



National Action Plan for Energy Efficiency

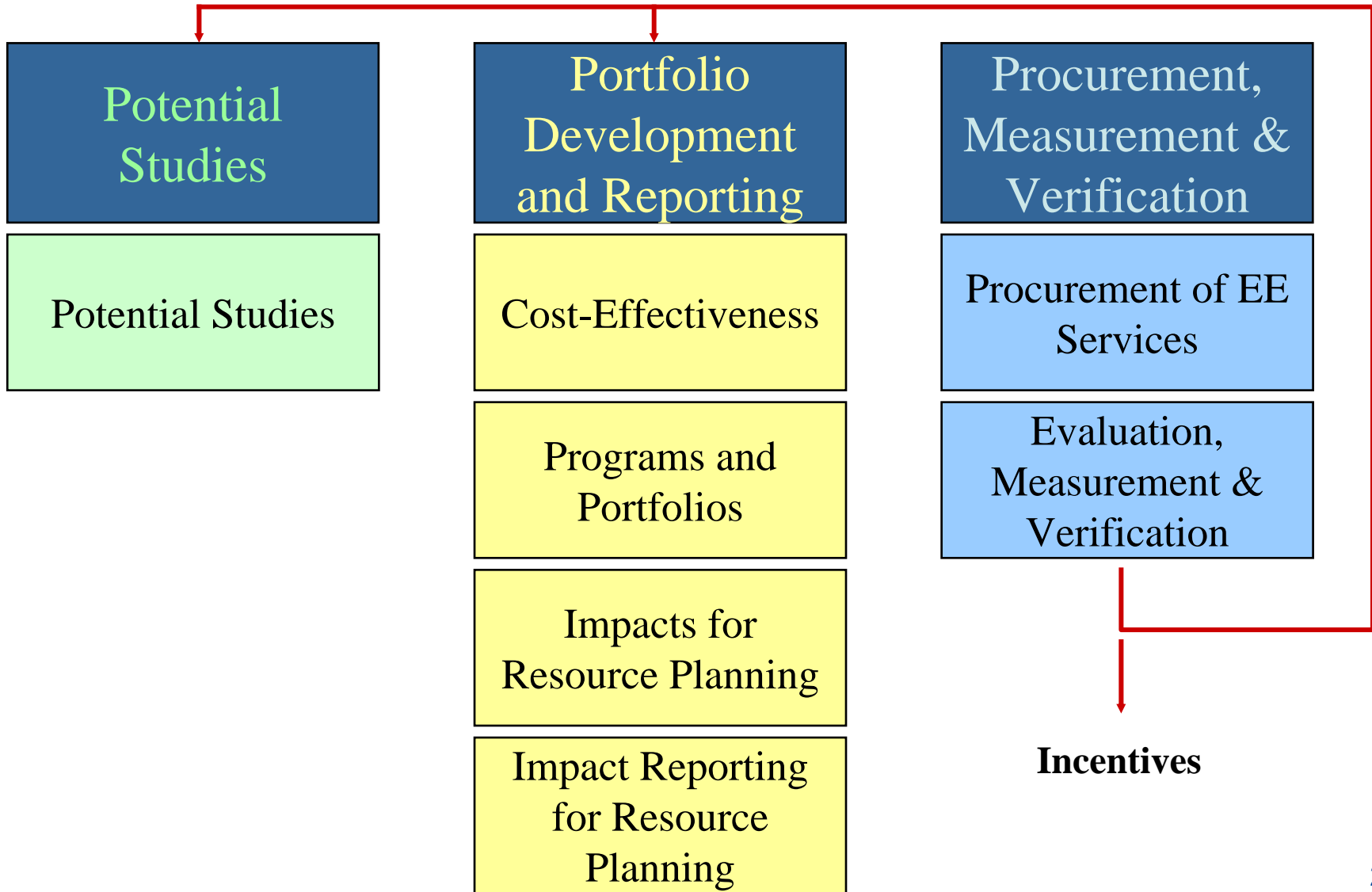
[www.epa.gov/
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Resource Planning with Energy Efficiency Issues for Policy-Makers

July 22, 2009
National Association of Regulatory Utility
Commissioners
Snuller Price, E3

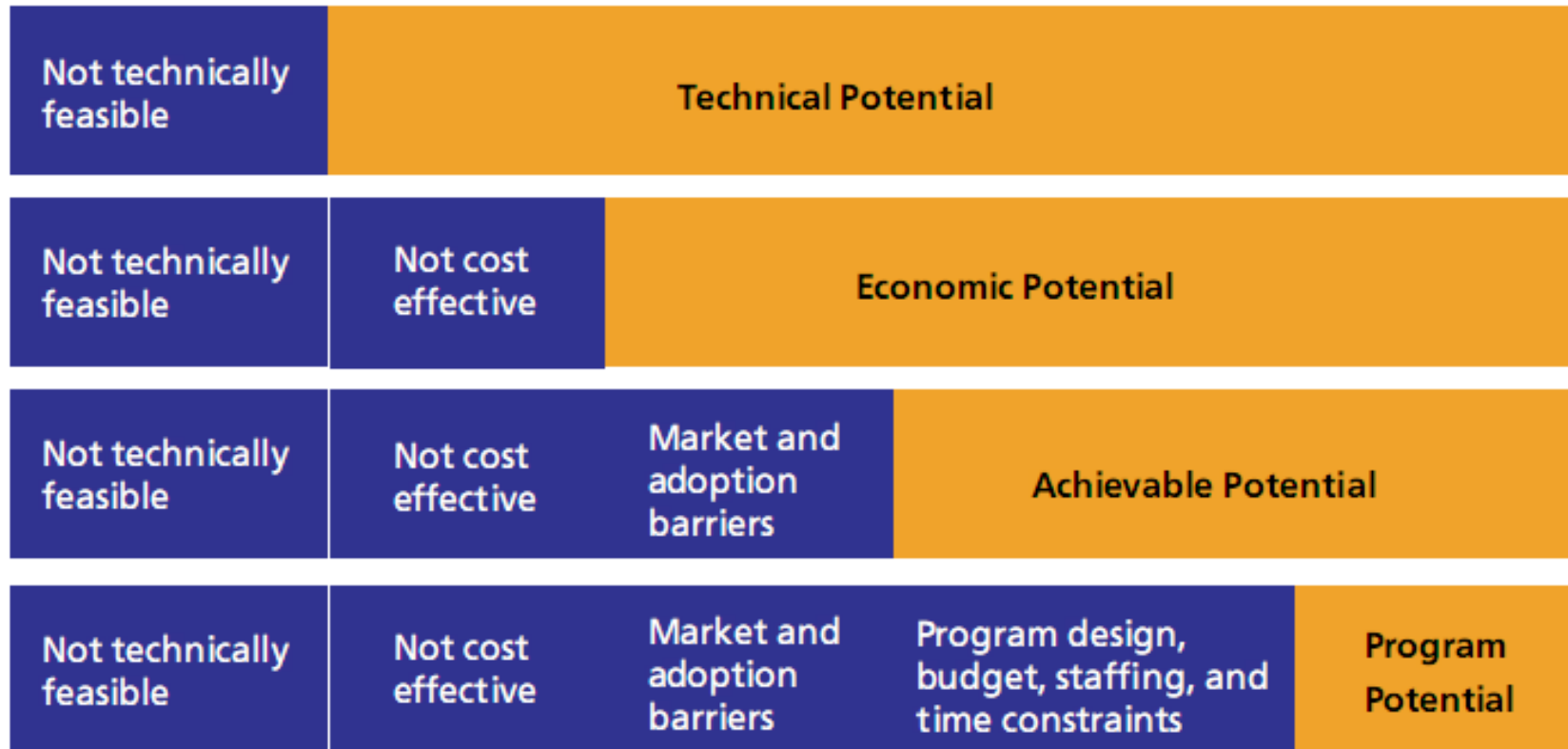


Overview





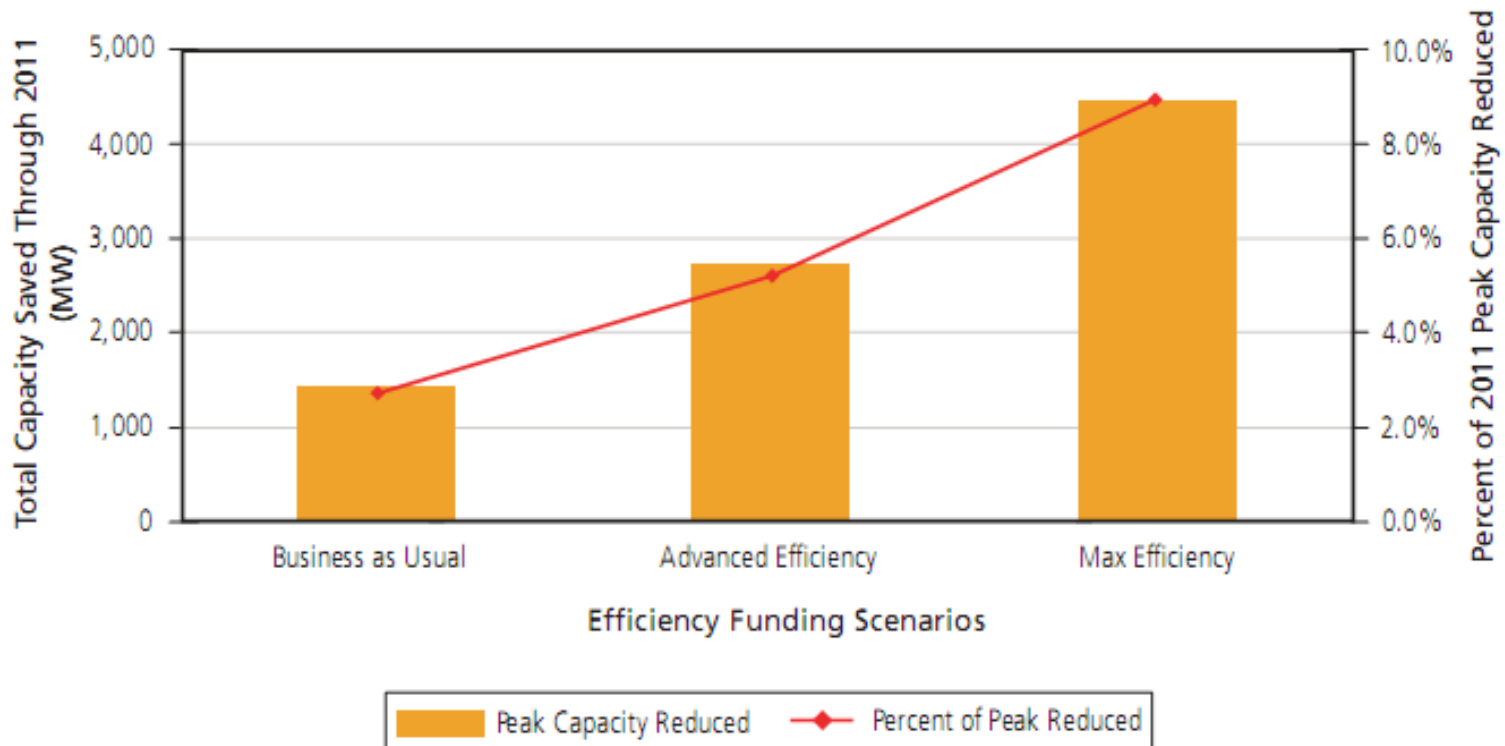
EE Potential Studies



Potential studies typically start by determining technical feasibility and then applying various screens to determine the energy efficiency that is economic and realistically achievable



EE Potential Studies – Funding Scenarios



The potential achievable with different levels of marketing and outreach is difficult to quantify and usually bounded with scenario analysis.



EE Avoided Cost - Components

Electricity Energy Efficiency	
Energy Savings	Capacity Savings
Market purchases <i>or</i> fuel and O&M costs	Capacity purchases <i>or</i> generator construction
System Losses	System losses (Peak load)
Ancillary services related to energy	Transmission facilities
Energy market price reductions	Distribution facilities
Co-benefits of water, natural gas, fuel oil	Ancillary services related to capacity
Air emissions	Capacity market price reductions
Hedging costs	Land use

The components included in energy efficiency avoided costs vary from state to state and depend on the utility and market structure.



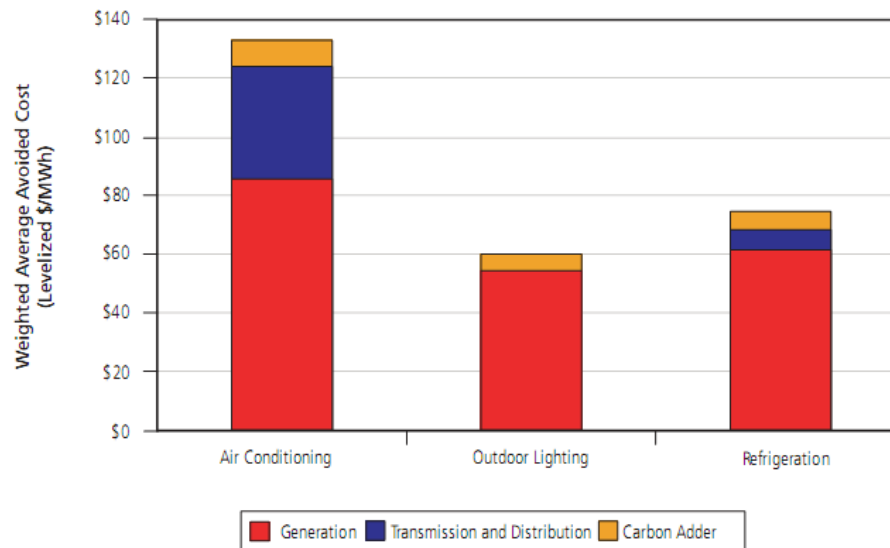
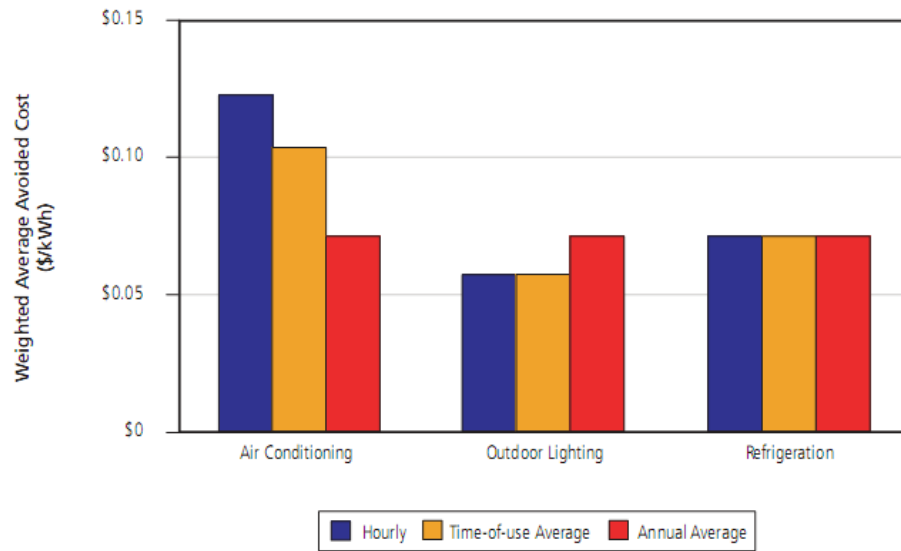
EE Avoided Costs - Methodology

Approaches to Value Energy and Capacity		
	Near Term (Market data is available)	Long Term (No market data available)
Distribution electric or natural gas utility	Current forward market prices of energy and capacity	Long-term forecast of market prices of energy and capacity
Electric vertically-integrated utility	Current forward market prices of energy and capacity <i>or</i> Expected production cost of electricity and value of deferring generation projects	Long-term forecast of market prices of energy and capacity <i>or</i> Expected production cost of electricity and value of deferring generation projects

Utility and market structure will also, to a large extent, drive data used to quantify and forecast avoided costs



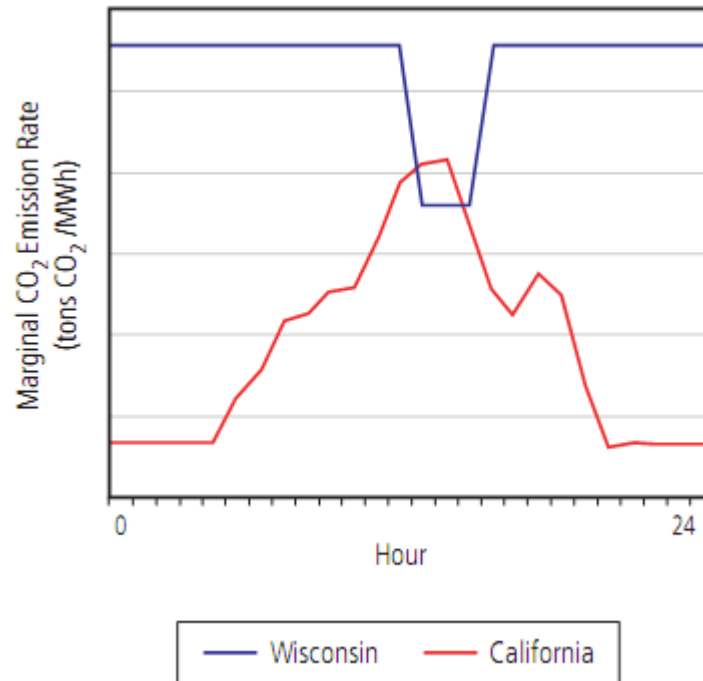
EE Avoided Costs – Time of Use



Time-of-Use avoided costs will increase cost-effectiveness of measures that provide on-peak energy and capacity savings.



EE Avoided Costs – GHG Emissions



More states are incorporating GHG value explicitly in energy efficiency avoided costs, but marginal emissions vary significantly by region.

Energy, capacity and emission reductions will depend on the types of measures included and the utility's existing load profile and resource mix.



EE Cost-Effectiveness – Cost Tests

Cost Test	Acronym	Key Questions Answered	Summary Approach
Participant Cost Test	PCT	Will the participants benefit over the measure life?	Comparison of costs and benefits of the customer installing the measure
Utility/Program Administrator Cost Test	UCT/ PAC	Will utility bills increase?	Comparison of program administrator costs to supply side resource costs
Ratepayer Impact Measure	RIM	Will utility rates increase?	Comparison of administrator costs and utility bill reductions to supply side resource costs
Total Resource Cost	TRC	Will the total costs of energy in the utility service territory decrease?	Comparison of program administrator and customer costs to utility resource savings
Societal Cost Test	SCT	Is the utility, state, or nation better off as a whole?	Comparison of society's costs of energy efficiency to resource savings and non-cash costs and benefits



EE Cost-Effectiveness - Cost Test by State

Primary Cost Test Used by Different States					
PCT	UCT/PAC	RIM	TRC	SCT	Unspecified
	CT, UT, TX	FL	CA, MA, MO, NH, NM,	AZ, ME, MN, VT, WI	AR, CO, DC, DE, GA, HI, IA, ID, IL, IN, Ks, KY, MD, MT, NC, ND, NJ, NV, OK, OR, PA, RI, SC, VA, WA, WY
Secondary Cost Test Used by Different States					
PCT	UCT/PAC	RIM	TRC	SCT	
AR, FL, GA, HI, IA, IN, MN, VA	AT, CA, CT, HI, IA, IN, MN, NO, NV, OR, UT, VA, TX	AR, DC, FL, GA, HI, IA, IN, KS, MN, NH, VA	AR, CA, CO, CT, DE, FL, GA, HI, IL, IN, KS, MA, ME, MN, MO, MT, NH, NM, NY, UT, VA	AZ, CO, GA, HI, IA, IN, MW, MN, MT, NV, OR, VA, VT, WI	

There is no single 'best' cost-effectiveness test: each test measures the costs and benefits from a different perspective

The Total Resource Cost (TRC) test is the most prevalent cost test. Again, there are differences state by state in how it is applied.



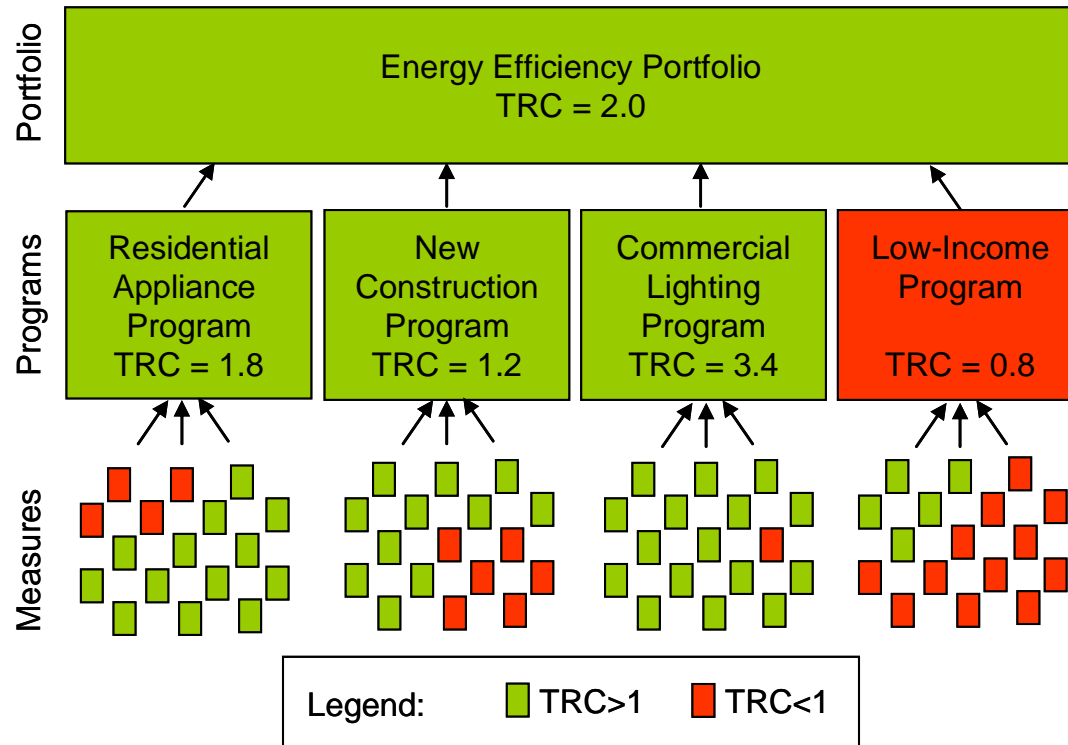
EE Programs and Portfolios – Program Type and Goals

Program Types	Decision Types	Program Goals
Energy Audit	Failure Replacement - Natural Replacement - Replace on Burnout	Resource Acquisition
Rebate Program		Market Transformation
Direct Install	Retrofit - Early Replacement	Stricter Codes and Standards
Codes and Standards	New Construction - Lost Opportunity	Education and Training
Education and Training		
Loans & Financing	Retire	
Upstream Incentives		
Commissioning		

Each type of energy efficiency program has its own advantages and disadvantages. Criteria such as continuity, equity, education and market transformation may be considered in addition to cost-effectiveness.



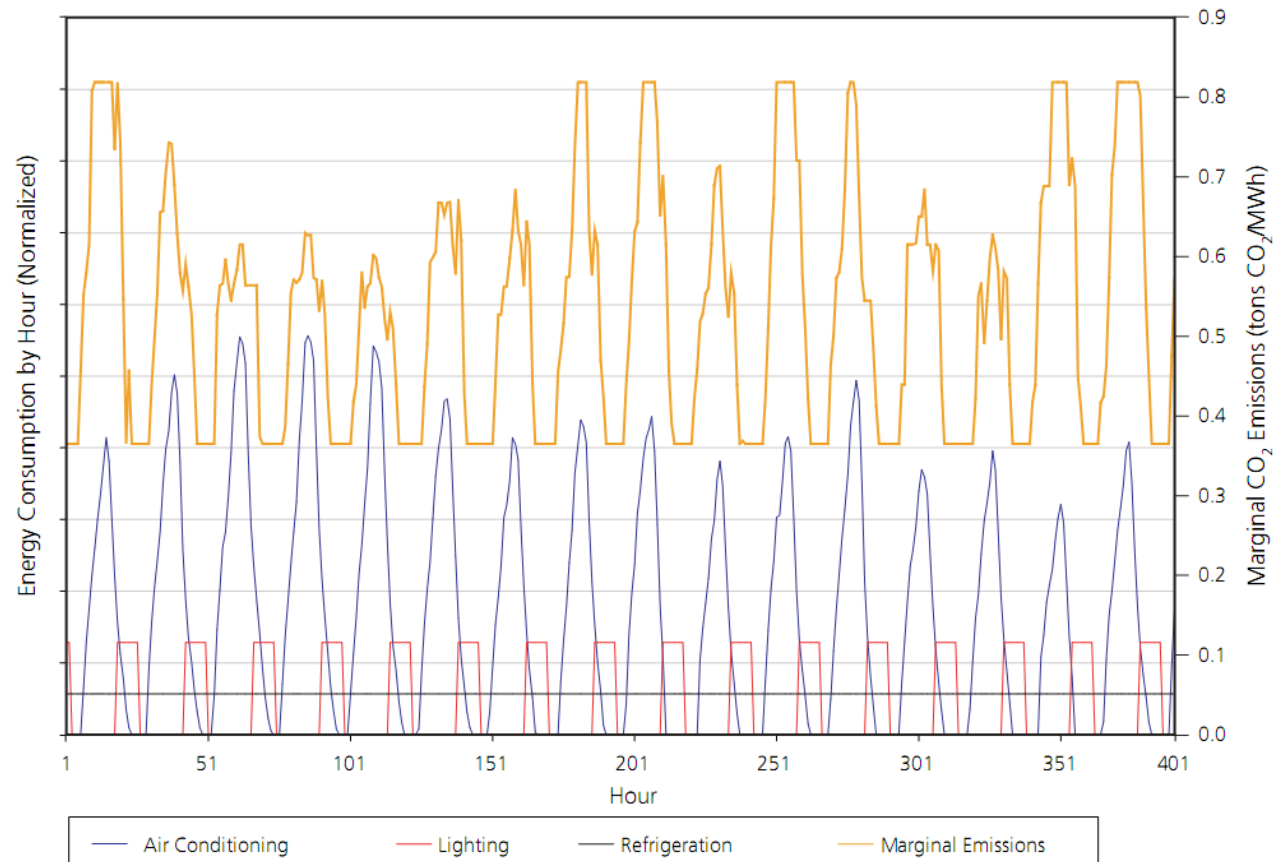
EE Programs and Portfolios – Point of Cost Effectiveness Evaluation



Applying a cost-effectiveness screen at the portfolio level allows for the inclusion of individual programs or measures that do not pass on their own. Greater discretion may be allowed for low income, emerging technology and market transformation programs.



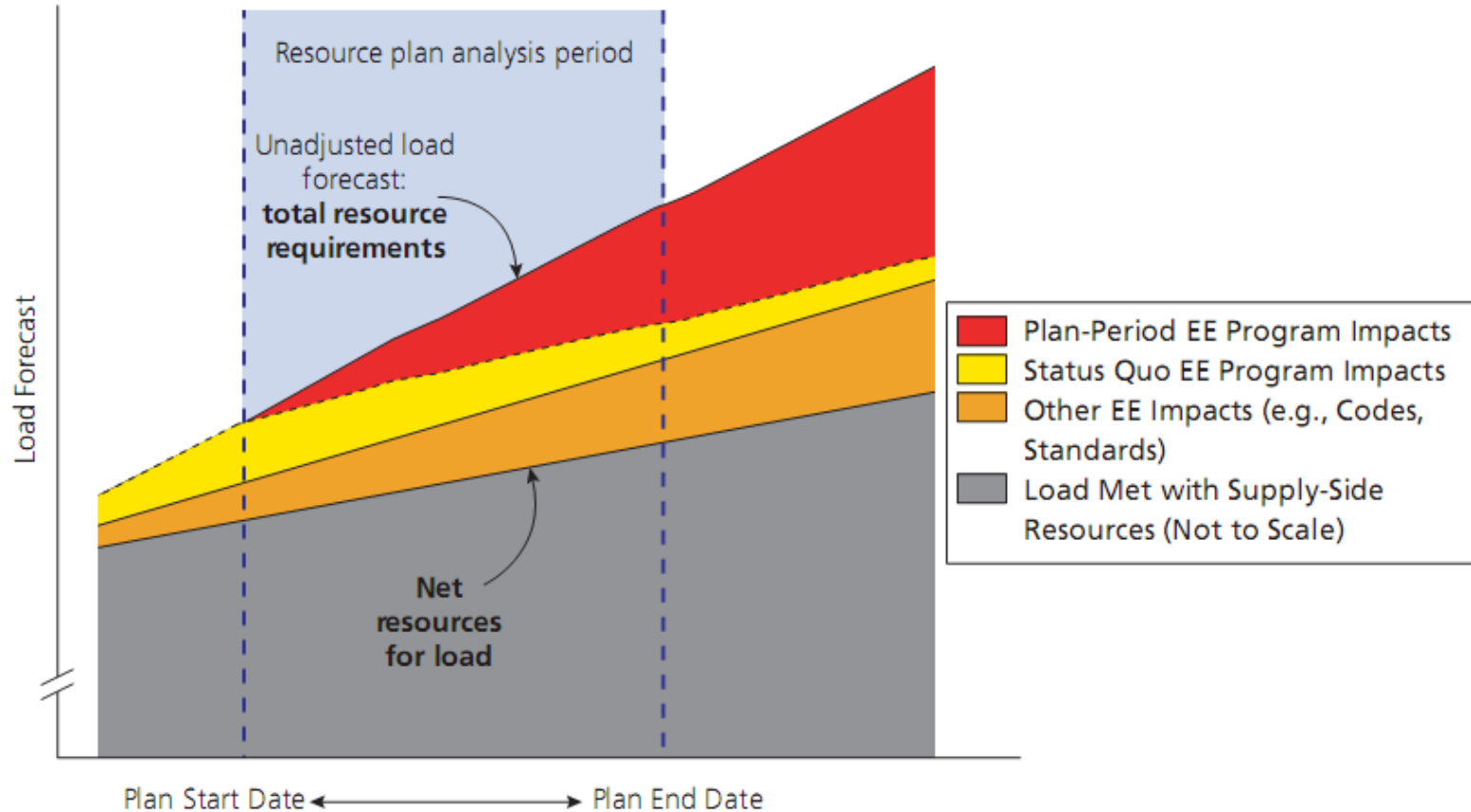
EE Impacts for Resource Planning – Load Shapes



Energy, capacity and emission reductions will depend on the types of measures included and the utility's existing load profile and resource mix.



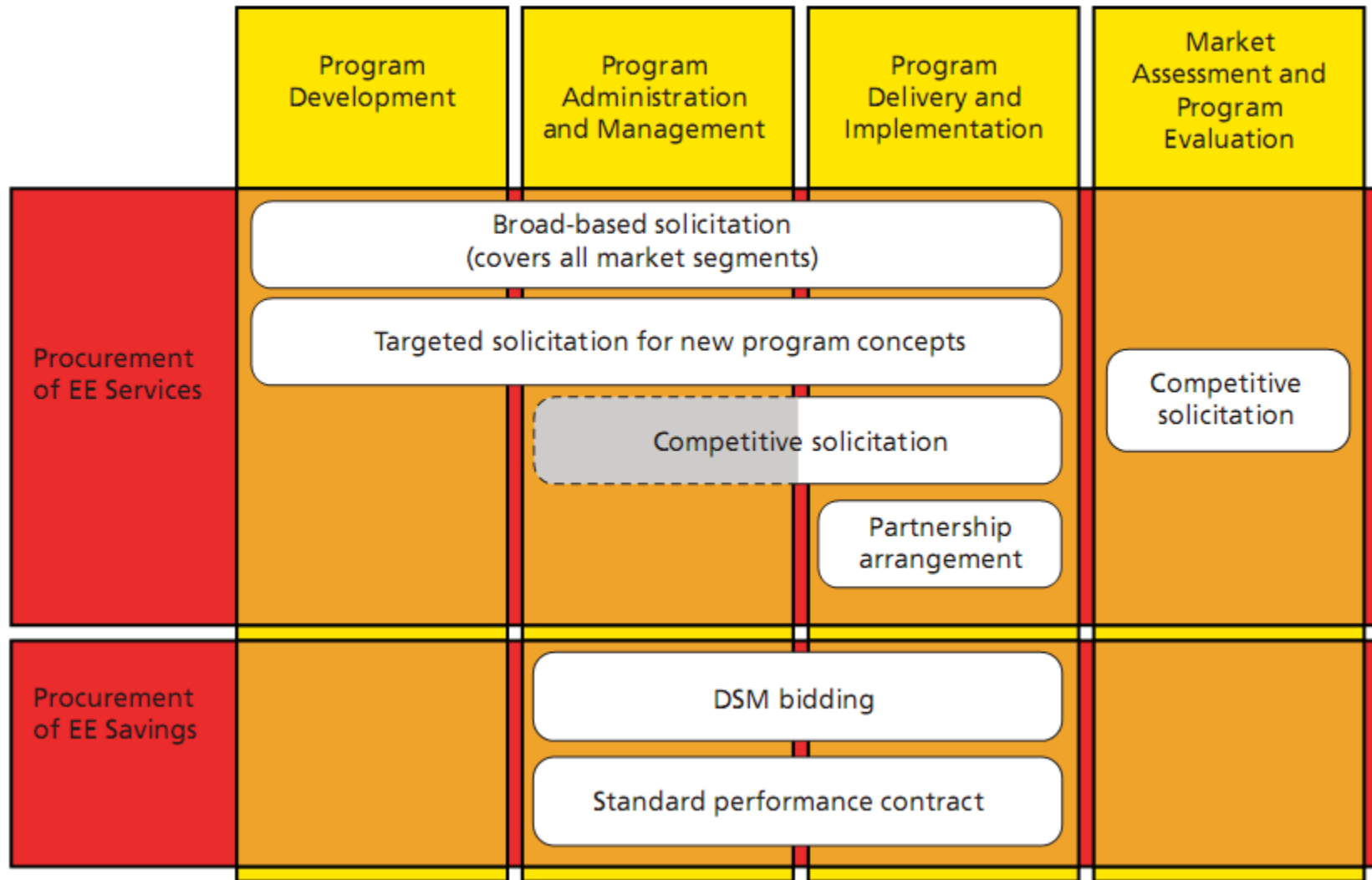
EE Impact Reporting



Ideally, EE impact reports and forecasts will show *net* savings directly resulting from the EE program as distinct from prior programs and other initiatives (such as codes and standards)



EE Procurement – Third-Party Contractors





EE Evaluation, Measurement & Verification

- Types of Evaluation
 - Process
 - Impact
 - Market Effects
- Metrics
 - Customer Adoption
 - Energy & Capacity Savings
 - Equipment Operation and Load Profile
- Estimating Net Impacts (Net-to-Gross Ratio)
 - Free-Riders, Rebound Effect, Spillover



Any Questions?

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