

THE BASICS: A QUICK INTRODUCTION TO ENERGY EFFICIENCY RESOURCE STANDARDS

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IN CASE YOU WERE THERE

Much of the following information is taken from a presentation I made at the ACEEE Summer Study in August, on a paper entitled:

Energy Efficiency Resource Standards: The Next Great Leap Forward?

by Martin Kushler, Steve Nadel, and Dan York of ACEEE
& Niko Dietsch and Sue Gander of the U.S. EPA



Topics

- Some quick history of utility sector energy efficiency
- What is an EERS? [Also known as an “energy efficiency portfolio (or performance) standard”]
- How does EERS differ from past approaches?
- What are the advantages of the EERS approach?
- How should savings targets be established?
- Where are EERS being used?
- Emerging developments



A STROLL DOWN MEMORY LANE: 4 MAJOR PHASES OF UTILITY-SECTOR ENERGY EFFICIENCY

1. The 1970's Energy Crisis Era (circa 1975-1983)
 - Primary purpose: help customers cope with soaring utility bills driven by high fossil fuel prices
 - Heavily residential in focus
 - More natural gas than electricity



2. THE IRP ERA (circa 1984-1995)

- Primary purpose: reduce runaway utility system costs (heavily driven by expensive generation...esp. nuclear) by integrating energy efficiency as a system resource
- All customer sectors
- Primarily electricity industry



3. THE RESTRUCTURING/PUBLIC BENEFITS ERA (circa 1995-2001)

- Primary purpose: preserve the “public benefits” of energy efficiency in an industry being substantially deregulated
- Heavy emphasis on “market transformation”
- More focus on mass markets
- Energy efficiency essentially a public good, rather than a utility system resource



4. THE RESOURCE PROCUREMENT ERA (circa 2001-present)

- Primary purpose: bring energy efficiency back as a resource, in response to growing utility system cost and reliability concerns (& failure of “competitive” model to produce desired system resource outcomes)
- Other corollary objectives emerging (e.g., environmental, economic development)
- First electric, then gas also when prices soared
- Emphasizes outcomes rather than process (in contrast to the 2nd and 3rd Eras)
- All of the above very conducive to EERS



What is an EERS?

- a) A simple market-oriented policy mechanism for requiring the achievement of measurable amounts of EE savings?
- b) A top-down goal to drive EE program efforts?
- c) A quantitative energy savings target for a set of end-use efficiency programs?
- d) A quick and easy way to pile up large energy savings results?
- e) The smarter and better looking cousin to RPS?

[Answer: All of the above]



BASIC EERS APPROACHES

- Stand-alone policy target
 - % of total sales
 - % of projected load growth
- Layered on top of a public benefit program (e.g., quantitative savings requirements)
- Blended with an RPS (renewable portfolio standard) requirement



How Does EERS Differ from Past Approaches?

- The “public benefits” type programs of the past decade have been driven primarily by required **spending levels**
- Earlier DSM programs were driven by an economic screening and integrated resource planning (IRP) process, in a bottom-up approach (amount of savings were an end-result—not a pre-established goal)
- Restructuring has undercut IRP in many states; EERS is one way to re-invigorate resource planning
- EERS goals can be generally based on the same kind of analysis as IRP-driven DSM programs, but EERS are administered from the top down, and typically set simple “round number” targets
- EERS goals tend to ramp up over longer timeframes, eg. 5-10 years vs. annual or biannual public benefits filings



What are EERS advantages?

- “Savings” is a better **outcome** measure than “spending”
- Provides a simple and direct way for states to **ensure** that Energy Efficiency will contribute as a resource
(as opposed to hoping that the regional electricity market will someday incorporate energy efficiency, for example)
- Can help restore a resource planning process
(e.g., as an input into developing EERS targets)
- Sets a clear direction for state energy policy

Additional EERS Advantages

- Can be easily linked to other policy goals, (e.g., emission reductions, reliability)
- Helps avoid common political problems
 - “raids” on energy efficiency budgets
 - opposition to spending requirements (e.g., a pbf surcharge criticized as a “tax”)
- Can work within either restructured or regulated utility structures—can be a very flexible approach

SETTING EERS-TYPE ENERGY SAVINGS TARGETS: A GROWING TREND

- At least 10 states have established, or are actively considering, specific utility sector energy savings targets
- Some key issues to be addressed:
 - What energy savings levels should be targeted?
 - Should an EERS be separate from, or combined with, an RPS?
 - Should “trading” and/or cost caps be included? (to limit risk)
 - What protocols for M&V should be used?
 - How does an EERS relate to other EE policies, such as a pbf or decoupling?

WHAT ARE STATES USING FOR EEPS TARGETS?

<u>STATE</u>	<u>ANNUAL % SAVING</u>	<u>% OF GROWTH</u>
California	0.9%	50%+
Connecticut	1.0% (incl. CHP)	N/A
New Jersey	1.0% (discussed)	N/A
Nevada	0.5%	N/A
Texas	0.2% (equivalent)	10%
Vermont	1.0%	N/A
Illinois	0.2% (equivalent)	10%

THE TEXAS APPROACH

Texas was the first prominent example of an EERS policy.

The Texas approach features:

- Relatively modest goals: utilities required to save at least 10% of projected electric load growth each year through energy efficiency
- Utilities estimate costs of programs to meet the target and file for cost recovery in rates
- Required to use a combination of “standard offer” programs and “market transformation” programs
- Serve all sectors (residential, commercial, industrial, and low-income)

TEXAS RESULTS

For 2005

- \$80 million total spent on EE programs

- Savings 27% above goal

[many programs “sold out” within weeks]

- Annual savings: 181 MW and 509 GWh

- Very cost-effective

[~ 2 cents/kWh levelized cost of energy saved]

HOW SHOULD ENERGY SAVINGS TARGETS BE SELECTED?

Two categories of research can help with setting savings targets:

- Energy efficiency potential studies
- Assessments of demonstrated energy efficiency performance

WHERE SHOULD WE SET THE ENERGY SAVINGS TARGET?

Energy efficiency potential studies

In 2004 ACEEE completed a “meta-analysis” of energy efficiency potential studies from around the U.S.¹

- Median cost-effective “achievable” potential for energy efficiency was 24% of total forecasted electricity use
- Median achievable potential equivalent to 1.2% of total electricity consumption per year

Demonstrated energy efficiency performance

- Leading states are saving 0.8% to 1.0% of total sales in current programs already
- Some states beginning to push beyond 1.0%

¹ [*The Technical, Economic, and Achievable Potential for Energy Efficiency in the United States: A Meta-Analysis of Recent Studies*, Nadel, Shipley & Elliott, ACEEE, 2004.]

Potential National EERS Impacts

- ACEEE's analysis shows a national EERS could:
 - Reduce electricity demand growth 25% by 2020
 - Avoid the need for over 400 powerplants (averaging 300 MW)
 - Provide \$64 billion in benefits (with a 2.6 benefit-cost ratio)
 - Save twice the energy in EPA Act 2005

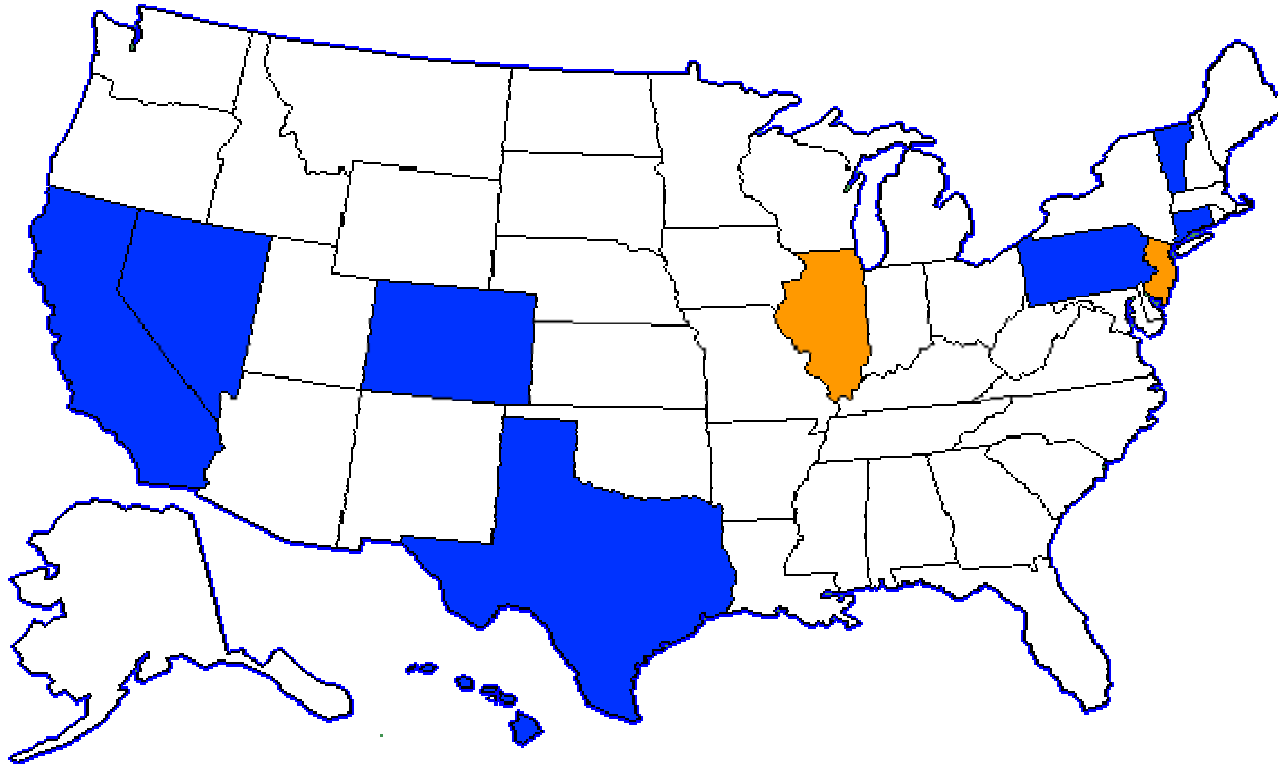
Where is the EERS Approach Being Used/Developed?

- Ten U.S. States: (including several in today's workshop) CA, CO, CT, HI, IL, NJ, NV, PA, TX, and VT
- In Europe: UK, Italy, France, Belgium
- ACEEE published a lengthy report on this topic earlier this year: *Energy Efficiency Resource Standards: Experience and Recommendations*, S. Nadel, March 2006.
<http://www.aceee.org/pubs/e063.htm>
- EPA also has a recent report: *Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States*, U.S. EPA, 2006.
<http://www.epa.gov/cleanenergy/stateandlocal/>

A Sample of State EERS

- TX—1999 restructuring law requires utilities to offset at least 10% of load growth with efficiency
- CA—set 10-year savings targets, on top on current PBF program commitments
- CT—2005 bill created Tier III resource category: sets 1%/year EE/CHP savings target for 2007-2010
- HI—includes EE as part of RPS
- NJ—developing quantitative EERS targets
- PA—EE included in an Alternative Energy Portfolio Standard in a Tier 2 requirement

Figure 1. States That Have or Are Actively Considering Energy Efficiency Resource Standard Policies



Note: Blue states currently have an EERS type mechanism
(CA, CO, CT, HI, NV, PA, TX, VT)

Orange states have a proposed EERS mechanism (IL, NJ)

Table 1. Summary of Current and Pending EERS Policies in the U.S.

State	EERS Description	Applies To	Savings Target	Timeframe
California	Sets specific energy and demand savings goals.	Investor-owned utilities	Savings goals set for each year from 2004 to 2013. The savings target for program year 2013 is: \$ 23,183 GWh, 4,885 MW peak • 444 MMtherms	2004–2013 Annual MWh, MW, and therm savings adopted for each year.
Colorado	Settlement agreement approved by PUC includes specific targets.	Public Service of Colorado (largest utility in the state)	320 MW and 800 GWh (40 MW and 100 GWh each year)	2006–2013
Connecticut	Includes EE at commercial and financial facilities as eligible source under its Distributed Resources Portfolio Standard (also includes CHP).	Investor-owned utilities	Savings goals set for the beginning of each program year: 1% 2% 3% 4%	2007 2008 2009 2010
Hawaii	Allows EE to qualify as a resource under RPS requirements.	Investor-owned utilities	20% of kWh sales (overall RPS target, EE portion not specified)	2020

Summary of Current and Pending EERS Policies in the U.S. (Cont.)

Illinois	Would set goals as percentage of forecast load growth.	Investor-owned utilities	10%	2006–2008
			15%	2009–2011
			20%	2012–2014
			25%	2015–2017
New Jersey	Two initiatives: 1. Setting energy and demand goals for overall PBF program. 2. Setting goals for savings as a % of sales.	1. PBF program administrators (selected competitively) 2. Investor-owned utilities	1. 1,814 GWH (four-year total) 2. Conceptual draft calls for 1% per year for a total of 12% in 2016	1. 2005–2008 2. 2005–2016 in conceptual draft
Nevada	Redefines portfolio standard to include energy efficiency as well as renewable energy.	Investor-owned utilities	Energy efficiency can meet up to 25% of the energy provider's portfolio standard:	
			6% (EE 1.5%)	2005–2006
			9% (EE 2.25%)	2007–2008
			12% (EE 3.0%)	2009–2010
			15% (EE 3.75%)	2011–2012
			18% (EE 4.5%)	2013–2014
20% (EE 5.0%)	2015 and thereafter			

Summary of Current and Pending EERS Policies in the U.S. (Cont.)

Pennsylvania	Includes energy efficiency as part of a two-tier alternative energy portfolio standard.	Investor-owned utilities	4.2%	Years 1–4
			6.2%	Years 5–9
			8.2%	Years 10–14
			10.0% (EE % each year unknown)	Years 15 and thereafter
Texas	Sets goals as percentage of forecast load growth.	Investor-owned utilities	10% (of forecasted load growth)	2004 and thereafter
Vermont	Contract sets energy and demand goals for overall PBF program.	Program administrator	83,766 MWh	2000–2002
			119,490 MWh	2003–2005
			204,000 MWh	2006–2008

Sources: EPA (2006); Nadel (2006)

Emerging EERS Developments

- No federal breakthrough yet, but EPAct 2005 includes call for a study and pilot program for EERS
- Several states looking at EERS as part of a post-restructuring utility policy, as they see the consequences of leaving resource planning to the market
- In the Northeast, RGGI states are looking at EERS as part of a climate policy package
- Many key institutions (EPA, DOE, NARUC) showing interest in the EERS concept
- Overall, much opportunity for adopting an EERS approach, on both the electric and natural gas side