Renewable Energy Question 20: *How has Michigan, and how have other jurisdictions, treated energy efficiency or optimization and renewables as related or separate? For instance, have credits generated from one or the other been interchangeable or separate? What have been the cost, reliability, and environmental impacts of different regimes?*

Executive Summary

1. Seven states, including Michigan, have energy efficiency as an eligible resource in their Renewable Portfolio Standard (RPS) policies

2. Expert studies indicate that including energy efficiency as an eligible resource to meet RPS standards can decrease compliance costs, enhance flexibility, and broaden political support for the policy

3. The flexibility to meet clean energy obligations with a combination of renewable energy and energy efficiency may be particularly valuable moving forward, as federal rules and policy on these topics come into play. Uncertainty around what might be required at a national level makes flexibility at the state level more important

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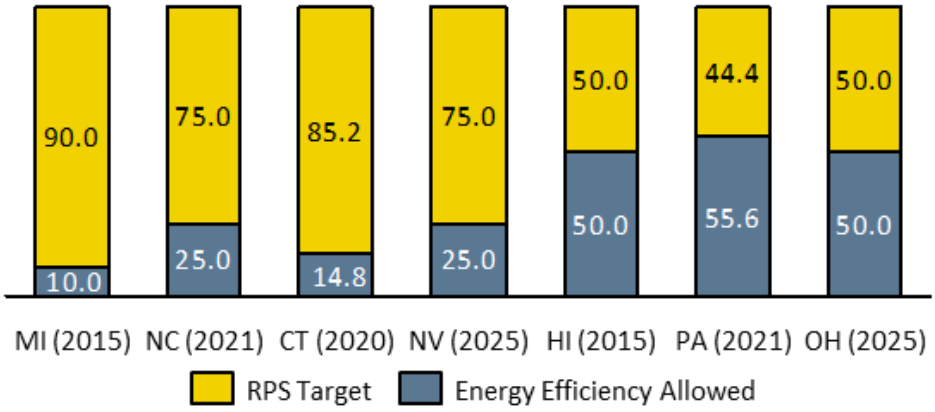
1. Seven states, including Michigan, have energy efficiency as an eligible resource in RPS policies

Among the twenty-nine jurisdictions that have renewable portfolio standards (RPS), twenty-one have standalone energy efficiency resource standards (EERS), and seven (CT, HI, MI, NV, NC, OH and PA) include energy efficiency as an eligible resource in their RPS policies.

All seven states that include energy efficiency in their RPS policies have a cap on the maximum contribution of energy efficiency to the RPS target. Capping the level of energy efficiency at a certain percentage ensures that both renewable energy and energy efficiency are utilized and provides a level of certainty to renewable market participants. The following chart shows that energy efficiency limits range from 10% to about 50% of the RPS target, with Michigan the lowest at 10%. The 10% of the RPS target in Michigan translates to 1% of retail sales, consequently reducing the actual renewable target to 9%. Appendix I provides the details on the inclusion of energy efficiency in various RPS policies.

Renewable Energy Question 20: *How has Michigan, and how have other jurisdictions, treated energy efficiency or optimization and renewables as related or separate? For instance, have credits generated from one or the other been interchangeable or separate? What have been the cost, reliability, and environmental impacts of different regimes?*

Maximum Percentage of RPS Targets Allowing Energy Efficiency



Source: DSIREUSA.org website

Source: Including Alternative Resources in State Renewable Portfolio Standards: Current Design and Implementation Experience, NREL, Nov 2012

As suggested in NREL's study on *Including Alternative Resources in State Renewable Portfolio Standard: Current Design and Implementation Experience*,

"…the utilities are typically using as much energy efficiency as allowed… Hawaii, Nevada and Pennsylvania all met or exceeded their maximum allowed amount of energy efficiency and/or non-renewables…"

Amount of Energy Efficiency or Alternative Energy Used by Compliance in 2010

State	Amount of Alternative Energy in 2010 (MWh)	Total RPS Compliance Obligation in 2010 (MWh)	Percent of RPS Target from Alternative Energy
Connecticut[a]	1,882,000 MWh	10,005,000 MWh	~20% of total registered certificates (less than allowable ~29%)
Hawaii[b]	916,420 MWh	1,001,000 MWh	~92% of target (exceeded allowable 50%)
Nevada	1,944,000 MWh	3,382,000 MWh	~57% of target (exceeded allowable 25%)
Pennsylvania	1,387,000 MWh (non-RE)	2,218,000 MWh	~63% of target (matched allowable)

[a] Connecticut has not issued a compliance report. However, certificates registered in NEPOOL GIS provide a preliminary estimate of the magnitude of EE being used.
[b] HECO includes 788,249 MWh of energy efficiency that was installed before 2010.

Renewable Energy Question 20: *How has Michigan, and how have other jurisdictions, treated energy efficiency or optimization and renewables as related or separate? For instance, have credits generated from one or the other been interchangeable or separate? What have been the cost, reliability, and environmental impacts of different regimes?*

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2. Expert studies indicate that including energy efficiency as an eligible resource to meet RPS standards can decrease compliance costs, enhance flexibility, and broaden political support for the policy

Decrease compliance costs

Studies have found that energy efficiency is relatively low cost compared to procuring renewable energy. Including energy efficiency in an RPS decreases the compliance costs of meeting the standard.

The NREL study on *Including Alternative Resources in State Renewable Portfolio Standard* reviewed state RPS compliance reports and other available data to assess the actual costs of procuring efficiency and renewables in meeting RPS targets.

Prices of Energy Efficiency and Renewable Resources

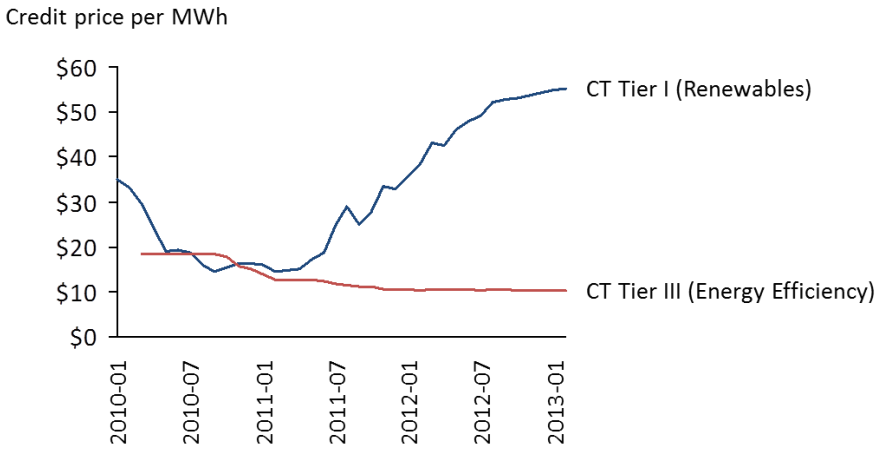
State	Energy Efficiency Price	Renewable Price	Source
Connecticut	~$10/MWh	~$50/MWh	Prices of energy efficiency (Tier III) and renewable (Tier I) credits in CT
Michigan	$20/MWh	$91.19/MWh	MPSC report on weighted average cost of energy optimization vs. renewables (life cycle cost)
Pennsylvania	$0.22/MWh	$3.94/MWh	Prices of non-renewable tier (Tier II) and renewable tier credits published by PUC in 2010-2011

It is important to note that prices are not comparable among the states as demonstrated by NREL's comparison of Connecticut, Michigan and Pennsylvania. The fact that Connecticut and Pennsylvania have allowed renewable energy credits imported from other states have significantly lowered their renewable prices. In addition, renewable prices for both states reflect the renewable price premium over conventional technologies, whereas Michigan's renewable price is the full average cost of generating renewable energy. On the other hand, energy efficiency prices are based on different types of energy efficiency resources defined in the states' RPS standards. Connecticut's energy efficiency prices include the prices of combined heat and power (CHP) systems and systems that recover waste heat or pressure from commercial and industrial processes. Pennsylvania's energy efficiency prices actually include a wide range of non-renewable generation resources defined in the state's Tier II RPS standard, including energy efficiency.

Renewable Energy Question 20: *How has Michigan, and how have other jurisdictions, treated energy efficiency or optimization and renewables as related or separate? For instance, have credits generated from one or the other been interchangeable or separate? What have been the cost, reliability, and environmental impacts of different regimes?*

In Connecticut, prices of energy efficiency credits (Tier III) have stayed much lower than those of the Tier I renewable energy credits (REC) since early 2011.

Efficiency and Renewable Credit Trading Prices in Connecticut



Source: Historical pricing compiled by DTE Energy Trading, Inc.

In Michigan, the Michigan Public Service Commission (MPSC) report[1,2] found that the weighted average energy optimization cost of conserved energy was $20 / MWh, compared to a life cycle cost of $91.19 / MWh for renewable energy.

In Pennsylvania, renewable energy (Tier I) was more expensive than the state's Tier II resources including energy efficiency, waste coal and other technologies. Tier I weighted average price in the 2010-2011 compliance year was $3.94 / MWh, compared to $0.22 / MWh for Tier II resources based on Pennsylvania Public Utility Commission annual report in 2011[3].

The assessment of actual compliance costs of energy efficiency compared to renewable energy resources is consistent with many previous studies.

A 2006 American Council for an Energy-Efficient Economy (ACEEE) study[4] on the experience and recommendation of energy efficiency resource standard concludes,

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[1] Michigan Public Service Commission (MPSC). (2012). 2012 Report on the Implementation of P.A.295 Utility Energy Optimization Programs. http://www.michigan.gov/documents/mpsc/2012_EO_Report_404891_7.pdf. Accessed Feb 14, 2013.

[2] MPSC. (2012). Report on the Implementation of the P.A. 295 Renewable Energy Standard and the Cost-Effectiveness of the Energy Standards. http://www.michigan.gov/documents/mpsc/implementation_PA295_renewable_energy2-15-2012_376924_7.pdf. Accessed Feb 14, 2013.

[3] Pennsylvania Public Utility Commission (PA PUC). (2012). 2011 Annual Report : Alternative Energy Portfolio Standards Act of 2004. http://www.puc.pa.gov/electric/pdf/AEPS/AEPS_Ann_Rpt_2011.pdf. Accessed Feb 14, 2013

[4] Nadal, S. (2006). Energy Efficiency Resource Standards: Experience and Recommendations. ACEEE Report E063. http://www.aceee.org/research-report/e063. Accessed Feb 14, 2013.

Renewable Energy Question 20: *How has Michigan, and how have other jurisdictions, treated energy efficiency or optimization and renewables as related or separate? For instance, have credits generated from one or the other been interchangeable or separate? What have been the cost, reliability, and environmental impacts of different regimes?*

"*Combining energy efficiency and renewable energy technologies is the opportunity to reduce the upfront cost of a renewable energy system*"

Enhance flexibility

Besides lowering compliance costs, incorporating energy efficiency into state RPS brings many other benefits. Brown, York and Kushler[5] discussed the enhanced flexibility for meeting targets:

"*The geography of renewable energy resources is very uneven…by contrast, energy efficiency is consistently available in substantial amounts in every state… Thus, by adding energy efficiency to the resource mix, the distribution of renewable and efficiency resources is much dispersed, and every state would have at least one high-potential option."*

They concluded that,

"*Combining renewable energy and energy efficiency in a SEPS [Sustainable Energy Portfolio Standard] has emerged as a key state and national policy option to achieve greater levels of sustainable energy resources with maximum economic efficiency and equity. A key advantage of the combined policy relative to an RPS or EERS is enhanced flexibility and broader options for meeting targets. Another advantage is the financial appeal that energy efficiency can bring…"*

Broaden political support

As concluded in the 2006 ACEEE report,

"*Combining efficiency and renewable energy in some fashion tends to broaden political support for a policy, as combined proposals can draw support from renewable energy and energy efficiency advocates, as well as supporters of other energy sources that are included. In particular, the inclusion of CHP and recycled energy may at least gain the acquiescence if not the support from some industrial energy consumers*."

A 2007 study[6] conducted by ACEEE and the American Council on Renewable Energy (ACORE) further concludes,

"*Some states and regions are richer in some renewable types than others. Efficiency, however, is consistently available across the country, so states with fewer renewables can exploit*

[5] Brown, M.A., York, D., and M. Kushler. (2007). Reduced Emissions and Lower Costs: Combining Renewable Energy and Energy Efficiency into a Sustainable Energy Portfolio Standard. The Electricity Journal. Volume 20, Issue 4. May. p. 62-72. doi:10.1016/j.tej.2007.03.005

[6] B. Prindle and M. Eldridge. (2007). The Twin Pillars of Sustainable Energy: Synergies between Energy Efficiency and Renewable Energy Technology and Policy, http://www.aceee.org/sites/default/files/publications/researchreports/e074.pdf. Accessed Feb14, 2013.

efficiency opportunities to compensate. This type of synergy helps build a broader political consensus around clean energy policy, because it tends to even out the regional differences among states and thus could make it easier to arrive at a national consensus."

3. The flexibility to meet clean energy obligations with a combination of renewable energy and energy efficiency may be particularly valuable moving forward, as federal rules and policy on these topics come into play. Uncertainty around what might be required at a national level makes flexibility at the state level more important

Both the U.S. House and Senate have made multiple attempts to enact a national-level clean energy policy in the past several years. The uncertainty around what might be required at the federal level makes flexibility in state policy more important.

The two well-known federal clean energy proposals discussed below have both tried to include energy efficiency as part of the policy.

In March 2012, U.S. Senator Bingaman, Chairman of the Senate Committee on Energy and Natural Resources, introduced the Clean Energy Standard Act (CESA) of 2012. The bill did not pass the Senate floor but placed a marker for continued discussion on a national level renewable portfolio standard. The bill would have required that all funds collected by the Secretary of Energy as alternative compliance payments or civil penalties be used to fund state energy efficiency programs. The bill also would have required the Secretary to submit to Congress a report examining ways to supplement the CESA with energy efficiency measures no later than 3 years after enactment.

The American Clean Energy and Security Act of 2009 (ACES), introduced by U.S. Representatives Waxman and Markey, was approved by the House of Representatives on June 26, 2009 but was defeated in the Senate. The bill explicitly required electric utilities to meet 20% of their electricity demand through renewable energy sources and energy efficiency by 2020, of which 5% of the standard could be met through energy efficiency savings.

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Appendix I RPS States Allowing Energy Efficiency

RPS States	EERS Standards	EE Eligible for RPS	Restriction on EE Use
Arizona	Y		
California	Y		
Colorado	Y		
Connecticut		Y	Separate tier for EE, represent ~29% of RPS in 2010, ~15% in 2020
Delaware			
Hawaii	Y	Y	<=50% of RPS through 2015
Illinois	Y		
Iowa	Y		
Kansas			
Maine			
Maryland	Y		
Massachusetts	Y		
Michigan	Y	Y	Energy efficiency and Advanced Clean Energy Credits[7] combined cannot exceed 10% of requirement
Minnesota	Y		
Missouri			
Montana			
Nevada	Y	Y	<=25% of RPS
New Hampshire			
New Jersey			
New Mexico	Y		
New York	Y		
North Carolina	Y	Y	<=25% of RPS (IOUs); Coops and municipals have no restriction
Ohio	Y	Y	<=50% of RPS
Oregon	Y		
Pennsylvania	Y	Y	Separate tier for EE, represents ~63% of RPS in 2010, ~55% of RPS in 2021
Rode Island	Y		
Texas	Y		
Washington	Y		
Wisconsin	Y		
Washington D.C.			

[7] Advanced clean energy credits are produced by a gasification facility, an industrial cogeneration facility, a coal fired electric generating facility that captures and sequesters 85% of the carbon dioxide, or an electric generating facility using technology not in operation on Oct 6, 2008