Demand as a Utility Resource

Legislative and implementation pathways to demand-side management

March 2026

Kari Hyde

PEMBINA Institute

PEMBINA Institute

Demand as a Utility Resource

Legislative and implementation pathways to demand-side management

Kari Hyde

March 2026

Contributors: Andrea Linsky, Alberta Ecotrust Foundation; Jesse Row, Alberta Energy Efficiency Alliance; Maureen Kolla and Terri-Lynn Duque, Energy Futures Lab

Recommended citation: Hyde, Kari. Demand as a Utility Resource: Legislative and implementation pathways to demand-side management. The Pembina Institute, 2026.

The Pembina Institute
#802, 322 – 11 Avenue SW
Calgary, AB T2R 0C5
403-269-3344

www.pembina.org

x.com/pembina

bsky.app/profile/pembina.org

facebook.com/pembina.institute

linkedin.com/company/pembina-institute/

The Pembina Institute is a national non-partisan think tank that advocates for strong, effective policies to support Canada's clean energy transition. We use our expertise in clean energy analysis, our credibility as a leading authority on clean energy, and our extensive networks to advance realistic climate solutions in Canada.

Donate

Together, we can lead Canada's transition to clean energy. Your gift directly supports research to advance understanding and action on critical energy and environmental issues. Canadian charitable number 87578 7913 RR 0001; pembina.org/donate

Acknowledgements

The Pembina Institute wishes to thank the Alberta Ecotrust Foundation for their generous support. The Alberta Ecotrust Foundation is a charity that leads and catalyzes climate action projects that enhance the well-being of Alberta's communities. It works collaboratively with diverse partners to deliver, fund, and enable innovative solutions that address pressing environmental challenges in the province. Alberta Ecotrust is a founding member of the Low Carbon Cities Canada network, a national initiative accelerating equitable climate solutions in cities. Alberta Ecotrust funded this research to identify and minimize barriers to retrofits, aiming to reduce emissions from existing buildings in Alberta and make retrofits more attainable.

The Pembina Institute recognizes that the work we steward and those we serve span the lands of many Indigenous Peoples. We respectfully acknowledge that our organization is headquartered in the traditional territories of Treaty 7, comprising the Blackfoot Confederacy (Siksika, Piikani and Kainai Nations); the Stoney Nakoda Nations (Goodstoney, Chiniki and Bearspaw First Nations); and the Tsuut'ina Nation. These lands are also home to the Otipemisiwak Métis Government (Districts 5 and 6).

These acknowledgements are part of the start of a journey of several generations. We share them in the spirit of truth, justice and reconciliation, and to contribute to a more equitable and inclusive future for all.

Contents

Tables

Executive summary

Demand-side management (DSM) programs are widely used across electricity systems to reduce peak demand and manage overall system costs by influencing electricity consumption. These programs typically include energy efficiency and demand response, as well as other demand-side resources that help electricity systems meet customer demand more efficiently. As electricity demand grows and grids evolve, many jurisdictions are expanding DSM as part of broader electricity system planning.

We assessed and compared DSM frameworks across four jurisdictions: Wisconsin, Ontario, California and Texas. This involved reviewing their legislative authority, institutional arrangements, governance structures and regulatory frameworks to understand how different jurisdictions legislate, support and evaluate DSM programs. We also examined Alberta as a baseline case since it currently has no formal DSM programs and explored how our findings from the comparative jurisdictions could be applied.

Key findings

- **DSM programs are established through legislation or ministerial direction**. Legislative authority defines the objectives of DSM programs and establishes the institutions responsible for program delivery, oversight and funding.
- **Institutional arrangements vary across jurisdictions.** DSM programs may be administered through centralized program administrators (Wisconsin), delivered directly by electric utilities under regulatory oversight (California and Texas), or implemented through a hybrid model where a central administrator leads overarching program design and procurement while distribution utilities support additional program delivery and local implementation (Ontario).
- **Regulatory oversight and program evaluation are core components of DSM frameworks.** Industry-standard cost tests are used in rate applications to consistently measure program cost effectiveness. Jurisdictions rely on program reporting; independent evaluation, measurement and verification; and periodic regulatory review to ensure that program outcomes are accurately measured and transparently reported.
- **Program funding approaches differ across jurisdictions.** DSM programs are funded through utility charges, centralized program budgets or regulatory cost-recovery mechanisms. While the source of funding is broadly similar, jurisdictions differ in how administrators are compensated. In some case, administrators recover approved

program costs only, while in others, additional incentive mechanisms are used to align program delivery with performance outcomes.

- **DSM programs have demonstrated measurable customer and overall system benefits.** DSM programs have resulted in reduced electricity consumption, reduced peak demand, avoided infrastructure investments and bill savings for all customer classes.

Insights for Alberta

Our assessment highlighted several structural elements that could inform future discussions on DSM legislation and implementation in Alberta. The jurisdictions examined demonstrate multiple approaches to program administration, regulatory oversight and program funding that could be adapted to different electricity system structures.

Key considerations for Alberta include establishing clear legislative authority for DSM programs, defining institutional responsibilities for program delivery and oversight, and designing regulatory frameworks that support effective funding, cost recovery, and administrator compensation. Cost-effectiveness testing is also critical to ensure that DSM programs deliver measurable value for consumers and the electricity system.

Abbreviations

CDM	Conservation and Demand Management
CPUC	California Public Utilities Commission
DER	Distributed energy resources
DSM	Demand-side management
EM&V	Evaluation, measurement and verification
ERCOT	Electric Reliability Council of Texas
IESO	Independent Electricity System Operator
LDC	Local distribution company
PACT	Program Administrator Cost Test
PUCT	Public Utility Commission of Texas
RIM	Ratepayer Impact Measure
TRC	Total Resource Cost
UCT	Utility Cost Test

1. Introduction

Electricity systems across North America have used demand-side management (DSM) programs for decades to influence how and when electricity is used.

DSM programs are utility programs or measures that aim to reduce overall electricity consumption, shift electricity use away from peak periods and improve energy efficiency. By doing so, they:

- improve system efficiency
- lower system and customer costs
- enhance grid reliability
- defer or avoid the need for investing in new generation and grid infrastructure

As electricity demand grows and electricity systems evolve, jurisdictions across North America are increasingly investing in DSM as a core component of broader electricity system planning. Alberta, however, does not currently have broad DSM programming.

In jurisdiction with DSM programs, their delivery varies. Understanding why and how these programs have been employed elsewhere, including the system objectives they were designed to achieve, can provide useful context for those considering how to implement DSM in Alberta's electricity system.

To facilitate DSM implementation, jurisdictions have developed legislative, regulatory and institutional frameworks that determine:

- who is responsible for delivering programs
- how programs are funded
- how program performance is evaluated and overseen

We assessed the DSM frameworks for several jurisdictions. This report summarizes and compares those findings and identifies elements that could inform how DSM programs are enabled and designed in Alberta. It is intended for policymakers, regulators, utilities and stakeholders involved in the development and oversight of Alberta's electricity system. This includes government decision-makers, the Alberta Utilities Commission, distribution utilities, retailers, system planners, consumer advocates and industry participants.

1.1 Defining DSM-related terms

Depending on the structure of the electricity system, DSM programs may be administered by distribution utilities, system operators or third-party program administrators, with program oversight generally provided by the energy regulator.

Because DSM programs encompass a range of approaches — including energy efficiency, demand response, load management, and distributed energy resources — this section clarifies how these terms are used in this report.

Energy efficiency programs: They support technologies or practices that reduce electricity use while maintaining the same level of service. Examples: high-efficiency heating and cooling equipment, building insulation improvements, high-efficiency industrial processing equipment.

Demand response programs: They temporarily reduce electricity demand during periods when the electricity system is under stress or approaching peak capacity. These programs are typically event-based and triggered by the electricity system operator or program administrator. Examples: commercial or industrial facilities temporarily reducing production load, residential smart thermostats automatically adjusting temperature settings during peak events, automated controls that briefly reduce electricity use in response to a grid signal.

Distributed energy resources (DERs): These are technologies that can reduce electricity demand from the grid, shift electricity consumption to different times of the day, and in some cases, supply electricity back to the grid. They are often contracted through third parties to participate in wholesale or local distribution capacity and reliability programs, including demand reduction programs. Examples: behind-the-meter solar panels; battery energy storage systems; electric vehicle infrastructure; smart technologies in homes, buildings and businesses.

2. Scope and methodology

We reviewed the following jurisdictions:

- Alberta (baseline)
- Wisconsin
- Ontario
- California
- Texas

Alberta was included in the comparator scan as a baseline jurisdiction since it does not currently have legislated or regulator-authorized DSM programs delivered through electric utilities.

Before the Electric Utilities Act coming into effect in 1996, early versions of DSM programs were delivered by individual, vertically integrated utilities in Alberta. With the transition to a competitive electricity market and the associated unbundling of generation, transmission, distribution and retail functions, responsibility for the customer experience became fragmented. The potential role of DSM programs in Alberta has been raised through utility rate applications for over a decade, with many distribution utilities requesting DSM program funding but with little success. More recently, DSM was referred to in the October 2025 mandate letter to the Alberta minister of Affordability and Utilities.

2.1 Analytical framework

To ensure consistency in our comparison of jurisdictions, we examined a common set of characteristics describing how DSM programs are enabled and administered. These characteristics were grouped into four themes:

- **Legislative authority and institutional characteristics:** Describes the policy drivers and legislative authority that underpin DSM programs, including the policy context that led to their implementation, the statutory authorities enabling program delivery, and the roles of key organizations involved.
- **Governance and operational responsibilities**: Examines the organizations responsible for supervising DSM programs and the oversight mechanisms used to monitor performance.
- **Regulatory and financial frameworks**: Describes how DSM programs are funded, program administrators compensated, and program costs treated within the regulatory framework.

- **Program outcomes and consumer protections:** Examines the impacts of DSM programs on electricity system customers and overall system performance, including the outcomes achieved. This theme also considers how program performance is evaluated and how financial and performance risks are managed.

The different characteristics assessed, arranged according to theme, are summarized in Table 1.

Table 1. Analytical framework used to compare DSM programs across jurisdictions

Theme	Characteristic	Description
Legislative authority and institutional characteristics	Trigger/origin	The policy, market or system conditions that led to the introduction or expanded use of DSM programs.
	Legislative authority and evolution	The statutory authorities that enable DSM programs and their development over time.
	Institutional characteristics	Key structural features of the electricity system that shape how DSM programs are implemented.
	Other roles and responsibilities	The organizations responsible for supporting DSM program implementation within the institutional structures of the electricity system.
Governance and operational responsibilities	Regulatory authority	The entity responsible for regulatory approval, oversight and supervision of DSM programs, including establishing program requirements and performance targets.
	Oversight and accountability	The regulatory and reporting mechanisms used to monitor program performance and ensure program administrators meet established requirements.
Regulatory and financial frameworks	Ratemaking framework	The regulatory approach used to determine how DSM programs are treated within electricity rate regulation, including how program costs and performance are reflected in utility rate-setting processes.
	Remuneration framework	The mechanisms used to compensate or incentivize program administrators for implementing DSM programs.
	Cost recovery treatment	The method used to recover DSM program costs from electricity customers and allocate those costs within the electricity system.

Theme	Characteristic	Description
Program outcomes and consumer protections	Customer and system benefits	The intended outcomes of DSM programs for electricity customers and the overall electricity system.
	Risk allocation	The measures used to distribute financial and performance risks associated with DSM programs among program participants.

.

3. Why DSM programs were introduced

The jurisdictions we reviewed introduced DSM programs under different conditions. In some cases, programs were established through legislative mandates intended to maintain or expand energy efficiency programs. In others, DSM programs emerged during periods of electricity market restructuring or in response to supply challenges. Several jurisdictions have also used DSM programs to manage system costs and moderate demand growth.

The sections below summarize the circumstances that led to the introduction of DSM programs in each jurisdiction.

3.1 Wisconsin

Wisconsin introduced statewide energy efficiency programs during electricity sector restructuring in the late 1990s. At the time, policymakers were concerned that energy efficiency programs, historically delivered by vertically integrated utilities, might decline as the electricity sector separated into functional components, reducing the services provided to participating customers and increasing costs for ratepayers.

In response, the Wisconsin legislature passed legislation in 1999 establishing the Focus on Energy program. The program created a statewide structure for delivering energy efficiency and renewable energy programs and ensured that cost-effective efficiency investments would continue regardless of changes in electricity market structure.

3.2 Ontario

Ontario introduced province-wide conservation and demand management programs amid electricity supply constraints and rising electricity demand in the early 2000s, which spurred concern about the need for additional generation capacity.

To address these pressures, the Ontario government implemented policies requiring cost-effective electricity conservation programs and assigned responsibility for program delivery to electricity system entities, including local distribution utilities. Over time, responsibility for administering these programs shifted to the Independent Electricity System Operator (IESO), which now administers province-wide conservation programs with support from local distribution utilities.

3.3 California

California expanded DSM programs during a period of electricity market restructuring and an electricity crisis, which occurred between 2000 and 2001. The crisis was marked by electricity supply shortages, price volatility, and rolling blackouts across the state.

California policymakers and regulators responded by expanding energy efficiency and demand response programs as part of broader efforts to improve system reliability and reduce peak demand. DSM programs have since become a central component of California's electricity system.

3.4 Texas

Texas introduced statewide demand-side programs during the restructuring of its electricity sector in the late 1990s. As part of this restructuring, the state moved to a competitive market for electricity generation and established the Electric Reliability Council of Texas (ERCOT) as the operator of the wholesale electricity market.

During the transition, policymakers established requirements for investor-owned utilities to deliver energy efficiency programs to reduce electricity demand growth. These programs included both energy efficiency measures and demand response measures within utility portfolios, recognizing their complementary roles in reducing consumption and managing peak demand. Within the ERCOT market, demand response programs were also developed to help manage peak electricity demand and support system reliability during periods of high electricity use.

4. Legislative authority and institutional characteristics

The jurisdictions reviewed have established legislative and regulatory frameworks that enable the implementation of demand-side management programs as an energy resource within the utility system. These frameworks define the legal authority for DSM programs and identify the institutions responsible for program development, delivery, and oversight. The legislative frameworks may also establish program objectives, authorize funding mechanisms, and assign responsibility for program performance and cost effectiveness.

4.1 Legislative authority

Table 2 sets out the legislative foundation for the current DSM programs in the various jurisdictions. While some jurisdictions already had demand-side activities, the statutes cited in the table formalized, expanded or institutionalized DSM as a core component of electricity system planning. They established the authority, funding structures and governance frameworks for sustained program delivery and ongoing investment.

Table 2. Statutory foundation enabling DSM programs

Jurisdiction	Statute	Legislative direction	Institutional outcome
Wisconsin	Wisconsin Statutes, s. 196.374(2)(a)1	"The energy utilities in this state shall collectively establish and fund statewide energy efficiency and renewable resource programs."	Established the statewide Focus on Energy program funded through utility charges and administered under state oversight.
Ontario	Electricity Act, 1998, c. 15, ss. 25.32 and 25.35	"The IESO may engage in activities to promote electricity conservation and demand management" "The Minister may issue directives to the IESO."	Conservation and demand management programs administered by the IESO under ministerial direction (e.g., Conservation First Framework). (Order in Council 1749/2021)

Jurisdiction	Statute	Legislative direction	Institutional outcome
California	California Public Utilities Code, ss. 381 and 454.5(b)(9)(c)	Utilities must first meet electricity demand through "all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible."	Investor-owned utilities deliver energy efficiency and demand response programs under CPUC oversight.
Texas	Texas Utilities Code, s. 39.905	"Each electric utility in this state shall administer energy efficiency incentive programs."	Public Utility Commission of Texas rules establish energy efficiency and demand response targets and program requirements for utilities.

4.1.1 Evolution of legislative authority

The DSM frameworks in Table 2 have evolved over time. Subsequent legislative amendments, regulatory decisions and policy directives have expanded program scope, refined governance structures and increased program investment, reflecting the growing role of DSM in electricity system planning and operations.

Wisconsin

Legislative and regulatory updates to the Focus on Energy program since its creation in 1999 have refined program governance, strengthened program evaluation requirements, and increased funding levels over successive program cycles. The program is implemented through multi-year planning periods, which provide a structured approach to setting targets, allocating budgets and evaluating program performance.

Program participation has also expanded across the state. While investor-owned utilities are *required* to collect funds for the program, most municipal utilities and electric cooperatives have *elected* to participate in the statewide program or offer complementary programs, broadening access to customers across different utility types.

Program oversight has also evolved, with increased emphasis on independent evaluation, measurement and verification (EM&V) to assess program outcomes and ensure accountability for program performance. This has supported the continued expansion of DSM as a cost-effective resource within Wisconsin's electricity system.

Ontario

Ontario's conservation and demand management framework has been revised through successive ministerial directives issued under the Electricity Act, 1998. These directives have periodically updated program design, funding structures and delivery responsibilities.

Local distribution utilities were initially responsible for administering conservation programs. Through the Electricity Act, this responsibility was transferred to the IESO, which now administers province-wide conservation and demand management programs with support from distribution utilities.

Program investment has expanded as conservation has become a larger component of electricity system planning. Ontario's 2020–2024 Conservation and Demand Management (CDM) framework authorized approximately $1 billion in program funding. Subsequent planning has identified around $10.9 billion in conservation investment through 2036 as part of Ontario's long-term strategy for managing electricity demand and reducing system costs.

Recent policy changes in Ontario have strengthened the role of non-wires solutions in distribution system planning. Amendments under Bill 214, Affordable Energy Act, 2024, shifted distribution planning requirements from traditional long-term distribution plans to integrated resource planning. This allows local distribution companies to consider distributed energy resources, demand response and other demand-side solutions alongside conventional infrastructure investments.[1] The Ontario Energy Board's 2024 Non-Wires Solutions Guidelines further supports this approach, enabling local distribution companies (LDCs) to earn up to 25% of the net benefits associated with approved non-wires solutions projects.[2]

California

California has progressively expanded the role of demand-side resources within electricity system planning. Provisions in the California Public Utilities Code require utilities to prioritize energy efficiency and demand reduction resources to meet electricity demand, establishing DSM as a preferred approach in the state.

Subsequent regulatory decisions by the California Public Utilities Commission have refined program rules, strengthened cost-effectiveness testing requirements, and established long-term

[1] Ontario Legislative Assembly, *Bill 214, An Act to amend various statutes with respect to energy and electricity*, S.O. 2024, c. 26. https://www.ola.org/en/legislative-business/bills/parliament-43/session-1/bill-214

[2] Ontario Energy Board, *Non-Wires Solutions Guidelines for Electricity Distributors* (2024). https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2024-04/OEB_2024%20NWS%20Guidelines_20240328.pdf

energy efficiency savings targets for utilities. These decisions have supported the expansion of utility-administered program portfolios and increased the scale of DSM investment.

California's DSM framework has also evolved to incorporate a broader range of demand-side resources, including distributed energy resources, within both utility program portfolios and electricity system planning processes. Program delivery has increasingly relied on third-party implementers and DER aggregators operating under utility contracts, supporting market participation while maintaining regulatory oversight and accountability for program performance.

Texas

Texas introduced utility-administered energy efficiency programs through legislative reforms associated with electricity market restructuring. Since then, the Public Utility Commission of Texas (PUCT) has periodically revised program rules and energy efficiency targets to expand program scope and improve program performance.

Although utilities are required to administer energy efficiency programs, they may also develop demand response initiatives at the distribution level. Demand response is an established component of Texas's demand-side framework, including through load management programs within utility portfolios.

More recent legislative updates have expanded the role of demand response and enabled comprehensive participation in program delivery. Amendments introduced in 2023 established requirements to support residential demand response and explicitly allow demand response providers to contract with retail electricity providers to deliver programs. This reflects continued movement to market-integrated demand-side approaches that incorporate distribution utilities, retailers and third-party providers.[3]

[3] Texas Legislature, *Texas Constitution and Statutes, Utilities Code*, c. 39. https://statutes.capitol.texas.gov/?tab=1&code=UT&chapter=UT.39&artSec=39.919

Funding of legislated programs

Examples of funding levels for DSM programs are shown in Table 3 to illustrate the scale of program investment for the above jurisdictions.

Table 3. Examples of DSM program funding levels for assessed jurisdictions

Jurisdiction	DSM program funding level
Wisconsin	Focus on Energy program funding typically ranges from around $95 to $100 million annually, secured through utility charges.[4]
Ontario	The 2021–2024 Conservation and Demand Management Framework has a budget of just over $1 billion (enabled by a $342 million increase to the original budget of $692 million),[5] with approximately $10.9 billion in conservation investment planned from 2025 through 2036.[6]
California	The California Public Utilities Commission has approved investor-owned utility energy efficiency portfolios of $4.3 billion for 2024–2027 and a forecasted budget of $4.6 billion for 2028–2031.[7]
Texas	Utility-administered energy efficiency programs collectively spend approximately $110 million annually.

We not only examined funding levels but evaluated cost-effectiveness as well. We found that program benefits greatly exceeded program expenditures, indicating that **DSM programs are a cost-reducing resource rather than a net expense to the system.** For example, in Wisconsin, annual program investments delivered more than double the value to the electricity system and customers. Additional information on program outcomes is provided in section 7.1.

[4] Public Service Commission of Wisconsin, *Public Service Commission Report to the Legislature: Energy Efficiency and Renewable Resource Program Activities in Wisconsin* (2024), 7. https://psc.wi.gov/Documents/Reports/2024_ReportToTheLegislature.pdf

[5] Independent Electricity System Operator, "2021–2024 Conservation and Demand Management Framework." https://www.ieso.ca/Sector-Participants/Energy-Efficiency/2021-2024-Conservation-and-Demand-Management-Framework

[6] Government of Ontario, *2025–2036 Electricity Energy Efficiency Framework*. https://ero.ontario.ca/notice/019-9235

[7] California Public Utilities Commission, "CPUC Adopts Milestone Investment in Energy Efficiency." https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-adopts-milestone-investment-in-energy-efficiency-2023

4.2 Institutional characteristics

The legislative frameworks determine which institutions are responsible for administering DSM programs and how those programs are delivered.

Several different institutional models are used across the jurisdictions reviewed. In some jurisdictions, programs are administered through centralized statewide or province-wide program administrators, while in others electric utilities administer and deliver programs directly to their customers. System operators may also play a role in coordinating conservation initiatives across the electricity system. In all cases, regardless of institutional model, DSM programs operate under a regulator's oversight, with the regulator approving programs and budgets, monitoring performance and ensuring accountability.

Wisconsin

In Wisconsin, energy efficiency programs are delivered through a centralized statewide program administrator. The Focus on Energy program is overseen by the Public Service Commission of Wisconsin, which establishes program requirements, approves program budgets and manages evaluation of program performance.

Utilities fund the statewide program through charges applied to electricity and natural gas customers. These funds are then administered through Focus on Energy.

Municipally owned utilities and electric cooperatives may elect to participate in the statewide program. The utilities that choose to participate in the Focus on Energy program, collect and remit funds to the program administrator. Utilities that choose not to participate directly in the statewide program may administer their own programs consistent with statutory requirements and regulatory oversight.

The Focus on Energy program does not administer demand response programs. Instead, they are administered directly through distribution utilities or through the regional wholesale electricity market mechanisms operated by the Midcontinent Independent System Operator.

Ontario

In Ontario, conservation and energy efficiency programs are designed and administered by the IESO under ministerial direction. LDCs may support program delivery and customer engagement activities.

Demand response resources primarily participate through IESO-administered market mechanisms, including demand response auctions that allow aggregators and large electricity consumers to reduce electricity use during periods of peak demand. In addition, programs such

as the Industrial Conservation Initiative incentivize large industrial customers to reduce consumption during peak demand periods.

LDCs may also develop or participate in localized demand response or load management initiatives, although these activities are not mandated through the same provincial framework governing conservation programs.

California

In California, energy efficiency and demand response programs are administered primarily by investor-owned utilities under the oversight of the California Public Utilities Commission (CPUC). The CPUC establishes program rules, approves program budgets and evaluates program performance, while utilities are responsible for implementing programs and working directly with customers.

Many municipal utilities operate outside the jurisdiction of the CPUC and may design and administer their own DSM programs that are consistent with statewide energy policy objectives.

Demand response programs are also delivered through utility-administered portfolios approved by the CPUC. In addition, demand-side resources may participate in wholesale electricity markets administered by the California Independent System Operator, where these resources can provide services that support system reliability and grid balancing.

Texas

In Texas, energy efficiency programs are administered by investor-owned transmission and distribution utilities, in accordance with requirements by the PUCT. Utilities must meet energy efficiency targets and administer programs designed to reduce electricity demand growth.

Demand response participation occurs primarily through the wholesale electricity market mechanisms administered by ERCOT. These mechanisms allow demand-side resources to reduce electricity consumption during periods of high system demand.

Utilities may also develop local demand response or load management initiatives at the distribution level. These are implemented under the same statutory framework governing system-wide utility energy efficiency programs.

4.3 Other operational roles

In addition to the main program administrators described above, several other organizations support the implementation of DSM programs. They may assist with program delivery, customer engagement, electricity system operations or program evaluation. While their roles

vary by jurisdiction, they contribute to the broader institutional ecosystem through which DSM programs are delivered, monitored and evaluated.

Municipal utilities and electric cooperatives

As indicated earlier, in Wisconsin and California, municipally owned utilities and electric cooperatives may volunteer to participate in DSM programs. They can either participate in statewide program frameworks or operate independent programs tailored to their customers and system needs.

Third-party program implementers and aggregators

Many DSM programs rely on third parties to design and deliver program services directly to customers, including customer engagement and installation support. In some jurisdictions, they also aggregate customer demand response resources, allowing multiple customers to collectively provide load reductions to DSM programs or electricity markets.

In California, utilities commonly contract with third-party implementers to deliver program services under utility-administered energy efficiency and demand response portfolios.

In Ontario, the IESO typically contracts third-party providers to deliver conservation or demand response services and aggregate customer load within IESO program frameworks.

In Wisconsin, third-party implementers deliver energy efficiency programs under the Focus on Energy administrator model.

In Texas, third-party providers and aggregators support demand response participation, including through utility-led and market-based mechanisms.

These arrangements allow program administrators to scale program delivery while leveraging specialized service providers.

Retail electricity providers

In jurisdictions with competitive markets for electricity generation, retail electricity providers primarily sell electricity supply to customers and manage retail electricity contracts.

Retailers generally do not administer legislated DSM programs. However, they can offer value-added services like energy management tools, energy efficient products or demand response offerings to customers.

In Texas, retail electricity providers compete for customers in the retail electricity market, but do not administer the core utility energy efficiency programs. However, recent legislative updates have expanded the retailers' role in demand response, allowing retailers to offer

demand response programs to customers, and in some cases, access funding through utility-administered energy efficiency program frameworks, subject to regulatory requirements. As a result, retailers can participate in DSM delivery through demand response while remaining distinct from the regulated utility-administered program structure.

System operators

System operators may integrate demand-side resources into electricity system operations. For instance, ERCOT operates wholesale electricity markets that allow demand response resources to participate in load reduction programs designed to support system reliability during periods of high electricity demand. Similarly, the California Independent System Operator enables demand response and distributed energy resources to participate in wholesale market operations.

These functions are separate from utility-administered DSM programs but enable demand-side resources to contribute to system reliability and grid balancing using complementary approaches.

5. Governance and operational responsibilities

Once legislative authority is established and institutional structures are in place, DSM programs operate within governance frameworks that assign operational responsibilities, set regulatory requirements and monitor program performance.

We examined key elements of program governance, including regulatory authority, program targets, and mechanisms for oversight and accountability. These elements determine how DSM programs are administered in practice and how performance is monitored over time.

5.1 Regulatory authority

Regulators in several jurisdictions established program rules and performance targets for implementation of DSM programs. These targets provide direction for program administrators and utilities and create a basis for evaluating performance.

While our jurisdictional analysis focused on governance structures rather than specific performance metrics, the examples below illustrate the types of program targets used.

- **Wisconsin:** The Public Service Commission sets energy savings goals for the Focus on Energy program. Recent program cycles have included electricity savings targets in the range of 1.2-2.4% of retail electricity sales annually.[8]
- **Ontario:** The IESO, under ministerial direction, establishes conservation program targets through the CDM framework. Ontario's 2020–2024 CDM framework had a target of around 3.8 terawatt-hours of electricity savings per year.[9]
- **California:** The state has adopted long-term policy targets to significantly expand energy efficiency. The Clean Energy and Pollution Act of 2015 required California to double energy efficiency savings by 2030, which would reduce projected electricity demand roughly 25% over 15 years (an average of 1.7% per year).[10]

[8] Billtrack 50, "WI SB869." https://www.billtrack50.com/billdetail/1947351

[9] Independent Electricity System Operator, *2021–2024 Conservation and Demand Management Framework: Mid-Term Review*, 2. https://www.ieso.ca/-/media/Files/SaveOnEnergy/2021-2024-Conservation-and-Demand-Management-Framework-Mid-Term-Review.pdf.

[10] Natural Resources Defense Council, *California's Golden Energy Efficiency Opportunity* (2016). https://www.nrdc.org/sites/default/files/ca-energy-efficiency-opportunity-IB.pdf

- **Texas:** The PUCT establishes energy efficiency targets that utilities must meet. Currently utilities are required to achieve annual energy savings equivalent to about 0.4% of summer peak demand growth.[11]

5.2 Oversight and accountability

Oversight and accountability mechanisms ensure that DSM programs operate as intended, and that program results are transparently evaluated. Our jurisdictional review found that regulatory oversight typically includes program reporting requirements, independent evaluation of program results, and periodic regulatory review of program performance.

Program administrators are generally required to report on program activities, expenditures, and measured energy savings. These reporting requirements allow regulators or system operators to monitor program implementation and assess whether programs are achieving established objectives.

The specific oversight structure varies across jurisdictions but usually includes formal program approvals, periodic regulatory filings or submissions of multi-year program plans, independent evaluation of program results, and public reporting on program performance.

- **Wisconsin:** The Public Service Commission oversees the Focus on Energy program and requires regular reporting and independent evaluation of program results. Program performance is reviewed through structured regulatory processes, including four-year program plans, budget approvals, and periodic evaluations aligned with program cycles.
- **Ontario:** The IESO administers conservation programs and conducts program reporting and evaluation activities. Program performance and results are subject to oversight through regulatory and government reporting requirements, including through the multi-year CDM framework.
- **California:** The CPUC oversees utility-administered energy efficiency and demand response programs. Utilities are required to file program portfolios for approval, report program results, and participate in comprehensive EM&V processes to verify energy savings and assess program effectiveness.
- **Texas:** The PUCT reviews utility-administered energy efficiency and demand response programs and requires utilities to report program performance, including verified energy savings. Independent evaluation processes are used to assess program outcomes and confirm compliance with program requirements.

[11] Public Utility Commission of Texas, "Energy Efficiency Goal," *Texas Administrative Code*, s. 25.181. https://ftp.puc.texas.gov/public/puct-info/agency/rulesnlaws/subrules/electric/25.181/25.181.pdf

6. Regulatory and financial frameworks

6.1 Ratemaking framework

We examined how DSM programs are funded, how program administrators are compensated and how program expenditures are treated within electricity regulatory frameworks. Across the jurisdictions reviewed, DSM programs are commonly funded through charges applied to electricity customers, but the structure of these charges varies.

In some jurisdictions, program funding is collected through dedicated system charges that flow through customer bills and are transferred directly to program administrators. In others, program budgets are approved through regulatory proceedings and incorporated into utility revenue requirements, allowing utilities to recover program expenditures through regulated electricity rates.

Ratemaking frameworks determine how electricity rates are established and how DSM program funding is incorporated into regulated electricity charges.

- **Wisconsin:** Energy efficiency programs are funded through a statewide Public Benefits Charge applied to electricity and natural gas customers. Utilities collect the charge through customers' bills and transfer the funds to the Focus on Energy program administrator as a flow-through.
- **Ontario:** Conservation programs administered by the IESO are funded through electricity system charges recovered from ratepayers through Ontario's Global Adjustment mechanism. The Ontario Energy Board recently clarified that non-wires solutions are treated the same as other distribution system expenditures for ratemaking purposes, with costs assigned as capital or operating expenditures in accordance with standard utility accounting and recovered through established rate-setting processes.[12]
- **California:** Energy efficiency and demand response programs administered by investor-owned utilities are funded through program budgets approved by the CPUC and incorporated into regulated electricity rates.
- **Texas:** Energy efficiency programs administered by transmission and distribution utilities are funded through charges approved by the PUCT and recovered through regulated electricity rates.

[12] Ontario Energy Board, *Non-Wires Solutions Guidelines for Electricity Distributors*.

6.2 Remuneration and cost recovery framework

Remuneration and cost recovery frameworks describe how organizations responsible for delivering DSM programs are compensated for program administration and implementation and how program expenditures are treated. We found that DSM program expenditures are mostly treated as program costs rather than regulated utility capital investments. Utilities or program administrators recover approved administrative and program delivery costs, and the extent to which utilities may earn performance-based incentives varies.

Wisconsin

Energy efficiency programs are delivered through the Focus on Energy program rather than directly by utilities. Investor-owned utilities collect and transfer funds through the Public Benefits Charge and may recover those administrative costs. Program delivery is handled by a contracted program administrator operating under a budget approved by the Public Service Commission of Wisconsin. Utilities do not receive returns on program expenditures or performance-based incentives tied to DSM outcomes.

Demand response programs are administered separately by utilities and integrated into their tariffs and operations. Cost recovery and associated financial treatment for these programs follow standard rate-setting processes.

Ontario

Conservation programs are administered by the IESO. LDCs may support program delivery but do not receive performance-based incentives tied to conservation outcomes. LDCs that participate in program implementation may recover approved administrative and program delivery costs.

Demand response and other flexible demand resources are typically compensated through IESO-administered contracts, which may include availability and performance-based payments. These payments are contractual rather than rate-base returns, and distributor earnings remain tied to general rate-setting structures rather than DSM performance.

Recent regulatory updates in Ontario introduced a targeted incentive for LDCs to implement non-wires solutions, allowing distributors to earn a financial margin of up to 25% on approved third-party DER projects used to meet distribution system needs, subject to cost-effectiveness tests and regulatory approval.[13]

[13] Daliana Coban, Ian T.D. Thompson, Daniel Gralnick, and David Ingalls, “Regulatory incentives for Ontario distributors to encourage DER integration through non-wires solutions,” *TORYS*, December 15, 2025.

California

Investor-owned utilities administer and deliver energy efficiency and demand response programs and recover approved program administration and implementation costs through regulated electricity rates.

California's regulatory framework allows certain distributed energy resource and grid investments tied to demand-side resources to be considered within distribution planning processes. Where appropriate, these qualify as capital investments recoverable through utility rate structures.

California also uses performance-based incentive mechanisms for energy efficiency portfolios. Utilities may receive additional incentives based on verified energy savings performance and portfolio cost-effectiveness. These incentives are designed to align utility financial outcomes with demand-side performance objectives.

California operates under full revenue decoupling, meaning utility revenues are not directly tied to electricity sales volumes. This ensures utilities are not financially penalized when energy efficiency programs reduce electricity consumption as intended.

Texas

Transmission and distribution utilities administer energy efficiency programs. Utilities recover approved program costs, including administrative expenses and payments made to participating customers. Program expenditures are treated as operating costs and are not capitalized as utility infrastructure.

Utilities may also administer demand response initiatives at the distribution level. Costs associated with these programs, including customer incentive payments, are recovered through regulated rates.

https://www.torys.com/our-latest-thinking/publications/2025/12/regulatory-incentives-for-ontario-distributors-to-encourage-der-integration

7. Program outcomes and consumer protections

7.1 Program outcomes

We reviewed the reported outcomes of DSM programs in each jurisdiction, which were assessed using cost-effectiveness tests and program evaluation processes established by regulators or program administrators within those jurisdictions.

Cost-effectiveness tests determine whether demand-side programs deliver benefits that exceed their costs. These tests compare program expenditures and participant costs against the avoided costs of supplying electricity, such as avoided generation, transmission and distribution investments. Regulators use these tests to screen proposed programs, evaluate program portfolios and ensure that program spending delivers value for electricity consumers and the electricity system.

Different jurisdictions use different cost-effectiveness tests depending on regulatory objectives. Some tests focus mostly on electricity system costs by comparing program costs to avoided supply costs. Others incorporate participant costs and benefits, as well as broader economic impacts and societal benefits. While some tests evaluate the effects of programs on electricity rates. As a result, multiple tests may be used within a jurisdiction to assess various aspects of program performance.

Table 4 summarizes several commonly used cost-effectiveness tests that we came across during our assessment and the outcomes they assess.

Table 4. Common cost-effectiveness tests used to evaluate DSM programs

Cost-effectiveness test	Main purpose	Outcomes or benefits evaluated	Limitations / considerations
Total Resource Cost (TRC) test	Evaluates DSM programs from a total system perspective by comparing program and participant costs to avoided electricity system costs.	Avoided generation costs, avoided transmission and distribution investments, energy savings, and peak demand reductions.	Often modified or expanded by regulators to include additional benefits, such as environmental impacts, economic benefits or avoided emissions. Results can vary depending on which benefits are added.

Cost-effectiveness test	Main purpose	Outcomes or benefits evaluated	Limitations / considerations
Societal Cost Test	Evaluates DSM programs from a broader societal perspective by incorporating economic and environmental impacts beyond the electricity system.	Avoided energy supply costs and societal benefits such as emissions reductions, public health improvements and broader economic impacts.	Requires assumptions about the value of societal benefits, which can vary across jurisdictions and policy frameworks.
Program Administrator Cost Test (PACT)	Evaluates cost-effectiveness from the perspective of the program administrator or utility by comparing program costs to avoided electricity system costs.	Avoided electricity system costs, such as generation, transmission and distribution investments, compared to delivery costs.	Excludes participant costs and broader economic or societal benefits.
Utility Cost Test (UCT)	Similar to PACT, focuses specifically on utility expenditures compared to avoided system costs. In many jurisdictions, PACT and UCT are used interchangeably.	Avoided electricity system costs, such as generation, transmission and distribution investments, compared to delivery costs.	Excludes participant costs and broader economic or societal benefits.
Ratepayer Impact Measure (RIM)	Evaluates potential impacts of DSM programs on electricity rates for non-participating customers.	Impact of program costs and reduced electricity sales on electricity rates.	Generally undervalues programs that reduce overall system costs but reduce utility sales revenues.
Savings-to-Investment Ratio	Compares the value of energy savings to the cost of program investments. Often used for targeted programs such as energy efficiency initiatives for low-income households.	Energy savings relative to program spending.	Typically used for specific program types rather than full program portfolios.

Data source: Snuller Price, Cost-effectiveness Tests 'Current Practice"

The jurisdictions we evaluated varied in the cost-effectiveness tests they rely on to evaluate their DSM programs. Wisconsin primarily uses a modified TRC. Ontario relies on PACT. California uses multiple tests, including TRC and PACT. Finally, Texas evaluates programs using UCT and RIM.

Wisconsin

Wisconsin's Focus on Energy program has produced substantial system and customer benefits over multiple program cycles. For the 2019–2022 program period, the program generated approximately $2.55 billion in life cycle benefits (i.e., the total value of energy savings and avoided electricity system costs over the expected lifetime of installed efficiency measures). Every $1 invested returned $2.42 in direct system benefits and $4.54 when broader economic impacts were included. These results reflect the program's ability to reduce consumption and peak demand while avoiding electricity system costs and generating measurable economic benefits for consumers and the state economy.

Program outcomes (2019–2022)

- TRC: $2.42
- Modified TRC: $4.54
- Demand reduction: 88.6 MW
- Life cycle electricity savings: 9,656 GWh
- Avoided system costs: $1.104 billion
- Participant savings: $3.9 billion
- Disposable income gains: $2.2 billion (the added household spending power when customers spend less on energy costs)
- Jobs: 20,606

Ontario

Ontario's CDM programs have reduced electricity use and peak demand while avoiding electricity system costs. Under the 2021–2024 CDM framework, around 3.57 terawatt-hours of electricity were saved and peak demand was reduced by 604 megawatts. Each dollar invested generated about $2.32 in avoided electricity supply costs, demonstrating the effectiveness of conservation in managing system demand and limiting the need for new generation and infrastructure.

Program outcomes (2021–2024)

- PACT: $2.32
- Electricity savings: 3.57 TWh
- Peak demand reduction: 604 MW
- Levelized unit energy cost: $0.02/kWh saved
- CO_2 emissions avoided: 207,660 tonnes

California

California's demand-side program delivers both long-term energy savings and large-scale peak demand flexibility. For the period 2021–2023, permanent peak demand was reduced around 330 MW through energy efficiency programs, and a further 6,410 MW of event-based demand response capability was available to support grid reliability during periods of high electricity demand. These programs also provided substantial customer and environmental benefits.

The programs were evaluated using TRC, PACT and Total System Benefit.

Program outcomes (2021–2023)

- Natural gas savings: 143.6 million therms
- Permanent peak demand reduction 330 MW
- Event-based demand response capability: 6,410 MW
- CO_2 avoided: 1.3 million tonnes
- Example portfolio impact: $3.46 billion in estimated lifetime customer bill savings under Southern California Edison's 2023 efficiency portfolio

Texas

Energy efficiency and load management programs in Texas focus on reducing peak electricity demand and improving system reliability during periods of high electricity use. Results from 2024 revealed an estimated 412 MW reduction in peak demand through load management programs and 197 MW of lifetime demand reduction from energy efficiency measures. These programs also saved 699 GWh of electricity, reducing overall electricity consumption while improving system reliability.

Program costs for 2024 showed that energy efficiency programs delivered both energy savings and peak capacity reductions at relatively low cost. These costs were reported using two complementary metrics that reflect the different types of system benefits delivered by demand-side programs. Energy savings are measured using the cost per kilowatt-hour saved, while demand reduction is measured using the cost per kilowatt of peak demand avoided.

Program outcomes (2024)

- Energy efficiency demand reduction: 197.34 MW
- Load management peak reduction: 411.94 MW
- Electricity savings: 699 GWh

- Program costs
  - $0.026 per kWh saved (ERCOT utilities)
  - $14.10 per kW lifetime demand reduction
- Equity-focused outcomes
  - Low-income households served: 33,408
  - Demand reduction: 41 MW (from programs serving low-income and hard-to-reach households)

7.2 Consumer protections

Jurisdictions with DSM programs rely on multiple oversight mechanisms to ensure that program costs are justified and that expected benefits are realized. These mechanisms include cost-effectiveness screening, regulatory review processes, and EM&V requirements.

Multi-year and integrated planning frameworks assess proposed programs before implementation, while ongoing regulatory oversight and EM&V processes verify that programs deliver their intended benefits. In many jurisdictions, program results are independently evaluated or reviewed. These processes help ensure transparency and accountability in program delivery and limit financial risk to consumers.

As stated previously, jurisdictions like California also incorporate performance incentive mechanisms to align utility performance with program outcomes. Under this approach, utilities may receive financial incentives for exceeding performance targets, while underperformance may result in penalties. By linking compensation to measured outcomes, performance incentives shift a portion of performance risk from customers to utilities while strengthening accountability for effective program delivery.

8. Summary of findings

We identified several common elements across the jurisdictions reviewed. Despite differences in electricity market structures and institutional arrangements, each had clear legislative authority, governance structures, and regulatory frameworks that integrate DSM programs into electricity system planning.

DSM programs were introduced to enhance system reliability, manage peak demand, and reduce overall electricity system costs. Legislative frameworks authorize regulators, utilities or system operators to administer programs, establish funding mechanisms, and oversee program performance.

Institutional arrangements for program delivery vary. Some jurisdictions rely on centralized program administrators, while others assign program administration to electric utilities under regulatory oversight. Additional roles may be played by municipal utilities, cooperatives and third-party implementers, depending on the structure of the electricity system.

In most cases, DSM programs are funded through electricity system charges or regulated electricity rates. Program outcomes are assessed using cost-effectiveness tests and independent evaluation, measurement and verification processes to confirm energy savings, demand reductions and other system benefits.

These findings highlight the range of approaches used to enable DSM programs and provide useful context for considering how similar elements could be applied to Alberta's electricity system.

9. Insights for Alberta

While Alberta does not currently have utility-administered DSM programs, many of the legislative, institutional and regulatory components observed in other jurisdictions could be adapted to Alberta's market structure and regulatory framework, including approaches that deliver both system-level efficiencies and direct customer benefits.

9.1 Benefits of DSM

Utility benefits: DSM programs can deliver measurable benefits that align with Alberta's electricity system objectives, including lower system costs, reduced consumers costs, improved grid reliability and reduced electricity demand. Alberta could incorporate cost-effective DSM into broader electricity system planning and operations to manage growing demand and support an evolving electricity system.

Customer and broader economic benefits: DSM programs deliver benefits to both participating and non-participating customers. Participating customers may directly gain through reduced energy use, lower electricity bills, and access to incentives or enabling technologies. Non-participating customers can benefit from system-wide impacts, including reduced peak demand, deferred or avoided investments in generation and grid infrastructure, and improved system reliability. These system-level benefits can help moderate overall system costs and support more stable electricity rates over time.

DSM programs also play an important role in shaping customer awareness and behaviour. Through education, engagement and behavioural components, programs help customers understand how and when energy is used, and how consumption patterns can be adjusted. This supports more informed decision-making by customers and can enable greater participation in demand response, energy efficiency, and emerging distributed energy resource opportunities.

In addition to system and customer benefits, DSM programs can generate broader economic advantages. Program delivery supports local jobs across trades, service providers and program implementation roles, while increasing demand for energy-efficient technologies and services. Over time, these investments can develop local industry, promote workforce growth, and boost regional economic activity.

9.2 Structural considerations

Legislative frameworks and authority: DSM programs are enabled through legislative statutes or ministerial mandates that authorize regulators, utilities or system operators to develop and administer cost-effective programs that benefit both the electricity system and its customers. These legislative frameworks establish the legal authority for program implementation and define the entities responsible for program oversight, administration, funding and evaluation.

In Alberta, establishing similar legislative authority would provide the foundation for DSM program development, while allowing implementation details to be determined through regulatory processes. The Alberta Utilities Commission already provides regulatory oversight of Alberta's electricity distribution utilities. The commission could work with industry participants — including investor-owned and municipally owned utilities, rural electrification associations and third-party service providers — to determine appropriate governance structures; program administration models; EM&V requirements; and roles and responsibilities that reflect Alberta's regulated and competitive electricity market structure.

Program administration models: Jurisdictions use a range of administrative structures to deliver DSM programs. Some rely on centralized program administrators to deliver energy efficiency programs across the electricity system, while others assign program administration directly to electric utilities. As noted earlier, legislation defines the roles of key organizations, while program administration is determined through the regulatory process.

A hybrid administration structure might be practical in Alberta. Energy efficiency programs could be delivered through a centralized administrator (similar to Wisconsin's statewide model), which would avoid requiring each distribution utility to independently design and operate full program portfolios. This would also give municipally owned utilities and rural electrification associations clear and well-defined pathways to participate if they wish to do so. At the same time, distribution utilities could administer specific programs, such as demand response, targeted at local distribution system needs, including managing feeder constraints, supporting system reliability, or meeting localized capacity requirements.

A utility-led model could also be compatible with Alberta's performance-based regulatory framework, aligning with existing distribution system planning responsibilities. In California, investor-owned utilities administer energy efficiency and demand response programs under regulatory oversight. A similar approach in Alberta would allow distribution utilities to design programs that respond to local system conditions, particularly as they increasingly manage localized demand growth and system constraints. Program delivery could be done through

contracted retailers and third-party services, with opt-in provisions for municipally owned utilities and rural electrification associations.

Funding and cost collection mechanisms: DSM programs can be funded through various mechanisms. These include public benefit charges applied to electricity bills, rate-based funding approved through regulatory processes, and dedicated cost recovery mechanisms applied through electricity tariffs. In some systems, utilities collect program funds from customers and transfer those funds to a centralized program administrator.

These funding mechanisms are broadly compatible with Alberta's tariff structure, where utilities already collect system charges to support the delivery of supply through regulated distribution tariffs. Implementation in Alberta would require clear policy direction establishing the funding mechanism and defining participation requirements or opt-in provisions across investor-owned utilities, municipally owned utilities and rural electrification associations.

Utility incentives and remuneration — Most of the jurisdictions reviewed separate DSM program funding from utility earnings. Utilities typically recover approved administrative or program delivery costs. In some cases, there is no mechanism to earn a regulated return on program expenditures, while in other cases, regulators use performance-based incentive mechanisms to align utility incentives with program outcomes or allow certain demand-side or DER related investments to earn a regulated return.

Because Alberta's distribution utilities operate under a performance-based regulatory environment, the treatment of DSM expenditures warrants important consideration. If utilities are expected to deliver or procure demand-side resources, a range of regulatory tools could be used to align utility incentives with program objectives, including performance-based incentive mechanisms, cost recovery approaches, and opportunities for utilities to earn a regulated return on demand-side investments.

Role of distribution utilities in addressing local system needs: These jurisdictions use demand-side resources to address localized distribution system needs. Ontario, for example, has established regulatory guidance allowing distribution utilities to consider non-wires solutions in system planning and to contract with third parties who aggregate distributed energy resources to address local constraints.

A similar approach may be appropriate in Alberta, where distribution system planning requirements already consider certain non-wires services. Expanding this framework to include procurement or contracting pathways for demand-side resources could enable utilities to use demand response and distributed energy resources as non-wires alternatives to traditional infrastructure investments when addressing local system constraints.

Market structure considerations: Many of the jurisdictions reviewed demonstrate that utility-administered demand response programs can coexist with demand response participation in competitive wholesale electricity markets. Under this dual approach to demand response, utilities administer programs that address local or regulatory objectives, while market operators manage wholesale market participation.

A comparable structure could be possible in Alberta, allowing distribution utilities to administer local demand response programs, while the Alberta Electric System Operator continues to oversee demand response resources in the wholesale market and via ancillary services.

Cost-effectiveness frameworks and program objectives: All the assessed jurisdictions evaluate DSM programs using structured cost-effectiveness tests to determine whether program benefits exceed program costs. These tests consistently compare program expenditures with avoided electricity system costs, including avoided new generation, transmission and distribution investments, as well as customer bill savings and other system benefits.

Jurisdictions apply different cost-effectiveness tests depending on the objectives of their DSM programs. Some jurisdictions emphasize tests focused on electricity system costs, while others incorporate broader economic or societal benefits when evaluating program performance. In several cases, multiple tests are used together to provide a more comprehensive assessment of program value.

The selection of cost-effectiveness tests and evaluation criteria needs to align with program objectives. For Alberta, this highlights the importance of establishing clear legislative authority and defining the objectives of DSM program implementation, which could include managing peak demand, improving system reliability, moderating electricity system costs, saving customers money, or achieving broader economic and environmental outcomes.

Appendix A. Resources used

Wisconsin

Database of State Incentives for Renewables & Efficiency. “Energy Efficiency Standard for Focus on Energy,” June 30, 2025. https://programs.dsireusa.org/system/program/detail/4689

Focus on Energy, “Participating Utilities.” https://focusonenergy.com/about/participating-utilities

Focus on Energy, “Wisconsin Focuses on Engaging Utilities in Energy Efficiency,” March 23, 2015. https://focusonenergy.com/news/wisconsin-focuses-on-engaging-utilities-in-energy-efficiency

Public Service Commission of Wisconsin, “How Rates Are Changed.” https://psc.wi.gov/Pages/CommissionActions/RateCaseApproval.aspx

Shantan Krovvidi, Yu Wu, and Amalia Hicks. *Focus on Energy 2019–2022 Quadrennium III Economic Impacts: Final Report*, prepared for the Public Service Commission of Wisconsin (2024). https://assets.focusonenergy.com/production/inline-files/2024/WI-Focus-2019-22-Quad-III_Econ-Impacts_Final.pdf

Wisconsin Legislative Council, *Wisconsin Act 141, Information Memorandum*. https://www.wisconsin.edu/capital-planning/download/reference/Wisconsin_Act141_InformationMemorandum.pdf

Wisconsin Legislature, “Energy efficiency and renewable resource programs,” *Wisconsin Statutes*, s. 196.374 (2023). https://docs.legis.wisconsin.gov/statutes/statutes/196/374

Wisconsin Legislature, “Regulation of Public Utilities,” *Wisconsin Statutes*, s. 196. https://docs.legis.wisconsin.gov/statutes/statutes/196/01

Wisconsin Legislature, “Rules on service; changes in rates,” *Wisconsin Statutes*, s. 196.20 (2023). https://law.justia.com/codes/wisconsin/2023/chapter-196/section-196-20/

Ontario

Government of Ontario, *Affordable Energy Act, 2024*, S.O. 2024, c. 26. https://www.canlii.org/en/on/laws/astat/so-2024-c-26/223300/so-2024-c-26.html

Government of Ontario, *Better for People, Smarter for Business Act, 2020*, S.O. 2020, c. 34. https://www.ontario.ca/laws/statute/s20034

Government of Ontario, *Electricity Act, 1998*, S.O. 1998, c. 15, sched. A. https://www.ontario.ca/laws/statute/98e15

Government of Ontario, *Green Energy and Green Economy Act, 2009*, S.O. 2009, c. 12. https://www.ontario.ca/laws/statute/s09012

Government of Ontario, *Green Energy and Green Economy Act, 2009*, S.O. 2009, c. 12. https://www.ontario.ca/laws/statute/s09012

Government of Ontario, *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, sched. B. https://www.ontario.ca/laws/statute/98o15

Government of Ontario, *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, sched. B. https://www.ontario.ca/laws/statute/98o15

Independent Electricity System Operator, "2021–2024 Conservation and Demand Management Framework," *Energy Efficiency*. https://www.ieso.ca/Sector-Participants/Energy-Efficiency/2021-2024-Conservation-and-Demand-Management-Framework

Independent Electricity System Operator, "Demand Response." *Ontario's Electricity Grid*. https://www.ieso.ca/Learn/Ontario-Electricity-Grid/Demand-Response

Independent Electricity System Operator, "Global Adjustment," *Price Overview*. https://www.ieso.ca/power-data/price-overview/global-adjustment

Ontario Energy Board *Filing Requirements for Electricity Distribution Rate Applications - 2026 Edition for 2027 Rate Applications* (2025). https://www.oeb.ca/sites/default/files/OEB%20Filing%20Reqs_Chapter%205_2027_20251216.pdf

Ontario Energy Board, "Conservation and Demand Management (CDM/DSM/IRP)." https://www.oeb.ca/consultations-and-projects/conservation-cdmdsmirp

Ontario Energy Board, *2027 Electricity Distribution Rate Applications*. https://www.oeb.ca/applications/applications-oeb/electricity-distribution-rates/2027-electricity-distribution-rate

Ontario Energy Board, *Decision and Rate Order, EB-2023-0048, PUC Distribution Inc.* (2024). https://ssmpuc.com/UploadedFiles/files/Decision%20and%20Rate%20Order_PUC_2024%20IRM_20240408%20FINAL.pdf

Ontario Energy Board, *Handbook for Utility Rate Applications* (2016). https://www.oeb.ca/oeb/_Documents/Regulatory/OEB_Rate_Handbook.pdf

California

American Council for an Energy-Efficient Economy, “California,” State and Local Policy Database. https://database.aceee.org/state/california

California Energy Efficiency Coordinating Committee, “Welcome to the California Energy Efficiency Coordinating Committee.” https://www.caeecc.org/

California Independent System Operator, “Flex Alerts.” https://www.flexalert.org/

California Legislature, *Public Utilities Code,* section 454.5. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=454.5.&lawCode=PUC

California Public Utilities Commission, “Demand Response.” https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/demand-response-dr

California Public Utilities Commission, “Demand Side Management.” https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management

California Public Utilities Commission, *Assessment of Energy Efficiency Potential and Goals and Modification Of Portfolio Approval and Oversight Process* (2021). https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M385/K864/385864616.PDF

California Public Utilities Commission, *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects* (2001). https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/utilities_and_industries/energy_-_electricity_and_natural_gas/cpuc-standard-practice-manual.pdf

California Public Utilities Commission, *Decision Addressing Third Party Solicitation Process for Energy Efficiency Programs* (2018). https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M205/K560/205560586.PDF

California Public Utilities Commission, *Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings* (2016). https://ccag.ca.gov/wp-content/uploads/2016/10/6.5-Attachment-ALJ-Decision-16-08-019-081816.pdf

California Public Utilities Commission, *Decision Re Energy Efficiency Goals for 2016 and Beyond and Energy Efficiency Rolling Portfolio Mechanics* (2015). https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M155/K511/155511942.pdf

California Public Utilities Commission, *Energy Efficiency Policy Manual* (2020). https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/e/6442465683-eepolicymanualrevised-march-20-2020-b.pdf

California Public Utilities Commission, *Proposed Decision Adopting Energy Efficiency Goals for 2020 – 2030* (2019). https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M311/K070/311070816.PDF

California Public Utilities Commission, *Report on Demand-Side Management Programs pursuant to Public Utilities Code Section 913.5* (2025). https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2025/report-on-demandside-management-programs-pursuant-to-puc-section-9135.pdf

Energy Upgrade California, "Who We Are." https://energyupgradeca.org/

Opinion Dynamics, *2013–2015 California Statewide Marketing, Education, and Outreach Program: Cross-Cutting Process Study* (2016). https://www.calmac.org/publications/PY2013-2015_MEO_Cross-Cutting_Process_Evaluation_Report_FINAL_2016-11-11ES.pdf

Southern California Edison, *2023 Annual Report of Southern California Edison Company*, submitted to California Public Utilities Commission (2024). https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M530/K697/530697470.PDF

Texas

"Energy Efficiency Goal," *Texas Administrative Code,* s. 25.181. Available at https://www.law.cornell.edu/regulations/texas/16-Tex-Admin-Code-SS-25-181

Constellation Energy, "Texas Electricity Deregulation and What It Means for You." https://www.constellation.com/energy-101/energy-choice/texas-electricity-deregulation.html

Electric Reliability Council of Texas, "Load Resource Participation in the ERCOT Markets." https://www.ercot.com/services/programs/load/laar

Electric Reliability Council of Texas, "Market Rules." https://www.ercot.com/mktrules

Oncor Electric Delivery Company, *Oncor and Energy Efficiency: The Basics*. https://www.oncor.com/content/dam/oncorwww/eepm/documents/training-resources/EE_Basics.pdf.coredownload.pdf

Public Utility Commission of Texas, "Energy Efficiency at the PUC." https://www.puc.texas.gov/industry/electric/energy-efficiency/

Public Utility Commission of Texas, “Energy Efficiency Goal,” *Electric Substantive Rules*, s. 25.181. https://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.181/

Public Utility Commission of Texas, *Final PY2024 Investor-Owned Utilities Energy Efficiency Report* (2025). https://interchange.puc.texas.gov/search/documents/?controlNumber=38578&itemNumber=168

Tetra Tech, “Delivering Cost Savings through Energy Efficiency and Demand Response.” https://www.tetratech.com/projects/delivering-cost-savings-through-energy-efficiency-and-demand-response/

Texas Legislature, “Essential Organizations,” *Texas Utilities Code*, s. *39.151*. https://codes.findlaw.com/tx/utilities-code/util-sect-39-151/

Texas Legislature, “Goal for Energy Efficiency,” *Texas Utilities Code*, *s*. 39.905. https://codes.findlaw.com/tx/utilities-code/util-sect-39-905/

Texas Legislature, *Texas Utilities Code*, s. 35.151. https://statutes.capitol.texas.gov/?tab=1&code=UT&chapter=UT.35&artSec=35.151

Photo: iStock.com/LaraBelova

PEMBINA Institute

www.pembina.org

x.com/pembina bsky.app/profile/pembina.org

facebook.com/pembina.institute linkedin.com/company/pembina-institute/