Aligning DSM Cost-Effectiveness Testing with Public Policy

Brendan Haley, Carol Maas



Efficiency Canada | Carleton University

Aligning DSM Cost-Effectiveness Testing with Public Policy

Brendan Haley, Carol Maas

Suggested citation

Haley, B., Maas, C. 2026. Aligning DSM Cost-Effectiveness Testing with Public Policy. Efficiency Canada, Carleton University, Ottawa, ON.

© Efficiency Canada
c/o Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
https://www.efficiencycanada.org

Facebook: https://facebook.com/EfficiencyCanada
LinkedIn: https://linkedin.com/company/efficiency-canada
Instagram: https://instagram.com/efficiencycanada

Acknowledgements

This project was undertaken with the financial support of the Government of Canada. Funding was provided through the Smart Grid Regulatory Innovation program, administered by Natural Resources Canada.

The authors gratefully acknowledge the numerous DSM administrator representatives we spoke to who provided valuable information, reviewed drafts of the report, and shared their advice. We also wish to thank individuals who acted as peer reviewers and subject matter experts. This includes, but is not limited to: François Boulanger (Dunsky Energy + Climate Advisors), David Brushett (PB Energy), Kala O'Riordain (BC Hydro), Keith Barrett (Newfoundland Power), Karen Gorecki (Efficiency Canada) and James Gaede (Efficiency Canada).

About the authors

Brendan Haley is Efficiency Canada's Senior Director of Policy Strategy. He has a PhD in Public Policy from Carleton University, a Master of Environmental Studies from York University, and a Bachelor of Science in Economics from Dalhousie University and was a Banting Postdoctoral Fellow at Dalhousie University.

Carol Maas is a Policy Research Associate at Efficiency Canada. Carol holds a Bachelor's Degree in Engineering and Society and a Master of Applied Science. Previously, she held various roles in research, consulting engineering, and process engineering.

Editing: Michael Teoh, Media and Communications Coordinator

Cover and design: Celina Johnson, Design Coordinator

Web: Aidan Djabarov, Communications Manager

About Efficiency Canada

Efficiency Canada is the national voice for energy efficiency. Our mission is to create a sustainable environment and better life for all Canadians by making our country a global leader in energy efficiency policy, technology, and jobs. Efficiency Canada is housed at Carleton University's Sustainable Energy Research Centre, which is located on the traditional unceded territories of the Algonquin nation.

The views expressed, as well as any errors or omissions, are the sole responsibility of the authors.

Table of contents

Summary 1

Introduction 8

What is cost-effectiveness testing? 12

- The legacy of the unbalanced Total Resource Cost test 14
- Evolution of the National Standard Practice Manual 15
- Routes to a balanced test 17

A snapshot of cost-effectiveness testing in Canada 18

- Utility impacts 19
- Non-energy, societal and electrification impacts 24
- Assessment level and exemptions 26
- Discount rate 29

The evolution of cost-effectiveness testing in Canada 31

- The New Brunswick Test 34
- Policy implications of cost-effectiveness testing trends 36
- Policy recommendations 38

Beneficial electrification 39

- Multi-fuel impacts 41
- Electrification targets 44
- Rate impacts or revenue benefit frameworks 45
- Program portfolio interactions to increase beneficial electrification 48
- Aligning cost-effectiveness testing with electrification policy goals 49
- Recommendations 50

Government funding interactions **51**

Attribution options 53

Treatment of government funding in DSM programs 54

Policy options to increase energy efficiency impact of government-funded and DSM programs 57

Implications for the Canada Greener Homes Affordability Program 59

The New Brunswick Test as coordination tool case 60

How DSM and government policy systems can realistically align 61

Conclusion **62**

Works cited **64**

Tables

Table 1. Conceptual overview of the traditional cost-effectiveness tests 13

Table 2. NSPM principles for benefit-cost analyses 16

Table 3. Utility system impacts for electrical utilities 20

Table 4. Utility system impacts for natural gas utilities 21

Table 5. Non-energy, societal impacts in Canadian utilities (those not using the PAC test) 25

Table 6. Cost-effectiveness test assessment levels and exemptions 27

Table 7. Discount rate options 30

Table 8. Discount rate type and values for utilities 31

Table 9. Multi-fuel impacts in electric utility cost-effectiveness testing 42

Table 10. Multi-fuel impacts in natural gas utility cost-effectiveness testing 43

Table 11. Government funding in DSM cost-effectiveness testing 55

Figures

Figure 1. Timeline of key cost-effectiveness events in Canada 32

Figure 2. Cost-effectiveness test perspectives included in the New Brunswick Test 36

Figure 3. Decision tree for attribution frameworks 58

Summary

For decades, utility system governance has used demand-side management (DSM) to lower system costs, improve customer affordability, reduce risk and increase reliability. DSM administrators, regulators and policymakers use benefit-cost analyses to inform decision-making when developing plans. These analyses take the form of cost-effectiveness tests and are often used as a "screen" to decide if a particular program should be funded, or what level of energy efficiency and distributed energy resources can serve as an alternative to energy supply options like fossil fuels and power plants. **The decision of which cost-effectiveness test to employ, and what costs and benefits are included, can significantly influence the composition and size of DSM program portfolios.**

Cost-effectiveness testing rules are highly technical, nuanced, and can obscure political and economic biases. Tests with the same name often adopt different accounting practices and assumptions are frequently not made transparent in regulatory proceedings. Biases and imbalances between costs and benefits can result in unfair comparisons of DSM to new supply infrastructure, leading to lost opportunities for energy and cost savings. As DSM programs graduate from "low hanging fruit" measures like lighting toward deeper and more complex energy-efficiency improvements, ignoring or undervaluing the myriad benefits of these programs' risks limiting their scope and diminishing the magnitude of energy savings. Equally concerning, rules and assumptions within tests can limit the potential for DSM to address modern objectives of public policy such as equity, affordability and decarbonization.

This report aims to inform DSM modernization in Canada by clarifying the potential unintended consequences of imbalanced and biased accounting of its impacts and offering insights into aligning DSM with public policy objectives. We review the current state of practice and then consider potential pathways for future evolution in cost-

effectiveness testing relevant to three particularly salient objectives of contemporary energy politics:

- aligning cost-effectiveness testing with public policy objectives
- facilitating beneficial electrification[1]
- leveraging government funding to encourage more DSM

Regulators and utilities across Canada are exploring ways to evolve cost-effectiveness testing to address old challenges and new opportunities. There are four commonly used cost-effectiveness tests, and each operates from a particular perspective and brings potential benefits and risks: the Program Administrator Cost (PAC) test — also called the Utility Cost Test — the Total Resource Cost (TRC) test, the Societal Cost Test (SCT) and the Jurisdiction-Specific Cost Test (JST). DSM administrators have adjusted their tests over time as contexts and best practices change. However, our research found that many jurisdictions are still not accounting for the full suite of benefits of DSM. Omission of these benefits may be problematic for valuing DSMs' contribution to key public policy and utility objectives related to energy poverty, risk, reliability, resilience and demand flexibility.

Almost all DSM administrators used the TRC test prior to 2015. However, the test was unbalanced and inherently biased because it was heavily influenced by incremental costs to the customer while failing to consider the customer-side benefits of improved energy efficiency. Some jurisdictions worked to correct the imbalance by counting additional customer benefits within their TRC test.

A decade later, most Canadian jurisdictions use a PAC test, which counts the benefits and costs relevant to the utility system. This test provides a balanced assessment of impacts and has resulted in higher benefit-cost ratios than the TRC in recent DSM plans. However, the PAC test is not immune from challenges. Significant increases in utility incentives, without capturing benefits to participants and society that the PAC test excludes, may lead to lower PAC results. The PAC test as typically interpreted takes the perspective of a single utility, which makes it unsuitable for screening electrification programs.

---

[1] Beneficial electrification is defined as replacing other energy sources with electric technologies to improve efficiency, affordability and enable a cleaner environment.

Some jurisdictions have explored designing JSTs that account for the impacts most relevant to a given policy context. These explorations have benefitted from greater transparency, more robust accounting practices, potential alignment with broader public policy goals and evaluation of electrification through inclusion of multiple energy systems. However, to date, no JST has been approved for rate-payer DSM programs in Canada.

Natural gas and electricity DSM portfolios can support beneficial electrification. Electrification can play a valuable role in meeting public policy objectives to reduce greenhouse gas emissions, increase energy security and improve customer affordability. Demand-side resources can help meet these policy objectives while simultaneously avoiding unnecessary costs on the electricity system. DSM administrators have the platforms and tools to ensure electrification is beneficial. For example, DSM can pair electrification technologies with on-site renewable energy, building envelope improvements, education and awareness, and smart appliances. Demand response and locational strategies can reduce peak demands on energy generation and grid congestion problems that may be exacerbated with unmanaged electrification.

DSM strategies coordinated with electrification programs can thus minimize the overall costs of electrification, while maximizing societal benefits. Aligning DSM with electrification policy requires first establishing clear guidance for program administrators on the objectives of beneficial electrification. Enabling and encouraging development of market transformation tools would support the innovation necessary to electrify at least cost. Within this framework, cost-effectiveness testing could then act as an informational guide to achieve multiple policy goals at lowest cost and highest benefit. Tests well suited to electrification are still largely under development. Recent DSM decisions have suggested adoption of a modified Rate Impact Measure in electricity systems, but we caution against use of this approach. Assessing electrification using a cost-effectiveness test will require accounting for the impacts on multiple energy systems, other fuels and greenhouse gas emissions.

Carefully designed, government-funded energy efficiency programs can encourage more DSM, in the same way that a subsidy for a wind turbine or nuclear plant increases the competitiveness of these resources. However, government funding could crowd out DSM efforts by making it more difficult to attribute benefits to DSM activities, thus decreasing net benefits relative to costs. Much depends on how energy savings benefits are attributed to DSM programs and costs are counted. Managers of DSM programs

should make the good-faith assumption that government programs aim to encourage stronger and more effective DSM and adjust attribution approaches and performance targets appropriately. Governments can send more powerful signals to accelerate DSM by making predictable investments and coordinating with existing DSM programs, while clarifying intent to encourage more DSM instead of less. Cost-effectiveness testing is one part of a DSM decision-making framework that determines what is valued and how much to pay for it. Though perhaps considered an obscure area of utility DSM policy, it interacts in meaningful ways with public policy. The rules within a test can either constrain or enable DSM contributions to policy objectives. Conversely, government policies can limit or amplify the level of DSM supported by utilities and their regulators. A wider governmental policy audience would benefit from understanding these intersections to design effective policies that avoid paradoxical outcomes and leverage DSM to its full potential.

Résumé

Depuis des décennies, les services publics ont recours à la gestion de la demande (GD) pour réduire les coûts du réseau, améliorer l'abordabilité pour la clientèle, réduire les risques et accroître la fiabilité. Pour éclairer l'élaboration de leurs plans, les responsables des programmes de GD, les autorités réglementaires et les responsables publics utilisent des analyses coûts-avantages. Ces analyses prennent la forme de tests coût-efficacité et servent souvent de « filtre » pour déterminer si un programme devrait être financé, ou pour évaluer dans quelle mesure des initiatives d'efficacité énergétique et des ressources énergétiques décentralisées pourraient se substituer à des options d'approvisionnement énergétique comme les combustibles fossiles et les centrales électriques. **Le choix du type de test utilisé, ainsi que des coûts et avantages pris en compte, peut avoir une incidence considérable sur la composition et la taille des portefeuilles de programmes de GD.**

Les règles régissant ces analyses sont très techniques et nuancées, et peuvent occulter des biais politiques et économiques. Des tests portant le même nom reposent souvent sur des pratiques comptables différentes et, dans bien des cas, les postulats sous-jacents ne sont pas clairement exposés dans les processus réglementaires. Des biais et des déséquilibres entre les coûts et les avantages peuvent entraîner des comparaisons injustes entre la GD et d'éventuelles infrastructures d'approvisionnement, ce qui se traduit par des occasions manquées de réaliser des économies d'énergie et de réduire les coûts. À mesure que les programmes de GD passent de solutions faciles à

mettre en œuvre, comme l'éclairage, à des améliorations de l'efficacité énergétique plus poussées et complexes, le fait d'ignorer ou de sous-estimer les nombreux avantages de ces programmes risque d'en limiter la portée et de réduire l'ampleur des économies réalisées. Autre point tout aussi préoccupant : les règles et les postulats des tests peuvent limiter la capacité de la GD à contribuer aux objectifs actuels de politique publique, comme l'équité, l'abordabilité et la décarbonation.

Le présent rapport vise à alimenter la réflexion sur la modernisation de la GD au Canada. Il clarifie les conséquences potentiellement imprévues d'une prise en compte déséquilibrée et biaisée des retombées de la GD, et propose des pistes pour mieux l'aligner sur les objectifs de politique publique. Nous faisons le point sur les pratiques actuelles, puis examinons les moyens possibles de faire évoluer les tests coût-efficacité en fonction de trois objectifs particulièrement importants des politiques énergétiques contemporaines :

- aligner les tests coût-efficacité sur les objectifs de politique publique;
- faciliter l'électrification bénéfique[2];
- mobiliser les fonds publics pour favoriser davantage la GD.

Les organismes de réglementation et les services publics de partout au Canada cherchent des moyens de faire évoluer les pratiques d'analyse coût-efficacité afin de relever des défis de longue date et de tirer parti de nouvelles possibilités. Il existe quatre méthodes d'analyse coût-efficacité couramment utilisées, chacune reposant une perspective particulière et comportant des avantages et des risques : le test de l'administrateur du programme (TAP), aussi appelé test du coût pour le service public; le test du coût total en ressources (TCTR); le test du coût sociétal (TCS); et le test du coût propre à une administration (TCPA). Les responsables de programmes de GD ont ajusté leurs tests au fil de l'évolution des contextes et des pratiques exemplaires. Toutefois, nos recherches montrent que de nombreuses administrations ne tiennent toujours pas compte de l'ensemble des avantages de la GD. L'omission de ces avantages peut poser problème lorsqu'on cherche à évaluer la contribution de la GD à certains objectifs clés

[2] Par « électrification bénéfique », on entend le remplacement d'autres sources d'énergie par des technologies électriques afin d'accroître l'efficacité, d'améliorer l'abordabilité et de favoriser un environnement plus propre.

des pouvoirs publics et des services publics d'électricité, notamment en matière de précarité énergétique, de gestion des risques, de fiabilité, de résilience et de flexibilité de la demande.

Avant 2015, presque tous les responsables de programmes de GD utilisaient le TCTR. Mais ce test était déséquilibré et foncièrement biaisé, car il accordait une grande importance aux coûts supplémentaires assumés par la clientèle sans tenir compte des avantages que celle-ci tirait d'une amélioration de l'efficacité énergétique. Certaines administrations ont cherché à corriger ce déséquilibre en intégrant d'autres avantages pour la clientèle à leur TCTR.

Dix ans plus tard, la plupart des administrations canadiennes utilisent le TAP, qui tient compte des avantages et des coûts pertinents pour le réseau de services publics. Ce test permet d'évaluer les répercussions de manière équilibrée et a donné lieu à des ratios avantages-coûts plus élevés que le TCTR dans les récents plans de GD. Toutefois, le TAP présente lui aussi certaines limites. Si les services publics augmentent leurs incitatifs, mais que le TAP ne tient pas compte des avantages qui en découlent pour la clientèle et la société, les ratios avantages-coûts pourraient paraître moins favorables qu'ils ne le sont réellement. Le TAP, tel qu'il est généralement interprété, adopte le point de vue d'un seul service public, ce qui le rend inadéquat pour évaluer les programmes d'électrification.

Certaines administrations ont testé de nouveaux TCPA qui tiennent compte des répercussions les plus pertinentes dans un contexte de politique publique donné. Cette démarche a permis d'apporter plusieurs améliorations par rapport aux tests classiques : une plus grande transparence, des pratiques comptables plus rigoureuses, un meilleur alignement potentiel sur les objectifs de politique publique et une évaluation de l'électrification qui tient compte de plusieurs systèmes énergétiques. Toutefois, à ce jour, aucun TCPA n'a été approuvé pour les programmes de GD financés à même les tarifs au Canada.

Les portefeuilles de programmes de GD dans les secteurs du gaz naturel et de l'électricité peuvent favoriser une électrification bénéfique. L'électrification peut jouer un rôle important dans l'atteinte d'objectifs de politique publique comme la réduction des émissions de gaz à effet de serre, le renforcement de la sécurité énergétique et l'amélioration de l'abordabilité pour la clientèle. Les ressources énergétiques du côté de la demande peuvent contribuer à atteindre ces objectifs de politique publique tout en évitant des coûts inutiles pour le réseau électrique. Les responsables de programmes

de GD disposent des plateformes et des outils nécessaires pour assurer une électrification bénéfique. Par exemple, les programmes de GD peuvent combiner des technologies d'électrification à des mesures complémentaires comme la production d'énergie renouvelable sur place, l'amélioration de l'enveloppe des bâtiments, l'utilisation d'appareils intelligents, ainsi que des activités d'éducation et de sensibilisation. Les stratégies de GD et les stratégies adaptées aux besoins du réseau peuvent réduire les pointes de demande liées à la production d'énergie et les problèmes de congestion du réseau que l'électrification non maîtrisée pourrait exacerber.

La coordination des stratégies de GD et des programmes d'électrification peut ainsi réduire au minimum les coûts globaux de l'électrification tout en maximisant les avantages pour la société. L'alignement de la GD sur les politiques d'électrification exige d'abord l'établissement d'orientations claires à l'intention des responsables de programmes quant aux objectifs de l'électrification bénéfique. En soutenant le développement d'outils de transformation du marché, les pouvoirs publics pourraient favoriser l'innovation nécessaire pour électrifier au moindre coût. Dans un tel cadre, les tests coût-efficacité pourraient ensuite servir de guide pour atteindre de nombreux objectifs stratégiques en limitant les coûts tout en maximisant les avantages. Les tests les mieux adaptés à l'électrification sont encore largement en cours d'élaboration. De récentes décisions concernant les programmes de GD ont préconisé l'adoption d'un test d'incidence tarifaire modifié dans les réseaux électriques, mais nous déconseillons cette approche. Pour évaluer l'électrification au moyen d'un test coût-efficacité, il faudra tenir compte des répercussions de cette électrification sur plusieurs systèmes énergétiques, sur les autres combustibles et sur les émissions de gaz à effet de serre.

En finançant des programmes d'efficacité énergétique bien conçus, les pouvoirs publics peuvent stimuler la GD, de la même manière qu'une subvention accordée à une éolienne ou à une centrale nucléaire accroît la compétitivité de ces ressources. Toutefois, le financement public pourrait nuire aux programmes de GD s'il devient plus difficile de leur attribuer les économies d'énergie, ce qui pourrait entraîner une diminution artificielle de leur ratio avantages-coûts. Tout dépend en grande partie de la manière de calculer la part des économies d'énergie attribuable aux programmes de GD et de comptabiliser les coûts. Les responsables des programmes de GD devraient présumer que les programmes gouvernementaux visent sincèrement à renforcer la GD et à en accroître l'efficacité, et adapter en conséquence les méthodes d'attribution des économies et les objectifs de rendement. Les pouvoirs publics peuvent envoyer des signaux plus forts pour accélérer le développement de la GD en effectuant des

investissements prévisibles et en les coordonnant avec les programmes de GD existants, tout en précisant leur intention de favoriser davantage la GD plutôt que d'en limiter le développement.

Les tests coût-efficacité constituent l'un des éléments pris en compte pour déterminer quels projets de GD méritent d'être financés. Bien qu'ils puissent sembler constituer un aspect assez obscur des politiques publiques en matière de GD, ils interagissent de manière importante avec les autres politiques publiques. Les règles d'un test peuvent soit limiter, soit favoriser la contribution de la GD à l'atteinte des objectifs stratégiques du gouvernement. À l'inverse, les politiques gouvernementales peuvent influer sur le niveau de soutien que les services publics et leurs organismes de réglementation accordent à la GD. Les responsables des politiques publiques auraient avantage à mieux comprendre ces interactions afin de concevoir des politiques efficaces qui évitent les effets contre-productifs et permettent de tirer pleinement parti du potentiel de la GD.

Introduction

For decades, the governance of utility systems has included demand-side management (DSM) as an accepted strategy to meet objectives like lower energy system costs, customer affordability, reduced risk and increased reliability. It is widely acknowledged that energy and demand savings produce numerous other benefits relevant to public policy, such as reduced pollution, customer comfort, health benefits, improved productivity, economic development and more.

DSM has been relatively unaligned with broader public policy objectives, often by design. DSM decisions are made within a utility regulatory arena that is structured to be arm's length from direct government control. Established norms call for a governmental policy system that set broad objectives and a utility regulatory policy system that makes specific decisions on issues like what rates to charge customers and capital projects to build based on technical understanding and economic principles. In practice, governments have been known to direct utility decisions to promote prestige projects or in response to political pressure. These instances of "government interference" can be viewed as either a failure of governments to respect evidence-based decisions or a failure of the utility system to answer to wider public policy objectives.

There are benefits to DSM decisions being made within this quasi-independent regulatory environment. It creates a policy framework where decisions on DSM

portfolios, budgets, and savings goals can be decided in a relatively transparent and evidence-based manner. It gives DSM a clear policy rationale as a utility system resource that is lower cost and lower risk than supply. These factors can lead to DSM budgets not experiencing the same ups and downs as government funding for energy efficiency programs.[3]

Several new trends are combining that will require a better design of how DSM interacts with its wider policy environment.

First, DSM energy-saving strategies will need to expand beyond "low-hanging fruit" measures like lighting. Previous reliance on highly cost-effective energy saving measures made it unnecessary for the full benefits of energy efficiency to be counted. DSM programs are graduating toward deeper and more complex energy efficiency improvements offering myriad benefits that may be undervalued or unaccounted for within current tests. It will be important to consider how to value the full impacts on utility system, as well as the multiple "non-energy" impacts that are important for customers and policymakers.

Second, utility systems are faced with deteriorating energy infrastructure combined with new energy demands to electrify industry, heating, and transportation, providing services to new industries like data centres. Extreme weather also introduces new costs and new demands, such as air conditioning to escape from extreme heat and storms that can bring down poles and wires that transmit electricity. Renewing energy systems with the same supply-oriented approach of the 20th century would be expensive and unnecessary because of our ability to save energy, use digital technologies to optimize demand, and better match renewable energy supply build-out with demand.

Third, action on climate change requires a significant increase in regulatory strategies across several economic sectors and government-funded support programs. While DSM has traditionally targeted utility-specific benefits, wider public policy agendas need to focus on learning and technological innovation in specific sectors to meet climate performance goals while ensuring equity, affordability, and political salience.

---

[3] For further discussion, see Haley, B., Gaede, et al. "From utility demand side management to low-carbon transitions: Opportunities and challenges for energy efficiency governance in a new era."

We therefore foresee a future where public policy initiatives increasingly overlap with DSM programs, which introduces potential problems and opportunities.

A risk is that DSM may be undermined if regulators view it as redundant alongside government-led energy efficiency regulations and programs. This would weaken an important utility system resource and ultimately weaken market transformation processes that are key to meeting government goals.

Increased government action also introduces a potential opportunity for utility system managers to leverage government resources to achieve larger energy savings more cost-effectively. They can thus make the energy system they manage more affordable and customer friendly. Government policymakers can also more effectively implement their agenda by using the skills and experience that utility DSM administrators have in designing and implementing programs that reach customers. Government and DSM policies should take up the opportunity to complement and reinforce each other rather than allowing misaligned policy systems to create complications and crowding out effects. Achieving this alignment requires intentional policy design, starting with an understanding of how government and utility DSM policy systems interact.

This report is motivated by a goal to create complementary alignment between DSM policy systems and wider government policies. It explores this theme through the topic of cost-effectiveness testing — a DSM policy term that describes benefit-cost testing of energy efficiency measures, programs, and/or portfolios. Different cost-effectiveness tests are used to evaluate if energy efficiency and distributed energy resource programs have benefits larger than costs. This can be evaluated from various utility, customer, or societal impact perspectives. The tests can be used to inform how much DSM should be supported in comparison to supply-side resources and/or as a strategy to select programs to achieve a policy goal or to make the best use of a given budget. The various tests can illuminate which benefits will be achieved, at what cost.

Cost-effectiveness testing is one example of the evidence-based and transparent justification DSM receives under utility regulatory environments. However, this also means technical decisions made about what costs and benefits are counted, over what time frame, and how they are calculated have a significant impact on the design of DSM programs. Testing protocols are infrequently updated, which introduces the potential for the testing rules failing to match contemporary policy goals. Cost-effectiveness testing protocols therefore provide an important lens to explore whether DSM decision-making systems are aligned or misaligned with wider public policy objectives.

This report provides a comprehensive benchmarking of Canadian cost-effectiveness testing policies and practices. It goes beyond naming traditional tests by providing a detailed survey of the benefits counted in each jurisdiction and other characteristics, such as discount rates, exemptions for equity-based programs, and the level at which the test is applied (e.g., each program or an entire portfolio). The report also tracks the evolution of practices over the past decade.

We then explore cost-effectiveness testing decisions in relation to supporting end-use electrification and when governments also fund energy efficiency improvements. These two topics have significant overlap with public policy and DSM systems. Cost-effectiveness design decisions can create unintended consequences, but they can also lead to new opportunities for government policy to reinforce and strengthen DSM and vice versa.

Electrification is increasingly driven by public policy. Climate policy calls for increased use of electricity alongside increased used of clean energy and the reduction of fossil fuel deliveries. Economic development objectives also call for increased electricity availability and reliability to attract industry. The danger is that electrification could put new costs on the electricity system that undermine its competitiveness compared to fossil fuels, resulting in less affordability, higher rates of energy poverty and increased political opposition. It can also put new costs on natural gas customers that must pay higher prices for fixed infrastructure costs that are spread over a shrinking customer base. DSM presents an opportunity to shift and manage these cost pressures. Energy efficiency programs can free up electricity so it can be redeployed for economic development and climate objectives. Shifting the timing and location of electricity usage can make better use of existing electricity grids and put downward pressure on rates by increasing sales and revenue across fixed-cost infrastructures. Additional cost pressures faced by both electricity and natural gas customers can be mitigated through energy-saving measures, such as building envelope improvements that reduce bills across all fuel types, and DSM can target bill reductions to those least able to afford additional costs. We will discuss how different cost-effectiveness rules can determine whether policy signals create new dangers or grasp the opportunity for well-managed electrification.

Next, we discuss how to manage the co-existence of DSM and government-funded programs. There is a danger that government and DSM program overlaps cause confusion among customers and DSM planners. Under certain rules about how benefits are attributed and costs are counted, government funding could result in lower DSM

funding. The opportunity exists, however, for DSM and government-funded energy efficiency programs to reinforce one another. They can target complementary, yet distinct, benefits of energy efficiency, or government actions can send a signal to utilities and regulators to co-invest to capture more benefits from energy efficiency. Achieving this complementarity requires thinking through the implications of different benefit attribution protocols, as well as the design of government-funded programs.

Cost-effectiveness testing is one way to make decisions on what is valued and who is paying for what. It has perhaps been an obscure area of utility DSM policy, but a wider governmental policy audience must understand it to design policies that send the right signals and avoid paradoxical outcomes.

What is cost-effectiveness testing?

Cost-effectiveness is an economic metric used to compare the costs and benefits of a specific action. It is a decision-making tool meant to inform DSM policy and program design. Some jurisdictions might use it as a pass-fail screen, while others could use multiple tests to understand different perspectives on the value of a particular measure, program, or DSM portfolio.

The California Standard Practice Manual, first published in 1987 and updated in 2001, was considered the primary guidebook for cost-effectiveness practice for several decades.[4] The manual defined five tests: the Program Administrator Cost (PAC) test — also known as the Utility Cost Test — the Total Resource Cost (TRC) test, the Societal Cost Test (SCT), the Participant Cost Test (PCT) and the Rate Impact Measure (RIM) test.[5] Tests can be applied at multiple levels within a DSM portfolio of programs — the measure level, the program level or the portfolio level.

[4] Clark et al., "California Standard Practice Manual."

[5] The National Standard Practice Manual's later clarified that the rate impact measure is not a benefit-cost test.

Table 1. Conceptual overview of the traditional cost-effectiveness tests

Test	Perspective	Key question answered	Impacts accounted for
Program Administrator Cost Test	The utility or energy system	Will utility system costs be reduced?	Benefits and costs experienced by the utility system
Total Resource Cost Test	The utility system plus participating customers	Will utility system costs plus program participants' costs be reduced?	Benefits and costs experienced by the utility system, plus benefits and costs to program participants
Societal Cost Test	Society as a whole	Will total costs to society be reduced?	Benefits and costs experienced by society as a whole
Participant Cost Test	Customers who participate in a program	Will program participants' costs be reduced?	Benefits and costs experienced by the customers who participate in the program
Rate Impact Measure Test	Impact on rates paid by all customers	Will utility rates be reduced?	Benefits and costs that will affect utility rates, including utility system benefits and costs plus lost revenues

Adapted from Table E-1 of the 2026 National Standard Practice Manual[6]

Each test represents a unique perspective that defines the scope of cost and benefits to be included. For example, the PAC test takes the perspective of the DSM administrator, typically including only the costs and benefits incurred by the DSM administrator or utility performing the test.[7] The TRC test theoretically includes impacts to all utilities along with the incremental impacts of the measure to energy efficiency program participants. The SCT was considered a variation of the TRC that extended the test to a societal perspective that includes externalities like benefits for economic development, public health and the environment.

---

[6] National Association of State Energy Officials, *National Standard Practice Manual: For Benefit-Cost Analysis of Distributed Energy Resources.*

[7] Impacts for more than one utility could theoretically be included in this test. For example, a non-utility DSM administrator could consider all energy impacts across electric, gas and other fuels compared to the program administrator cost.

The legacy of the unbalanced Total Resource Cost test

Starting in the 1980s, the most common test used to screen energy efficiency programs for cost-effectiveness in North America was the TRC test.[8]

At the time, the TRC test was thought to be the most comprehensive, practical, economic measure because it evaluated the net economic benefit of energy efficiency for both program participants and the utility, without having to include externalities in the SCT that remained unpriced in markets. Furthermore, California had employed the TRC test since the 1980s, and other states and provinces looked to them for leadership and followed suit.

However, the TRC test as practically implemented was unbalanced, making DSM appear less cost-effective. The TRC test accounts for the utility system costs and benefits of an energy efficiency program such as program administration costs and the benefits of avoided costs of generating and delivering energy. It also accounts for the participant costs, such as the customer contribution to energy efficiency measures. In theory, the cost-saving benefits of reducing the use of other fuels should also be included. Participant savings could also include several "non-energy benefits" accrued by building owners, such as improved comfort, better air quality and health, reduced maintenance costs, and reduced water use. Non-energy benefits are known to be significant yet can be difficult to quantify and were therefore rarely included in the TRC test in practice.

The TRC test faced increased criticism in the early 2010s as energy efficiency measures evolved.[9] Twenty years ago, energy efficiency was highly cost-effective, and thus the lopsided nature of the TRC test was not considered important. The participant cost didn't dominate the economics of energy efficiency measures like lightbulbs and motors. As many of the highly cost-effective technologies have become standard practice through efficiency standards and market evolution, utilities have had to look to deeper retrofit measures like insulation, heat pumps, and air sealing, along with

---

[8] Muncaster et al., *Adventures in Tweaking the TRC: Experiences from British Columbia*; Kushler, "Passing the Test: How Are Residential Efficiency Cost Effectiveness Tests Changing?"; Winfield and Koveshnikova, "An Efficient Balance? Applying the Total Resource Cost Test to Conservation and Demand Management Initiatives of Local Electricity Distribution Companies in Ontario: Assessment and Recommendations for Reform."

[9] Spector and Peach, "Natural Selection: The Evolution of DSM Valuation and Use of the UCT"; Dunsky et al., *Screening DSM: When the TRC Blocks Efficiency, What's Next?*; Neme and Kushler, *Is It Time to Ditch the TRC? Examining Concerns with Current Practice in Benefit-Cost Analysis.*

investments in industrial energy managers, and net-zero new construction to meet targets. The incremental costs of these modern DSM measures can weigh down the cost side of the TRC test. The test then becomes harder to pass for DSM measures — particularly when the benefits to participants are not included.

Evolution of the National Standard Practice Manual

Cost-effectiveness tests are applied inconsistently in each jurisdiction. This makes comparison across regions difficult and contributes to stakeholder confusion. Tests with the same name (e.g., Total Resource Cost test) often include different benefits and costs, or use different discount rates, and thus have quite different program screening outcomes. The names of the test themselves, while providing good information on their specific perspective, fail to provide the relevant details as to how each jurisdiction chose to apply those tests, with dramatically different outcomes.

In 2014, U.S. organizations and individuals combined to create the "National Energy Screening Project" with a goal to update and improve cost-effectiveness testing of publicly funded energy efficiency and distributed energy resource investments. This project resulted in the publication of a new "National Standard Practice Manual" (NSPM) in 2017, superseding the California version. The NSPM was further updated in 2020[10] and again in 2026.[11] The manual was based on eight principles (see Table 2). The principle of symmetry rules out the use of a TRC test that includes customer costs and excludes customer benefits.

[10] National Energy Screening Project, *National Standard Practice Manual.*

[11] National Association of State Energy Officials, *National Standard Practice Manual: For Benefit-Cost Analysis of Distributed Energy Resources.*

Table 2. NSPM principles for benefit-cost analyses

Principle 1	Align with applicable energy policy goals
Principle 2	Treat DERS as a utility system resource
Principle 3	Account for all relevant and material impacts
Principle 4	Ensure symmetry in the treatment of benefits and costs
Principle 5	Conduct forward-looking, long-term, incremental analyses
Principle 6	Avoid double counting impacts
Principle 7	Conduct benefit-cost analyses separately from other complementary analyses (e.g. rate impact)
Principle 8	Ensure transparency

Adapted from the 2026 National Standard Practice Manual[12]

A policy innovation in the NSPM was the creation of a framework that can be used to define a test aligned with a jurisdiction's policies and objectives — a Jurisdiction-Specific Test (JST). This test recognizes that different regions will have distinct policy goals that should inform the accounting of region-specific costs and benefits in DSM cost-effectiveness testing. A JST should follow the principle of symmetry between costs and benefits yet also enable selective inclusion of particular impacts based on relevance to a given place. This can be viewed as more pragmatic and workable than improving the balance of a TRC test or SCT by accounting for and quantifying all benefits. States that have adopted a JST include Minnesota, Rhode Island, New Hampshire, Michigan and others.[13]

[12] National Association of State Energy Officials, *National Standard Practice Manual: For Benefit-Cost Analysis of Distributed Energy Resources.*

[13] NASEO, "NSPM References Map."

Routes to a balanced test

There are two primary routes that jurisdictions have taken to remedy lopsided accounting of costs and benefits. One route is to reduce the imbalance between the customer costs and the customer benefits in tests like the TRC and JST. A second option is to restrict accounting of costs and benefits to the energy system through use of the PAC test.

In theory, the TRC should include all relevant energy and non-energy benefits to customers and other utility systems. While some jurisdictions have recognized important "non-energy benefits," many have simply excluded them. A comprehensive quantitative accounting of several multi-faceted benefits can be administratively difficult, though several jurisdictions have completed studies. More commonly practiced is introducing "benefit adders" to recognize the existence of these wider benefits (see Enbridge and Énergir in Table 5).[14] These benefits could be recognized, yet still under-counted, if utility regulators and stakeholder negotiations decide to conservatively account for these benefits.

A JST takes a more pragmatic approach, suggesting accounting for those impacts most relevant to specific public policy priorities and potentially evolving the test as government objectives change over time. The policy process to design the test begins by rationalizing inclusion of benefits based on policy priorities. In-depth studies to account for those benefits deemed relevant (e.g., customer protection against power outages, arrearages, utility or participant resiliency) typically follow.[15]

A second option is to restrict the accounting of costs and benefits to the utility (or energy) system. The PAC test (also called the Utility Cost Test) is balanced because it limits the relevant costs and benefits to the utility system. This includes the administration and incentive costs of DSM programs and the benefits of avoided energy, capacity, and other supply-side costs along with utility non-energy benefits. It does not count the participant costs like the TRC. Eliminating regulatory debates around non-energy benefits makes the PAC test a relatively straightforward choice for a balanced

---

[14] ACEEE, "Cost-Effectiveness Tests: Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency."

[15] National Energy Screening Project, *National Standard Practice Manual Case Study: Michigan*; National Energy Screening Project, *National Standard Practice Manual Case Study: Minnesota*.

test.[16] Debates over how to calculate non-energy benefits can lead to a conservative (i.e. low) estimation, which partially explains why PAC tests have resulted in higher net benefits than tests that attempt to quantify larger benefits in recent DSM proceedings.[17] In practice, the outcome of the PAC test is still influenced by the policy decision of what specific energy system costs or benefits to include or exclude. It is not necessarily comprehensive or balanced, and one jurisdiction's interpretation of the PAC test could differ from another's.

The PAC test might also make certain types of programs or program strategies look less cost effective. For instance, low-income programs often pay 100 per cent of energy efficiency upgrade costs, which will make these programs less competitive against ones where program administrator costs are reduced because customers co-fund. Future years might call for more direct-install strategies to achieve goals such as much higher energy savings, high participation in a particular area to avoid transmission congestion or regional equity, or high participation from certain customers, such as those with rooftop solar systems that could be better managed by also installing batteries. These types of initiatives have benefits that are outside of the perspective of the PAC test.

A snapshot of cost-effectiveness testing in Canada

Below, we provide a snapshot of current cost-effectiveness testing practices in Canada, a historical overview, and a discussion based on the theme of balancing consideration of costs and benefits above.

The information on current cost-effectiveness practices in Canada was collected through a combination of desk research (e.g., DSM plans and valuation studies) and interviews with DSM administrators and regulators. We aimed to go beyond listing the name of the test used because a given test could be applied differently depending on which costs and benefits are included along with other methodological choices. To

---

[16] Dunsky et al., *Screening DSM: When the TRC Blocks Efficiency, What's Next?*; Nickerman and Aslin, *Cost-Effectiveness Adjustments: How Effective Have States Been At Recreating the PAC?*; Ontario Energy Board, *Decision and Order: Enbridge EB-2024-0198. Application for Approval of Natural Gas Demand Side Management Plan for 2026.* The stronger cost-effective results of a PAC test could also be due to a tendency for non-energy benefit adders and other quantification methods to underestimate non-utility benefits.

[17] EfficiencyOne, *E1 Responses to Nova Scotia Energy Board (NSEB) Undertakin*g.

provide a more thorough investigation of the details of each test applied, we used the Database of State Efficiency Screening Practices benchmarking information (housed at the American Council for an Energy-Efficient Economy) as a template.[18] The results of this comparative benchmarking can be found in Efficiency Canada's online provincial policy tracking system.[19] We aim to update it regularly.

Utility impacts

Tables 3 and 4 below summarize information for electricity and natural gas administrators, respectively. The table includes the name of the decision-making test (the primary test) and a list of possible utility benefits of DSM applicable to all tests. Costs were consistent across DSM administrators and were therefore excluded for simplicity (e.g., incentive and administration costs were common for all PAC tests). The assessment level required for screening decisions — at the portfolio, program or measure level — is also included, and a full discussion of these results are provided in a later section.

[18] ACEEE, "Database of State Efficiency Screening Practices (DSP)."

[19] Efficiency Canada, "Policy Tracking System."

Table 3. Utility system impacts for electrical utilities

		Program administrator - electricity									
		BC Hydro	Efficiency Manitoba	Efficiency Nova Scotia	efficiency PEI	FortisBC	NB Power	Ontario IESO	Hydro-Québec	NF Power / NL and Lab Hydro	Sask Power
Tests											
Primary decision-making test(s)*		PAC	PAC	PAC	PAC	PAC	PAC	PAC	TRC	PAC/ TRC	PAC/ TRC
Primary Assessment level		⊕	⊕	⊕	⊕	⊕	◶	⊕ ◶	⊕	◶	⊕ ◶
Benefits included in cost-effectiveness tests											
Utility avoided costs	Marginal energy costs	●	●	●	●	●	●	●	●	●	●
	Generating capacity costs	●	●	●	●	●	●	●	●	●	●
	Transmission capacity costs	●	●	●	-	●	●	-	●	●	-
	Distribution capacity costs	●	●	●	-	●	●	●†	●	-	-
	Transmission system line losses	●	●	●	●	●	●	●	●	●	●
	Distribution system line losses	●	●	●	●	●	●	●	●	-	●
	Distribution O&M	-	-	-	-	-	-	-	-	-	-
	Distribution voltage	-	-	-	-	-	-	-	-	-	-
	Ancillary services	-	-	●	-	-	-	-	-	●	-
	Renewable portfolio standard compliance	-	-	●	-	-	-	-	-	-	-
	Environmental compliance costs	-	-	●	-	-	-	-	●♢	-	-
	Credit and collection costs	-	-	-	-	-	-	-	-	-	-
	Reduced risk	-	-	-	-	-	-	-	-	-	-
	Increased reliability	-	-	●	-	-	-	-¶	-	-	-
	Increased resilience	-	-	-	-	-	-	-¶	-	-	-

● Benefit included - Benefit not included

⊕ Portfolio-level assessment ◶ Program-level assessment

* PAC - Program Administrator Cost test or Utility Cost Test (UCT); TRC - Total Resource Cost test

† The Ontario Energy Board requires the Distribution System Test when programs are delivered by Local Distribution Companies - including distribution capacity costs.

¶ The Distribution System Test allows for inclusion of quantitative or qualitative reliability and resilience benefits.

♢ The Autonomous Network (diesel generation system) includes GHG costs based on Québec's carbon trading system.

Table 4. Utility system impacts for natural gas utilities

		Program administrator - natural gas				
		Efficiency Manitoba	FortisBC	Enbridge	Énergir	Sask Energy
Tests						
Primary decision-making test(s)*		PAC	PAC	TRC-Plus	TRC-Plus	TRC; SCT
Primary assessment level		⊕	⊕	⊕ ◔	◔ ○	⊕
Benefits included in cost-effectiveness tests						
Utility avoided costs	Fuel commodity + variable O&M costs	●	●	●	●	●
	Capacity costs	-	-	●	●	●
	Distribution costs	-	●	●	●	
	Distribution losses	-	-	●	●	●
	Ancillary services	-	-	-	-	-
	Renewable portfolio standard compliance	-	-	-	●	-
	Environmental compliance costs	-	●†	●†	●†	●†
	Credit and collection costs	-	-	-	-	-
	Reduced risk	-	-	-	●	-
	Increased reliability	-	-	-	-	-
	Increased resilience	-	-	-	-	-

● Benefit included - Benefit not included

⊕ Portfolio-level assessment ◔ Program-level assessment ○ Measure-level assessment

* PAC - Program Administrator Cost test also called Utility Cost Test; TRC - Total Resource Cost test; TRC-Plus - TRC test modified to include non-energy benefits; SCT - Societal Cost Test.

† Fortis Energy Inc., Enbridge and SaskEnergy all included either a provincial or federal price of carbon in their avoided utility costs until they were cancelled in 2025. Énergir includes the SPEDE carbon price. None of the program administrators include other environmental compliance costs such as methane leakage, NOx, SOx, etc.

Most electric utility DSM programs use the PAC test, which theoretically balances costs and benefits by restricting the accounting to utility system impacts. Natural gas DSM administrators largely use either the PAC or the TRC-Plus. The latter term is used to signify inclusion of non-energy benefits to create a more balanced test.

However, the tables show that several utility avoided costs are not considered within existing tests. Transmission and distribution capacity costs are omitted in two electric utilities and two natural gas utilities. No utility considers distribution-level benefits from reduced operation and maintenance and voltage costs.

Ontario's electricity system is somewhat unique, involving both the Independent Electricity System Operator (IESO), which governs generation and transmission, and local distribution companies (LDCs). The Ontario IESO has well-established energy efficiency programs. Local distribution companies may offer additional programs to their customers or run programs jointly with the IESO. The Ontario Energy Board (OEB) requires LDCs to consider non-wires alternatives when additional distribution capacity is deemed necessary and apply a recently developed Benefit Cost Analysis framework, the Distribution System Test (DST).[20] In 2026, the Ontario IESO also introduced a new cost-effectiveness test — the PAC 2.0. This framework incorporates distribution valuation from the OEB's DST for joint initiatives between the IESO and local distributors.[21]

Hydro-Québec includes monetized environmental compliance cost reductions for regions of the grid served by diesel electricity generation systems (the Autonomous Network); the costs are based on its provincial carbon trading system.[22] Other utilities had accounted for an avoided cost of carbon, but these values have been set to zero since the cancellation of the federal carbon price. Environmental compliance costs could also include air quality and water or land-use impacts, and it is not always clear which compliance costs are embedded in avoided energy and capacity costs.

Credit- and collection-avoided costs, which can be reduced by lowering overall energy costs for homes and businesses and through low-income-targeted energy efficiency

---

[20] Ontario Energy Board, *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*.

[21] Forgione, "eDSM Cost-Effectiveness Methodology Update."

[22] Hydro-Québec, *Coûts Évités: R-4307-2025*.

programs, were also not accounted for by any Canadian utility.[23] For comparison, 12 U.S. states account for credit and collection costs.[24] Maryland, Pennsylvania, and Massachusetts completed valuation studies on arrearages, bad-debt write-off, and savings from subsidy programs to inform the monetization of these benefits.[25]

Only Énergir reported considering the DSM benefits of reduced risk that could stem from fuel price volatility, cost overruns, overbuilt supply infrastructure and more. Vermont, Maryland and Washington D.C. are examples of American jurisdictions that incorporate the benefits of reduced risk by using a 10 per cent adder.[26]

Reliability and resilience benefits can be accounted for as either a utility or host customer benefit; for simplicity, we documented these benefits in the utility benefits tables. Costs to maintain grid reliability (i.e. reduced customer service interruptions) and resilience (i.e. responding to and recovering from major outages) could become significant as climate change increases the prevalence of storms. Energy-efficiency and demand-flexibility measures can reduce theses costs. For example, battery systems could prevent customer power outages, improving utility power reliability performance metrics. Lower loads can reduce stress on the electricity system when starting up after a blackout. The reliability and resilience benefits of DSM resources to both utilities and customers are increasingly being valued in states like Vermont, New York, Rhode Island and California.[27] However, no Canadian utility has monetized the benefits of increased reliability and resilience.[28]

---

[23] The New Brunswick Test, used for informational purposes only, adopted a value for credit and collection costs of $6 per participant per year. EL-003-2025 - NB Power 2026-2027 General Rate Application (April 1, 2026).

[24] ACEEE, "Database of State Efficiency Screening Practices (DSP)."

[25] Skumatz, "Efficiency Programs' Non-Energy Benefits"; Baatz, *Everyone Benefits: Practices and Recommendations for Utility System Benefits of Energy Efficiency.*

[26] Caputo, *Non-Energy Impacts Approaches and Values: An Examination of the Northeast, Mid-Atlantic, and Beyond*; Srivastava et al., *Valuing Resilience Benefits in Utility Building Retrofit Programs*.

[27] Kushler et al., Keeping the Lights On: Energy Efficiency and Electric System Reliability.

[28] The New Brunswick Test includes these benefits, however this test is not used as a primary test and applies primarily to government funded programs.

We also collected information on time and location varying avoided costs; results are available in Efficiency Canada's provincial policy tracking system.[29] Location varying costs can enable utilities to prioritize grid-constrained areas or regions with higher-than-average impacts, such as remote areas using diesel-powered generation. Five utilities employed some form of location-specific avoided costs. Avoided energy costs can range between a single annual value and highly granular hourly values. Seven utilities reported avoided costs more granular than a single annual average. For example, BC Hydro breaks down avoided energy costs into high- and low-load hours each month, for a total of 24 avoided cost values per year. Ontario IESO's new PAC 2.0 test methodology will partition avoided energy costs into 10 Seasonal Demand Days, each with an average 24-hour price curve resulting.[30]

Non-energy, societal and electrification impacts

Table 5 provides a list of possible non-energy benefits for customers and broader society identified through the NSPM and the ACEEE database on state screening processes.[31] Canadian DSM administrators using only the PAC test were excluded because their costs and benefits are limited to the utility.

[29] Efficiency Canada, "Policy Tracking System."

[30] Forgione, "eDSM Cost-Effectiveness Methodology Update."

[31] ACEEE, "Database of State Efficiency Screening Practices (DSP)"; National Association of State Energy Officials, *National Standard Practice Manual: For Benefit-Cost Analysis of Distributed Energy Resources.*

Table 5. Non-energy, societal impacts in Canadian utilities (those not using the PAC test)

		Program administrator - electricity			Program administrator - natural gas		
		Hydro-Québec	NF Power / NL and Lab	Sask Power	Enbridge	Énergir	Sask Energy
Primary decision-making test(s)		TRC	PAC; TRC	PAC; TRC	TRC-Plus	TRC-Plus	TRC; SCT
Benefits included in cost-effectiveness tests							
Host customer non-energy	Water	-	-	-	●	-	●
	Asset value	-	-	-	●†	●¶	-
	Economic wellbeing	-	-	-	●†	●¶	-
	Comfort	-	-	-	●†	-	-
	Health and safety	-	-	-	●†	●¶	-
	Satisfaction	-	-	-	●†	●¶	-
	Productivity	-	-	-	●†	-	-
Societal	Greenhouse gas emissions (beyond compliance)						-
	Other emissions / air quality						-
	Economic development and jobs						-
	Public health						-
	Low-income customers						-
	Energy security						-

● Benefit included - Benefit not included

Host customer non-energy and societal benefits are outside the PAC test perspective; Societal benefits are outside theTRC test perspective.

† Enbridge non-utility benefits are captured as a 15% adder; non-energy benefits such as asset value, economic wellbeing, comfort etc. are assumed part of that adder but have not explicitly been defined

¶ Énergir non-utility benefits are valued using % adders estimated for each measure.

Hydro-Québec, SaskPower, SaskEnergy and Newfoundland Power do not include any non-energy benefits in their TRC tests. SaskEnergy reported using the SCT but does not account for any societal benefits. These cases are illustrative of how a test name is not indicative of which costs and benefits are included in cost-effectiveness testing. Enbridge and Énergir are two natural gas utilities using a TRC that includes non-energy benefits, yet most are captured via a general benefit adder rather than detailed estimates. The results from these tables demonstrate that few utilities are comprehensively accounting for the multiple benefits of DSM and other distributed energy resources.

Assessment level and exemptions

Another nuance of cost-effectiveness testing protocols is the level of assessment and screening. Cost-effectiveness tests can be applied at the program, portfolio or measure level. Screening based on a lower level of application (e.g., measure level) makes the test more restrictive. In this case, each measure must pass its own test. Program or portfolio-level screening allow measures that would not otherwise pass to be included and offset by more cost-effective measures. A higher level (e.g., portfolio) application of the test enables an administrator to achieve larger energy savings because more programs are eligible for inclusion, while ensuring the overall DSM resource is still lower cost than supply and/or the portfolio achieves net benefits.

Alternatively, a jurisdiction could remove programs entirely from cost-effectiveness testing, and base performance on an alternative metric. Exempted programs are typically those that produce equity or market-transformation benefits.[32] For example, in California, the DSM portfolio is segmented into resource acquisition, equity and market transformation — with the latter two elements exempted from cost-effectiveness testing.[33]

Equity-based programs can have higher costs due to the household's limited ability to share costs and a greater level of administrator and/or contractor involvement required for customer participation. Low-income programs may be justified to the regulator

---

[32] Roe, *Analysis of State Approaches to Cost-Effectiveness Testing: Efficiency Vermont R&D Project: Cost-Effectiveness Screening Tests.*

[33] Higa and Yin, *Transforming Market Transformation; Roe, Analysis of State Approaches to Cost-Effectiveness Testing: Efficiency Vermont R&D Project: Cost-Effectiveness Screening Tests.*

based on the principle that all customers that paid for DSM should be able to participate, despite unique barriers to participation.

Market-transformation programs are sometimes exempted because their impact is difficult to measure, yet they produce important structural changes such as a higher skilled workforce, greater technology availability, and naturally occurring energy savings in future years. These exemptions recognize that DSM portfolios are associated with broader policy goals that are imperfectly captured by narrow benefit-cost ratios. Table 6 provides a list of the cost-effectiveness test assessment levels and exemptions applied by Canadian DSM administrators.

Table 6. Cost-effectiveness test assessment levels and exemptions

Screening level and / or exemption	DSM administrator
Portfolio-level screening only	Hydro-Québec
	Efficiency Nova Scotia
	efficiencyPEI
	Efficiency Manitoba
	BCHydro
	SaskEnergy
Program-level assessment; exemptions for equity programs	FortisBC Electric
	FortisBC Gas
	NBPower
	SaskPower
	IESO
	Enbridge[34]
Program-level assessment: no exemptions	Newfoundland Power and Newfoundland & Labrador Hydro
Measure-level assessment; exemptions for equity	Énergir

[34] Enbridge's equity programs can pass a lower threshold of 0.7 (instead of 1.0); Market transformation programs are also exempted from cost-effectiveness testing.

Six out of 14 program administrators in Canada now rely solely on portfolio-level assessment as the decision-making criterion for DSM plan approval. Programs with benefits that may be more difficult to quantify or have higher costs, such as equity, market transformation and innovation programs, can therefore be offset by more cost-effective programs within a portfolio in these jurisdictions.[35]

An additional seven jurisdictions require more restrictive program-level cost-effectiveness assessment but provide an exemption for equity initiatives. In some cases, such as Énergir and Hydro-Québec, the exemption is not formalized, but the regulator has historically not required equity measures and/or programs to pass cost-effectiveness tests.

For Enbridge's programs, the OEB requires program level assessment but applies a lower benefit-to-cost ratio threshold of 0.7 for equity programs.[36] Enbridge's market transformation programs are also exempt from cost-effectiveness screening, instead relying on performance metrics — like the number of ENERGY STAR® or net-zero homes built, or the number of participants in commercial airtightness testing — for the purpose of assessing program performance and determining shareholder incentives.[37] A case can sometimes be made for inclusion of programs that don't pass cost-effectiveness testing but have other benefits,[38] such as Enbridge's Home Renovation Savings program that failed to pass after the cancellation of the federal carbon price but offered the benefit of program continuity and a one-window consumer experience with the IESO's electricity offering.[39]

---

[35] Some DSM administrators, such as Nova Scotia, must still justify any programs that don't pass program-level cost-effectiveness testing to the regulator.

[36] Ontario Energy Board, *Filing Guidelines to the DSM Framework for Natural Gas Distributors (2015-2020): EB-2014-0134*.

[37] Ontario Energy Board, *Decision and Order: Enbridge EB-2024-0198. Application for Approval of Natural Gas Demand Side Management Plan for 2026*.

[38] Ontario Energy Board, *Decision and Order: EB-2021-0002 Application for Multi-Year Natural Gas Demand Side Management Plan (2022 to 2027). Schedule E*.

[39] Ontario Energy Board, *Decision and Order: Enbridge EB-2024-0198. Application for Approval of Natural Gas Demand Side Management Plan for 2026*.

Discount rate

Another variable in how cost-effectiveness rules impact DSM is the use of the discount rate. A discount rate accounts for the time value of money, including DSM costs and benefits. Discount rates allow comparison between a dollar today and in the future by "discounting" the value over time. A high discount rate will therefore make long-term energy savings appear less valuable today and favour activities with shorter-term gains. A lower discount rate will likely show a higher net value from DSM investments because the test will not diminish the value of energy savings in later years. Table 7 outlines the types of discount rates and typical values.

The weighted average cost of capital (WACC) represents the average annual percentage a utility pays to borrow money from banks, investors and/or government to fund its operations and infrastructure and is the most common discount rate used in North America. However, energy efficiency is a much lower-risk investment than supply-side options, especially if DSM funds are regularly recouped from ratepayers as an operational expense. However, the discount rate used in DSM cost-effectiveness testing should reflect the perspective and policy objectives of the test, rather than only the utility's private cost of capital. For this reason, a lower discount rate than the WACC is often justified. A jurisdiction guided by sustainable development principles, for example, should arguably use a societal discount rate to consider long-term impacts. Numerous U.S. jurisdictions now rely on a low-risk discount rate, and some have adopted a societal discount rate.[40]

[40] Kushler and Witte, *Sustaining Utility Natural Gas Efficiency Programs In a Time of Low Gas Prices*; ACEEE, "Database of State Efficiency Screening Practices (DSP)."

Table 7. Discount rate options

Type of discount rate	Potential indicator of time reference	Real discount rate (%)
Societal	Societal cost of capital, adjusted to consider intergenerational equity or other societal values	0–3
Low risk	Interest rate on 10-year government bonds	1–3
Publicly owned utility	Publicly owned utility's cost of borrowing	3–5
Investor-owned utility	Investor-owned utility's WACC	5–8

Adapted from Table H-1 in the 2026 National Standard Practice Manual

We tracked whether a jurisdiction based its discount rate on WACC, a societal discount rate, or another guideline, as well as the discount rate used in a given reference year in Table 8 below. We collected information on nominal and real discount rates (to compare with representative rates in the table above). We list the year the discount rate was published so the numbers can be put into the context of the interest rate environment, however we found little differences in discount rates over time.[41]

Over the past decade, utilities have reported nominal discount rates ranging from 5.2 to 7.9 per cent, and the vast majority use the WACC. Canadian jurisdictions that reported using a societal discount rate do not have a lower rate than those using the WACC. A recent Nova Scotia regulatory proceeding suggested that a social discount rate would be two per cent,[42] whereas in 2022, the Ontario IESO reported a real societal discount rate of four per cent.

[41] For reference, the annual average of daily benchmark interest rates for a 10-year Government of Canada bond was 1.6% in 2019, 0.8% in 2020, 1.4% in 2021, 2.8% in 2022, 3.4% in 2023, 3.3 in 2024, and 3.2% in 2025. From Bank of Canada, https://www.bankofcanada.ca/rates/interest-rates/canadian-bonds/.

[42] Nova Scotia Energy Board, *Application by EfficiencyOne for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans*.

Table 8. Discount rate type and values for utilities

	Utility	Type of discount rate	Year	Real discount rate (%)	Nominal discount rate (%)
Electricity	efficiencyPEI	Government's long-term cost of borrowing	2020	3.20	5.20
	Hydro-Québec	WACC	2025	3.80*	5.80
	NB Power	WACC	2018	3.90*	5.90
	BC Hydro	WACC	2025	3.90	6.00
	Efficiency Manitoba	WACC	2019	3.70	6.00
	Ontario IESO	Societal Discount Rate	2022	4.00	6.00
	NF Power, NL and Labrador Hydro	WACC	2025	4.60	6.60
	Efficiency Nova Scotia	WACC	2024	4.72*	6.72
	FortisBC	WACC	2022	5.90*	7.90
	SaskPower	WACC	-	-	-
Gas	FortisBC Energy Inc.	WACC	2023	3.62	5.60
	Efficiency Manitoba	WACC	2019	3.70	6.00
	Enbridge	WACC	2025	4.00	6.00
	Énergir	WACC	2024	4.20*	6.20
	SaskEnergy	WACC	-	-	-

Nominal discount rate = real discount rate + inflation rate
* Real discount rate estimated by subtracting 2% inflation from the nominal rate
- No info

The evolution of cost-effectiveness testing in Canada

It is important to take a dynamic perspective on cost-effectiveness testing because the rules change over time. Figure 1 illustrates the general evolution away from the TRC test toward more balanced tests in Canada. Prior to 2015, 13 of 14 program administrators used the TRC as one of its primary cost-effectiveness tests. By 2026, only six administrators were still using the TRC test; the remaining eight employ the PAC test.

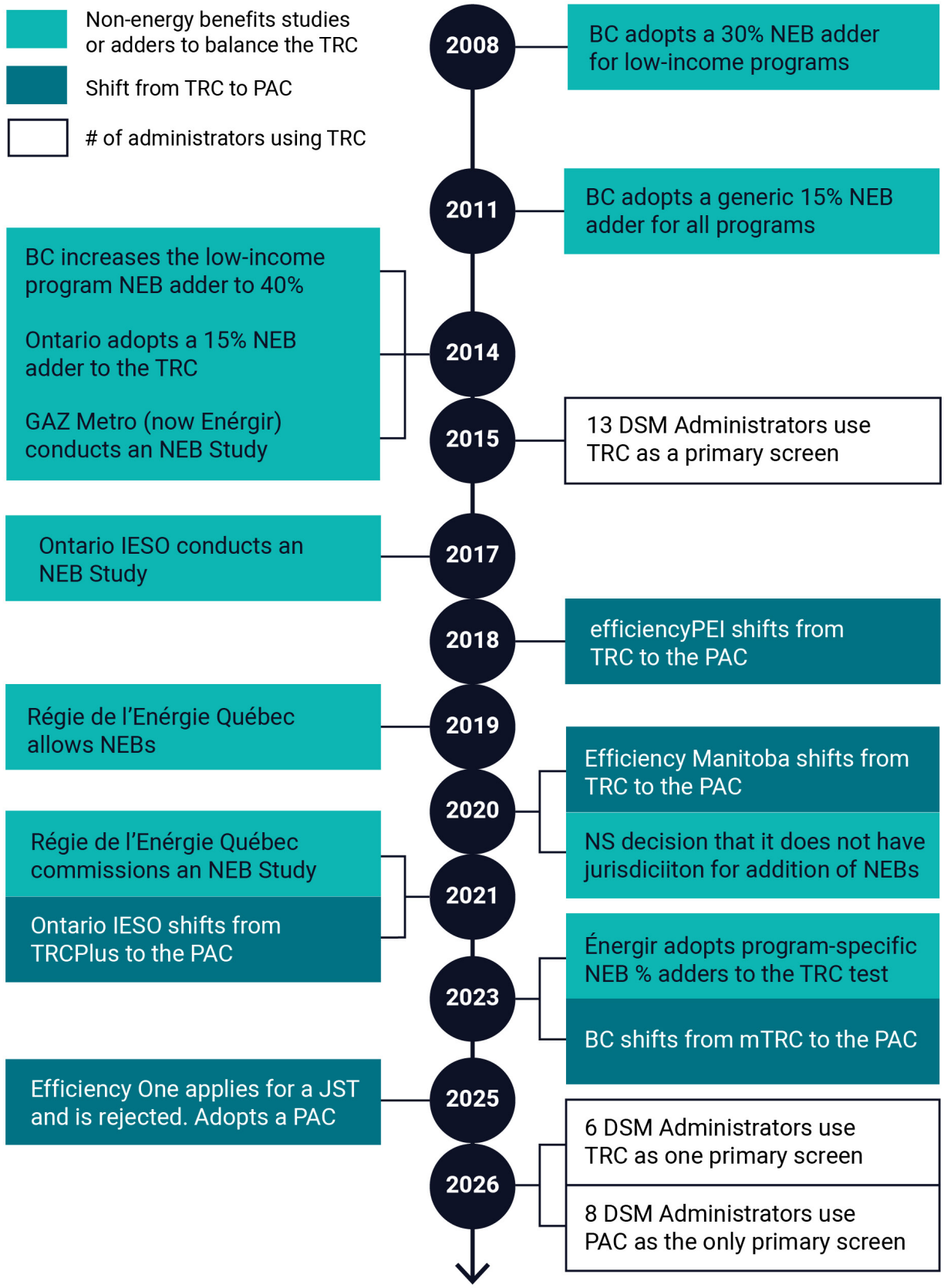


Figure 1. Timeline of key cost-effectiveness events in Canada

Over this period, some jurisdictions accounted for non-energy benefits by applying a benefit adder. This included British Columbia, which required minimum benefit adders first for low-income programs and then for the portfolio as a whole through legislation. In 2021, Ontario conducted a comprehensive study that resulted in monetized benefits for each of seven sectors — finding that the value of non-energy benefits often exceeded the participant's electricity cost savings and influenced decision-making.[43]

However, both B.C. and the Ontario IESO chose to move away from the TRC test with non-energy benefits and adopt a PAC test framework. B.C. adapted its DSM regulation to require use of the PAC in 2023.[44] Analysis suggested that the PAC would justify a higher level of DSM than the TRC (under a given program design that likely included significant customer co-pay).[45] Ontario's IESO moved toward the PAC in 2021. Both Efficiency Manitoba and efficiencyPEI shifted from the TRC to the PAC during their first DSM plan as an energy-efficiency utility after taking over DSM planning from their respective electric utility.

In 2025, Nova Scotia's DSM administrator applied to its regulator to replace the TRC with a JST. A decade earlier, a request to replace the TRC with the PAC[46] and to account for non-energy benefits was rejected by the regulator.[47] The proposed JST included benefits such as GHG emissions, public health, comfort, credit and collection, reliability, resilience and productivity improvements. However, a comparative PAC test produced higher benefit-cost analyses results than the JST.[48] The JST was rejected in a regulatory ruling in favour of using the PAC as a balanced test.[49]

The ruling recognized that applying the PAC at the portfolio level allows inclusion of programs that fail the primary cost-effectiveness test, provided the overall portfolio

---

[43] Dunsky Energy Consulting, *Non-Energy Benefits Study: Phase II*.

[44] Government of British Columbia, "Demand-Side Measures Regulation."

[45] Muncaster et al., *Adventures in Tweaking the TRC: Experiences from British Columbia*; Dunsky et al., Screening DSM: When the TRC Blocks Efficiency, What's Next?

[46] Nova Scotia Utility and Review Board, *2016-2018 Demand Side Management Resource Plan*.

[47] Nova Scotia Utility and Review Board, *An Application by EfficiencyOne for Approval for the Use of Measure-Level Non-Energy Benefits within the Context of Cost-Effectiveness Testing Associated with Future Demand Side Management (DSM) Planning Regulatory Processes*.

[48] EfficiencyOne, *E1 Responses to Nova Scotia Energy Board (NSEB) Undertaking.*

[49] Nova Scotia Energy Board, *Application by EfficiencyOne for Approval of a New Benefit-Cost Analyss Test for Evaluating Demand Side Management Plans*.

passes. It also allowed non-energy benefit estimates to be used as supplementary evidence to support program and portfolio design, rather than as inputs to the primary PAC screening test.

More evolution is expected. New Brunswick Power designed a JST that includes non-energy benefits applied to programs with blended government and utility funds (see case study below).[50] Prince Edward Island's 2025 energy strategy recommended designing a JST.[51] Enbridge and IESO co-deliver a home retrofit program that includes support for heat pumps. The implications of possible fuel switching have prompted administrators to consider how to evolve cost-effectiveness practices to accommodate these activities.[52] In 2019, the Régie de l'énergie requested Hydro-Québec include the PAC test alongside the primary decision-making TRC test and allowed the inclusion of non-energy benefits. The Régie then commissioned a report on non-energy benefits.[53] Hydro-Québec has significantly increased its electric energy efficiency targets, citing a lower cost of energy efficiency relative to supply on a utility cost basis, consistent with the perspective of a PAC test.[54]

The New Brunswick Test

NB Power, an electric utility, has used a PAC test for ratepayer-funded programs since its first DSM plan in 2016. More recently, the utility received a mandate to deliver energy efficiency programs to all customers regardless of fuel type and to achieve objectives beyond reducing costs for ratepayers. To meet these objectives, the utility has received federal and provincial funding for low-income, decarbonization and non-electric energy efficiency programs (e.g., Low Carbon Economy Fund, Future Electricity Fund, NB Climate Fund).

DSM programs funded solely through non-ratepayer sources, like its low-income programs, have not been subject to the primary PAC test. Instead, NB Power applied

---

[50] New Brunswick Energy & Utilities Board, *NB Power 2026-2027 General Rate Application.*

[51] Dunsky Energy Consulting, *PEI Energy Strategy.*

[52] Ontario Energy Board, *Decision and Order: Enbridge EB-2024-0198. Application for Approval of Natural Gas Demand Side Management Plan for 2026.*

[53] Dunsky Energy Consulting, *Bénéfices Non Énergétiques (BNÉ Orientation Sur La Prise En Compte Dans La Pratique Règlementaire).*

[54] Hydro-Québec, *Action Plan 2035 – Towards a Decarbonized and Prosperous Québec.*

an “All-Fuels” PAC test to these programs as an information-only test, with the aim to prioritize measures and design programs that best deliver on provincial goals. The All-Fuels PAC test included the program administration and incentive costs; benefits included commodity pricing, margins, delivery costs and carbon assumptions for fuel oil, propane, biomass and natural gas.

In its 2026–29 DSM plan, NB Power replaced the All-Fuels test with the New Brunswick Test and extended its application to any programs aligned with provincial policy.[55] The New Brunswick Test will be the first JST to be used in Canada and will employ a social discount rate of two per cent.

Figure 2 illustrates all possible impacts for a cost-effectiveness test; blue-shaded areas document those included in the New Brunswick Test. As in the All-Fuels test, the energy system impacts of natural gas and other delivered fuels are included alongside electricity system impacts in the New Brunswick Test, making it suitable for assessing electrification. Transmission and distribution capacity, ancillary services, risk, resilience, reliability and avoided credit and collection costs are included — the first test in Canada to include the full range of utility avoided costs. Non-energy impacts, including societal impacts that align with the goals of environmental health, a social cost of greenhouse gas (GHG) emissions, and multi-fuel impacts are all included. The most significant departure from the All-Fuels test is the inclusion of non-energy benefits accrued by equity-deserving host customers. Non-energy benefits for market rate-paying host customers are not included.[56]

[55] New Brunswick Energy & Utilities Board, *NB Power 2026-2027 General Rate Application.*

[56] Dunsky Energy Consulting, *New Brunswick Test: A DSM Cost-Effectiveness Framework Specific to the Province.*

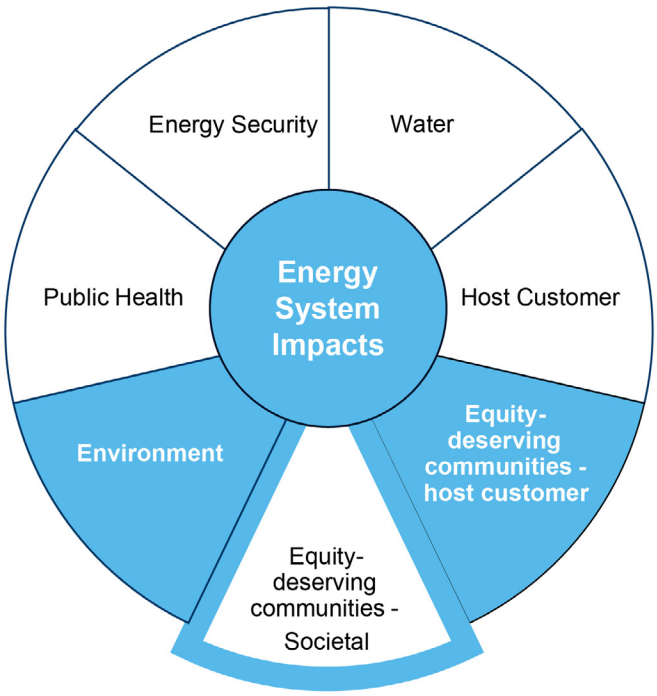


Figure 2. Cost-effectiveness test perspectives included in the New Brunswick Test[57]

NB Power's consultant, Dunsky Energy + Climate Advisors, suggested the New Brunswick Test be used as a primary test in the next DSM plan, applied to all distributed energy resource actions linked to provincial objectives. This includes energy efficiency, demand response, fuel switching, and behind-the-meter distributed generation and storage.[58]

Policy implications of cost-effectiveness testing trends

The general trend in Canadian DSM is movement toward more balanced cost-effectiveness testing at the portfolio level, using either a PAC Test, a modified TRC or potentially a JST that accounts for customer and societal benefits. This trend will provide a more complete accounting for DSM value in Canada and will be increasingly important as DSM strategies must move beyond "low-hanging fruit" measures that were highly cost-effective even when costs and benefits were accounted for unevenly.

---

[57] Image excerpted from: Dunsky Energy Consulting, *New Brunswick Test: A DSM Cost-Effectiveness Framework Specific to the Province.*

[58] New Brunswick Energy & Utilities Board, *NB Power 2026-2027 General Rate Application.*

Yet, as we outlined previously, a cost-effectiveness test does not necessarily indicate how it is applied in practice. Tests with the same name can vary significantly depending on which costs and benefits are included or excluded, as well as methodological choices such as level of application (portfolio, program or measure), discount rate, avoided costs, and inclusion or exclusion of other costs and benefits. These decisions can affect both the overall level of DSM supported relative to supply-side resources and the mix of programs in a portfolio. For example, several Canadian electricity DSM programs do not consider avoided transmission and distribution capacity costs and/or locational values, which undervalues programs that reduce peak demand and geo-targeted programs that can act as non-wire alternatives.

A JST provides greater flexibility to align the test perspective and included impacts with jurisdictional policy objectives. A wider consideration of benefits can justify a diversity of programs within a portfolio, such as a low-income program that produces significant health benefits. It might also make a program portfolio more resilient and adaptive when faced with changing economic circumstances. For example, a recession could significantly reduce load growth and accordingly reduce utility avoided costs. It could provide stronger justification for electrification, direct install or 100 per cent incentive strategies. A test designed with multivariate objectives is flexible enough to allow for an adaptation of program strategies toward productivity, economic well-being, and equity objectives, as well as an increase in beneficial electrification to increase utilization of existing electricity utility capacity.

A movement toward screening DSM portfolios in Canada with a PAC test does not necessarily mean that these other benefits of energy efficiency are ignored or rejected. The recent Nova Scotia regulator decision rejected a JST in favour of a portfolio-level PAC but recognized that programs with significant non-utility benefits could still be included in the portfolio even if they would not pass cost-effectiveness screening on their own.[59] Similarly, the consultant designing the New Brunswick Test recommended it be evaluated at the sectoral level, and that a rationale be provided for programs that do not pass but are included in the portfolio.[60] The OEB's "Benefit Cost Analysis Framework

[59] Nova Scotia Energy Board, Decision M12282: *An Application by Efficiency One for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans.*

[60] New Brunswick Energy & Utilities Board, *NB Power 2026-2027 General Rate Application.*

for Addressing Electricity System Needs" can include qualitative consideration of benefits — like reliability, resilience, and market transformation — and costs such as energy system risk.[61]

This recognizes a way to provide flexibility to include programs with wider benefits, while remaining under an overall screening framework that prioritizes utility system costs and benefits.

Policy recommendations

We conclude with strategic policy considerations tailored to jurisdictions operating under three different cost-effectiveness testing regimes: an unbalanced test, the PAC test, and those accounting for wider non-utility benefits.

We suggest jurisdictions still operating under an unbalanced TRC test follow their peers by adopting a balanced testing framework.[62]

The jurisdictions applying the PAC test should consider the implications of any utility costs (outlined in Tables 3 and 4) absent from their avoided cost calculations. Exclusion of these benefits to utility systems means the test is still not balanced. Without these benefits, important DSM strategies, such as demand response, on-site storage, renewable generation and non-wires alternatives could be screened out. We recommend applying the PAC test at the portfolio level to enable investment in energy-savings programs and initiatives that may have long term or difficult-to-measure benefits (e.g., codes, market transformation, etc.), or deliver benefits to equity deserving groups at higher cost, while still delivering a portfolio that is cost-effective relative to supply. Alternatively, these categories of programs could be exempted from cost-effectiveness testing and instead evaluated using other performance metrics.

Other jurisdictions that count non-energy benefits or are considering adopting a JST that can consider a wider array of benefits and costs, it is important to recognize that a "conservative" assessment of non-utility benefits has been the norm. Yet,

---

[61] Ontario Energy Board, *Benefit-Cost Analysis Framework for Addressing Electricity System Needs.*

[62] At time of writing, this includes Hydro-Québec, Sask Power, SaskEnergy, and Newfoundland Power and Newfoundland and Labrador Hydro.

underestimating these benefits can prevent the utility system from choosing lower cost demand-side resources over more expensive supply-side options. A key benefit of considering a wider array of benefits is how they inform programmatic choices, potentially leading toward greater equity, diversity of strategies, and innovation in program designs to capture customer and societal benefits.

Beneficial electrification

Public policy and market forces induced by previous policies are driving increased electrification of end-uses such as transportation, industrial production, and heating. In May 2026, Canada's federal government released "A National Strategy for an Electrified Canadian Economy," which views increased conversion toward electricity as a solution for economic competitiveness and climate change.[63]

From a fuel-neutral and economy-wide perspective, the increased use of electric technologies improves energy efficiency. However, DSM policy systems are traditionally siloed between natural gas and electricity systems.[64] Fuels that are not regulated — such as heating oil, propane, and wood — are often left out of DSM program offerings. These silos do not accommodate customer or economy-wide realities.

Utility regulatory systems were developed during a period when electrification was a major policy priority. The challenge in the late 19th and early 20th century was to build the poles, wires, and power plants that would enable rural and urban customers to access electric service. This is why utilities earn returns on capital expenditure, which can produce the incentive to build new infrastructure over lower-cost DSM, and why utilities often earn revenues based on sales volume instead of other measures of performance. Utilities therefore have a built-in incentive to encourage electrification, but they do not necessarily have the right incentives to promote efficient, affordable and GHG-reducing forms of electrification.

---

[63] Natural Resources Canada, "Powering Canada Strong."

[64] Haley et al., *Breaking Fuel Silos in Demand-Side Management: Policy Options to Align Energy Efficiency with Net-Zero Emissions across All Fuels.*

Today's policy goal is not necessarily to increase the number of customers connected to electricity or the amount of electricity used and produced. It should be to increase "beneficial electrification," defined as replacing other energy sources with electric technologies to achieve better efficiency, affordability and a cleaner environment.[65]

DSM administrators have the platforms and tools to ensure electrification is beneficial. This includes programs that meet customer needs by coupling electrification technologies with other services and technologies, such as on-site renewable energy, building envelope improvements, education and awareness, and smart appliances. DSM can implement demand response and locational strategies that avoid peak demands and grid congestion problems that could be triggered by unmanaged electrification. By making better use of the electricity infrastructure already built and paid for, DSM can put downward pressure on rates and bills by increasing sales revenues without triggering new costs. Programs can also help customers to affordably and quickly electrify by implementing energy management strategies that avoid expensive electric panel upgrades and give customers the ability to earn financial benefits from off-peak and/or flexible consumption patterns.

Future DSM strategies should recognize a trend toward electrification. Just as a key role for DSM has traditionally been to avoid unneeded power plants, a new role should be the avoidance of unbeneficial electrification through the proactive promotion of beneficial electrification.

Cost-effectiveness testing is one of the tools within DSM policy system that can help decision makers meet electrification policy goals at the lowest cost and the highest societal benefit.

Our review of practices in Canada show that treatment of beneficial electrification in cost-effectiveness testing practices or alternative DSM performance measures is largely under development. Our review finds that there are three general approaches to integrating electrification into DSM policy: incorporating other-fuel and GHG emission impacts into cost-effectiveness testing, establishing separate targets or performance indicators, and using rate-impact or utility-revenue assessments. We view the first

[65] Farnsworth et al., *Beneficial Electrification: Ensuring Electrification in the Public Interest.*

two approaches as aligned with beneficial electrification and the third approach as inappropriate and misguided. Below we discuss each of these three approaches, followed by recommendations on how to align DSM with public policy electrification goals.

Multi-fuel impacts

The first proposal is to expand a given utility system's cost-effectiveness test to consider all energy system impacts in cost-effectiveness testing (sometimes referred to as "other fuels"). For example, an electricity utility DSM test could be expanded to consider both marginal cost increases on the electricity system alongside avoided costs to the natural gas system when assessing electrification measures. Where the jurisdiction's test also recognizes customer or societal impacts, it could include additional benefits such as reduced propane or fuel oil costs, indoor and outdoor air quality, reductions in insurance costs, comfort improvements, and GHG reduction benefits. This would provide a balanced approach across different fuels. Tables 9 and 10 provide information on current practice in Canada for inclusion of energy systems and fuels beyond the utility performing the test.

Table 9. Multi-fuel impacts in electric utility cost-effectiveness testing

		Program administrator - electricity									
		BC Hydro	Efficiency Manitoba	Efficiency Nova Scotia	efficiency PEI	FortisBC	NB Power	Ontario IESO	Hydro-Québec	NF Power / NL and Lab Hydro	Sask Power
Primary decision-making test(s)		PAC	PAC	PAC	PAC	PAC	PAC	PAC	TRC	PAC/ TRC	PAC/ TRC
Benefits included in cost-effectiveness tests											
Electrification	Energy system natural gas and other fuel utility impacts	-	-	-	-	-	-	-	-	-	-
	Host customer natural gas impacts								-	-	-
	Host customer non-regulated fuel impacts								-	-	-
Societal	Greenhouse gas emissions (beyond compliance)										

● Benefit included - Benefit not included

Non-utility and societal benefits are outside the PAC test perspective; Societal benefits are outside the TRC test perspective

Table 10. Multi-fuel impacts in natural gas utility cost-effectiveness testing

		Program administrator - natural gas				
		Efficiency Manitoba	FortisBC	Enbridge	Énergir	Sask Energy
Primary decision-making test(s)		PAC	PAC	TRC-Plus	TRC-Plus	TRC; SCT
Electrification	Energy system electricity utility impacts	-	-	●	-	-
	Host customer electricity impacts			-	●	-
	Host customer non-regulated fuel impacts			●	-	-
Societal	Greenhouse gas emissions (beyond compliance)					

● Benefit included - Benefit not included

Non-utility and societal benefits are outside the PAC test perspective; Societal benefits are outside the TRC test perspective.

Regulators in Canadian jurisdictions have rejected proposals to adjust tests to consider other fuel impacts. Newfoundland and Labrador's DSM application sought to create a "modified TRC" that would have considered the customer benefit of reduced fossil fuel consumption and vehicle maintenance from electrification, yet the regulator stated that the test was not consistent with the utility's mandate to provide least cost utility service.[66] Similarly, Nova Scotia's application to create a JST included considering other fuel impacts to respond to government legislation that included electrification as a component of electricity DSM. The regulator ruled that legislation that focused on utility costs took precedence over language that gave the regulator a mandate to consider sustainable development.

In Ontario, both electricity and natural gas DSM administrators have the ability to promote electrification. At the time of writing, a screening methodology for electricity DSM electrification has yet to be developed. Natural gas DSM could treat electrification as a gas-saving measure similar to other measures, as an OEB ruling for a residential program in 2022 did.[67] Enbridge's natural gas DSM program had previously counted

[66] Newfoundland and Labrador Board of Commissioners of Public Utilities, *Order of the Board.*

[67] See Haley et al., *Breaking Fuel Silos in Demand Side Management.*

the costs of small changes in electricity use due to interaction effects, such as a furnace fan reducing electricity demand due to decreased runtime because of building envelope improvements. However, it has since incorporated larger marginal costs on the electricity system from electrification into the TRC-Plus test (see Table 10).[68]

Electrification targets

A second option is to create separate beneficial electrification targets and plans.

Targets could be based on technology or sector-specific outcomes, such as the number of heat pumps installed; electrification of transportation and industry; GHG reductions; market transformation objectives; and/or measurements of the load factor implications of electrification to encourage load growth that mitigates peak demand.

In Canada, relevant examples include BC Hydro's development of a separate electrification plan with GHG reduction targets, as well as the agreement between Hydro-Québec and Énergir to promote hybrid gas-electric heating systems.

Another example of this approach is the creation of a Clean Heat Standard on utilities, which requires them to meet performance targets focused on decarbonizing heating. Such standards usually enable a variety of strategies to meet the standard, such as weatherization, electrification, thermal energy and low-carbon fuels.[69] No Canadian utility has introduced a Clean Heat Standard, but examples exist in Colorado, Maryland and Massachusetts.[70]

This option does not necessarily substitute for a cost-effectiveness test, which could be used to inform the programs that should be included in a portfolio to meet specific beneficial electrification or clean heat standard objectives. Alternatively, it is also

---

[68] Enbridge Gas Ontario, "DRAFT 2024 Demand Side Management Annual Report."

[69] Stebbins and Neme, *A Comparison of Clean Heat Standards: Current Progress and Key Elements.*

[70] Massachusetts is delaying its adoption of a clean heat standard until 2028. Wolman, "Healey Administration Pushes Back Clean Heat Standard to 2028 as Affordability Concerns Mount." Maryland's Clean Heat reporting rule came into effect February 2026. The standard is to be adopted in 2026, with requirements in effect 2029. Building Decarbonization Coalition, "Maryland Policy Updates."

possible to create market transformation goals for electrification technologies such as heat pumps, hot water heaters and electric vehicles that are not linked to a benefit-cost framework.

Rate impacts or revenue benefit frameworks

A third proposal surfacing in recent DSM proceedings is to consider the rate impacts of electrification or the impact on electricity utility revenues. We contend that this approach is misguided and misaligned with the ideals of beneficial electrification. One example is the BC 2012 Greenhouse Gas Reduction Regulation.[71] The regulation directed the BC Utilities Commission to determine the cost-effectiveness of electrification programs based on whether they produce a net increase in revenues after considering the costs of programs and any export revenue losses. As another example, the Nova Scotia Energy Board's 2025 ruling rejected a JST in favour of a PAC test yet recognized that the latter was unsuitable for examining electrification.[72] For electrification, the board noted the potential to use a "modified PAC" test that would count increased utility revenues as a benefit.[73]

These proposals use a version of the Rate Impact Measure (RIM) as the cost-effectiveness test for electric utility-funded electrification programs. When DSM decreases electricity demand, the RIM is mathematically equivalent to a PAC test with the additional cost of paying for utility lost revenues. When electrification increases electricity demand, the RIM instead counts additional utility revenues as a benefit. Costs may include program costs, increased supply costs and, in some cases, opportunity costs from replacing higher-value sales, such as exports, with domestic electricity use. The test directed for electrification in B.C. is a RIM test that excludes the supply costs of additional electricity production. Rather than including the marginal cost of acquiring new supply, it includes the opportunity cost associated with selling electricity domestically rather than exporting to the wholesale market.

---

[71] Government of British Columbia, "Greenhouse Gas Reduction (Clean Energy) Regulation."

[72] Nova Scotia Energy Board, *Application by EfficiencyOne for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans*.

[73] Nova Scotia Energy Board, *Order M12282: An Application by EfficiencyOne for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans*.

The NSPM's principles clarify that the RIM is not a benefit-cost test. While a benefit-cost test considers if benefits exceed costs, on average, for all customers or society, the RIM is narrowly focused on rates which can increase or decrease based on the relationship between a utility's sunk costs, volume of sales, and rate design. Lost revenues are largely driven by sunk costs, while a benefit-cost test should be forward looking and consider if each incremental decision has benefits that exceed costs.

Using a RIM as the primary test for electrification programs creates potential for several perverse outcomes and an unbalanced consideration of utility profits versus the public interest. It is a test that encourages maximizing utility profit (increasing revenues more than costs) rather than minimizing costs or maximizing benefits to society.

A RIM-style test can also interact poorly with the capital expenditure bias of regulated utilities. Because utilities can earn a rate of return on capital investments, they may have an incentive to build supply-side infrastructure rather than pursue lower-cost alternatives such as energy efficiency or distributed energy resources. If this leads to overbuilt or underused infrastructure, a RIM test may then favour electrification programs that increase electricity sales and help spread those fixed costs over more kilowatt-hours. This might mitigate the rate implications of overbuilt infrastructure, but it does little to reduce electricity system costs overall by exploring if capital investments could have been avoided in the first place.

Electrification guided by a RIM could work against beneficial electrification. There is potential for a boom-bust dynamic as electrification is urgently required in reaction to overbuilding supply relative to demand, and then a bust in electrification programming when a utility is closer to full capacity utilization. An on-off program offering for electrification would create missed opportunities to promote adoption of electric technologies at time-of-replacement or as part of a staged building or industry retrofit. The test's discounting of future benefits also means near-term electric sales are more highly valued, which could also work against well planned electrification or long-term market transformation toward the use of electricity over fossil fuels.

Making utility revenue the principal benefit could justify increasing sales with inefficient electrification. A broader benefit-cost perspective, such as the JST, that instead includes customer total fuel bill impacts and other customer and societal non-energy benefits would recognize the benefit of more efficient electric technologies (e.g., high-efficiency heat pumps) for their ability to lower customer and environmental costs.

Fundamentally, the reason for utility regulation is to balance a utility profit with the public interest in supplying energy as an essential service. The primary question for public utility regulation should not be if a utility profits, but if the electricity system is serving the public interest. Thus, electrification programs cannot be divorced from the question of whether electrification reduces overall customer and societal costs, which includes consideration of impacts beyond the electric utility system. A RIM test could create situations where an electric utility profits while imposing other costs on society or at the expense of alternative options that would maximize societal benefits.

A RIM test for electrification could also prevent a utility from pursuing plans that modestly increase electricity rates to produce large-scale benefits to society. Consider a scenario where increased electricity sales push an electricity system toward needing to pay for new demand- and supply-side resources – and those new resources have a higher cost per kilowatt hour than the retail price of electricity. The utility's revenue gain from additional sales would be less than the additional utility costs. This would require a rate increase, or put upward pressure on rates, and would thus be screened out by the RIM. However, paying for the expansion of the electricity grid through higher rates might still lead to lower combined energy bills for customers that use electricity to substitute away from more expensive fossil fuels. For example, customers switching from an internal combustion to an electric vehicle experience a significant decrease in gasoline and maintenance costs, even if electricity rates increase. At a larger provincial or national level, electricity grid expansion could achieve greater domestic energy security, improve a jurisdiction's trade balance, reduce energy poverty, and/or help meet climate goals. Screening electrification activities based on a RIM test would exclude paying for an electricity system expansion through slightly higher electricity rates to achieve larger customers, societal, and environmental benefits.

Regulators in Newfoundland and Labrador and Nova Scotia stated that they did not have a mandate to consider impacts beyond the electricity system, leading to stakeholders proposing a rate impact-related test for electrification. However, this narrow interpretation neglects to consider how the electricity system can be used to benefit the public interest. In addition, regulators and policymakers already make decisions on the beneficial versus unbeneficial use of electricity. For example, several Canadian provinces introduced restrictions or rules on cryptocurrency mining based

on environmental and economic development rationales.[74] Thus, intervenors and regulators considering beneficial electrification within DSM could recognize the role of directing the electricity system to serve public rather than private interests. Alternatively, policymakers could clarify utility regulator mandates to ensure a more rational and public interest-oriented approach to guiding electrification program strategies.

Using a true benefit-cost framework to consider electrification does not preclude examining rate impacts. Rate impacts should be considered alongside bill and participation impacts, as recommended by the NSPM. A rate analysis could consider the impact on customers that do not participate in electrification programs. A bill analysis would consider the potential all-fuel bill reducing benefits to customers that substitute toward electricity, even if electricity rates increase. A participation analysis would estimate how many customers benefit from participating in electrification programs, and how program strategies could increase participation. Many customers might choose electrification because of other benefits such as indoor air quality and environmental protection, which should also be recognized in the picture of participant impacts.

Program portfolio interactions to increase beneficial electrification

Assessing electrification programs from the measure or program perspective could offer an incomplete picture and prevent consideration of broader program strategies that can mitigate costs and make electrification beneficial. For example, a given electrification measure like an electric vehicle incentive has the potential to significantly increase electricity system costs due to distribution system upgrades and increase customer costs due to electric panel upgrades. However, a coordinated program approach could balance the increased demand with non-wires solutions that include electricity savings and managing peaks within the distribution area. For a given customer, their costs could be reduced via “power efficiency” measures, such as smart panels that manage the timing of consumption at the household level. Including beneficial electrification within electricity DSM programming allows administrators to implement these cost reducing strategies in coordination with electrification programs.

---

[74] La Régie de l’énergie in Québec, for example, created a selection grid for cryptocurrency based on environmental and economic development critiera. See: https://www.quebec.ca/nouvelles/actualites/details/cryptomonnaies-la-regie-de-lenergie-rend-une-decision.

A portfolio-level assessment enables an optimization of program strategies to offset electrification costs and increase benefits. If electrification programs are screened at the program level, the relevant costs and benefits should be estimated based on the impacts of complementary program strategies.

Aligning cost-effectiveness testing with electrification policy goals

Cost-effectiveness testing should be aligned with public policy goals, including electrification, where relevant. However, the decision to promote electrification is likely best guided by policy, with a benefit-cost framework helping to inform how to do it and not necessarily whether to do it.

Achieving net-zero emissions is a structural goal that is best defined by a desired end-state and the strategies to re-shape markets, infrastructure and business models to meet that desired future. A benefit-cost analysis is not always the best tool to guide policy in this area because it tends to assess costs and benefits on current conditions, while achieving net-zero requires dynamic changes over time — such as achieving lower technology costs, structural changes in infrastructure and business models.

A “market transformation” approach could provide a better way to incorporate electrification into DSM portfolios. This would consider how to re-shape markets and trigger dynamic changes in technology availability, acceptance, and costs. Electric vehicles policy has largely used this approach with incentives and mandate to increase vehicle availability and to expand charging infrastructure.

A cost-effectiveness framework that includes beneficial electrification can highlight net-benefit and “no regret” options, which may result from previously successful market transformation. It can also demonstrate initiatives with high costs that can be either mitigated through complementary DSM strategies, or which demonstrate the need for additional market transformation strategies. Thus, cost-effectiveness testing should be recognized as more of an indicator than a “screen” of electrification programs for policymakers, while also recognizing that it could be valuable in finding the appropriate role for DSM driven electrification.

Recommendations

Based on the discussion above, we suggest the following guidance for aligning cost-effectiveness testing with electrification in utility DSM.

- Clarify a definition of beneficial electrification for utility DSM, incorporating electrification that is efficient, affordable and clean, to guide plans and programs.
- Define a beneficial electrification plan informed by multiple potential scenarios of electric end-use growth. The plan can include market transformation initiatives focused on shifting market dynamics over time as well as programs to increase the near-term use and deployment of electric end uses. It could include electrification goals such as number of heat pumps, or electric vehicles and smart charging systems, installed.
- Use cost-effectiveness testing to inform decision makers about beneficial electrification programs with high near-term benefits. Cost-effectiveness tests should include the benefit of GHG reductions as well as "other fuel" impacts, or total energy system impacts, in both electricity and natural gas DSM. For natural gas DSM, this recognizes the avoided cost benefits of electrification, while also accounting for any added costs imposed on electricity systems. For electricity DSM, considering these cross-fuel impacts helps assess how the electrification can best serve the public interest.
    - Considering increased electric utility revenues as the primary benefit of electrification or rate impacts is not a benefit-cost test. The results of this test can produce outcomes that encourage inefficient and unbeneficial electrification or boom-bust electrification programming. Rate impacts should be considered alongside bill impacts and estimates participation rates in programs.
- Cost-effectiveness tools applied to electrification are most useful for optimizing DSM program portfolios to mitigate the costs of electrification and increase its benefits, through strategies such as building envelope improvements, demand response, smart panels, non-wires solutions, and larger electricity saving targets to free up resources for beneficial electrification.

Government funding interactions

Government funding of energy efficiency programs reflects broader public policy support for objectives that can extend beyond ratepayer funded utility DSM, such as affordability, emissions reductions, equity and economic development.[75] When coordinated with utility DSM, government funding can increase overall energy savings and impact to achieve the above goals. It is therefore important to consider how government funding interacts with DSM.

For supply-side energy resources, government supports through instruments such as tax credits, subsidies, and loan guarantees has the effect of lowering the cost of procuring wind, nuclear and transmission for utility systems. This thus sends a signal for utilities to procure more of these resources instead of alternative options. However, government-led and/or funded energy efficiency initiatives do not necessarily send a signal for a utility or program administrator to undertake more DSM.[76]

When government-funded programs co-exist alongside or in cooperation with DSM programs, there is potential for several types of perverse outcomes or unintended consequences. Much depends on what benefits are attributed to DSM activities and what costs are counted in program evaluations and within cost-effectiveness frameworks.

Government funding could lead to decreases in DSM program funding. This could occur if savings that would have been attributed to DSM programs are attributed to the government program instead, thus reducing the amount of savings available. A program administrator could experience this and still face higher costs because they need to pay more to capture more difficult-to-achieve savings, or they might face higher

---

[75] The Canadian government has funded energy efficiency programs through the Low Carbon Economy Fund, the Canada Greener Homes Grant and Loan, the Oil to Heat Pump Affordability Program, and the Canada Greener Homes Affordability Program. It also funds DSM-adjacent programs through the Green Industrial Facilities and Manufacturing Program, the Codes Acceleration Fund, the Deep Retrofit Accelerator Initiative and the Greener Neighbourhoods Pilot Program. This is a non-exhaustive list. Provincial governments also fund programs, often using revenues from cap and trade or carbon taxation.

[76] Part of the reason for this paradoxical situation is that government and DSM programs both target utility customers instead of the government offering incentives directly to utilities.

administrative and marketing costs to help customers navigate between utility DSM and government programs. From a cost-effectiveness perspective, costs will increase without an increase in benefits that can be attributed to the program.

It is also possible that over-attribution of savings to a DSM portfolio could lead to lower efforts and failure to maximize the collective impact of government and DSM programs. If a DSM program is effectively capped by either a target or a maximum budget, this might result in reducing budgets by the same amount of government funds to meet static goals. Consider an energy efficiency resource standard that was originally intended to induce more DSM efforts. If an unexpected increase in government funding helps meet this goal, DSM policymakers can either expand the energy savings target or reduce DSM efforts.

An over-attribution of savings to utility DSM could also result in unearned performance payments to utilities that are compensated by energy savings performance. In this case, government funding could result in more ratepayer funds paying utility shareholders and public and stakeholder opposition.

Thus, the details of how benefits are attributed and which costs are accounted for within DSM policy systems matter. If governments are funding energy efficiency, they conceivably hope their policy choice is reinforced by other actors — including customers and DSM administrators — undertaking higher energy efficiency efforts to increase impact. As stated above, government funding could result in decreased DSM efforts or that this funding results in subsidizing energy prices instead of delivering lower bills through DSM. If this was a government's intention, it would make more sense to introduce policies like DSM budget caps or direct price subsidies. Below, we therefore write from the perspective of finding ways for government funding to send a signal that enables the expansion of DSM efforts, in the same manner that government incentives would increase the competitiveness of supply-side resources.

Attribution options

How to most effectively attribute savings in the context of significant government incentives was considered by the Northeast Energy Efficiency Partnership (NEEP) when the U.S. Biden administration introduced large-scale public investments in energy efficiency under the Inflation Reduction Act.[77]

NEEP outlines four possible attribution frameworks, which we discuss below with a lens toward maximizing energy savings results.

Full attribution: Under a full attribution framework, a DSM program administrator would get full credit for all savings resulting from the combination of DSM and government funding. This would normally include requirements that the DSM administrator provide significant financial and administrative support. For example, utilities in Illinois receive full attribution of energy savings for helping to implement the state-funded Home Weatherization Assistance Program under a requirement that they provide administrative services and 50 per cent of the project's costs.

A policy of full attribution might need to increase DSM goals or targets to ensure overachievement does not result in lower DSM efforts or a substitution of DSM funding for government funding.

Proportional attribution: Under a proportional attribution framework, a DSM administrator might receive credit based on the amount of financial contribution or other efforts they contribute (e.g., 30 per cent of savings are attributed by contributing to 30 per cent of program budget). This approach can simplify attribution. However, the benefits per dollar spent do not necessarily track linearly. If a DSM program administrator must use its budget to meet harder-to-achieve and more expensive energy savings, it will become more difficult for it to meet targets or demonstrate cost-effectiveness.

Negotiated attribution: A negotiated attribution framework is relevant in cases where government and DSM programs might be targeting different types of benefits or have different capabilities to contribute. This framework has been used in situations

[77] NEEP, *Expanding the Energy Savings Pie: Attribution Frameworks to Align IRA Home Energy Rebates and State Programs*.

where two utility DSM with different regulatory mandates co-administer the same program. The NEEP study uses an example of a jointly administered heat pump program in Vermont, where an investor-owned utility (Green Mountain Power) was attributed 100 per cent of emissions savings from water-heating electrification; and savings resulting from air source heat pumps were shared evenly between the investor-owned utility and an efficiency utility (Efficiency Vermont).

No attribution: A no-attribution framework could be relevant when a government launches a program in a jurisdiction without an active DSM program, or if the government program is distinct from those currently offered by utilities. This option might also be appropriate if attribution could result in decreased DSM effort under a budget cap or energy-savings target.

Each of these attribution frameworks could be relevant in different cases and require complementary changes in DSM policy and/or government policy. Below, we provide a snapshot of attribution approaches in Canadian provinces and how they might impact cost-effectiveness results.

Treatment of government funding in DSM programs

We examined how Canadian DSM administrators attribute energy savings and program costs in cost-effectiveness test results when a program includes government funds. The most relevant cases to consider involved the treatment of federal program funding, such as the Canada Greener Homes Grant and funds from the federal Low Carbon Economy Fund. The results from jurisdictions that were able to provide this information are presented in Table 11 below.

Table 11. Government funding in DSM cost-effectiveness testing

			DSM cost-effectiveness testing	
Utility	Primary cost-effectiveness test	Program type with federal $	Attribution of energy savings as DSM benefit	Government $ included as a DSM cost
FortisBC & FEI	PAC	Stacked Greener Homes Incentive[78]	Full	No
Efficiency Nova Scotia	TRC[79]	Stacked Greener Homes Incentive	Full[80]	No (participant incremental costs reduced by the incentive amount)
Efficiency Manitoba	PAC	Stacked Greener Homes Incentives / CGHAP[81]	Full	Yes
Enbridge	TRC-Plus	Co-delivered Greener Homes Incentives	Proportional	No
SaskEnergy	TRC / SCT	Stacked Greener Homes Incentives	Full	CE testing not done on stacked incentives
SaskPower	TRC / PAC	Federal funding[82]	Full	Yes

On the benefits side, almost all jurisdictions claim full attribution for energy savings when their programs stack a rebate on top of a government incentive for the same measure.

[78] Costs and benefits of CleanBC funding are not included in CE test.

[79] Greener Homes programming was prior to EfficiencyNS's shift to the PAC test in late 2025.

[80] TRC: It reduced the participant cost and accounted for energy saving benefits to the host customer.

[81] CGHAP: Canadian Greener Homes Affordability Program.

[82] ECCC funding; Future Electricity Fund; NRCan funding; Decarbonization Incentive Program.

The only exception was Enbridge; through a formal agreement with Natural Resources Canada for the Greener Homes Grant program, the groups proportionally attributed the energy savings based on their respective financial contributions to the incentive for customers that remain using natural gas.[83] A small case of negotiated attribution occurred, with 100 per cent of the results attributed to the federal government for participants that did not remain gas customers (likely due to full electrification) at the time of the post-retrofit energy assessment. This is despite a regulatory ruling that viewed full electrification as a legitimate natural gas DSM strategy.[84] Without attribution, Enbridge would seem to have less of an incentive to support full electrification.

The agreement also included provisions to avoid the danger that proportional attribution would significantly decrease the cost-effectiveness of DSM. It guaranteed Enbridge that a unit cost of saved energy would not fall below 0.34 gross annual cubic metres of natural gas saved per incentive dollar contributed. If costs fell below this level, adjustments would be made to attribution to meet this minimum cost threshold. Enbridge also pledged to use the additional federal dollars to achieve higher savings, rather than lowering budgets.

Most utilities excluded the costs of government incentives in cost-effectiveness tests, effectively sending the signal that federal funds buy-down the cost of DSM. Efficiency Manitoba is an exception. In this case, government funds were used to decrease budgets rather than increase savings.[85] Thus, the federal funds did not send a signal that Efficiency Manitoba could have invested in more DSM because of cost-effectiveness improvements. It replaced ratepayer dollars with taxpayer dollars.

---

[83] Enbridge Gas Ontario, "Department of Natural Resources Energy Efficiency Program: Greener Homes Initiative Non-Repayable Contribution Agreement."

[84] Haley et al., *Breaking Fuel Silos in Demand-Side Management: Policy Options to Align Energy Efficiency with Net-Zero Emissions across All Fuels.*

[85] Based on rational in EMB Annual Business Plan, stating ""there is an absolute benefit to Manitoba ratepayers associated with the pursuit of and access to federal LCELF dollars as these dollars directly reduce contributions required through utility rates that would otherwise be required to fund the natural gas energy efficiency portfolio."

SaskPower also counted government funding as a cost. However, this is a special case where nearly all funding was from the federal government, without a ratepayer-funded DSM contribution — with SaskPower providing administrative support.

Policy options to increase energy efficiency impact of government-funded and DSM programs

The NEEP study that discussed different attribution approaches published a decision tree that we replicate below because it provides guidance on methods to increase overall energy efficiency results through the combination of DSM and government programs.

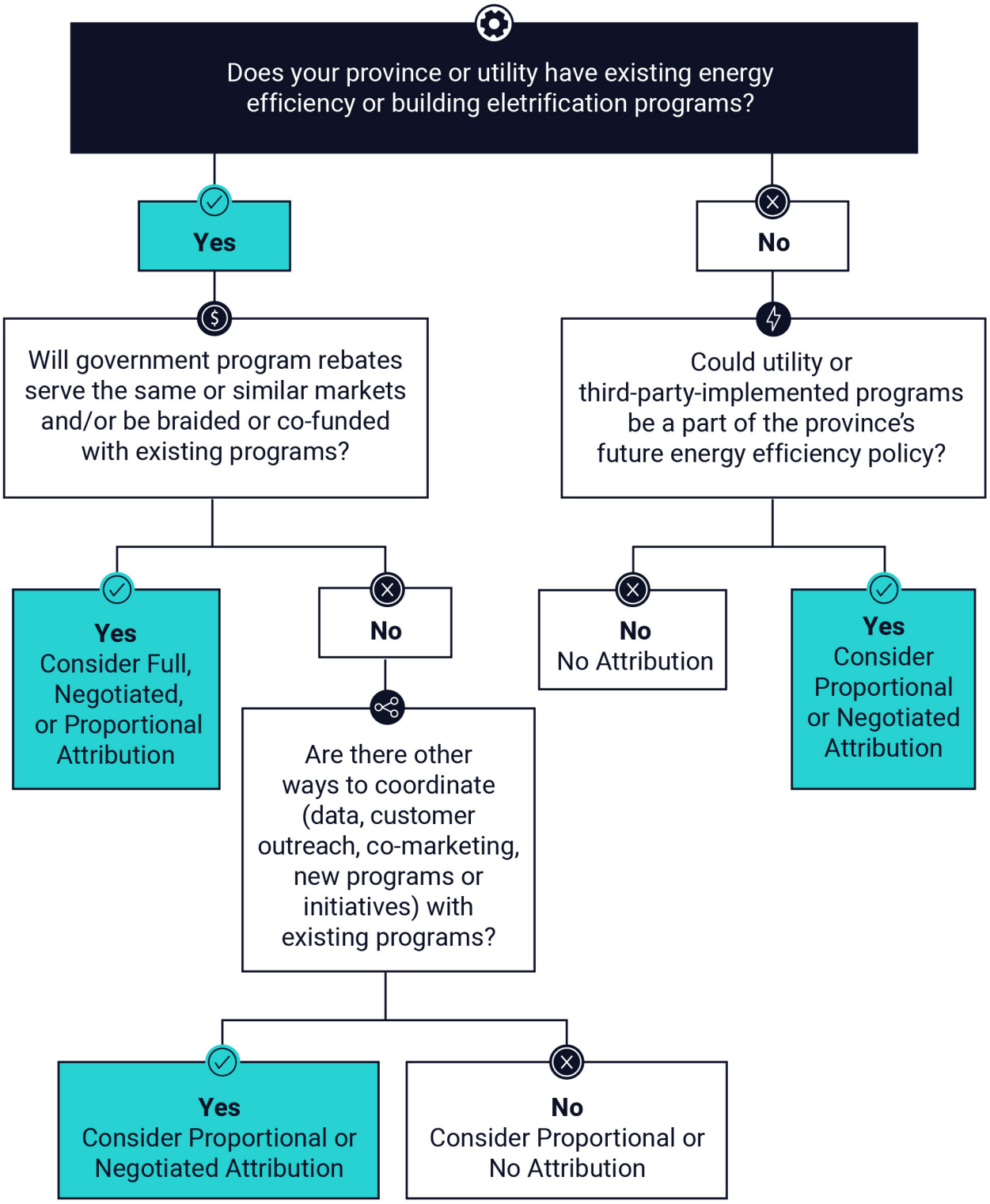


Figure 3. Decision tree for attribution frameworks

Adapted from NEEP, Expanding the Energy Savings Pie.[86]

[86] NEEP, Expanding the Energy Savings Pie: Attribution Frameworks to Align IRA Home Energy Rebates and State Programs.

If there is no DSM program active in a jurisdiction that could help deliver a federal program or initiative, the decision tree recommends no attribution. This enables government to not be dependent on pre-existing DSM institutions and to still improve energy efficiency in a jurisdiction. However, an important policy impact of a government program could be the inducement of a complementary DSM initiative because additional ratepayer investments that leverage government funds could help a utility more cost-effectively avoid more expensive supply (or produce additional benefits). For this reinforcing effect to occur, it would need to be clear the DSM program would receive, at least, partial attribution of energy savings for their decision to complement a government program.

The decision tree recommends full attribution if DSM programs are significantly co-funding alongside government. It recommends proportional or negotiated attribution if utility DSM involvement is limited to administrative or coordination resources, which is the case in the Saskatchewan utilities discussed above. This effectively sends a signal that could encourage more co-funding from DSM with full attribution, while also rewarding coordination through partial attribution.

Implications for the Canada Greener Homes Affordability Program

These decisions on attribution will need to be made in the Canada Greener Homes Affordability Program (CGHAP), which is being negotiated between the federal government and provinces and territories at the time of writing. This is a federal program with a policy goal focused on affordability for low-to-median income households. Thus, its objectives are separate, yet complementary to typical utility DSM objectives. It is a program area where DSM administrators often struggle to demonstrate cost-effectiveness under testing frameworks that do not count health and other social benefits, or reductions in credit and collection utility costs.

The federal government's policy encourages integration with existing programs by inviting provinces and territories to tailor program designs to regional circumstances. It also requires matching funds that are equal to 30 per cent of the federal contribution, which can come from existing DSM budgets. Thus, a co-funded program that gives full attribution of savings to a DSM program could effectively buydown the costs for a DSM program administrator and justify increased efforts due to the program's improved cost-effectiveness. From the DSM administrator cost-effectiveness perspective, the federal government policy can be viewed as an actor willing to pay for benefits such as

health, affordability, and equity. The administrator can take advantage of this co-pay opportunity to increase participation and savings.

CGHAP also needs to navigate how to deliver low-income efficiency in provinces without robust utility DSM or pre-existing low-income programs. It is possible for the federal government to deliver the program through for-profit or not-for-profit organizations. In these cases, the federal program can encourage the development of new utility DSM programs that could receive some attribution for initial activities, and the prospect of full attribution could play a role in encouraging the growth of low-income utility DSM.

The New Brunswick Test as coordination tool case

The New Brunswick Test provides a relevant example of how a cost-effectiveness framework can help coordinate across government and ratepayer funding streams. In this case, the test is not used a "pass-fail" screen, but to highlight different benefit streams and implications for who funds what.

As described above, the New Brunswick Test incorporates customer and societal impacts. It was used to assess programs with government funding, while ratepayer-funded DSM was assessed under a PAC test framework restricted to energy system costs and benefits.

The benefit-cost framework can be used as more than a screen. It can clarify specific beneficial impacts and the costs associated with them. This can then inform an attribution approach whereby government funding aims to achieve larger societal benefits, while ratepayer funding might be focused on energy system impacts. Ideally, attribution is designed in a way that the utility DSM strategy achieves higher energy system impacts and more participation because of government funding, and government recognizes the role of utility DSM in achieving its goals with lower cost.

A caution with this approach is that a benefit-cost framework might not be a suitable decision-making tool for government policy. Benefit-cost is a static analysis, which is not well suited to policies that aim to produce dynamic market transformations. Policy objectives such as equity and fairness are not easily monetized. Some policies are best

reflected as societal goals or targets, such as eliminating energy poverty, achieving net-zero emissions, or improving economy-wide energy productivity. In such circumstances, cost-effectiveness tests could add value by informing which program strategies to use but should not be used to make "yes or no" decisions.

How DSM and government policy systems can realistically align

Government and DSM program interactions present an interesting case of how to send desired signals across two semi-autonomous policy systems. Close coordination and negotiation between governments and utility DSM systems is not always realistic and should not be expected. Each policy system has its own decision-making timelines and frameworks. It will not always be clear which benefits federal or provincial, territorial, or municipal governments are targeting by introducing energy efficiency programs, and it is up to utility DSM policymakers to respond and interpret the signals. However, government policymakers should understand how DSM rules like attribution frameworks and cost-effectiveness testing work so they can avoid unintended consequences and accelerate the impact of their own policies and programs.

From the utility DSM governance perspective, we suggest the only good-faith assumption to make is that government programs aim to also encourage stronger and more effective DSM. The response to new government funding should not be a reduction in DSM budgets, and performance targets should be increased. Government funding presents an opportunity to attract more resources into a given jurisdiction and to help customers benefit from additional support.

There are actions governments can take to increase the potential that their programs will result in increased DSM investments or implementation support from DSM administrators.

The consistency and timing of government funding matters. Sudden or boom-bust government funding can be difficult to integrate with DSM plans that are designed over multiple years. If government funding is expected and predictable, it will be easier to incorporate these signals into utility planning and cost-effectiveness results – and encourage more DSM investments to displace expensive and polluting supply-side resources. Multi-year agreements and co-delivery approaches by governments are more likely to result in complementary increases in DSM investments and better coordination.

The federal government does not have jurisdiction to decide on DSM attribution policy for federally funded energy efficiency. However, it can clarify intent. For example, the Department of Energy in the U.S. provided guidance on its HOMES (Home Efficiency Rebates) and HEAR (Home Electrification and Appliance Rebates) programs that encouraged incentive stacking and stated an intent to "maximize the ability for local programs to count savings" toward such projects.[87]

The federal government can also negotiate terms for the use of its funds. In these cases, it is worthwhile for federal representatives to understand the potential implications of attribution frameworks within the context of DSM policies like cost-effectiveness testing, performance targets, and budget caps.

Conclusion

Although cost-effectiveness testing is often treated as a technical issue within DSM, it has significant implications for public policy. Government policies can have positive or negative implications for the level of DSM supported by utilities and their regulators, depending on how costs and benefits are included and calculated. Without careful design of government policy and DSM, a government program aiming to improve energy efficiency could reduce DSM by making programs look less cost-effective. This unintended outcome would run counter to government policy objectives of improving energy affordability, reducing emissions, increasing grid reliability, promoting economic development, and improving health and comfort.

Canadian jurisdictions are moving away from unbalanced cost-effectiveness tests by either using a utility system-specific PAC test or accounting for the wider benefits DSM provides outside of utility systems for customers, society, and other utility systems. The PAC test at the portfolio level often justifies an increase in DSM investments compared to the previous norm of using an unbalanced TRC test. However, the test is not balanced if it neglects to quantify important DSM benefits, such as avoided credit and collection costs for customers in arrears, avoided transmission and distribution costs, and increased reliability and resilience. The PAC test could also fail to support programs for low-income customers, direct-install strategies, or electrification solutions with high benefits outside of utility system boundaries.

---

[87] ACEEE, *Residential Retrofit Programs to Complement Federal Rebate Programs: Brief 2: Navigating Regulatory Mandates for Utility Program Investments*.

Other jurisdictions are considering defining and adopting a JST informed by the new NSPM, which considers the wider benefits relevant to a jurisdiction's policy objectives. These tests could also be unbalanced if they adopt an overly conservative accounting of energy efficiency benefits.

Both routes toward a balanced cost-effectiveness framework are valid, yet stakeholders must continue to navigate the issues noted above.

Electrification is a valid component of future electricity and natural gas DSM portfolios because of the potential for proactive strategies to avoid unnecessary costs of electrification and to maximize the beneficial impacts of electrification. This requires cost-effectiveness testing protocols to consider the impacts on other utility systems and/or to customers using other fuels. While this might appear to be outside of utility regulatory boundaries, the fundamental role of utility regulation is to ensure energy systems serve the public interest. With increasing use of electric technologies due to market dynamics and government actions, utility DSM cannot ignore electrification.

Government funding can strengthen energy efficiency outcomes, and policymakers should consider interactions with DSM policy systems in policy design. To achieve complementary alignment governments and utility systems both have a role to play. Government funding or financing would have a larger impact if it were long term and consistent, because it could be integrated within utility system planning and result in energy efficiency being chosen over more expensive and polluting supply-side resources. Utility regulators also have a role to play in ensuring that attribution rules reflect a good-faith understanding that the government wishes to create an incentive for more DSM investments, rather than crowding out DSM opportunities or reducing DSM efforts under a given target or budget cap.

Decisions on cost-effectiveness testing have a large impact on DSM performance throughout Canada. The rules adopted reflect a jurisdiction's priorities. Inattention to this obscure policy area can also lead to unintended consequences, such as exclusion of solutions beneficial to the energy system as a whole and government funding policies that could weaken the competitiveness of DSM relative to supply. The influence of cost-effectiveness testing rules on DSM programs should be actively considered in any energy efficiency policy design, and we hope this report facilitates a better understanding of how cost-effectiveness testing interacts with wider public policies.

Works cited

ACEEE. "Cost-Effectiveness Tests: Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency." *ACEEEE Topic Brief*, December 2018. https://www.aceee.org/sites/default/files/he-ce-tests-121318.pdf.

ACEEE. "Database of State Efficiency Screening Practices (DSP)." 2025. https://www.aceee.org/database-state-efficiency-screening-practices.

ACEEE. *Residential Retrofit Programs to Complement Federal Rebate Programs: Brief 2: Navigating Regulatory Mandates for Utility Program Investments.* ACEEE Topic Brief. 2025. https://www.aceee.org/sites/default/files/pdfs/brief_2_-_navigating_regulatory_mandates_for_utility_program_investments.pdf.

Baatz, Brendon. *Everyone Benefits: Practices and Recommendations for Utility System Benefits of Energy Efficiency.* June 2015. https://www.aceee.org/sites/default/files/publications/researchreports/u1505.pdf.

Building Decarbonization Coalition. "Maryland Policy Updates." *Maryland Policy Updates,* July 17, 2021. https://buildingdecarb.org/maryland-policy-updates.

Caputo, Samantha. *Non-Energy Impacts Approaches and Values: An Examination of the Northeast, Mid-Atlantic, and Beyond.* June 2017. https://neep.org/sites/default/files/resources/NEI%20Final%20Report%20for%20NH%206.2.17.pdf.

Clark, Woodrow W., Arnie Sowell, and Don Schultz. "California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects." In *Sustainable Communities Design Handbook*. Elsevier, 2010. https://doi.org/10.1016/B978-1-85617-804-4.00018-5.

Dunsky Energy Consulting. Bénéfices Non Énergétiques (BNÉ Orientation Sur La Prise En Compte Dans La Pratique Règlementaire). 2021. https://www.regie-energie.qc.ca/storage/app/media/la-regie/publications-documentations-conference-colloques/evenements-et-colloques/colloques/2021/BNE-2021_Orientation-sur-la-prise-en-compte-dans-la-pratique-reglementaire-Dunsky.pdf.

Dunsky Energy Consulting. *New Brunswick Test: A DSM Cost-Effectiveness Framework Specific to the Province*. New Brunswick Energy & Utilities Board, NB Power 2026-2027 General Rate Application: Appendix CD. Prepared for NB Power, 2025.

Dunsky Energy Consulting. *Non-Energy Benefits Study: Phase II.* Dunksy, 2021. https://www.ieso.ca/en/Sector-Participants/IESO-News/2021/08/Non-Energy-Benefits-Study-Released.

Dunsky Energy Consulting. *PEI Energy Strategy.* 2025. https://www.princeedwardisland.ca/sites/default/files/fe81/PEIEnergyStrategy.pdf.

Dunsky, Philippe, François Boulanger, Patrick Mathot, and BC Hydro. *Screening DSM: When the TRC Blocks Efficiency, What's Next?* 2012. https://www.aceee.org/files/proceedings/2012/data/papers/0193-000199.pdf.

EfficiencyOne. *E1 Responses to Nova Scotia Energy Board (NSEB) Undertaking.* Nos. M12282 – EfficiencyOne (E1) Application for Approval of a New Benefit-Cost Analysis (BCA) Test for Evaluating Demand Side Management (DSM) Plans. 2025.

Efficiency Canada. "Policy Tracking System." 2026. https://database.efficiencycanada.org/.

Enbridge Gas Ontario. "Department of Natural Resources Energy Efficiency Program: Greener Homes Initiative Non-Repayable Contribution Agreement." November 24, 2022. https://www.rds.oeb.ca/CMWebDrawer/Record/762132/File/document.

Enbridge Gas Ontario. "DRAFT 2024 Demand Side Management Annual Report." April 1, 2025.

Farnsworth, D., J. Shipley, J. Lazar, and N. Seidman. *Beneficial Electrification: Ensuring Electrification in the Public Interest*. Regulatory Assistance Project, 2018.

Forgione, David. "eDSM Cost-Effectiveness Methodology Update." Enhancements to eDSM Cost-Effectiveness Methodology: Engagement Webinar, June 16, 2026. https://ieso.ca/Sector-Participants/Engagement-Initiatives/Engagements/Electricity-Demand-Side-Management-Framework?utm_source=newsletter&utm_medium=email&utm_campaign=IESO+Bulletin+-+June+11%2c+2026+#:~:text=June%2016th%202026.-,Presentation,-Recorded%20Presentation.

Government of British Columbia. "Demand-Side Measures Regulation." June 30, 2023. https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/326_2008.

Government of British Columbia. "Greenhouse Gas Reduction (Clean Energy) Regulation." July 1, 2024. https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/102_2012.

Haley, Brendan, James Gaede, and Alyssa Nippard. *Breaking Fuel Silos in Demand-Side Management: Policy Options to Align Energy Efficiency with Net-Zero Emissions across All Fuels*. Efficiency Canada, Carleton University, 2024. https://www.efficiencycanada.org/fuel-report/.

Haley, Brendan, James Gaede, Mark Winfield, and Peter Love. "From Utility Demand Side Management to Low-Carbon Transitions: Opportunities and Challenges for Energy Efficiency Governance in a New Era." *Energy Research & Social Science* 59 (January 2020): 101312. https://doi.org/10.1016/j.erss.2019.101312.

Higa, Randall, and Carol Yin. *Transforming Market Transformation*. 2024. https://www.aceee.org/sites/default/files/proceedings/ssb24/assets/attachments/20240722160833234_736d3a98-2a69-495a-b68f-e8492b770fd8.pdf.

Hydro-Québec. Action Plan 2035 – Towards a Decarbonized and Prosperous Québec. 2023. https://www.hydroquebec.com/data/a-propos/pdf/action-plan-2035.pdf.

Hydro-Québec. *Coûts Évités: R-4307-2025*. 2025. https://www.regie-energie.qc.ca/fr/participants/dossiers/R-4307-2025/doc/R-4307-2025-B-0012-Dem-Piece-2025_07_31.pdf.

Kushler, Martin. "Passing the Test: How Are Residential Efficiency Cost Effectiveness Tests Changing?" February 11, 2021. https://www.energy.gov/sites/default/files/2021/03/f83/bbrn-peer-test-021121.pdf.

Kushler, Martin, Ed Vine, and Dan York. *Keeping the Lights On: Energy Efficiency and Electric System Reliability.* No. 812819. 2002. https://doi.org/10.2172/812819.

Kushler, Martin, and Patti Witte. *Sustaining Utility Natural Gas Efficiency Programs In a Time of Low Gas Prices*. October 2020. https://www.aceee.org/sites/default/files/pdfs/sustaining_utility_natural_gas_efficiency_programs.pdf.

Muncaster, Katherine, Andrew Pape-Salmon, Sarah Smith, and Mark Warren. *Adventures in Tweaking the TRC: Experiences from British Columbia.* no. ACEEE Summer Study on Energy Efficiency in Buildings (2012). https://www.aceee.org/files/proceedings/2012/data/papers/0193-000258.pdf.

National Association of State Energy Officials. *National Standard Practice Manual: For Benefit-Cost Analysis of Distributed Energy Resources*. National Energy Screening Project, 2026. https://naseo.org/Data/Sites/1/media/tknaseo/nspm-main-2026-final.pdf.

National Association of State Energy Officials.. "NSPM References Map." Accessed May 19, 2026. https://www.naseo.org/topics/nesp/nspm-references-map.

National Energy Screening Project. National Standard Practice Manual. 2020. https://naseo.org/nesp/nspm.

National Energy Screening Project. *National Standard Practice Manual Case Study: Michigan*. 2025. https://michigan.gov/mpsc/-/media/Project/Websites/mpsc/workgroups/benefit-cost-analysis/Case-Study.pdf?rev=af36139732394f1a99f4bc5a5d698f47&hash=EB37BD21AD31454CE5E3CD5D317F2716.

National Energy Screening Project. National Standard Practice Manual Case Study: Minnesota. 2023. https://naseo.org/Data/Sites/1/media/documents/topics/Minnesota_NSPM-Case-Study_2023.pdf.

Natural Resource Canada. *Powering Canada Strong: A National Strategy for an Electrified Canadian Economy*. 2026. https://natural-resources.canada.ca/energy-sources/electricity-infrastructure/powering-canada-strong-national-strategy-electrified-canadian-economy.

NEEP. *Expanding the Energy Savings Pie: Attribution Frameworks to Align IRA Home Energy Rebates and State Programs*. Northeast Energy Efficiency Partnerships, 2024. https://neep.org/sites/default/files/media-files/neep_attribution_frameworks_ira_final.pdf.

Neme, Chris, and Marty Kushler. *Is It Time to Ditch the TRC? Examining Concerns with Current Practice in Benefit-Cost Analysis*. ACEEE Summer Study on Energy Efficiency in Buildings (2010). https://www.aceee.org/files/proceedings/2010/data/papers/2056.pdf.

New Brunswick Energy & Utilities Board. *NB Power 2026-2027 General Rate Application*. EL-003-2025. 2026. https://nbeub.ca/uploads/2026%2004%2001%20-%20EL-003-2025%20-%20Decision.pdf.

Newfoundland and Labrador Board of Commissioners of Public Utilities. *Order of the Board.* P.U. 33(2022). 2022. http://www.pub.nl.ca/PU/orders/2022/P.U.%2033(2022).PDF.

Nickerman, Luke, and Richard Aslin. *Cost-Effectiveness Adjustments: How Effective Have States Been At Recreating the PAC?* ACEEE Summer Study on Energy Efficiency in Buildings (2014). https://www.aceee.org/files/proceedings/2014/data/papers/8-1084.pdf.

Nova Scotia Energy Board. *Application by EfficiencyOne for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans*. No. M12282. 2025. https://www.canlii.org/en/ns/nserbt/doc/2025/2025nseb18/2025nseb18.html?resultId=c4d9829f6739473287b572f35e026973&searchId=2026-05-08T11:39:20:573/7d2949fb80494806abfe34fb42ec9c23.

Nova Scotia Energy Board. *Decision M12282: An Application by Efficiency One for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans*. 2025.

Nova Scotia Energy Board. *Order M12282: An Application by EfficiencyOne for Approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans*. 2025.

Nova Scotia Utility and Review Board. *2016-2018 Demand Side Management Resource Plan*. No. M06733. 2015. https://www.nspower.ca/docs/default-source/pdf-to-upload/2016-2018-dsm-plan---board-order.pdf?sfvrsn=95bca92e_0.

Nova Scotia Utility and Review Board. *An Application by EfficiencyOne for Approval for the Use of Measure-Level Non-Energy Benefits within the Context of Cost-Effectiveness Testing Associated with Future Demand Side Management (DSM) Planning Regulatory Processes*. No. M08888. 2020. https://canlii.ca/t/j6f4z.

Ontario Energy Board. *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*. 2026. https://engagewithus.oeb.ca/bcaframework.

Ontario Energy Board. *Decision and Order: Enbridge EB-2024-0198. Application for Approval of Natural Gas Demand Side Management Plan for 2026*. 2025. https://www.oeb.ca/node/5395.

Ontario Energy Board. *Filing Guidelines to the DSM Framework for Natural Gas Distributors (2015-2020): EB-2014-0134*. 2014. https://www.oeb.ca/oeb/_Documents/EB-2014-0134/Filing_Guidelines_to_the_DSM_Framework_20141222.pdf.

Régie de l'Énergie du Québec. D-2019-088 (R-4043-2018) Décision Aspect 2. 2019. https://www.regie-energie.qc.ca/fr/participants/dossiers/R-4043-2018/doc/R-4043-2018-A-0159-Dec-Dec-2019_07_31.pdf.

Roe, Haley. *Analysis of State Approaches to Cost-Effectiveness Testing: Efficiency Vermont R&D Project: Cost-Effectiveness Screening Tests.* 2021. https://www.efficiencyvermont.com/Media/Default/docs/white-papers/Analaysis_of_State_Approaches_to_Cost-Effectiveness_Testing.pdf.

Skumatz, Lisa A. "Efficiency Programs' Non-Energy Benefits: How States Are Finally Making Progress in Reducing Bias in Cost-Effectiveness Tests." *The Electricity Journal* 28, no. 8 (2015): 96–109. https://doi.org/10.1016/j.tej.2015.09.008.

Spector, Allison, and H. Gil Peach. "Natural Selection: The Evolution of DSM Valuation and Use of the UCT." *2014 ACEEE Summer Study on Energy Efficiency in Buildings*, 2014. https://www.aceee.org/files/proceedings/2014/data/papers/8-145.pdf.

Srivastava, Rohini, Emily Garfunkle, and Amber Wood. *Valuing Resilience Benefits in Utility Building Retrofit Programs.* ACEEE, 2024. https://www.aceee.org/sites/default/files/pdfs/b2402.pdf.

Stebbins, Gabrielle, and Chris Neme. *A Comparison of Clean Heat Standards: Current Progress and Key Elements.* February 2024. https://www.edf.org/sites/default/files/2024-03/Clean%20Heat%20Standards%20Report_FINAL%2002-2024.pdf.

Winfield, Mark, and Tatiana Koveshnikova. "An Efficient Balance? Applying the Total Resource Cost Test to Conservation and Demand Management Initiatives of Local Electricity Distribution Companies in Ontario: Assessment and Recommendations for Reform." *Studies in Ontario Electricity Policy Series Paper No. 3* (York University) Studies in Ontario Electricity Policy Series, no. Paper No. 3 (2009). https://sei.info.yorku.ca/files/2015/06/trc-web-final.pdf?x60126=.

Wolman, Jordan. "Healey Administration Pushes Back Clean Heat Standard to 2028 as Affordability Concerns Mount." *CommonWealth Beacon*, January 14, 2026. https://commonwealthbeacon.org/energy/healey-administration-pushes-back-clean-heat-standard-to-2028-as-affordability-concerns-mount/.