

Accelerating State-wide Benchmarking Laws into Programs of the Future

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ABSTRACT

Building benchmarking has been around for years and has a positive track record. In a three-year study, the U.S. EPA measured an average energy savings of 7% across 35,000 buildings who participated in their ENERGY STAR benchmarking program. An independent study on New York's benchmarking mandate finds even greater energy savings with an average energy use intensity (EUI) reduction of 14% in four years. Despite the measured success and no-cost access to the national data platform, only three states have required benchmarking mandates. That number shrinks further when considering laws that also incorporate additional energy management strategies.

In 2020, Washington state passed HB1257, the Clean Buildings Act, a far reaching and impactful set of requirements built around benchmarking as well as concepts of Strategic Energy Management (SEM). Other states are considering similar sets of requirements to elevate their buildings, which is highly promising. However, the role of utilities with respect to these laws is evolving. This paper will present these laws alongside a utility program design that dovetails with requirements and helps building owners and operators comply with the law while returning reliable and cost-effective savings to the utility. The audience will see how benchmarking-based programs can utilize approachable, standard metrics to align organizations around specific energy goals and serve as a core tenet for developing mature efficiency programs across large markets.

Benchmarking Overview

Benchmarking is an established and dynamic practice used across industries to compare process and performance metrics. While there are many approaches to benchmarking processes, most adopt a systematic and continuous improvement model for implementation. Robert Camp (2006), a leading authority in benchmarking practices, defined four core benchmarking types: internal, external, performance, and practice.

Internal benchmarking focuses on identifying efficiency gaps within an organization including specific processes or key performance indicators (KPIs). It is commonly introduced with an assessment to identify areas where a continuous improvement cycle can be implemented to align with business goals. External benchmarking is the process of comparing organizations to others in a similar industry. The data collection to establish industry-wide performance metrics requires the cooperative input of many organizations to a central, impartial repository such as ENERGY STAR Portfolio Manager (ESPM).

Performance and practice benchmarking are defined by the type of data being tracked and compared. Performance benchmarking monitors quantitative data as reflected in traditional KPI's such as energy performance or production output. Practice benchmarking evaluates

qualitative data such as process improvement. Both types of benchmarking can be applied as a subset within internal and external benchmarking evaluations.

Building Benchmarking Policies

In the last 25 years, international policy and voluntary programs have accelerated the advancement of building rating systems and performance-based efficiency metrics. Most jurisdictions have created building energy rating systems that incorporate physical building information and/or actual building energy use (Burt 2015). Additional requirements to publish building information on a standard cadence supports the progression of both asset (modeled) and operational (actual) ratings. Figure 1 below provides a history of international benchmarking policy.

The adoption of benchmarking policies in the United States is rapidly growing. California, Washington, and most recently Colorado each adopted state-wide policies alongside several local and county jurisdictions. All policies target a combination of multi-family, public, and governmental commercial buildings across a range of sizes. As of October 2021, nineteen of forty-two benchmarking programs have published compliance rates as shown in Figure 2 below (Institute of Market Transformation, 2015).

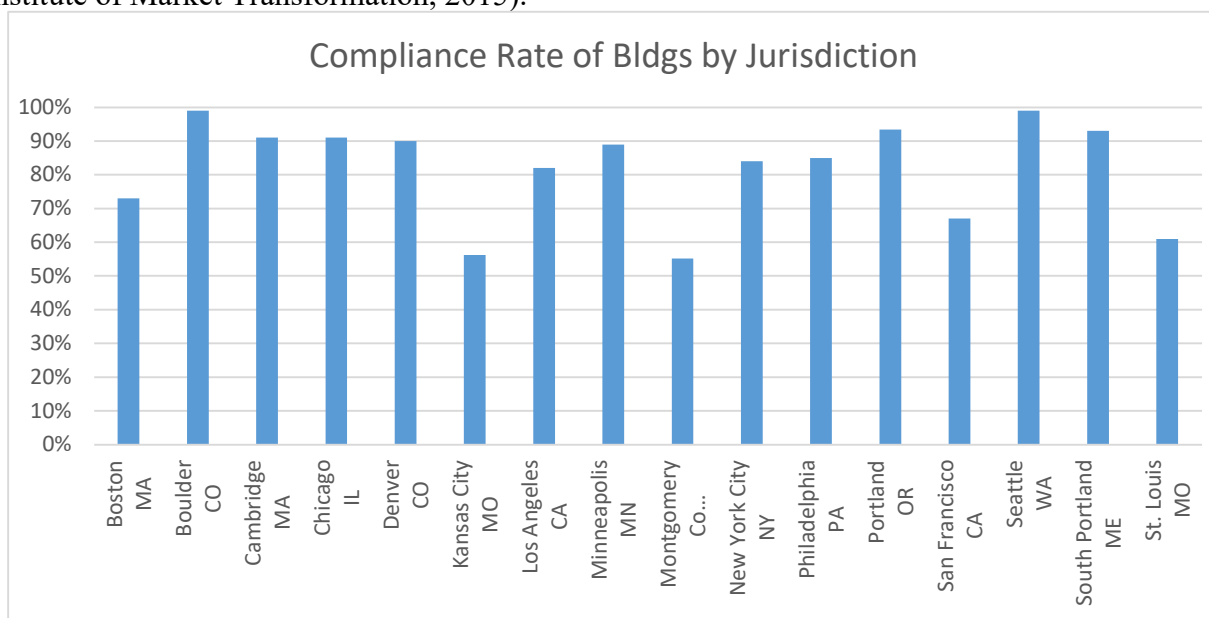


Figure 1 Building Compliance Rates by Jurisdiction. Source: Institute of Market Transformation, 2015

High compliance rates and a clear demonstration of energy savings indicate the effectiveness and impact of these policies. On-going benchmarking requirements coupled with additional energy management best practice mandates are driving persistent savings in current programs.

ENERGY STAR Portfolio Manager

While the requirements of U.S benchmarking policies vary, most have standardized around the use of ENERGY STAR Portfolio Manager (ESPM) as the mandatory benchmarking

software. ESPM is a free tool launched in 2000 by the U.S Environmental Protection Agency (EPA) that now leads the industry with roughly 25% of US commercial building space being actively benchmarked in the platform (ENERGY STAR).

Portfolio Manager offers a suite of operational rating calculations including an ENERGY STAR score, (weather normalized) site EUI, source EUI, and total energy use. The ENERGY STAR score indicates a building's efficiency on a scale from 1 to 100 as compared to similar buildings. There are currently more than 80 options for property types and a database that continues to evolve and expand (EPA). The platform has extensive training materials that includes how-to-guides, video recordings, and a live help desk.

Portfolio Manager offers data exchange functionality with most major utilities and third-party energy management software to automatically upload monthly energy data. It has also successfully integrated specialized reporting for local benchmarking laws. However, the platform does not have the ability to create highly customized reports, dashboards, or provide energy efficiency analytics used for identifying savings opportunities. Organizations with more mature energy management practices often opt to manage their energy using specialized software as their primary benchmarking tool that feeds into Portfolio Manager for compliance requirements.

Strategic Energy Management (SEM)

Strategic Energy Management (SEM) is an energy management approach that leverages organizational structure proven in other areas such as safety and quality to yield lasting change and persistent energy savings. This approach addresses gaps in energy management that undermine overall energy performance. For example, organizations that do not have an energy team will often not consistently train employees and occupants on newly implemented measures or on optimal operations of existing measures, both of which will reduce the effectiveness of expected energy savings results from traditional projects. In 2014, the Consortium for Energy Efficiency (CEE) facilitated creation of the “SEM Minimum Elements”, a document that standardized the expectations of most SEM program efforts to include the following three components (CEE 2014):

- Customer Commitment
- Planning and Implementation
- System for Measuring and Reporting Energy Performance

Most SEM programs implement the above components using one or more of the following program designs:

- Cohort – Implementing SEM elements with multiple customers moving at the same pace through a series of multi-organization workshops and individualized coaching.
- Consultative – Implementing SEM elements with individual customers in a process that is specific to the organization, with single-organization workshops and coaching.
- Energy Managers – Implementing SEM elements with individual customers who function as a full-time or part-time energy manager, for whom some amount of their salary may be augmented by the program administrator.

Washington State Clean Buildings Act (House Bill 1257)

Washington State has a long history of energy efficiency programs and using tools like building energy code and utility incentive programs to drive change. As the threats of climate change continue to compound, commercial buildings were identified as being the second largest source of greenhouse gas (GHG) emissions in the state (27% in 2015), and the sector with the largest increase in GHG emissions (51%) from 1990-2015 (Washington State Department of Commerce). Therefore, The Washington Clean Buildings Act, House Bill 1257, was proposed and signed into law in 2019, with a goal of reducing emissions and energy consumption.

The law set forth a Clean Buildings Performance Standard (CBPS) that requires owners of commercial buildings over 50,000 square feet to externally benchmark their properties to meet an industry specific weather normalized energy use intensity (EUI) as the main performance target. However, the law also includes the creation and maintenance of an energy management plan (EMP) and operations and maintenance (O&M) program. If implemented correctly, these additional requirements will encourage organizations to utilize both internal and practice benchmarking processes to create robust energy management systems and drive deeper savings.

The rulemaking started with ASHRAE Standard 100-2018 – Energy Efficiency in Existing Buildings and was modified to meet the requirements of the legislation. Building owners have to meet an EUI target (EUI_t) based on building use type. If they are unable to meet their target (or create a target for their building), they must instead perform an ASHRAE Level 2 audit and implement all cost-effective energy efficiency measures. There are minimum requirements for a qualified person to attest that a building complies with the law, as well as for who can conduct an energy audit. Credentials may include being a Professional Engineer, Certified Architect, Certified Energy Manager, etc. EUIs must be tracked using ENERGY STAR Portfolio Manager (ESPM), which was readily adopted due to its wide use across the country, a developed platform that is maintained by the Environmental Protection Agency (EPA) and is available at no cost.

The EUI_ts were developed during the rulemaking based on several data sources. These include the national Commercial Buildings Energy Consumption Survey (U.S Energy Information Administration year), regional Commercial Building Stock Assessment (Northwest Energy Efficiency Alliance year), and local data from the City of Seattle, which has had a benchmarking ordinance in place since 2012 for buildings 20,000 square feet or larger (Office of Sustainability and Environment year). Targets can be normalized for operating hours, and buildings permitted after 2016 have an EUI_t that is 15% lower than that of existing buildings.

The compliance timeline is phased in over 3 years, with buildings over 220,000 GSF due June 1, 2026, buildings 90,001-220,000 GSF due June 1, 2027, and buildings 50,000-90,000 GSF due June 1, 2028. To comply on “day 1”, building owners must have operationalized all pieces of the standard for at least one year. Compliance periods will repeat on a 5-year cycle. Multifamily buildings or properties regulated by Tribal Sovereign Nations are not required to comply with this law but are eligible to pursue Early Adopter Incentive (EAI) funds. Washington State Department of Commerce (Commerce) has allocated \$75 million in EAI funds to help building owners that are at least 15 EUI points above their target to come into compliance.

The penalty structure for non-compliance has two pathways that include a mitigation plan or maximum fines. If owners do not have their buildings ready for compliance by the deadline, they are eligible to submit a mitigation plan to Commerce for review to demonstrate their due diligence. If approved, they face a lesser fine of \$1500 + \$0.20/SF/year until conditional

compliance is met. If buildings owners choose not to comply without a mitigation plan, the maximum penalty is \$5000 + \$1/SF/year up to 18 months.

Utilities have two obligations under the law – to provide energy data in a format that can be uploaded into ESPM; and to administer Early Adopter Incentive funds that the state allocated as a part of this law. Many utilities have developed automated benchmarking tools to push data to ESPM, but since benchmarking has not been enforced (with the exception of the City of Seattle), there are efforts underway by several WA utilities to ensure they can provide these services at scale.

Customer Needs Related to CBPS

Commerce estimates that between 12,000-15,000 buildings will be subject to HB1257. Based on knowledge of the market, the building owners and their building manager/operators affected by the law will likely have numerous needs, including:

- Understanding the law and its specific requirements
- Establishing practices around the use of ESPM
- Identifying and implementing energy savings opportunities
- Maintaining energy management practices
- Implementing all of the above within the law's time horizon to avoid penalties

With that, many utilities as well as other market actors in Washington state are working quickly to assess and potentially develop solutions that can ease these challenges. Some of these other market actors include city governments, the Washington State University Energy Program, the Smart Building Center, and the Seattle 2030 District.

Puget Sound Energy (PSE) History with Energy Programs and Policy

PSE has been running SEM programs for over 10 years, including Commercial SEM, Industrial SEM, and even a pilot small-to medium business (SMB) SEM program in downtown Bellevue, WA. While the programs have evolved over the years, the focus has always been around energy management practices for both capital equipment replacements and day-to-day operations. Particularly on the commercial side, PSE has completed extensive work with regression analysis and whole building modeling in order to claim energy savings for these programs. Even though the incentive rates for these programs are small compared to capital incentive programs, customers find incredible value from the ongoing relationship with PSE and with peers in order to get the most out of their buildings.

In 2022, PSE's CSEM program goals include 15,000,000 kWh and 570,000 therms annually; and the ISEM program goals add several million kWh more. This represents approximately 10% of the total commercial and industrial programs savings targets for electric, and 27% of the gas savings targets. Further, the quality of the customer-utility relationship with CSEM and ISEM participants and PSE yields many capital projects, whose savings are not attributed to the SEM programs.

Clean Buildings Accelerator (Accelerator)

Commerce actively solicited feedback from stakeholders including PSE before the law went into effect in 2021. As an active participant of the design process, PSE recognized the customer's need for support in understanding the complexities of the law and an opportunity to

create energy savings through sustained technical and organizational support. The Clean Buildings Accelerator (the Accelerator) is a no-cost program to customers and is designed to:

1. Help building owners comply with the law
2. Deliver energy savings using proven and reliable methods
3. Support PSE relationships across the commercial building-owner community
4. Deploy a virtual delivery model proven through the COVID-19 Pandemic

Stillwater Energy, LLC (Stillwater), designed the Accelerator iteratively through discussions with PSE and Seattle City Light. The program is designed as a path to compliance for customers targeted by the law, with the explicit intent to support customers to reduce site EUIs prior to required CBPS compliance dates, while delivering energy savings to PSE. The program also provides resources and support to address the law's reporting and organizational requirements.

Commerce provided a list of potential buildings required to comply in Fall of 2021, with a significant number of applicable buildings in PSE's territory. Many of these buildings split their utility use between PSE and a second utility. PSE remains openly collaborative with the other utilities to share resources that benefit shared customers including duplicating the Accelerator in other territories.

PSE Opportunities for Continued Engagement

The Accelerator support of CBPS compliance presents PSE with several opportunities to engage customers presently and in the long-term. PSE is considering several ways to use the Accelerator to sustain customer energy savings and relationships.

1. Support 'leading' customers in the near term to obtain the law's EIAs
2. Support customers' path to compliance prior to the law's requirements to become mandatory in 2026-2028
3. Help customers of smaller building sizes gradually take action as the standard scales to smaller buildings
4. After 2026, enable PSE to obtain savings above and beyond the law's EUIs
5. Deepen relationships with PSE's largest commercial customers
6. Provide continued support and resources to under-resourced communities within PSE's territory.

Market Demand for the Accelerator

Given the penalties associated with non-compliance, it is reasonable to assume a high compliance rate with the CBPS. There are a few factors relevant to approximate the market demand for the Accelerator program:

1. ESPM is the platform the law requires for compliance. While ESPM is the standard commercial benchmarking platform, it is not yet universally adopted. The Accelerator provides hands-on support to set up and optimally use ESPM.
2. Many requirements of the law are akin to SEM elements. Based on the Accelerator implementation team's experience with the PSE market and other SEM models across North America, most building owners do not implement SEM practices without utility program support, and those that attempt to do so are often challenged to maintain these practices.

3. The Accelerator does not offer a monetary performance incentive. However, the high touch consulting and technical support for operational savings should motivate energy saving actions and support implementation of other energy efficiency measures.

Current Stage in Service Lifecycle

The law is a single standard that leverages two mature approaches that are becoming well known in the market:

1. **Benchmarking** – prior to the law, energy benchmarking across PSE’s territory had not been consistently widespread due to different municipality priorities. The City of Seattle has required use of ESPM, but other areas of PSE’s territory have not. Nationally, there has been a significant increase in energy benchmarking over the last five years. Since 2008, 43 jurisdictions have enacted some form of energy benchmarking policy (Institute of Market Transformation, 2021). In 2021, more than 220,000 buildings used ESPM to measure and track their energy and other uses, this number increasing by more than 20% over the last five years (ENERGY STAR June 2022).
2. **SEM** – prior to the law, SEM has been used mostly with industrial and large commercial customers. SEM has generally not targeted mid-sized buildings that make up the lower tiers of the law’s requirements.

PSE established the Accelerator program in 2021 to help propel PSE customers to adopt these practices at a faster rate over the coming years prior to CBPS compliance requirements becoming mandatory June 1, 2026. PSE is supporting their customers’ compliance efforts while at the same time claiming savings from their customers’ energy savings activities related to the Accelerator program. After June 2026, it is possible that PSE will play a role in continuing to elevate energy performance for these buildings as EUIs increase per requirements of the CBPS. In addition, PSE is exploring the value that the program brings, with a possibility the program itself may produce greater value in training and awareness so that energy is more consistently a part of PSE’s customers decisions, where they can have a greater influence on projects. PSE will assess this in their next program biennium, to examine results and then make decisions on how to classify this offering related to their program portfolio.

Phased Implementation

From a customer perspective, there are three phases of the Accelerator:

1. **Phase 1: Raise Awareness** – During this phase, the team implements monthly informational “Energy Coffee Chat” webinars to engage building owners and staff to hear more about the CBPS requirements as well as to highlight the Accelerator to support their compliance. Outcomes include enrolling in the next phase and learning about resources to help participants prepare for success.
2. **Phase 2: Sprint** – During this four-month phase, organizations participate in four workshops to understand and achieve the law’s implementation requirements, including the Energy Management Plan and Operations and Maintenance Program. The phase is called a “Sprint”, as it occurs over a four-month period, with relatively intensive effort for that timeframe. Compared to other SEM programs, many of which occur between 12-24 months, this timeframe is relatively short; however, there is less content in this phase

than in a typical SEM program. Common to many other SEM programs, the program design does utilize a “cohort” model in the Sprint phase, where customers are grouped together and participate alongside each other in the workshops and other activities. In this phase, participants may also use the optional ESPM Help Desk designed to explain the platform, setup buildings, and troubleshoot issues. Phase 2 also includes delivery of virtual energy scans at each participating site to identify low-cost retro-commissioning-type controls opportunities to save energy and reduce EUIs. Identified projects will be prioritized for maximum impact in the short, mid, and long term.

3. **Phase 3: Elevation** – After completing the Sprint, customers move into the ongoing third phase, where they convene in quarterly virtual workshops called “Elevation Seminars”. There, the customers learn key featured topics that address the law’s ongoing energy training requirement. In addition, the program works with customers on new or existing challenges that they may face. Customers report their energy savings progress towards their EUI goals. PSE representatives attend workshops to share program updates and other useful information.

Customer Recruitment

Generally, PSE’s role in recruiting for the Accelerator is to inform and invite customers to monthly 1-hour long, web-based “Clean Buildings Coffee Chats” facilitated by Stillwater Energy. Coffee Chats ensure participants are educated on the law as well as the Accelerator. These informational sessions provide potential participants with an outline of expectations, roles and responsibilities, and key factors for participant success. One of the major goals of the Accelerator is to engage and support under-resourced communities that need additional support for law compliance. Stillwater and PSE work to tailor services to meet the specific needs of these customers. Coffee Chats are designed to spark interest and lead to customer enrollment in the Accelerator.

The program uses continuous improvement in all aspects of delivery. At the end of each Sprint, the program team surveys cohort participants about their overall experience, including feedback on the recruiting process. The program team also continually checks in with PSE’s program managers and account executives to identify additional ways to support their efforts and refine the recruitment process. Throughout the Sprint and Elevation periods there are both formal and informal ways to check-in on participant engagement and follow through on low and no cost opportunities. Following the virtual energy scans, the program team provides each participant with an Opportunity Register, where they prioritize and track progress on energy saving opportunities. The Opportunity Register is a tool that customers continue to use in their energy management practices well beyond the engagement period. It also serves as eligible documentation for CBPS compliance requirements. In addition to the Opportunity Register, the program team ensures customer commitment and engagement to low and no cost opportunities through the following activities:

- Facilitate Elevation Seminars, quarterly workshops where participants review successes and barriers to completing low/no cost opportunities.
- Conduct a prioritization session to discuss each measure and allow the customer to rate each opportunity on an impact versus effort scale.
- Conduct one-on-one coaching to provide tailored support and dig deeper into understanding barriers and challenges.

- Review performance through ESPM to provide feedback on energy performance and reinforce energy savings as they consistently implement low/no cost opportunities.

Savings Opportunities and Measurement and Verification (M&V)

The Accelerator leverages the proven practices of SEM to deliver energy savings. In other SEM programs, typical conservative estimates for reliable SEM savings are 3-5% per enrolled site.

Prior to COVID-19, Stillwater had developed and was routinely delivering a successful virtual energy scan approach to commercial SEM participants. These virtual scan techniques were quickly refined and deployed in mass across all commercial and industrial Stillwater SEM programs in response to the pandemic. Most SEM energy savings opportunities are now focused on controls optimization of the major energy uses as well as organizational changes.

Stillwater also developed and delivered a series of resources and trainings to help customers understand the complexities and energy impacts of COVID-19 HVAC mitigation strategies. Stillwater is currently working with commercial SEM customers to develop ‘return to occupancy’ strategies that optimize energy use while maintaining occupant health. Virtual energy scans are the primary mechanism to deliver Accelerator energy savings to PSE through the identification and prioritization of low-cost retro-commissioning-type controls opportunities. Stillwater initially provides three, 1-hour long energy scans per eligible building for each customer. If customers demonstrate continued engagement and measure implementation of the first three buildings, additional scans may be deployed at new sites with significant savings potential or where customers have implemented opportunities and wish to go deeper into controls optimization.

For the Accelerator, Stillwater deploys top-down, multivariable regression modeling at each site that receives an energy scan. Stillwater uses a streamlined ENERGY STAR Portfolio Manager (ESPM) regression modeling approach pioneered for the program. This approach reduces M&V costs by extracting consistent data sets directly from ESPM and combining them with publicly or readily available building schedules and weather data.

Stillwater works with PSE to apply M&V protocols and requirements of modeling criteria. A few key tenets of the program’s modeling approaches include:

- Modeling activities are conducted at the programmatic level and are not customer-facing. Customers are required to use ESPM to report their energy use intensity for compliance and provide Stillwater with access to their data for the duration of the Accelerator. This reduces modeling costs associated with transferring models and customizing model templates for participants.
- Stillwater screens all sites for ESPM-derived streamlined energy models. Sites that meet PSE modeling criteria use this M&V approach. Stillwater develops customized, conventional SEM models for large sites that do not meet PSE modeling criteria through the streamlined approach. A bottom-up measure-level engineering analysis that adheres to PSE M&V protocols is used for smaller sites.
- Regardless of the M&V approach deployed, program attribution of modeled savings is enabled through customer-updated opportunity registers with completion dates assigned to individual projects.

PSE initially claims a conservative deemed 2% annual energy savings for participants who complete the Sprint and are actively engaged. Stillwater then completes a streamlined regression-based savings analysis to true-up achieved energy savings with the 2% deemed amount one year after the Sprint ends. The true-up process should yield three potential outcomes:

1. For sites where modeled energy savings exceed the 2% deemed rate, actual measured savings will be claimed.
2. For sites where energy efficient actions have been completed but cannot be successfully modeled, show savings less than the 2% annual savings rate, or uncertainty in the model exceeds savings, the 2% deemed rate will be applied.
3. For sites where no energy efficient actions have been completed and energy savings are found to be minimal, zero savings will be claimed.

One early objective of the Accelerator is to validate an accurate annual deemed savings level. The results from this pilot will be used to better approximate the annual deemed savings rate for future Accelerator program cycles. The following are key rationales that demonstrate how the Accelerator savings methods will stand up to a 3rd party evaluation:

1. Understand and document the customer's prior state. Capture prior energy management practices, building usage, and building operations during the enrollment process.
2. Develop clear and repeatable protocols. These include the use of visual guidelines to ensure evaluators can replicate the logic and decisions.
3. Use defensible deemed savings values. Deemed savings that leverage information from publicly available evaluations of other SEM programs.
4. Gather right-sized records. Maintaining documentation and records of the model development activity and savings results to enable a quick grasp of approaches and outcomes across dozens (or hundreds) of buildings.
5. Ensure proactive communication. Establishing dialogue with team members from PSE's Evaluation and Business Efficiency groups, to stay aligned on vision and direction for evaluation efforts.

Experiences from the First Sprint

As of the writing of this paper, the program team has finished one Sprint cohort and is currently deploying the second Sprint cohort with plans to implement several more in 2022. With each cohort implementation, PSE and the program team are gaining greater insights into customer needs as well as refinements for the program design. To date, key findings from the first Sprint include:

- **Market awareness** – while some of the largest energy users in Washington have been highly involved in the development of the Clean Buildings Act, most energy users are unaware of the details of the law and how it may affect them; this lack of awareness is even more acute with organizations that are small and/or have limited resources
- **Urgency** – as more organizations begin working through the various aspects of the Clean Buildings Act, our team is collectively realizing the urgency with which these organizations need to take action. Many components of the law have explicit time requirements, or the requirements have implications that typically take organizations multiple years to address. Fines for non-compliance are significant and many organizations will be severely affected if subject to unplanned penalties; these penalties

may also increase pushback against the law, which could work against much of the positive emphasis utilized in the Accelerator program.

Lessons Learned for Other Jurisdictions

In the US and Canada, there are buildings across utility territories and agency jurisdictions that should produce positive energy savings and other benefits if a benchmarking policy were deployed. Entities interested in deploying a policy that leverages benchmarking and potentially other energy management practices should:

- Review the high-level information from the IMT about building benchmarking. IMT's resources can help to ground thinking around trends and possibilities.
- Review the information on the Commerce energy website (<https://commerce.wa.gov/energy>) about the Clean Buildings Law. The Commerce team has a solid set of resources to understand the vision around the policy, to understand how building owners should address the requirements, and a great deal more.
- Use these resources alongside an understanding of your area's built environment to craft a policy that will drive positive impacts for your organization and constituents.

At the same time, the functionality of ESPM and the commonality of SEM can provide reasonable confidence that an Accelerator-type approach can leverage benchmarking policies to produce energy savings. Entities interested in deploying such a program approach should:

- Review your local jurisdiction's current and proposed legislation, to understand how these different efforts can align for a program to leverage policies, fill customer gaps, and provide solutions.
- Review the information on the PSE website (<https://pse.com/cleanbuildings>) about the Clean Buildings Accelerator program. There, one can also see an example of how utilities can interact with their customers around a benchmarking policy, connecting customers to numerous resources.
- Review how your organization engages (and seeks to engage) with diverse, underserved, or other priority communities that may be affected by building benchmarking policies.
- Review the landscape of potentially affected customers, potentially alongside their organizational sectors and building types, to assess market potential.

Taking the above actions can help interested organizations take positive actions that will improve the energy performance of their jurisdiction's buildings, both soon and into the future.

Bibliography

- Camp, R. Benchmarking: The Search for Industry Best Practices that Lead to Superior Performance. Taylor and Francis, 2006.
- Consortium for Energy Efficiency (CEE). “CEE Strategic Energy Management Minimum Elements.” Energy Efficiency Program Library, 11 February 2014, <https://library.cee1.org/content/cee-strategic-energy-management-minimum-elements>. Accessed 25 March 2022.
- Ember Strategies, LLC. “Building energy rating and benchmarking: understanding similarities and differences.” ECEEE, 2015, https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2015/6-policies-and-programmes-towards-a-zero-energy-building-stock/building-energy-rating-benchmarking-understanding-similarities-and-differences/2015/6-170-15_Burt.pdf/. Accessed 25 March 2022.
- ENERGY STAR. “Benchmark Your Building Using ENERGY STAR® Portfolio Manager®.” Energy Star, <https://www.energystar.gov/buildings/benchmark>. Accessed 25 March 2022.
- ENERGY STAR. “Facts and Stats.” <https://www.energystar.gov/buildings/about-us/facts-and-stats>. Accessed 12 June 2022
- EPA. “Benchmarking and Building Performance Standards Policy Toolkit | US EPA.” US Environmental Protection Agency, <https://www.epa.gov/statelocalenergy/benchmarking-and-building-performance-standards-policy-toolkit>. Accessed 25 March 2022.
- Institute of Market Transformation (IMT). “Comparison of US Commercial Building Energy Benchmarking and Transparency Policies | IMT.” Institute for Market Transformation, Oct 2021, <https://www.imt.org/resources/comparison-of-commercial-building-benchmarking-policies/>. Accessed 25 March 2022.
- Northwest Energy Efficiency Alliance. “Commercial Building Stock Assessment.” Northwest Energy Efficiency Alliance, <https://neea.org/data/commercial-building-stock-assessments>. Accessed 25 March 2022.
- Office of Sustainability and Environment. “Energy Benchmarking.” Seattle.gov, <https://www.seattle.gov/environment/climate-change/buildings-and-energy/energy-benchmarking>. Accessed 25 March 2022.
- U.S Energy Information Administration. “Energy Information Administration.” Commercial Buildings Energy Consumption Survey, September 2021, <https://www.eia.gov/consumption/commercial/>. Accessed 25 March 2022.
- Washington State Department of Commerce. “Clean Buildings Performance Standards.” Washington State Department of Commerce, <https://www.commerce.wa.gov/growing-the-economy/energy/buildings/clean-buildings-standards/>. Accessed 25 March 2022.