

The American Council for an Energy-Efficient Economy (ACEEE) welcomes the opportunity to provide this overview of those states that have implemented or are considering changes to their energy efficiency policy framework to support beneficial electrification. These changes include modifications to energy efficiency targets in legislation, as well as changes to the rules that support implementation of those targets. ACEEE developed this memo in response to the DC DOEE's request for comparison of existing and emerging models in legislative or regulatory language.

DOEE is tasked with analyzing the pending Clean Energy DC Omnibus Act of 2018, which includes a provision that removes the current requirement that annual expenditures on natural gas and electricity related programs be no less than 75% of the amount provided from ratepayer funds associated with each type of fuel.¹ This memo is intended to support comparison and assessment of the different options the District has to support its climate and energy efficiency efforts. In the first section, we describe motivations for electrification policy and highlight emerging models; we then describe five states with pending or recently passed legislation and provide references and details regarding the current state of policy implementation.

Beneficial Electrification and Energy Efficiency Policy

The carbon intensity of electric grids is decreasing, as the supply mix shifts toward natural gas, carbon-free renewables, and efficiency and away from coal-fired electricity generation. As this trend continues, many analyses find that strategic electrification will be a viable long-term strategy to help meet climate goals.¹ Policymakers in states with long-term carbon goals are re-examining their complementary energy policies to ensure they align with this new opportunity.

Efficiency has a large role to play in meeting climate goals, both through traditional energy efficiency programs and as well as through beneficial electrification strategies like energy-saving electric vehicles and advanced electric space and water heating technologies. ACEEE defines beneficial electrification strategies as those that provide three forms of societal benefits: reduced energy consumption (total source BTUs), lower consumer costs, and reduced greenhouse gas emissions (GHG).

However, state policies will need to be designed in a way to help states with climate goals meet those targets. The state models below offer a few main approaches to balancing beneficial electrification and energy efficiency. The first is by modifying targets themselves, through changes to use GHG (no states thus far) or BTU (New York) targets, or by creating a portfolio of targets (Massachusetts), including ones that support electrification. Others, like DC, Minnesota, and California, are considering modifying or removing existing fuel switching restrictions. In the case of Vermont, regulatory implementation orders include criteria to ensure that electrification is beneficial and that utilities considered options that do not increase electricity consumption. We discuss each of these states below in alphabetic order.

State Models

CALIFORNIA

Current California policy allows for fuel substitution in energy efficiency programs in only limited cases. In 1992, the California Public Utility Commission (CPUC) created a "Three-Prong Test for Fuel Substitution" to determine which fuel substitution projects can receive ratepayer-funded program support, given concerns that utilities would subsidize non-cost-effective fuel substitution measures.

¹ The bill repeals subsections (h), (i), (j) of D.C. Official Code § 8-1774.02

The three-prong test uses the baseline that programs must compare to same-fuel substitute technologies that would have a TRC and PAC of 1.0 or greater, and cannot:

1. Increase source fuel consumption, measured as source-BTU impacts using an existing heat rate (which does not include non-combustion, renewable resources)
2. Degrade the environment, measured by avoided costs of emissions with and without the program, using a short-run avoided cost model which assumes natural gas as the marginal fuel in all hours
3. Increase total resource costs, measured by a program/project/measure TRC and PAC benefit-cost ratio of more than 1.0

The CPUC is currently considering changes to the test for determining whether funding is appropriate for energy efficiency projects and measures (not the broader question of whether the CPUC should pursue electrification to meet climate goals) and is currently seeking input on a series of questions in their Energy Efficiency Proceeding.ⁱⁱ Environmental intervenors in California (NRDC, CEEIC, Sierra Club) petitioned to update the test to:

- Reflect a baseline of “what would have happened in the absence of the program” – specifically, no fuel substitution – to better align with California policy (AB 802) that authorizes ratepayer funding for savings that would result from actions/measures already required by codes and standards
- Update the energy and environmental methodologies to reflect the current and forecasted renewable energy in the state’s electricity supply to ensure GHG is accurately counted (e.g, adjusting heat rates and using long-run marginal emissions factors)
- Use a portfolio-level, not program/measure-level cost-effectiveness ratio like other efficiency measures

Two of the electric utilities in the state also favored updates to baselines and changes to make cost-effectiveness testing consistent with other efficiency measures. Pacific Gas & Electric additionally recommended a “receiving fuel pays” rule for ratepayer fund allocation, wherein measures that replace gas in favor of electricity would be funded by electric ratepayers, and vice versa.ⁱⁱⁱ In contrast, Southern California Gas and San Diego Gas & Electric do not believe the current test inhibits environmentally beneficial, cost effective fuel substitution. Changes to the Three-Pronged Test are still pending in the Energy Efficiency Docket (R.13-11-005).

MASSACHUSETTS

In July, the Massachusetts legislature passed H4857, An Act to Advance Clean Energy. The bill adds energy storage, other active demand management technologies, and strategic electrification as eligible measures under EE programs. Discussions are ongoing about when and how to integrate the bill’s provisions into the 3-year plan.

In parallel, the utility program administrators in the state are negotiating with stakeholders regarding the 2019-2021 energy efficiency plan. In the current 2016-2018 program cycle, goals for MassSave are characterized as MWh, MW, and net benefits in dollars from all the electric, natural gas, oil, propane, water, and non-energy program impacts.^{iv} In addition, the state has an existing regime to support thermal electrification through the Massachusetts Clean Energy Center, a state economic development agency, using Alternative Compliance Payments from the RPS.^v

The current Revised Draft Plan (note: not yet publicly available) shifts toward using multiple goals to address additional policy objectives including GHG reduction, demand optimization (called “active demand management”) and reducing system and customer costs. Stakeholders drafting the plan report that there was no one overarching goal that would adequately serve all of these policy objectives, and in fact that some goal metrics were in conflict with each other. As a result, the current draft plan includes a group of goals, designed to balance amongst resources, acknowledging the different capabilities or characteristics each resource has to contribute to the achievement of those goals. For example, they chose both MMBTUS and lifetime MWh in order to encourage both beneficial electrification and CHP, and specific goals for active demand management and BTM storage which MMBTUs or energy units would not support. The draft goals include:^{vi}

1. lifetime MWhs
2. lifetime therms
3. lifetime MMBTUs (including for electrification/fuel switching)
4. MW of active demand management (summer peak)

According to conversations with stakeholders, goals for MW of behind-the-meter storage, benefits (TRC benefits), GHG reductions and goals for winter resiliency for both electric and gas (winter demand reduction and price effects) are also being considered.

The Final Plan is due in mid-October, to be reviewed by the Massachusetts Energy Efficiency Advisory Council, and then filed with the Department of Public Utilities on Oct. 31. It is not yet clear whether this will open up ratepayer funds for fuel switching purposes, although the change to goal structure in the Revised Draft Plan and the new legislation suggests a change in that direction.

MINNESOTA

Minnesota’s energy efficiency policy framework for utilities is encompassed in their Conservation Improvement Program (CIP), with energy savings goals and carbon reduction goals established in 2005 legislation (the Next Generation Energy Act). The current policy framework in Minnesota is broadly regarded as precluding utilities from including fuel-switching in their energy efficiency program portfolios.² However, over the past two years there has been considerable discussion in Minnesota about the notion of updating their energy policy, potentially including beneficial electrification.

The Minnesota Center for Energy and Environment (MNCEE) is leading a process to obtain utility and stakeholder input for consideration of possible policy revisions. On the subject of electrification, MNCEE has proposed a four-part definition for beneficial electrification for discussion.^{vii} The four criteria would be:

- 1) A net reduction in source energy use
- 2) A net reduction in fuel-neutral customer energy costs
- 3) A net reduction in lifetime carbon emissions
- 4) No increase in coincident peak electricity demand

That last item is a noteworthy addition to the common ‘3-part’ test that has been discussed in other states. Lastly, any such ‘beneficial electrification’ program would need to be cost-effective under

² March 7, 2005 Commission Order in Docket No. G008/CIP-00-864.07 explicitly stated that “targeted fuel-switch projects are not allowed in the Conservation Improvement Program.”

Minnesota's societal cost test. In Minnesota, this concept might also be applied to natural gas utilities, such that the policy change wouldn't appear to be favorable to electric utilities at the expense of gas utilities. The term they are proposing is "efficient load-building", designed to be able to apply to either electric or gas utilities. MNCEE's modeling finds that both electric vehicles and air source heat pumps will hit emissions parity in the 2020-2023 timeframe (depending on coal retirement timing) in Minnesota. However, air source heat pump replacements are not yet cost-effective compared to natural gas space heating, although they still generally lower site and usually source energy use.^{viii}

Legislation is being discussed that, among other things, would allow for "efficient load-building" to be included in the CIP framework. Key considerations to be worked out include: how to incorporate such efficient load-building into CIP without weakening or eroding the primary focus on energy efficiency; how to ensure that only beneficial load-building is included; what budgets, performance targets, and tracking should be established; and whether any utility performance incentives should be considered (since utilities already have an inherent incentive to build load).

NEW YORK

In April 2018, New York State (NYSERDA and the Department of Public Service or DPS) issued a new report, *New Efficiency: New York*,^{ix} which lays out a 2025 statewide energy efficiency target of 185 TBTU of cumulative, site energy savings³ and makes several policy recommendations for the Commission and other stakeholders to pursue. The new 2025 BTU target is set on an all-fuels basis, addressing energy savings in buildings and the industrial sector across all fuel sources (electricity, natural gas, heating oil, and propane).

The NYSERDA & DPS report further sets forth a sub-target of electricity site savings of 30,000 GWh in 2025 (relative to forecasted electricity sales), annual reported electricity savings of 3% for investor-owned utility sales in 2025, and average electricity savings that exceed 2% of IOU sales over 2019–2025. This will be based on electric savings reported across investor-owned utility and State-supported efficiency activities (e.g., through NYSERDA's Clean Energy Fund or CEF). However, the Commission has yet to establish specific incremental annual energy savings targets and determine how budgets will be funded and shared among utilities, NYSERDA, and other entities.

One of the notable proposals and strategies to meet the 2025 target includes consideration of a fuel-neutral approach to programs to be delivered by utilities, consistent with New York's commitment to reduce emissions from all fuels and across all market segments. The report also notes that increases in beneficial electrification, including heat pumps and electric vehicles, pose the need for separate accounting outside an electricity efficiency sub-target.

On the topic of fuel neutrality, the Commission previously noted the benefits of fuel neutral design across a program portfolio in its adoption of fuel neutrality for the CEF, as well as in an order providing the opportunity for utilities to create fuel neutral offerings.^x The CEF order highlights the idea that "fuel neutrality supports a truly customer centric approach to clean energy given consumers do not view their energy needs on a fuel-by-fuel basis", and the decision collects the CEF surcharge solely from electric ratepayers because all customers regardless of heating fuel used, are electric customers.^{xi}

³ They estimate that these achievements will deliver nearly one-third of the greenhouse gas (GHG) emissions reductions needed to meet New York State's 40 by 30 climate goal.

The NYSERDA & DPS report recommends “The Commission should develop criteria and guidelines for the funding of fuel-neutral efficiency programs to be delivered by utilities. Issues to be addressed should include the following:

- The potential scale of cost-effective cross-fuel programs
- Criteria for determining the cost-effectiveness of cross-fuel programs, including weighting of participant benefits relative to carbon reductions and appropriate use of Benefit Cost Analysis framework
- Types of cross-fuel programs and eligibility criteria, including potential weighting toward LMI customers”

VERMONT

Vermont policy explicitly encourages electrification as a part of its 2015 RPS update. Tier I can be from any source of renewable energy, and Tier II is new distributed renewable generation.^{xii} The third “tier” of the RPS requires that distribution utilities either procure incremental distributed energy or that they acquire fossil-fuel savings through “energy transformation projects” that reduce the fossil-fuel consumption of a distribution utility’s customers and the greenhouse gas emissions associated with that consumption. Tier III savings are required to be equivalent to 2% of their annual retail sales in 2017, increasing by two-thirds of a percent each year until reaching 12% in 2032.

The VT Public Service board promulgated rules for Tier III savings that further define allowable programs.^{xiii} They set three key eligibility criteria:

1. Projects should result in a net reduction in fossil fuel consumed by the provider’s customers and in the emission of greenhouse gases attributable to that consumption, whether or not the fuel is supplied by the provider. This is measured based on the net reduction in fossil fuel consumption resulting from the project to a MWh equivalent of electric energy, using the most recent year’s approximate heat rate for electricity net generation from total fossil fuels in the EIA Monthly Energy Review.
2. Projects should meet the need for its goods or services at the lowest present value life cycle cost, including environmental and economic costs, and this evaluation should include analysis of alternatives that do not increase electricity consumption.
3. The project should cost the utility less per MWh than the applicable RPS alternative compliance payment rate.

In reporting and planning, distribution utilities must demonstrate they have analyzed alternatives that do not increase electricity consumption for each energy transformation project. In the case where an energy transformation project increases or may increase electricity consumption, they must provide a description of: 1) the estimated electric impact of such measures, 2) the demand-management best practices that will be incorporated, 3) how the technologies are appropriate for Vermont, and 4) how the installation of the technologies in buildings that meet minimum energy performance standards will be encouraged.

Further Research

We appreciate this opportunity to present comparisons of changes to efficiency policy to incorporate beneficial electrification. ACEEE is available to provide additional resources, research, and analysis of options for aligning energy efficiency policy with climate and other goals.

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ⁱ Williams, J.H., B. Haley, F. Kahrl, J. Moore, A.D. Jones, M.S. Torn, H. McJeon (2014). Pathways to deep decarbonization in the United States. The U.S. report of the Deep Decarbonization Pathways Project of the Sustainable Development Solutions Network and the Institute for Sustainable Development and International Relations.

ⁱⁱ CPUC, 2018, ALJ Ruling Seeking Comments on Three-Prong Test.

<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M216/K775/216775944.PDF>

ⁱⁱⁱ Opening Comments of PG&E on the ALJ Ruling Seeking Comments on the Three-Prong Test.

<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M223/K625/223625092.PDF>

^{iv} MA EEAC 2016-2018 Energy Efficiency Plan. <http://ma-eeac.org/wordpress/wp-content/uploads/2016-2018-Energy-Efficiency-Three-Year-Plan-Order.pdf>

^v Levin, Emily. VEIC. “Getting from Here to There: How Efficiency Programs Can Go Beyond MWh Savings to Next-Generation Goals.” ACEEE Summer Study 2018

^{vi} Ibid.

^{vii} Brrr! The Outlook for Beneficial Electrification in Heating Dominant Climates” Jennifer Edwards, et. al. MNCEE, presented at 2018 ACEEE Summer Study

^{viii} Ibid.

^{ix} NYSEDA, “New Efficiency New York,” April 2018. <https://www.nyserda.ny.gov/About/Publications/New-Efficiency>

^x Case 15-M-0252, In the Matter of Utility Energy Efficiency Programs, Order Authorizing Utility-Administered Energy Efficiency Portfolio Budgets and Targets for 2016–2018, issued January 22, 2016.

^{xi} Cases 14-M-0094, et al., Order Authorizing the Clean Energy Fund Framework, issued January 21, 2016, page 61.

^{xii} [30 V.S.A. § 8002-8005](#)

^{xiii} Order Implementing the Renewable Energy Standard, State of Vermont Publish Service Board, Docket No. 8550, 6/28/2016 http://puc.vermont.gov/sites/psbnew/files/doc_library/8550-final-order.pdf