



Northeast Energy Efficiency Partnerships

Survey of Cost-Effectiveness Screening Practices for Energy Efficiency in the Northeast & Mid-Atlantic States

Maryland Public Service Commission Hearing on EmPOWER Programs – October 2, 2013

Josh Craft, Policy Analysis Manager at NEEP

Accelerating energy efficiency since 1996

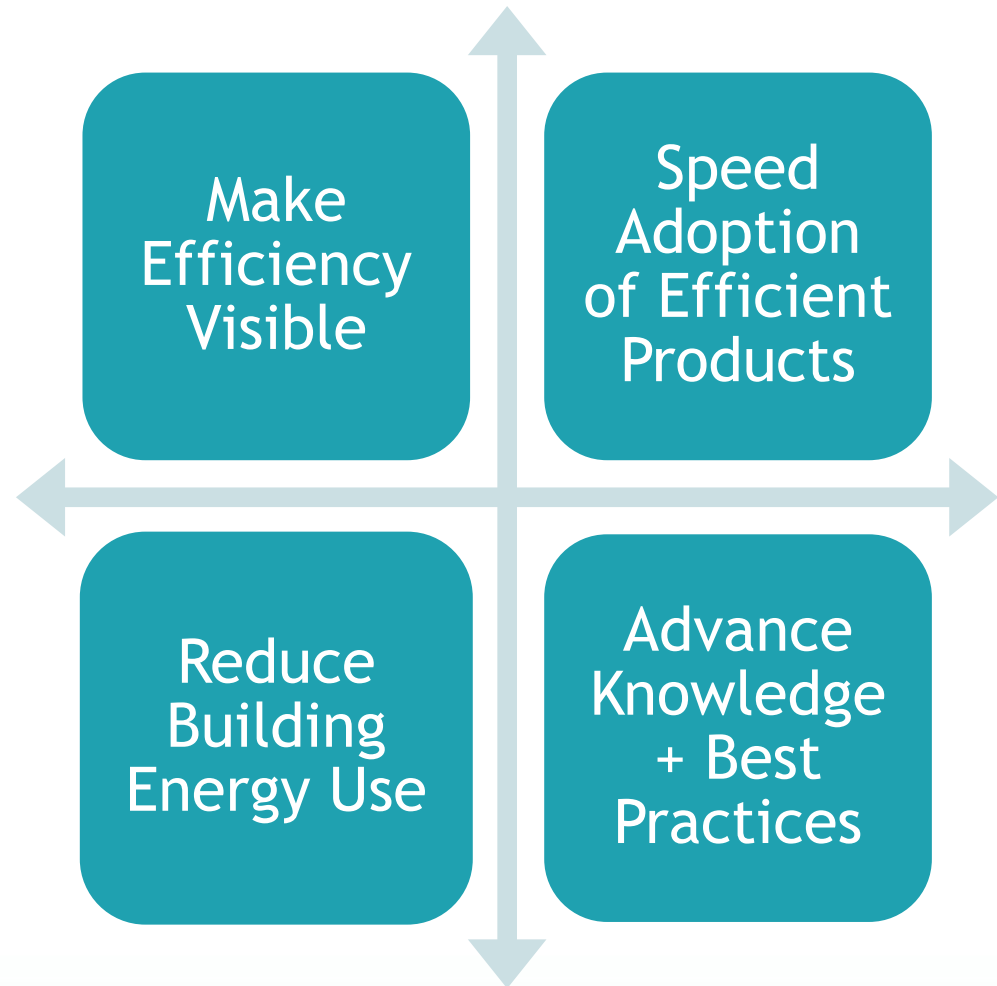
NEEP Strategies

MISSION

Accelerate energy efficiency in homes, buildings & industry in the Northeast - Mid-Atlantic region.

GOAL

Keep the Northeast region a national leader in accelerating energy efficiency.



APPROACH: *Collaboration, Education, Advocacy*

Energy Efficiency Policy in Northeast & Mid-Atlantic States



- Increased recognition of the value of energy efficiency as an economic resource
 - 10 states enacted strong energy savings goals

- Role for EE in emissions reduction strategy
 - MD's Greenhouse Gas Emissions Reduction Act
 - MA Global Warming Solutions Act

- Investments in EE have risen significantly, states achieving strong electric savings of 1.5%+ of sales
 - 6 in Top 10 in 2012 ACEEE State Policy Scorecard
 - Energy efficiency in regional energy forecasts

Source: [2012 ACEEE State Policy Scorecard](#)

2012 Electric Energy Efficiency Programs

Investments, Savings, & B/C Ratios under the TRC



Maryland (EmPOWER Programs)

- Investments of \$29.3 per capita
- Electric Savings of ~1.3% of electric sales
- Benefit-Cost Ratio
 - Residential: 1.62
 - C&I: 2.27

Massachusetts (Green Communities Act)

- Investments of \$58.7 per capita
- Electric Savings at ~2% of electric sales
- Benefit-Cost Ratio
 - Residential: 3.4
 - C&I: 3.8

Pennsylvania (Act 129)

- Investments of \$19.9 per capita
- Electric savings of 0.97% of sales
- Benefit-Cost Ratio
 - 2.97 for all programs

Sources: MD PSC Staff/Comments (Itron Report), 9/17/13; [MA EEAC 2012 Results](#), [PA Statewide Evaluator PY 2012 Report](#)

Discussion in the Northeast & Mid-Atlantic States on C/E Screening



- States examining appropriate energy efficiency program cost-effectiveness screening
 - What methods of screening best align with state public policy goals?
 - What type of screening ensures best value for ratepayers?
 - How to ensure symmetry between benefits & costs in screening?
 - How best to manage risk in state energy planning?

- EmPOWER Planning Process is a good time to revisit Maryland practices

NEEP EM&V Forum

Cost-Effectiveness Survey

Phase 1 (*final draft*): Survey of cost-effectiveness testing practices in Northeast states

- State Policy Drivers
- Screening Tests & Application Practices
- Benefits & Costs
- Other Program Impacts (OPIs)
- Recommendations to Forum members on cost-effectiveness screening*

States: CT, DC, DE, MA, NH, NY, RI, VT

Contractor: Synapse Energy Economics

*The recommendations by Synapse Energy do not necessarily represent those of the Regional EM&V Forum participating states.

Different Perspectives, Different Benefits & Costs



	PAC Test	TRC Test	Societal Test
Energy Efficiency Program Benefits:			
Avoided Energy Costs	Yes	Yes	Yes
Avoided Capacity Costs	Yes	Yes	Yes
Avoided Transmission and Distribution Costs	Yes	Yes	Yes
Wholesale Market Price Suppression Effects	Yes	Yes	Yes
Avoided Cost of Environmental Compliance	Yes	Yes	Yes
Reduced Risk	Yes	Yes	Yes
Other Program Impacts (utility-perspective)	Yes	Yes	Yes
Other Program Impacts (participant-perspective)	---	Yes	Yes
Other Program Impacts (societal-perspective)	---	---	Yes
Energy Efficiency Program Costs:			
Program Administrator Costs	Yes	Yes	Yes
EE Measure Cost: Program Financial Incentive	Yes	Yes	Yes
EE Measure Cost: Participant Contribution	---	Yes	Yes
Other Program Impacts (participant costs)	---	Yes	Yes

Source: Synapse Energy Economics, Survey of Cost-Effectiveness Practices in the Northeast, p. 3

Primary Cost-Effectiveness Tests in the Northeast & Mid-Atlantic Region

- Total Resource Cost (TRC) Test most common test
- CT, DE, & VT use secondary tests as well

Primary Screening Test	States
Total Resource Cost Test (5)	<ul style="list-style-type: none"> • Delaware* • Massachusetts • New Hampshire • New York • Rhode Island
Societal Cost Test (2)	<ul style="list-style-type: none"> • District of Columbia • Vermont*
Program Administration Cost Test (1)	<ul style="list-style-type: none"> • Connecticut*

Primary Screening Level



- Screening most common at the customer sector or portfolio level
- Varies by selection of the test
- Only one state, New York, screens at the measure level

Primary Test	Measure Level	Program Level	Sector/Portfolio Level
TRC	New York	Massachusetts New Hampshire	Delaware Rhode Island
SCT			District of Columbia Vermont
PACT			Connecticut

Discount Rates in Screening *Consideration & Discussion*



	10-Yr. Treasury or Prime	Societal	Utility Cost of Capital
Range	0.5-2%	3%	5-7.5%
TRC	Delaware Rhode Island Massachusetts New Hampshire		New York
SCT	District of Columbia	Vermont	
PACT			Connecticut

Energy System Benefits (Avoided Costs) Vary



Avoided Energy & Capacity Costs	Price Suppression (DRIPE)	Risk Premium
All States	Yes: CT, DC, DE, MA, RI No: NH, NY, VT	Yes: CT, DC, DE, MA, NH, RI, VT No: NY
New England: Regional Cost study (include environmental compliance costs) NY: NYISO & PSC studies (RGGI carbon credit) DC & DE: Evaluation contractor	New England: 3.44 cents/kWh DE uses Price Elasticity Adder	Risk premiums in energy cost Lower discount rate

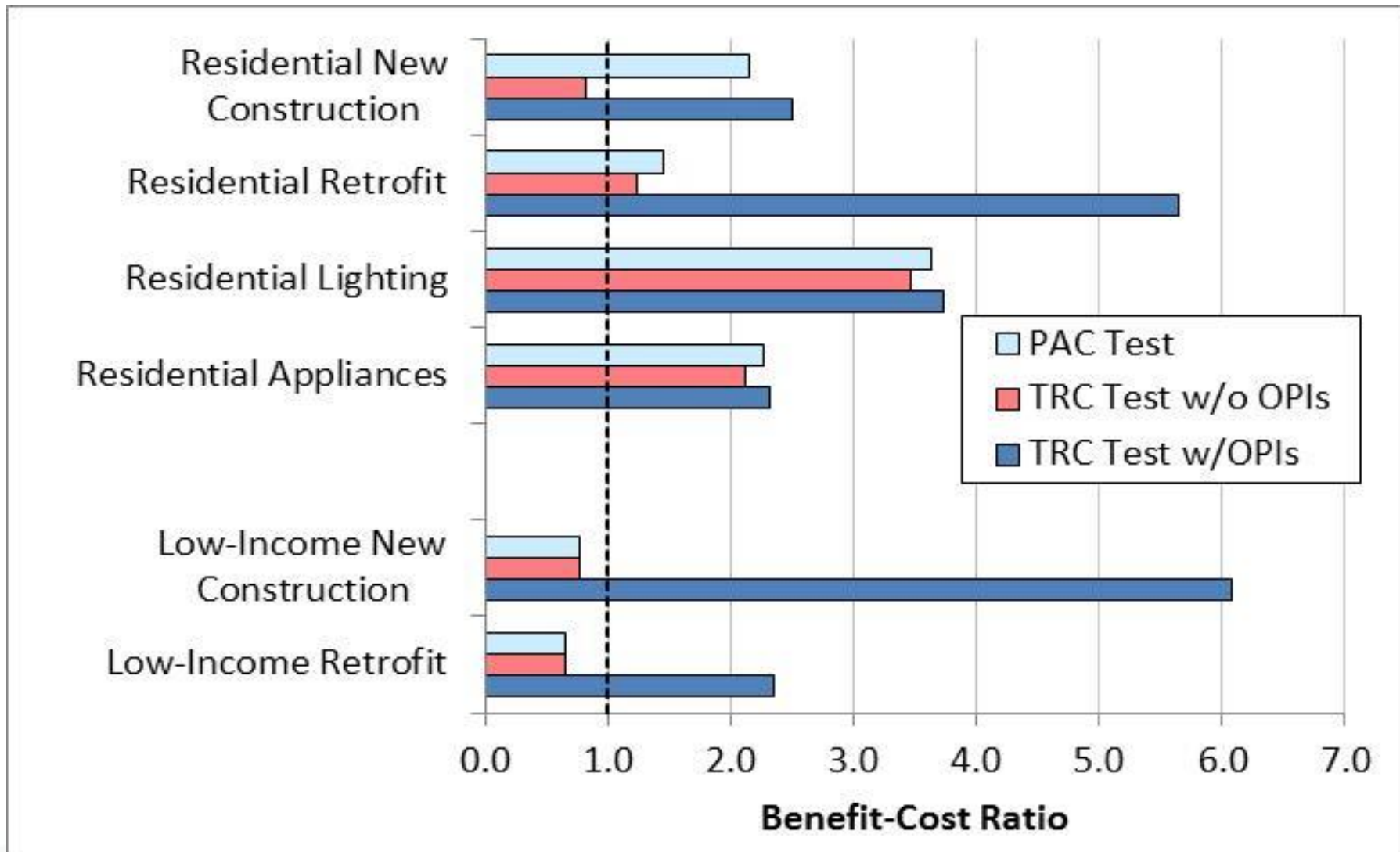
Source: [Synapse, Avoided Energy Supply Costs in New England, 2013](#)

Other Program Impacts (OPIs) #1



- Other resource savings, including non-primary fuels, oil & propane, and water
- Non-energy benefits
 - Utility-perspective
 - Participant-perspective
 - Societal-perspective
- Range & Values of OPIs vary widely
 - Majority of states attempt to account for OPIs to varying degrees
 - Can be challenging to quantify
- Inclusion of OPIs important to capture symmetry of benefits and costs to participants

Impact of OPIs on Program Screening



Source: Synapse Energy Economics, Survey of Cost-Effectiveness Practices for NEEP EM&V Forum, p. 5

State Practices with OPIs



OPI Category	Examples	States Using
Utility Perspective	<ul style="list-style-type: none">• Reduced arrearages• Improved customer service	MA, RI, VT
Participant Resource Benefits	<ul style="list-style-type: none">• Secondary fuels• Oil & propane• Water savings	ALL
Participant Non-Energy Benefits	<ul style="list-style-type: none">• Productivity• Comfort• Health• Operations & Maintenance Costs	DC, MA, NY, RI, VT
Low-Income		ALL
Societal	<ul style="list-style-type: none">• Environmental benefits• Economic development• National security	DC, RI, VT

How States Account for OPIs



- Quantifies Broad Range of OPIs
 - Massachusetts & Rhode Island
 - *See Appendix C of survey*

- Use Adders for OPIs
 - Estimate value of benefits using a percentage adder
 - D.C. & Vermont (10-15%)

- Value Qualitatively
 - Commission discretion if BCR < 1.0
 - Low-Income: CT, NH, NY
 - Operations & Maintenance: NY

Timeline on Cost-Effectiveness Project

- Phase 1: Final report early October 2013 for Forum Steering Committee review
- Phase 2: Develop Forum guidance on c/e testing for Forum states
- Phase 3: Identify gaps in research needs (e.g., NEBs, risk mitigation, T&D benefits)

Contact: jcraft@neep.org

Recommendations for EmPOWER Planning Process



1. Support EmPOWER planning process
2. Ensure transparency and consistency in benefits & cost in screening for Maryland program administrators
3. Choose a test(s) that aligns with Maryland's public policy goals & ensures symmetry between benefits and costs
4. Work regionally to inform Forum guidance & research on cost-effectiveness screening

Background: Regional States Energy Efficiency Cost-Effectiveness Summary



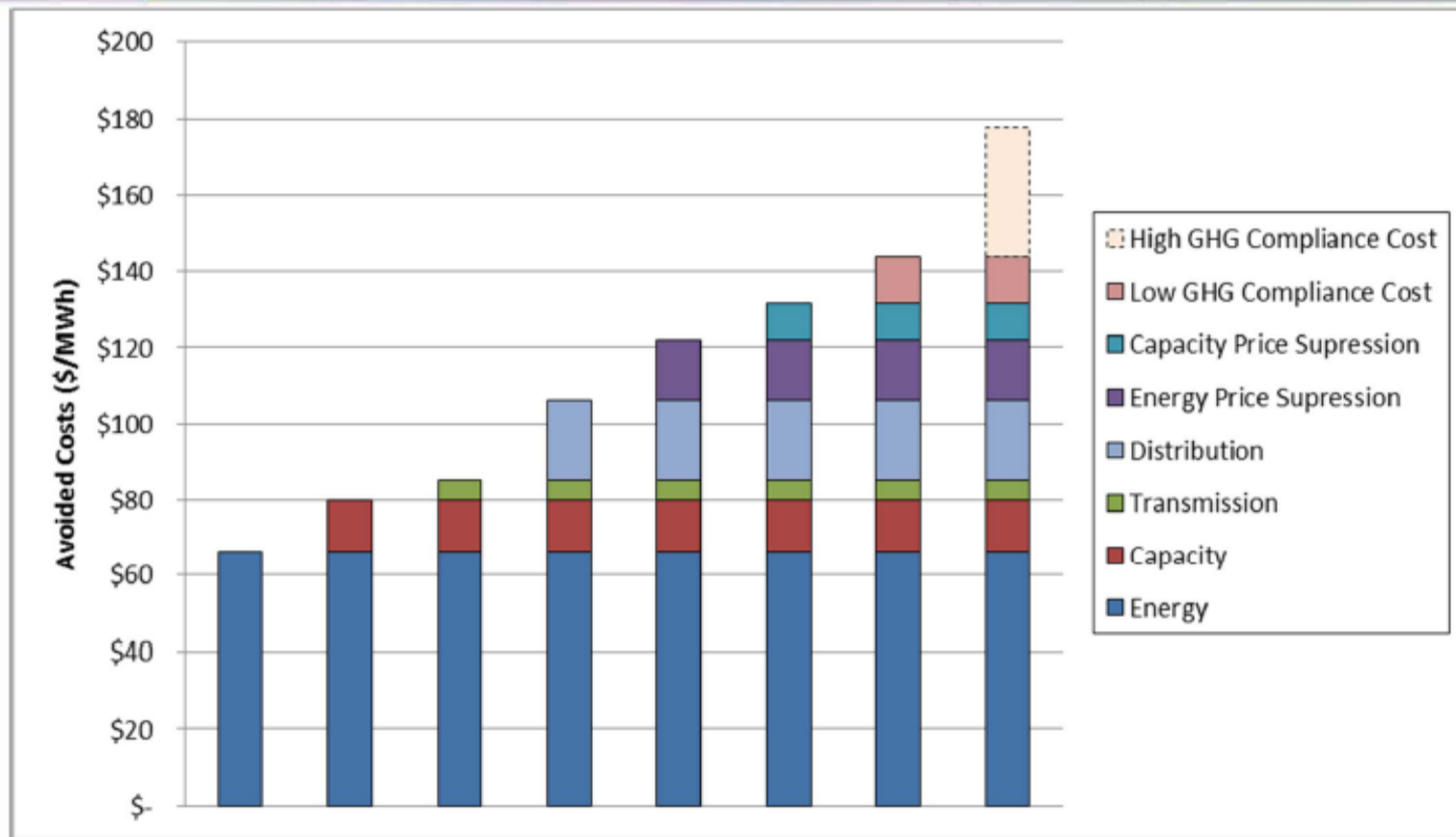
Cost-Effectiveness Metric		Connecticut	Delaware	District of Columbia	Massachusetts	New Hampshire	New York	Rhode Island	Vermont
Primary Policy Driver		Focus on electric system impacts only	Still under development	Energy efficiency programs must meet the Societal Cost test	All available cost-effective energy efficiency	Reduce market barriers to investments in cost-effective energy efficiency	Maximize cost-effectiveness given limited funding	All cost-effective energy efficiency	Least cost planning including environmental costs
Cost-Effectiveness Test(s) & Application	Primary Test	PAC	TRC	Societal	TRC	TRC	TRC	TRC	Societal
	Secondary Test	TRC	Societal; RIM						TRB; PAC
	Primary Screening Level	Program	Portfolio	Portfolio	Program	Program	Measure	Portfolio	Portfolio
	Additional Screening Level(s)		Program	Program, Project, Measure			Project, Program		Program, Project, Measure
	Discount rate used in Test	Cost of Capital	Societal	Prime Rate	10Yr Treasury	Prime Rate	Utility WACC	10Yr Treasury	Societal
	Study period over which Test is applied	Measure Life	Measure Life	Measure Life	Measure Life	Measure Life	Measure Life	Measure Life	Measure Life
Avoided Costs Included in Primary Cost-Effectiveness Test	Capacity Costs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Energy Costs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	T&D Costs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Environmental Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Price Suppression	Yes	Yes	Yes	Yes	No	No	Yes	No
	Line Loss Costs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Reduced Risk	No	Yes	Yes	No	No	No	No	Yes
OPIs/NEBs Included in Primary Cost-Effectiveness Test	Utility OPIs	No	No	No	Quantified	No	No	Quantified	Part of 15% Adder
	Participant OPIs								
	Resource	No	Yes - Calculation TBD	Quantified	Quantified	Quantified	Quantified	Quantified	Quantified
	Low-Income	Qualitative	No	Part of 10% Adder	Quantified	Qualitative	Qualitative	Quantified	Additional 15% Adder
	Equipment	No	No	O&M Quantified	Quantified	No	Qualitative	Quantified	O&M Quantified
	Comfort	No	No	Part of 10% Adder	Quantified	No	No	Quantified	Part of 15% Adder
	Health & Safety	No	No	Part of 10% Adder	Quantified	No	No	Quantified	Part of 15% Adder
	Property Value	No	No	Part of 10% Adder	Quantified	No	No	Quantified	Part of 15% Adder
	Utility Related	No	No	Part of 10% Adder	Quantified	No	No	Quantified	Part of 15% Adder
Societal OPIs	No	No	Part of 10% Adder	No	No	No	Quantified	Part of 15% Adder	

Source: Synapse Energy Economics, Survey of Cost-Effectiveness Practices for NEEP EM&V Forum, p. 9

Background: Range Impacts Financial Value of EE Investments



Example of Avoided Costs, by Component

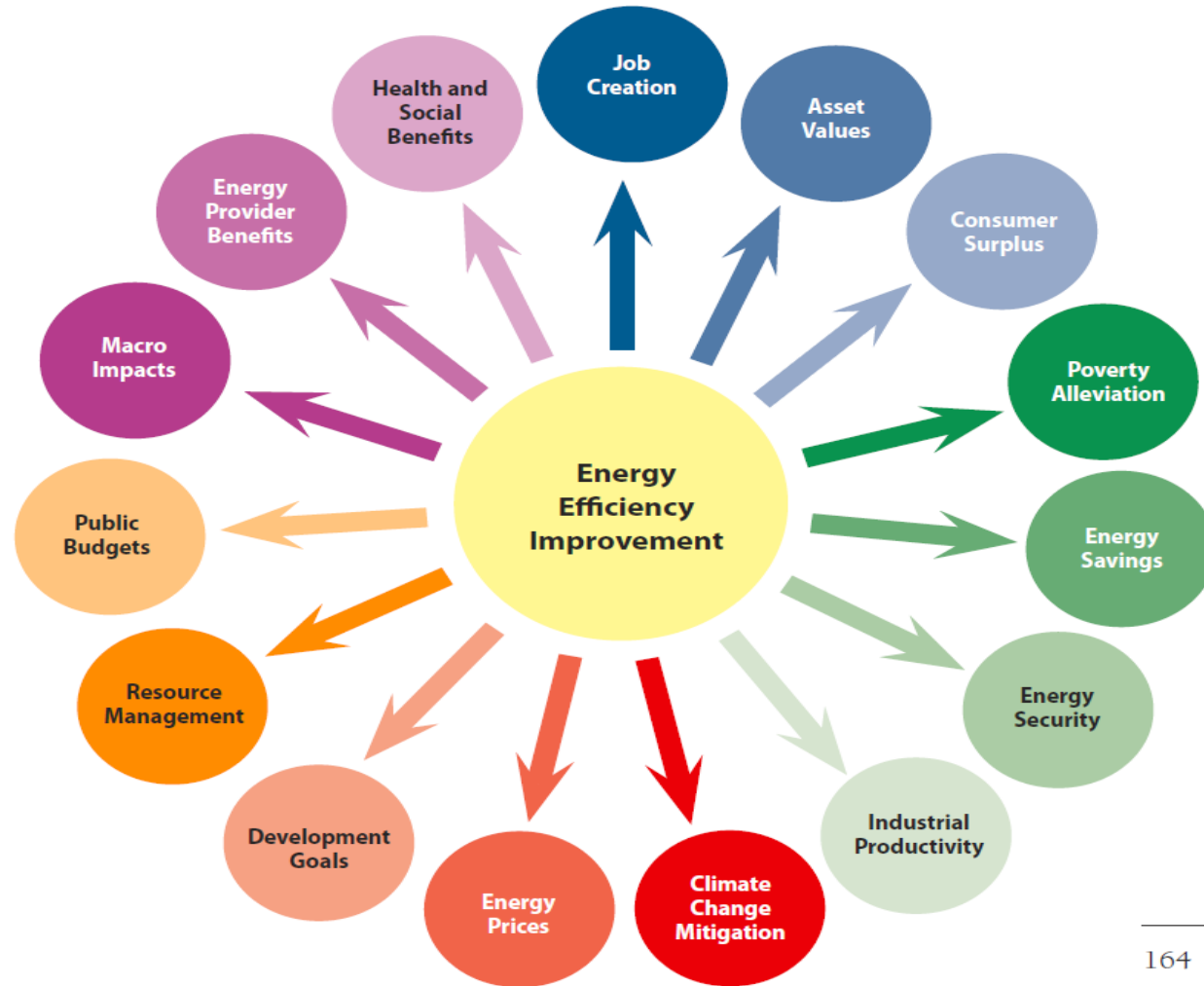


Source: [Synapse Energy Economics, Best Practices in Energy Efficiency Program Screening, 2012](#)

Background: Variety of Benefits to EE Investments



The Multiple Benefits of Energy Efficiency ¹⁶⁴



164 Ryan et al., 2012.

Source: [Lazar & Coburn, Regulatory Assistance Project, 2013](#)