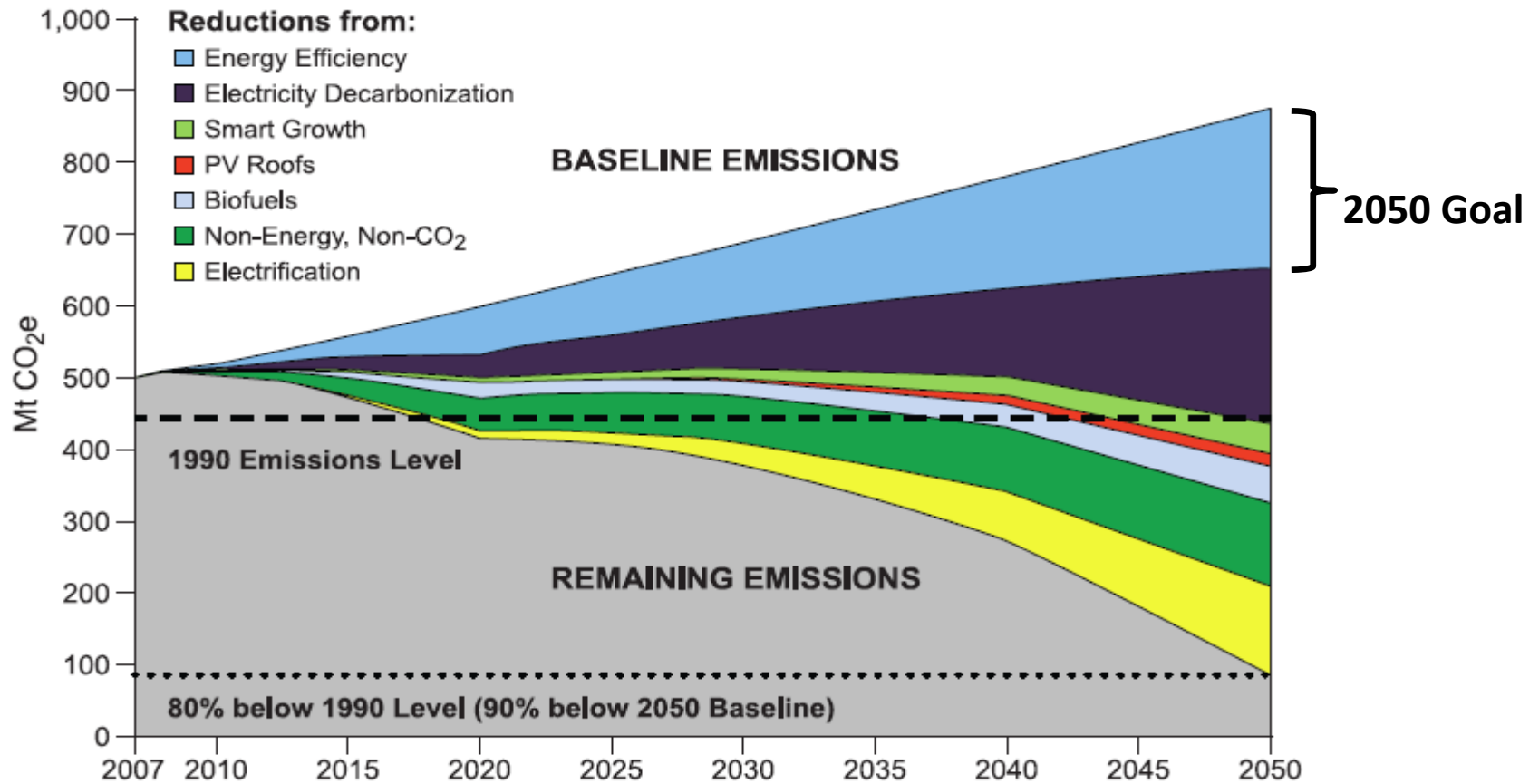
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The Next Level of EE: The Five Challenges Ahead

- Dramatically increase the **magnitude** of savings
- **Diversify** the sources of savings
- Measure and ensure the **persistence** of energy efficiency savings
- Integrate energy efficiency savings within a **GHG emission reduction** framework
- Understand and value energy efficiency as part of an **evolving grid**

D. Grueneich, Electricity Journal, Vol. 28, Issue 7, Sept. 2015.

EE, etc. in Climate Change Efforts



Source: "The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity", Science January, 2012

Vision for the Future: An Updated and Integrated EE Policy Framework

- Develop forecasted baselines using standardized methodologies
- Focus on metered building savings and persistency
- Move from widget-based rebates only to PfP/market transformation approaches as well
- Pay for EE with “extra attributes” – locational value to avoid/defer distribution benefits; grid integration (EE load saving curves)
- Provide real-time/near-time feedback to many stakeholders
- Skip attribution and cost-effectiveness fights – focus on overall outcomes (we don’t require it for NEM/DG/renewable PPAs, etc.)(NY REV)
- Embrace new technology, esp. IT and cloud-based products, and private investment (e.g., PACE); update cost recovery and utility profit opportunities
- Focus on understanding customer EE opportunities (esp. when coupled with other customer initiatives like DR/PV/EV/storage) and customer engagement

New CA Laws Begin This Change

- SB 350 – doubles EE goals through 2030
- AB 802 – existing metered conditions baseline, building performance focus (all savings count)
- AB 793 – incentives for customer energy management technology
- SB 32/AB 197 – Reduce statewide GHG emissions by at least 40% below 1990 levels by 2030; increased focus on disadvantaged CA communities

First New CA Law - SB 350 (2015)

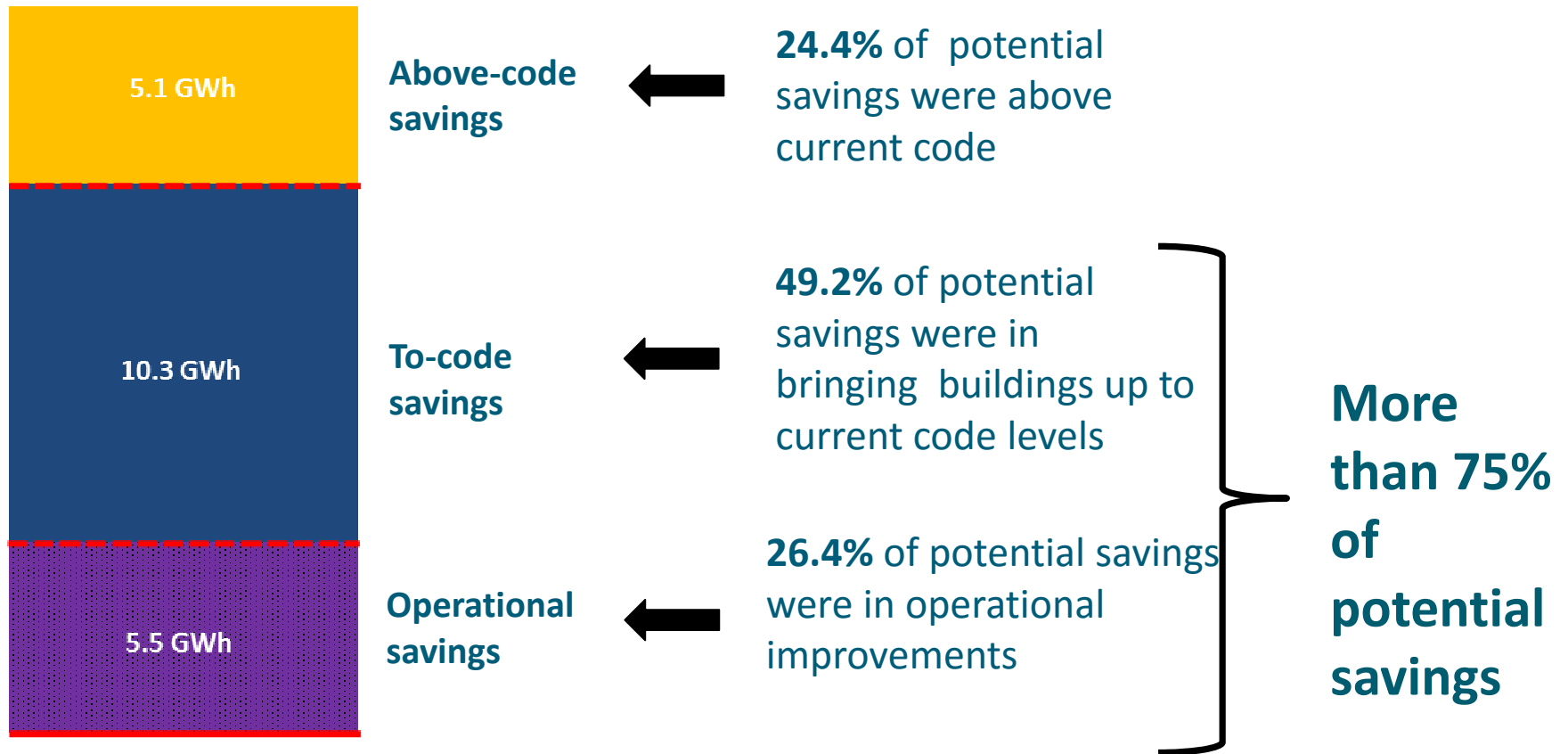
- 50% Renewable Portfolio Standard by 2030
- **Double (cumulative basis) of energy efficiency in existing buildings, based on metered energy reductions, by 2030 (20% decrease in building energy use)**
- Utility programs for transportation electrification
- Explore Western US wholesale energy market
- Updated GHG focus for utility Integrated Resource Plans (IRPs)

Second New CA Law - AB 802 (2015)

- Revises CA's energy benchmarking law
- Dramatic change for utility-customer programs
 - Focus on meter-based building performance
 - **Count all savings: operational, behavioral and retro-commissioning activities**
 - Baseline based on metered existing conditions (rather than Title 24 “at code”)
 - **Utility rebates for all savings from existing conditions**

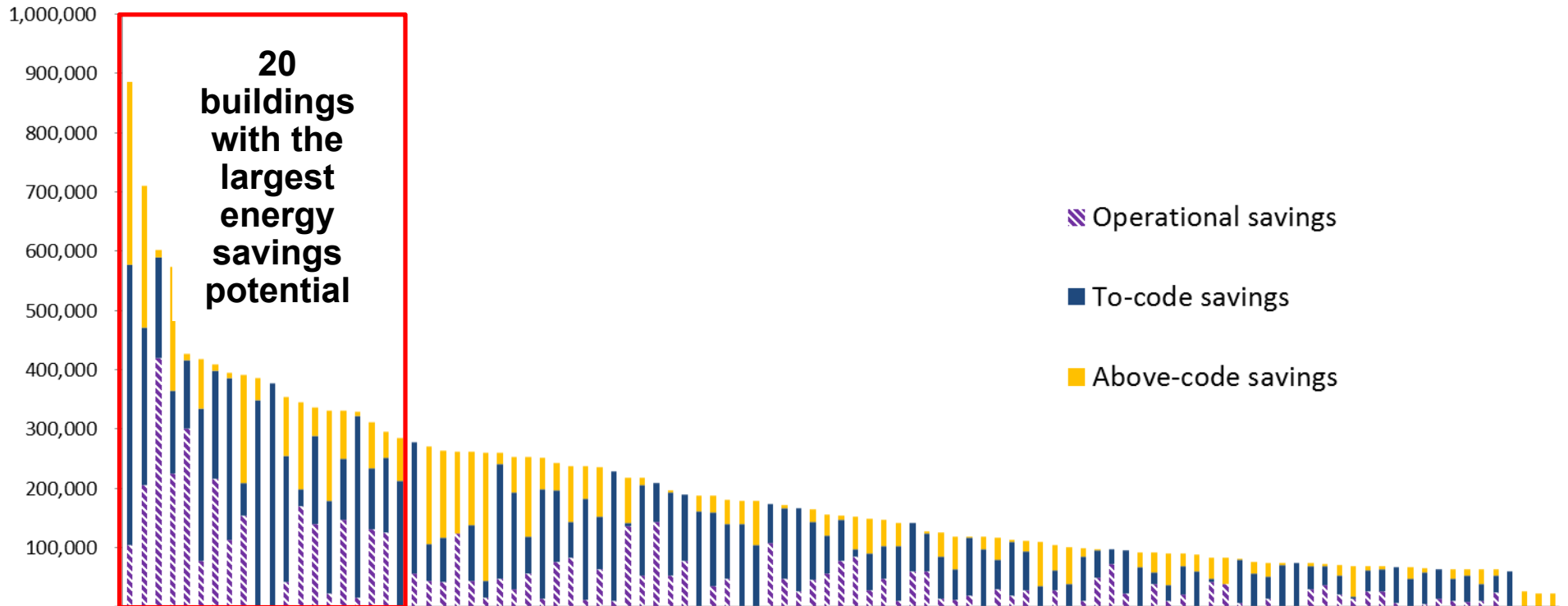
New CA Law (AB 802): Go After ALL Potential Savings

Aggregate Potential Energy Savings



New CA Law Will Dramatically Change Which Buildings Are Targeted

kWh Savings Potential by Building (Retrofit + Operational)



The 100 buildings with largest energy savings potential (out of the 164 examined)

Third New CA Law – AB 793 (2015)

- Energy Management Technology (EMT) Offerings for Residential and Small & Medium Business customers
- Requires IOUs to propose the following:
 - **Strategies for increasing participation and deployment of existing DSM programs** that meet the intent of AB 793
 - A list of EMT offerings, programs, and technologies that will be rebated and **available on Jan 1, 2017**
 - Examples: Rate Analysis, On-line Bill Comparison Tools, Business Energy Advisor, High Bill Usage Alerts.
 - A list of EMT offerings, programs, and technologies that will be rebated **after Jan 1, 2017**
 - Two year marketing plan for EMT offerings

Aug. 2016 CA PUC Decision

- **Baseline**
 - 2-year life for Behavioral; 3-year life for RCx & Operational Measures
 - Existing Conditions baseline (not code) for Behavioral, RCx/Operational, Retrofit
- **Statewide Programs (SW)**
 - Uniform programs designed to be delivered throughout all 4 IOU territories
 - Implemented by single statewide implementer (may be non-IOU)
 - Required for all upstream and midstream programs; pilot downstream
 - Encourages Pay for Performance (PfP)
- **Third Party Programs**
 - Proposed, designed, implemented and delivered by non-utility personnel
 - 20% minimum for outsourcing with a transition to at least 60% by 2020
 - Pay for Performance encouraged; focus on innovation and lower costs
- **Other**
 - Regional Energy Networks (RENs) continue to be pilots
 - EM&V – Accountability for verifying savings stays with PUC; budget stays at 4%
 - Overall focus on market transformation

Other Key Activities

- IOU HOPPS Proposals and Pilots
- PG&E's Diablo Canyon Closure and 2017 EE Solicitation

Role of Cloud-Based Data Analytics for Building Energy Efficiency

- “Scale, Speed, and Persistence in an Analytics Age of Efficiency: How Deep Data Meets Big Savings to Deliver Comprehensive Efficiency,” D. Grueneich/D. Jacot, Electricity Journal, April 2014
- Precourt EE Center (PEEC) surveying companies, utilities, and experts re products available, uses, value, efficacy assessments, EM&V role, and policy barriers to greater use
- Research results to be presented at the Annual Meeting of the National Association of Regulatory Utility Commissioners (NARUC) (Nov. 2016) and ACEEE’s Intelligent Efficiency Conference (Dec. 2016)

Four Thoughts About the Future

- Traditional EE policy framework must change to capture full EE potential and support market innovation
- New tools, esp. data analytics, can help
- Work is just starting on EE's role in a larger customer-focused portfolio of ER/DG/EV/storage and large amounts of renewables
- Utility involvement is critical

Thank You

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Appendix

CA Adopted Baseline Policy to Apply to EE Programs and Projects Beginning January 1, 2017

Table 1. Adopted Default Baseline Policy for All Sectors

Alteration Type	Delivery	Savings Determination	Shell & Bldg System and Add-On Equipment	Behavioral, Retro-commissioning, and Operational	Normal replacement	Accelerated replacement and repair eligible
New construction, expansions, added load	Any	Any	Code	N/A	Code	N/A
Existing buildings, including major alterations	Upstream & Midstream	Any	Code	N/A	Code	N/A
	Downstream	Calculated	Existing	Existing	Code	Dual
		Deemed	Existing	Existing	Code	Dual
		NMEC	Existing	Existing	Existing, Program Design	Existing
	RCT/experimental	Existing	Existing	Existing	Existing	
Non-building projects, including industrial and agricultural processes	Any	Any	N/A	Existing	Standard Practice	Dual

Whole Building & RC_x Legislative Drivers in CA

Bill	Program & Planning Impacts
SB 350 (De Leon)	<ul style="list-style-type: none"> • Integrated Resource Planning • 50% Renewables • Doubling EE (IOU & POU) • Increase Pay for Performance Programs
AB 802 (Williams)	<ul style="list-style-type: none"> • Load forecast based on existing conditions (CEC/CPUC) • Web-based, energy use data disclosure for large commercial and MF buildings (CEC) • By Sept 1, 2016, authorize IOUs to count meter based savings as a measure of savings • IOU programs shall incorporate existing condition baseline and multi-year savings from operational, behavior and RCx
AB 793 (Quirk)	<ul style="list-style-type: none"> • IOU's provide incentives to residential & SMB customers to acquire energy management technology in their home and business • IOU's develop a marketing plan to educate SMB on new EMT program
AB 1330 (Bloom)	<ul style="list-style-type: none"> • Increase EE Funding • CPUC to ensure sufficient funds to cover SB 350 mandate, but only if determined necessary