



Energy Efficiency Potential: California Experiences

Energy Efficiency as a Resource
ACEEE Conference, Berkeley, CA

Fred Coito

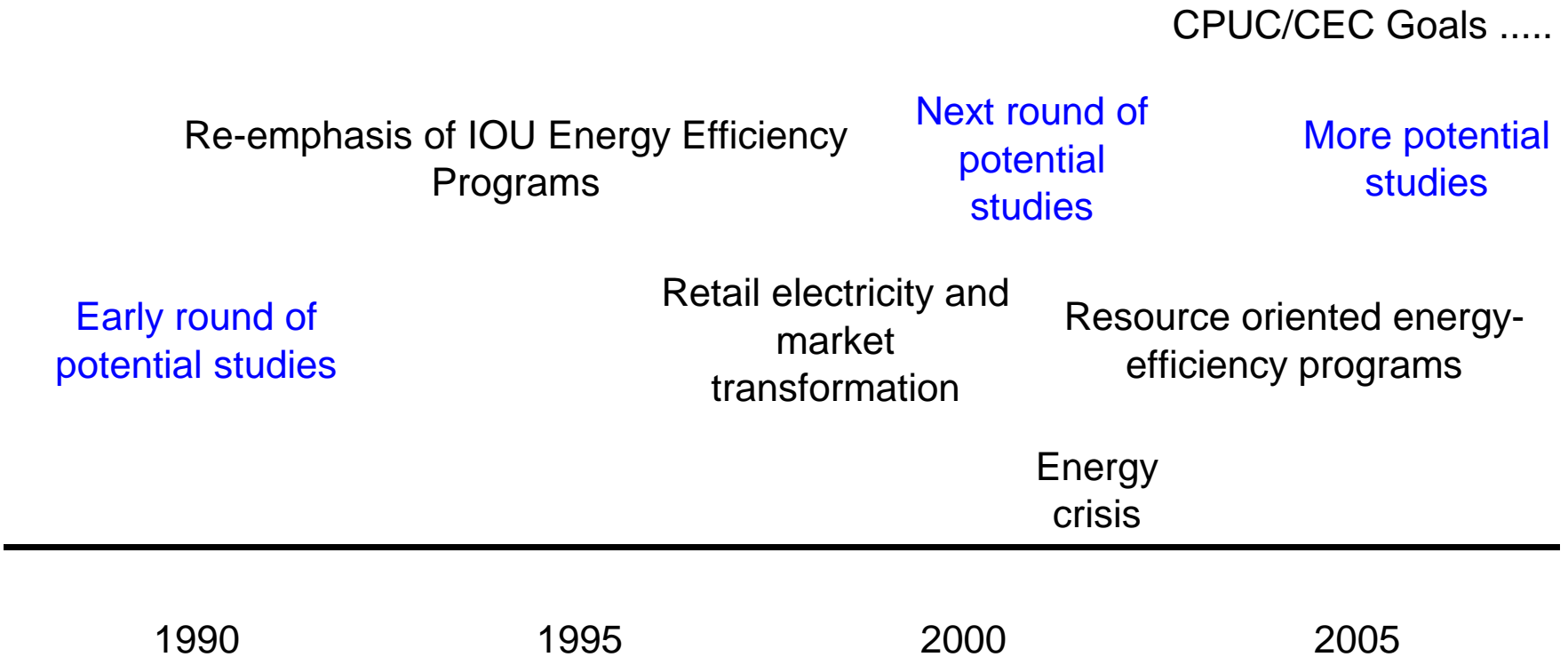
fred.coito@kema.com

October 1, 2007

Topics

- Brief history of energy efficiency in CA – 1990 on
- Purposes of energy efficiency potential studies
- Key research questions for EE potential studies
- How were the 2002 CA potential studies used
- 2002 study recommendations for future research
- Maximum achievable potential
 - A key, sometimes misunderstood element of 2002 CA energy efficiency potential work

Brief history of energy efficiency in CA



Purposes of energy efficiency potential studies

- Understanding which measures and markets to target with programs
 - Incorporating energy efficiency into integrated resource planning (IRP) process
 - Goal setting
 - Advocating for more energy efficiency
-
- Early CA studies targeted the first 2 points; next round touched on all 4 points; latest round of studies focused on first 3 points – little need for advocacy

2002 CA potential studies: key research questions

- How much near-term EE potential is there *today*?
 - What are the relative costs of acquiring savings?
 - How aligned are programs with potential?
 - How robust/sensitive is potential to avoided costs, rate increases, etc.?
-
- Latest round of potential studies improved upon points 1 and 2; did not focus on points 3 and 4

How were the 2002 CA potential studies used?

- Program planning: utility planners utilized the studies to identify key measure groups and customer groups to focus program efforts on
 - For example: lighting in schools
- Resource planning: utility planners utilized results to incorporate energy efficiency into their resource plans
 - Additional scenario runs were conducted for specific utilities to align results with internal program approaches and planning assumptions
- Goal setting: Regulators utilized elements of the studies to set utility EE goals

2002 study recommendations for future research

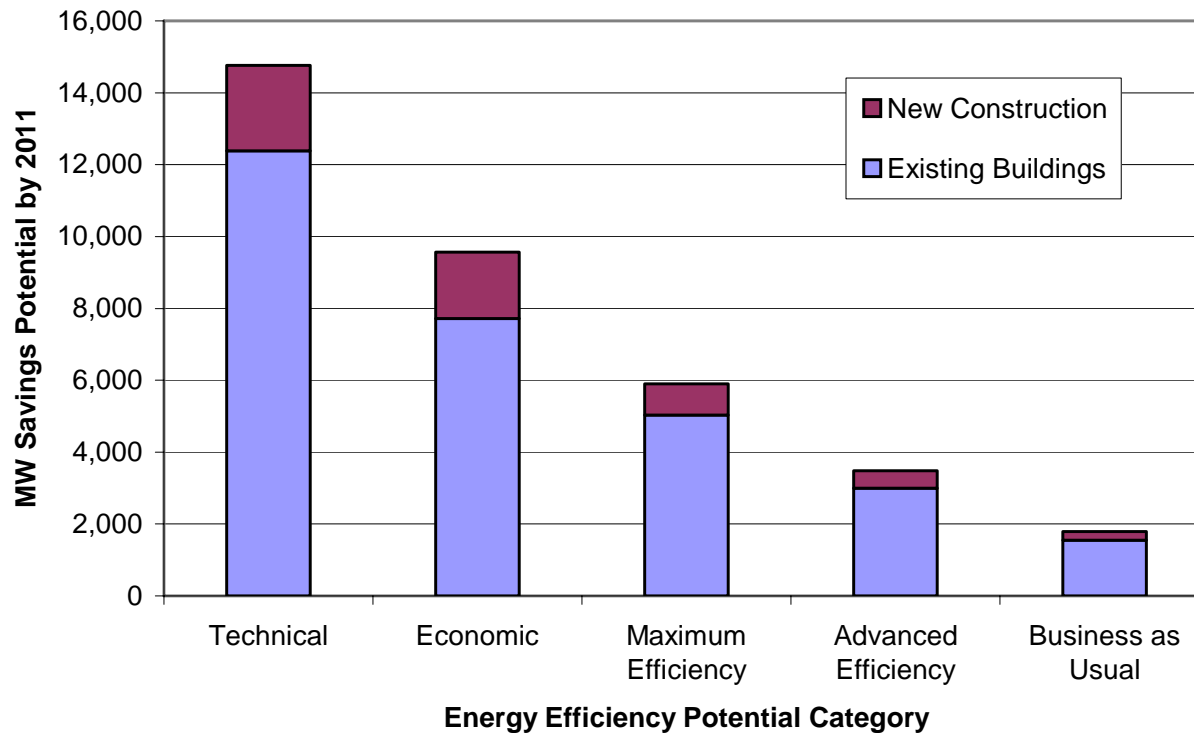
- Improve estimates of current efficient measure saturation
 - Yes. CEUS, CLASS, RASS studies
- Improve estimates of sustained conservation and efficiency resulting from 2001 energy crisis
 - Yes. Picked up in above studies and calibration
- Improve estimates of efficiency potential for the industrial and new construction sectors
 - Yes. Expanded industrial and new construction modeling efforts
- Improve forecasts and tracking of customer adoption of efficiency measures
 - No. Tracking databases lacking; absence of funding for adoption studies

Maximum Achievable Potential

- Defined as the amount of economic potential that could be achieved over time under the most aggressive program scenario possible.
 - Assumes a direct-install type set of programs to ensure maximum penetration
- Modeled in 2002 by ramping incentives up to 100% of incremental measure cost over several years and doubling marketing/education budgets.
 - Studies assumed traditional program cost-savings relationships would hold
- 2002 estimated program costs for maximum efficiency were 4x those of business-as-usual
 - Present value of \$8 billion vs. \$2 billion over 10 year period

Maximum Achievable Potential

- In 2002, CA *net* maximum achievable potential over 10 years was estimated at about 60% of economic potential



Maximum Achievable Potential

- Maximum achievable potential, in net terms, will never reach economic potential
 - Naturally occurring EE will take away some potential
 - Some customers will not install measures on a voluntary basis
 - Marginally cost-effective measures will not remain cost effective for programs, when program overhead costs are added

Maximum Achievable Potential

- PROs and CONs of modeling and striving for Max-Ach
 - PROs
 - Provides a good technical upper bound for ensuring program potentials are not overestimated
 - Provides a context for setting stretch goals
 - CONs
 - Rapid attempts to reach Max-Ach may lead to spending inefficiency – infrastructure limitations
 - Costs associated with reaching Max-Ach will be higher than initially estimated
 - Harder to reach market segments
 - More bad measures and programs
 - Possible boom-bust EE industry
 - Large transfer payments to program participants
- Are mandatory standards a better way to reach economic potential?