Under the Bright Lights: Energy Efficiency Programs

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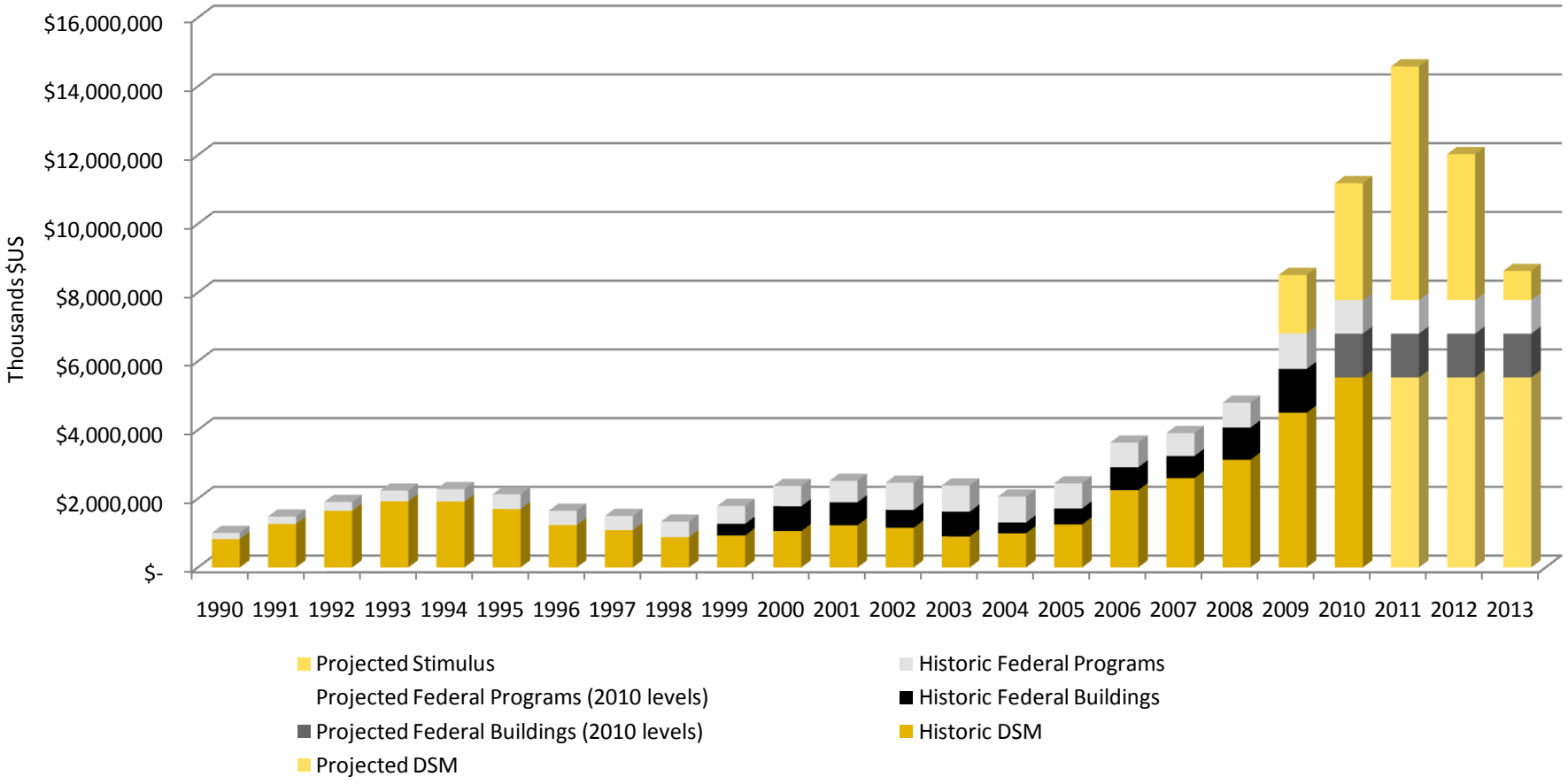
Boom Times for Energy Efficiency

- EISA (2007)
  - > Most significant EE legislation in previous 3 decades
  - > Incandescent light bulb phase out starting 2012
  - > Vehicle fuel economy standards increased for first time since 1980s
  - > Numerous program budget authorizations
- Federal Stimulus Funding
- Ratepayer Funded Programs
  - > All states except AK and LA
  - > 4 states half of total funding, 10 states 94%

US Energy Efficiency Funding 1990-2013



Alliance to Save Energy 2011

About this Presentation

- Are EE programs reducing energy consumption?
  - Short Answer: Yes – Programs are not increasing energy use.
- Are programs meeting expectations (goals)?
  - Short Answer: Depends on your expectations and who is measuring.
- Are EE programs cost effective?
  - Short Answer: Yes, at portfolio level, but some programs may need to be revisited and federal standards will pick a lot of the low hanging fruit.
- Outline
  - > Focus on Maryland EmPOWER findings to date
  - > Additional states for context
  - > Then national perspective and recommendations

About EmPOWER MD

- Goals
  - > Reduce per capita statewide electric use (from 2007)
    - kWh – 15% by end 2015, 5% by end 2011
      - – Roughly 15% reduction in overall kWh sales
      - – 2% annual!
      - – EmPOWER utilities on hook for 10%
    - kW -- 15% by end of 2015, 5% by end 2011
- Objectives
  - > Commission to consider cost effectiveness and impacts on rates, jobs and environment
- Statewide Evaluation of Savings and Cost
  - > Independent evaluator to provide info symmetry

EmPOWER Maryland Findings – Yes!

- Reduced MWH by ~0.8% in 2009-10
  - > Reduced peak MW by ~ 0.6%
  - > Percent of 2007 sales
- Total Resource Cost B/C > 1
  - > For 4 of 5 utility portfolios
  - > For 14 of 26 program areas
  - > Statewide B/C = 2.2
  - > B/C more likely to be higher than lower
- Statewide RIM = 0.5
- Verified savings ~= evaluated savings ~= utility-reported savings

EmPOWER MD Findings – Hmmm….

- Meeting expectations?
  - kWh ~25% of target trajectory
- Lighting dominates portfolio savings
  - > More than 80% of evaluated kWh savings
  - > EISA standards will remove some of this low hanging fruit
- Low cost utility portfolio did not pass TRC B/C
- Some programs don’t make the cut and likely won’t in the future
  - E.g., Res HVAC programs

Is Maryland Typical?

- Rebuilding Program Delivery Infrastructure
  - Some utilities new to EE, some old hands
- Lighting programs dominate savings and cost effectiveness
- High and low cost utilities
  - Hard to establish “cost effective” targets for all utilities
- Aggressiveness of targets
  - Some higher (e.g., VT)
  - Some lower (e.g., OH)
  - Per capita targets!
- Taking EMV seriously
  - EMV budget ~$7m over 2 years for a $120m portfolio
  - About average for “serious” states

Assumptions Drive Benefit Cost Estimates

Program Type	Base Case (thru Sept 30, 2010) TRC B/C	Amortized Administrative Costs		4th Quarter Update of Costs and Savings	High-Cost Supplier Equivalent
		5 Years	3 Years		
Residential HVAC (5)	0.18 - 0.69	14 - 207%	12 - 128%	1 - 179%	0 - 73%
Residential Appliances (2)	0.45 - 0.64	104 - 107%	75%	(2) - (10)%	71 - 94%
C&I Custom (2)	0.06 - 0.93	60 - 366%	45 - 193%	52 - 1952%	22 - 38%
C&I Prescriptive(2)	0.69 - 0.99	150 - 229%	99 - 138%	49 - 95%	53 - 80%

Adapted from Itron, *Cost Effectiveness Estimates for 2009-10 EmPOWER Maryland Energy Efficiency Programs*, April 2011

Policies Too

- $100 CO2 tax ($27/ton Carbon)
  - > Low cost utility portfolio becomes cost effective
  - > Even Res HVAC programs start looking good
- Standards reduce PROGRAM cost effectiveness
  - > CFLs >> Remaining Useful Life of 5.7 years increasingly questionable
  - > SEER 13 CAC >> Much higher incremental costs and lower savings
  - > This is NOT an argument AGAINST standards

Raising the Bar on EE Program Evaluation

- More money = more visibility
  - > Stimulus, Ratepayers, Carbon Cap & Trade
- Performance-based compensation
  - > CA Incentive Mechanism, Save-a-Watt
- Performance-based funding
  - > Carbon Offsets, Cap & Trade allowance distribution
- Performance-based DSM Standards
  - > Energy Efficiency Resource Standards
- System Planning
- Making Programs Work Better!

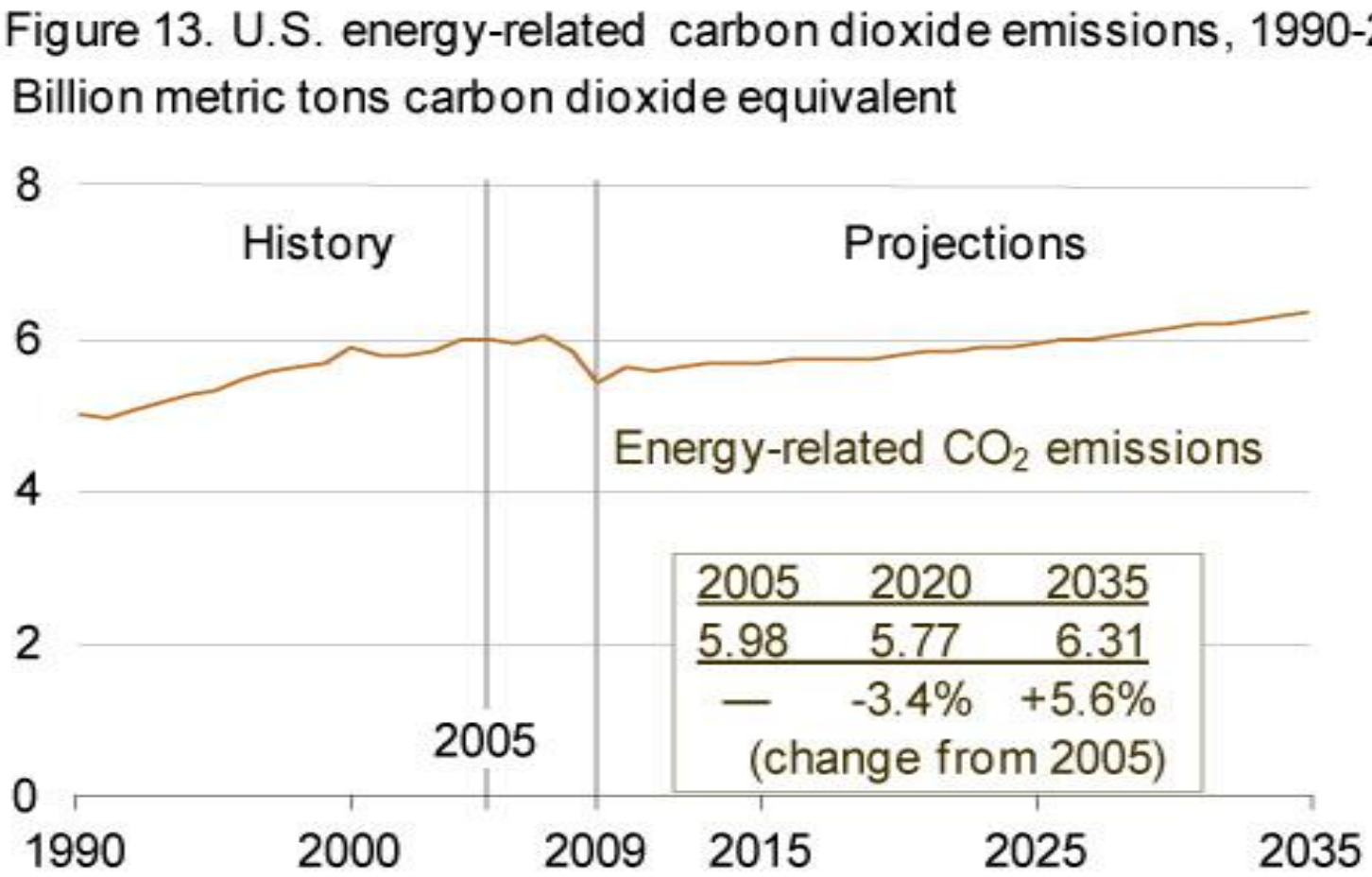
Program Evaluation Challenge in a Nutshell

- Objectives
  - Comparability
  - Reliability
  - Credibility
- Means
  - Consistency
  - Transparency
  - Knowledge & Expertise
  - Independent Verification/Oversight

National "Framework" for Evaluation

- No easy path
  - > Decide assumptions/methods, if you can
  - > Create credible decision frameworks
    - CA, MD, OH, MA
- Several initiatives underway
  - > NEEP EMV Forum (regional)
  - > NAPEE
  - > NAESB
  - > California (and other states)
- Macro-Consumption (Top-Down) Models
    - CPUC pilot projects to develop metric(s) to be used in 2013-15 Program Evaluation Plans

How to Attribute Savings?



Source: EIA, Annual Energy Outlook 2011, Early Release

EIA….Help!

- Surveys
  - > Some individual state surveys, but no coordination
  - > Continue and increase funding for RECS, CBECS, MECS (and Transportation too)
  - > Refine/focus DSM data (Form 861)
- Annual Energy Outlook (AEO) and Service Reports
  - > Refine and build demand modules
  - > Maintain independence

EIA….Help! (cont'd)

- AEO tells us where we're going
  - > EE will reduce consumption 13% from baseline
  - > Structural change will reduce by 33%
- But where have we been?
  - > Have we moved the needle?
    - Programs, standards, supply
    - Energy subsidies, mortgage interest deduction

Recap

- EE Programs ARE saving energy
  - > BUT “The fruit always grows back” thesis will be tested over next few years
- Utility program portfolios ARE generally cost effective
  - > BUT low-cost utilities may not be “cost effective” w/o CO2 price
  - > Some programs may need to be “revisited”
- Assumptions and policies can drive cost effectiveness
  - > Evaluation challenges remain

Thanks!

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