



# Building Energy Benchmarking and Transparency: Overview for State and Local Decision Makers

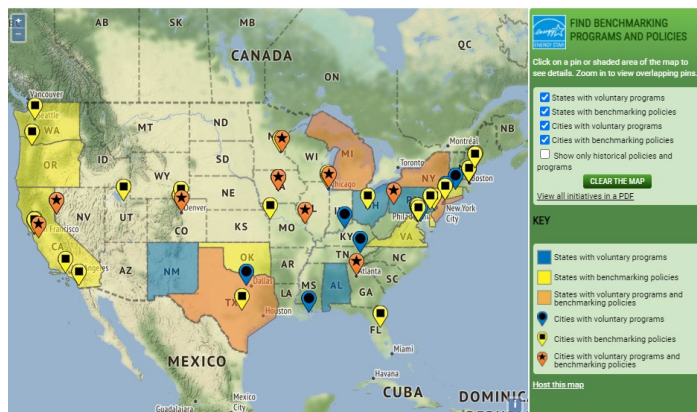
*EPA's Benchmarking and Building Performance Standards Policy Toolkit aims to inform and support state and local government decision makers who are exploring policies to reduce energy use and greenhouse gas (GHG) emissions from existing commercial and multifamily buildings in their communities. This section of the toolkit focuses on building energy benchmarking and transparency policies. It provides information about what is needed for these policies, lists key considerations for success, and demonstrates how government leaders have used benchmarking as an initial step for enacting building performance standards. The toolkit includes four sections—each intended to build on the previous section—that focus on different aspects of policy development, including benchmarking and transparency ([Section 1](#)), building performance standards ([Section 2](#)), state and local government coordination ([Section 3](#)), and data access ([Section 4](#)). Each section lists additional resources on the topic.*



**Building energy benchmarking** refers to measuring a building's energy use (and in some cases water use) and comparing it to the energy use of similar buildings, its own historical energy use, or a reference performance level.

industry associations and other organizations across the country, have initiated voluntary programs and enacted mandatory benchmarking policies for public, commercial, and multifamily buildings that use [EPA's ENERGY STAR® Portfolio Manager® tool](#).<sup>ii</sup>

## Find Benchmarking Programs and Policies on [ENERGY STAR's website](#)



Measuring and assessing energy performance through benchmarking can help to inform other government priorities and is an important initial step in identifying energy efficiency improvements. State and local governments that enact benchmarking policies also have an opportunity to engage with building owners<sup>iii</sup> that would not normally be focused on energy efficiency. By enacting benchmarking policies, state and local decision makers can establish relationships with building owners in their jurisdiction and learn more about their building stock.

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## Overview

Buildings account for nearly 40 percent of the energy consumed in the United States and over 30 percent of GHG emissions.<sup>i</sup> Benchmarking energy use of buildings is a key first step to understanding and improving energy performance and reducing carbon footprints. Dozens of state and local governments, along with numerous



Many mandatory benchmarking policies also include public disclosure of benchmarking data. This public transparency of benchmarking data allows the local community and prospective tenants and owners to understand the energy performance of the buildings they may purchase, lease space in, or visit. Transparency also allows the market to recognize and reward superior energy performance, creating a driver for continuous improvement.



### EPA's ENERGY STAR Portfolio Manager

The go-to tool for collecting energy and water use data from commercial and/or multifamily housing buildings is **EPA's ENERGY STAR Portfolio Manager**. EPA offers robust, off-the-shelf training materials; regularly hosts webinars; and has a help desk to support users. Some fast facts on the tool include:

- The tool is completely cost-free to use.
- Users enter data into their own secure, password-protected account.
- Any building can be benchmarked in Portfolio Manager.
- At least 25% of building square footage nationwide is benchmarked in Portfolio Manager.
- Buildings can use the tool to track GHG emissions and energy, water, and waste costs.
- 1-100 ENERGY STAR scores indicate a building's energy performance compared to similar buildings nationwide, and are available for approximately 21 building types and 60% of commercial floorspace.
- Portfolio Manager can also be used to:
  - Check for possible errors using the data quality checker,
  - Set goals and track progress toward them,
  - Share or transfer properties,
  - Run custom and pre-populated reports, and
  - Apply for ENERGY STAR certification-EPA recognition for top performance relative to similar buildings nationwide-where eligible.



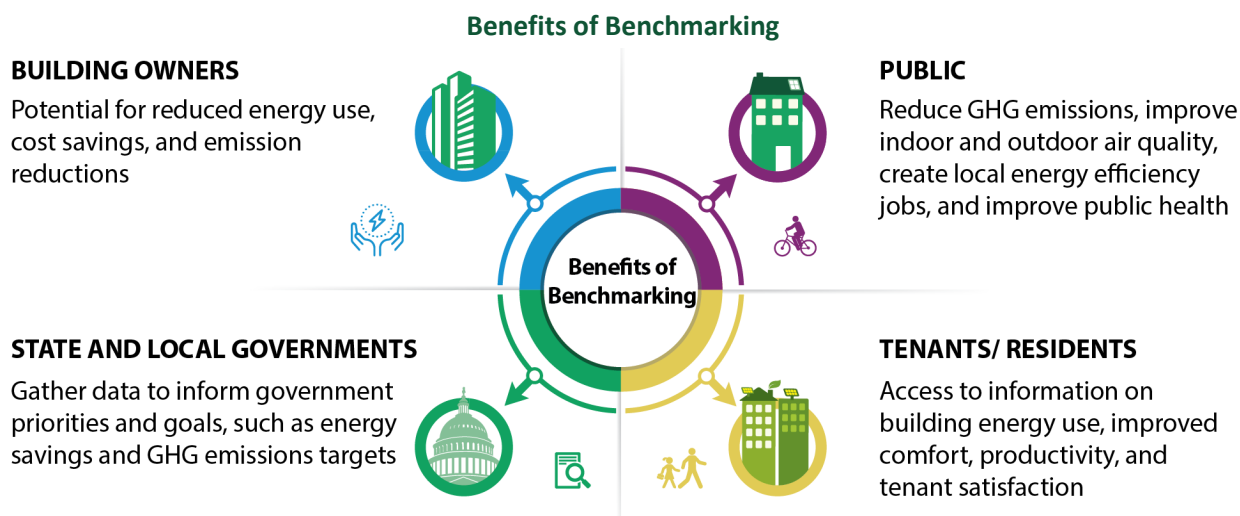
There are many ways to make benchmarking data accessible and transparent, including making it available through public websites, online comparative maps, or spreadsheets. Visualization websites, such as [Seattle's Office of Sustainability energy benchmarking map](#), display the relative performance of covered properties and allow users to select from a set of metrics and property information.<sup>iv</sup> Other methods include direct disclosure to prospective lessees or purchasers, or on-building labeling that requires building owners to display their efficiency ratings in a prominent location at their building. Recognizing that a lack of consistency in how metrics are displayed can make it difficult for the public to understand performance information, EPA created an [ENERGY STAR Energy Performance Scorecard](#) within Portfolio Manager. The scorecard offers a quick snapshot of a building's energy performance, relying on either the building's 1-100 ENERGY STAR score or site energy use intensity (EUI).

EPA's ENERGY STAR team is available to provide technical support to state and local governments across all phases of policy development and implementation. EPA can help state and local governments understand how Portfolio Manager and its metrics work in the context of their goals, exchange best practices across governments, and provide technical assistance related to quantifying the benefits of energy efficiency and other policy support.

### Understanding the Value of Benchmarking

Benchmarking energy use and publicly disclosing the results can change how people behave in and operate buildings in ways that bring immediate and low-cost reductions in energy consumption. While implementing a benchmarking policy alone does not mandate energy efficiency improvements, EPA found that buildings benchmarked on a consistent basis achieved an average annual energy savings of 2.4 percent.<sup>v</sup>

These savings realized over several years can result in significant cost savings and increased property value for building owners. For example, a 500,000 square foot office building achieving 2.4 percent savings for three consecutive years could realize cumulative energy cost savings totaling \$120,000 and an increased asset value of over \$1 million.<sup>vi</sup>



Benchmarking provides decision makers a baseline understanding of a building's energy use, enabling building owners to manage what they measure. While leading organizations often benchmark voluntarily, many building owners may be unfamiliar with the benefits of benchmarking, and energy efficiency may not be a focus for their operations. State and local governments that enact benchmarking policies have an opportunity to engage with building owners that would not normally be focused on energy efficiency to find areas for improvement. Transparency requirements improve consumer access to information about a building's energy use and make building performance more visible in the marketplace, encouraging more building owners to invest in energy efficiency.

In addition to producing cost savings and increasing asset values, energy efficiency results in multiple benefits to building occupants and the local community:

- When building owners invest in efficiency upgrades, local jobs are created to conduct audits and install equipment upgrades.
- Building occupants realize improvements to indoor air quality, comfort, and productivity from efficiency improvements.
- Reduced power plant emissions from less energy use lead to improvements in outdoor air quality and public health for the local community, and help to meet state and local government decarbonization goals.
- Energy efficiency upgrades can improve tenant satisfaction and retention and lead to EPA recognition

for building owners and operators, such as ENERGY STAR certification.

EPA's [\*Quantifying the Multiple Benefits of Energy Efficiency and Renewable Energy: A Guide for State and Local Governments\*](#) helps decision makers to identify and quantify the energy, environmental, and economic benefits of energy efficiency and renewable energy.

## Role in Building Performance Standards

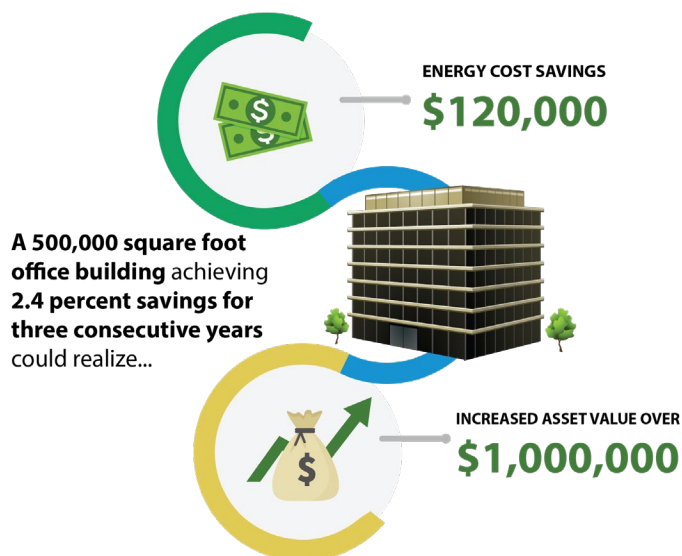
Since benchmarking energy use alone does not ensure energy savings, state and local governments have coupled benchmarking policies with other programs aimed at encouraging reductions in energy use. Many do this through voluntary campaigns, while others have required audits and/or retrocommissioning, and more recently, mandatory building performance standards (BPS). A BPS is a policy that requires building owners to meet performance targets by actively improving their buildings over time, often with interim targets that drive energy savings and emission reductions. See [Section 2](#) of this toolkit for additional information on BPS policies.

While BPS and benchmarking are distinct policies, benchmarking requirements are a meaningful bedrock to a BPS or other efforts to improve energy performance whether voluntary or mandatory. Benchmarking establishes an energy-focused relationship between the government and building owners and can result in improvements to data quality over time. Data collected through measuring and assessing energy performance can also help state and local governments to set and measure compliance with a BPS.





### Example Potential Cost Savings to Building Owners



Most state and local governments that have adopted a BPS have relied on the data collected through their benchmarking policies. In Washington, DC, tracking building energy use over time allowed the DC Department of Energy & Environment to assess the energy use of different building types and sizes, improve the quality of data, and understand the savings potential in buildings. This, in turn, helped the District develop its BPS.<sup>vii</sup> In St. Louis, city officials used benchmarking data to

determine that buildings were the largest source of pollution and the largest users of local energy, leading to the establishment of the city's BPS.<sup>viii</sup>

### Stakeholder Engagement

Stakeholder engagement is a critical element of designing any benchmarking policy. Engaging and communicating at the start of policy design and throughout all stages of policy implementation can help state and local leaders align policy objectives with community priorities, gather input from directly affected individuals, and understand the needs of historically underserved groups. Providing an opportunity for the community to weigh in on key decisions can help to create an equitable process and outcomes.<sup>ix</sup> By listening to and strengthening relationships with the community, state and local leaders can build support for the policy and ensure it keeps the interests of the affected communities in mind. In addition, engaging local utilities early in the design process can help ensure building owners will have access to the necessary data. State and local governments may want to consider the following stakeholder engagement strategies (as shown below). See the City Energy Project's resource, [Engaging the Community in Policy Development](#), for more detailed information on structuring stakeholder engagement.<sup>x</sup>

### Stakeholder Engagement Strategies

#### Identify interested stakeholders

Assemble a comprehensive list of internal and external stakeholders who should be involved in the process. Prioritize inclusion over selectivity to avoid excluding interested community members. Creating an open process early in policy design can facilitate information sharing and provide a contact list of interested stakeholders to keep informed throughout the policy development process.

#### Create a structure of engagement

Consider the resources and availability of stakeholders when choosing a structure for engaging the community. Allowing for flexibility (e.g., holding in-person meetings with virtual components, varying the meeting times to accommodate work schedules and responsibilities, and sending meeting notes to all interested stakeholders) and providing more than one opportunity to engage can increase participation. Generating a contact list of interested stakeholders can help to streamline communication throughout the policy development process.

#### Allow for ongoing engagement

Consider developing a working group or board to help guide decision making and tailor needs throughout the rulemaking and implementation process. Creating a benchmarking help desk to offer support and resources to those required to benchmark can help with continued relationship building and information sharing with stakeholders.



## Decision Points for Designing a Benchmarking Policy

State and local governments have a number of key decision points to make when designing a benchmarking policy:

1. **Determine the department responsible for administration and funding support.** Select the department that has the capacity to prioritize the design, implementation, and enforcement of the policy. At the local level, cities have generally directed policy development to their sustainability office and implementation to another department. The department responsible for implementation can create a support desk to assist building owners with compliance. To ensure sufficient staff capacity to assist with enforcement and compliance, state and local governments have found that a dedicated funding source is necessary. This funding may come from a grant or other award from an external organization or possibly through a fee placed on properties that building owners must pay when reporting.<sup>1</sup> Some governments have hired third parties to manage aspects of their programs, such as building owner support and a customer relationship management database.
2. **Identify the sectors and building types that are covered or exempted.** States and local governments need an understanding of their building stock before defining which buildings will be subject to compliance to align with stakeholder considerations and goals. The types and sizes of buildings that need to comply are key factors in determining the amount of energy, water, and GHG emissions savings that can be achieved, and inform the degree of program outreach and support needed for building owners. Benchmarking policies can cover buildings in the public, commercial, and multifamily sectors. A large and growing number of requirements include multifamily housing in addition to commercial buildings. Building size is another factor to consider in determining what type of buildings would be covered by the requirement. Benchmarking policies have tended to cover large buildings to target high energy savings potential and keep program administration manageable. Exemptions can relate to occupancy rates, financial hardship, building size, or specialty-use buildings, among others. As data collected through benchmarking can also help state and local governments to set and measure compliance with BPS policies or other “beyond benchmarking” policies, state and local governments can include covered building types in the benchmarking policy that would align with those of future performance policies.
3. **Determine a reporting schedule and process.** Building owners are responsible for complying with benchmarking reporting requirements, with some exceptions (e.g., owners associations). Reporting schedules can vary depending on local considerations. Generally, there has been phased-in reporting, where larger buildings are required to report first because they tend to have more staff capacity. Public buildings can also report sooner, allowing for the government to lead by example and enact any necessary changes before requiring other sectors to comply.
4. **Identify an approach to ensure data quality.** Creating a process to ensure data quality is a key element of a benchmarking policy. Minimizing errors in the data will make performance information more meaningful and actionable for transparency and other efforts targeted at improvement. Portfolio Manager has a built-in data quality checker and is adding fields for data verification; use of either could be encouraged or required.
5. **Decide on an approach and timeframe for transparency.** If transparency is part of the policy, state and local governments should consider which method of public disclosure will best suit their needs. There are a variety of ways to make benchmarking data accessible to the public, including through public websites, online maps or spreadsheets, direct disclosure to prospective lessees or purchasers, or requiring on-building labeling. Each of these will have widely varying costs and levels of complexity, so it is important to take into account those concerns and the likelihood of various approaches to achieve the goals of the policy.
6. **Determine how to use benchmarking data.** Benchmarking data can lead to energy efficiency improvements. State and local governments can encourage building owners to make improvements and facilitate the use of incentives, such as utility program offerings and other sources of financial support. State and local governments might consider holding a competition or incentivizing early reporting before a policy gets implemented as a way to ease building owners into the process before compliance begins. Voluntary efforts that start small can make one-on-one support, recognition, and other benefits to building owners more possible. EPA offers a suite of competition-hosting resources, such as the [ENERGY STAR Build Your Own Battle](#), and can send a message to existing Portfolio Manager users in your jurisdiction to highlight voluntary opportunities.

Source: City Energy Project. *Creating a High-Impact Building Performance Policy: A Decision Framework for Local Governments*. December 2018. [https://www.cityenergyproject.org/wp-content/uploads/2019/01/City\\_Energy\\_Project\\_Resource\\_Library\\_Decision\\_Framework\\_Creating\\_A-High-Impact\\_Performance\\_Policy.pdf](https://www.cityenergyproject.org/wp-content/uploads/2019/01/City_Energy_Project_Resource_Library_Decision_Framework_Creating_A-High-Impact_Performance_Policy.pdf). See this resource for more detailed information on key decision points.

<sup>1</sup> If funding comes from a grant or other external award, consider how funding will be provided after the grant ends.



## Key Considerations for Success

A benchmarking policy should be tailored to meet the needs of local stakeholders. Nevertheless, state and local governments can consider successful strategies that have worked for other governments when designing and implementing successful benchmarking programs. The following considerations can help state and local decision makers design and implement these programs.

### Contact the Experts for Assistance

EPA's ENERGY STAR team is available to answer questions and provide technical support across all phases of policy development and implementation, including review of draft legislation and rulemaking to ensure references to Portfolio Manager and its metrics are accurate and actionable. EPA can help state and local governments understand how Portfolio Manager and its metrics work in the context of their goals and exchange best practices across governments. EPA's State and Local Climate and Energy Program is available to provide technical assistance related to quantifying the benefits of energy efficiency and other policy support.

### Determine Requirements in the Law vs. Rulemaking Process

The degree of specificity in legislative text compared to that of the rulemaking process can factor into a state or local government's ability to gain public support and may pose a challenge when considering future changes to a benchmarking program. State and local governments have found that reserving key details for the rulemaking process can allow for greater public input and support. When developing an ordinance or legislative text, it is important to consider whether the law will be difficult to revise if changes arise in the program. For example, listing the metrics that will be collected through the benchmarking program in the law may prevent program administrators from requiring other metrics over time that could help them understand the energy and water use of their building stock. These could include new metrics added to the Portfolio Manager tool. Consider using terms such as "including but not limited to" in provisions where some flexibility seems reasonable.

### Learn about Current Activity and Aligned Organizations

EPA can develop and share an anonymized, aggregated summary of current benchmarking activity in a jurisdiction to support state and local governments in their decision making. The summary can also clarify where benchmarking is and is not happening, such as among certain types and sizes of buildings. This information can be valuable to a policymaker looking to determine the level of effort in terms of outreach and support that will be needed to launch a new requirement. EPA can also provide lists of buildings that have recently earned ENERGY STAR certification and of ENERGY STAR partner organizations in the jurisdiction to help identify possible champions of a benchmarking policy.

### Consider Going Beyond Energy

Determine whether the benchmarking policy will focus exclusively on energy use, or also include reporting and disclosure on the water that commercial and multifamily housing properties use. A large and growing number of benchmarking policies nationwide include water reporting.

### Ensure Building Owners Have Access to Data

Because of common metering and billing setups, many building owners do not have access to data on the total energy use of their buildings. This is particularly a problem in buildings with multiple tenants, such as multifamily apartment buildings and offices, where tenants often pay for their own utilities. Access to these data is essential for owners to be able to comply with the requirements of a policy. However, accessing the data is not as simple as asking the utility because most utilities are not set up to provide such aggregated data. With the advent of benchmarking policies, a growing number of electric and natural gas utilities provide improved access to energy use data in a format that aligns with Portfolio Manager, making benchmarking easier. This information is delivered either in a spreadsheet format or directly into a user's account. State and local decision makers can work with their utilities to provide necessary data in a format that works or find other ways to elevate the issue. For example, decision makers can mandate that their utilities provide data access solutions if they have that authority.



See [Section 4](#) of this toolkit for additional information on data access.

### Set up Reporting Mechanism

The most common reporting approach under existing benchmarking requirements is for the state or local government to set up a custom reporting template in Portfolio Manager, and to publish this as a **Data Request**. Building owners access the Data Request by clicking on a dedicated URL. After clicking the link, respondents select the properties for which they are reporting data and release their report to the requesting state or local government. The reported properties from all respondents are combined in the reporting template, and the requesting government downloads the data from Portfolio Manager as one data set. The other reporting approach available in Portfolio Manager is called **Property Sharing**. Through this method, covered building owners share read-only access with an account set up by the state or local government for reporting. This approach allows the state or local government to directly view the respondent's property record in real time and extract the necessary metrics for compliance and reporting. Some local governments have used these methods in tandem, helping them to resolve data quality issues with respondents more easily. These reporting approaches are summarized in the Benchmarking Reporting Approaches table below.

### Align Reporting Deadlines with Portfolio Manager Updates

Ensuring benchmarking reporting requirements are aligned with Portfolio Manager updates can help avoid

disruptions during reporting cycles. Portfolio Manager undergoes two major updates each year, in mid-February and mid-August. State and local decision makers may want to consider creating reporting deadlines that occur between these dates so that data collection can reflect recent changes and additions to the tool. This alignment can also help avoid possible disruptions during compliance cycles related to the tool going offline when updates are made. EPA generally suggests that deadlines be set at least one month before or one month after the scheduled Portfolio Manager updates.

### Focus on Data Quality

Getting accurate benchmarking data is an ongoing process. Governments may want to consider how they will work to improve data quality over time, such as requiring building owners to run the data quality checker feature in Portfolio Manager, or requiring that data be verified prior to submission.<sup>xi</sup>

### Consider the Timeframe and Format(s) for Disclosure

State and local governments can determine transparency requirements that will help ease potential concerns from building owners and maximize impact. For example, reserving data disclosure for after the second reporting year can allow for more time to work with building owners and utilities to correct data quality issues, before data is released to the public. Transparency can take many forms, including published spreadsheets, interactive maps, on-building labels, and performance scorecards that go directly to building owners.

## Summary of Benchmarking Reporting Approaches

Reporting Method	Characteristics	Pros and Cons
Data Request	Creates a "snapshot of performance" based on requested metrics and time period	<ul style="list-style-type: none"><li>• Requires action from building owner each reporting cycle that may improve data quality and completeness.</li><li>• Defined metrics and time period ensure greater data privacy.</li><li>• Offers fewer insights into historical data and into building owner inputs that could have errors.</li></ul>
Property Sharing	Provides "real-time" and full view into all building owner inputs and corresponding metrics	<ul style="list-style-type: none"><li>• Allows state or local government to see rolling view of current and historical inputs and metrics as building owner makes changes and when EPA refreshes metrics such as 1-100 ENERGY STAR scores.</li><li>• Could create issues from not prompting building owner to review data quality and completeness and may raise data privacy—concerns among building owners, requiring transparent communication around what data points will be retrieved, when, and for what purposes.</li></ul>





### Create a List of Covered Buildings

Develop a comprehensive list of buildings that will need to comply with the policy. At the local level, this list is often available through tax assessor or other records, but at the state level this list may not be readily available. At the state level, consider how you can incorporate into the policy or rulemaking a requirement that will provide needed information.

### Set up for Success in Portfolio Manager

EPA can support state and local governments so that they are set up for success in Portfolio Manager and can help to ensure that state and local governments are using the tool in the most appropriate way to achieve their goals. Additional support includes providing a list of recommended metrics to collect, helping to explain data collection methods, and providing a direct connection with EPA's user support for questions.

### Get EPA Support on Portfolio Manager Trainings for Staff and Community

A primary way that governments with new benchmarking laws will need to support building owners is training them to use Portfolio Manager. EPA can facilitate “train the trainer” sessions so that program staff are able to teach others, and to support benchmarking government-owned buildings. EPA offers robust off-the-shelf [training materials](#), regularly [hosts webinars](#), and can support trainings organized for building owners. EPA's user support team can also provide advice and training to help desk staff at the state or local agency implementing the policy.

### Develop Materials and Mechanisms for Compliance Support

Develop simple, step-by-step materials that walk through how to comply and that provide a way for building owners to get one-on-one support, ideally in real time. Focusing on common sources of potential data quality issues is a best practice.<sup>xii</sup> EPA's tools and resources can be customized to fit state and local leaders' resource needs.

## Contact EPA

Katy Hatcher, ENERGY STAR Commercial & Industrial, [hatcher.caterina@epa.gov](mailto:hatcher.caterina@epa.gov)

Brendan Hall, ENERGY STAR Commercial & Industrial, [hall.brendan@epa.gov](mailto:hall.brendan@epa.gov)

Cassandra Kubes, State and Local Climate and Energy Program, [kubes.cassandra@epa.gov](mailto:kubes.cassandra@epa.gov)

## EPA Resources

EPA offers robust training materials and support to help state and local decision makers understand how to benchmark in Portfolio Manager, implement energy efficiency improvements, and quantify the multiple benefits of energy efficiency:

[ENERGY STAR Buildings Support for State and Local Governments](#)—Fact sheet providing an overview of how EPA's ENERGY STAR® Commercial and Industrial Branch serves as a partnership among private and public sector organizations to channel marketplace ingenuity, promote energy efficiency, and prevent pollution.

[ENERGY STAR An Overview of Portfolio Manager](#)—Guide describing some of ENERGY STAR Portfolio Manager's basic functions, such as how to navigate through the tool, enter building data, and connect and share data with others.

[Interactive Maps for Energy Benchmarking](#)—Maps summarizing national, state, and local efforts that use EPA's ENERGY STAR Portfolio Manager to improve energy efficiency in commercial buildings, and service territories of the utilities providing customers with energy benchmarking data.

[ENERGY STAR Certification](#)—Overview of EPA's ENERGY STAR certification for buildings and a description of the energy performance standards set by EPA.

[ENERGY STAR Energy Performance Scorecard](#)—Overview of the scorecard that offers a quick snapshot of a building's energy performance, displaying either the building's 1-100 ENERGY STAR score or site EUI.





[ENERGY STAR Build Your Own Battle](#)—EPA’s ENERGY STAR® program invites organizations to build their own competition to save energy, water, or waste. Use no-cost guides and templates to help plan every step of your competition.

[Local Action Framework: A Guide to Help Communities Achieve Energy and Environmental Goals](#)—State and Local Climate and Energy Program’s step-by-step guide to help local and tribal governments plan, implement, and evaluate new or existing energy or environmental projects.

[Quantifying the Multiple Benefits of Energy Efficiency and Renewable Energy: A Guide for State and Local Governments](#)—State and Local Climate and Energy Program’s guide to help decision makers identify and quantify the energy, environmental, and economic benefits of energy efficiency and renewable energy.

[Tools for State, Local, and Tribal Governments](#)—Overview of the State and Local Climate and Energy Program’s tools to help state, local, and tribal governments quantify and achieve their environmental, energy, and economic objectives.

## Additional Resources

[American Council for an Energy-Efficient Economy: Commercial and Multifamily Benchmarking Policy Brief](#)—Policy brief that describes case studies focused on unique strategies and experiences with benchmarking in three cities.

[City Energy Project: Creating a High-Impact Building Performance Policy: A Decision Framework for Local Governments](#)—Decision framework tool designed to help city governments as they engage with stakeholders to collect input to inform key aspects of a local building performance policy.

[City Energy Project: Model Ordinance for a Policy to Improve the Performance of Existing Buildings](#)—Sample language to help jurisdictions draft a comprehensive policy that encompasses provisions for benchmarking and additional actions beyond benchmarking.

[Institute for Market Transformation Building Rating: Benchmarking Policy Landscape](#)—Map displaying U.S. cities, counties, and states that have adopted mandatory building energy benchmarking and transparency policies for existing buildings.

[Institute for Market Transformation: The Benefits of Benchmarking Building Performance](#)—Report that highlights the positive effects that can be achieved through benchmarking and transparency policies.

[National Association of State Energy Officials: Benchmarking](#)—Provides an overview of benchmarking and resources to help state governments achieve state energy goals.

[National Association of State Energy Officials, Facilitating Power, and Minnesota Department of Commerce, Energy Division—Designing Equity-Focused Stakeholder Engagement to Inform State Energy Office Programs and Policies](#)—Resource for State Energy Offices seeking to advance equitable policies and programs through deeper and more inclusive stakeholder engagement.

[U.S. Department of Energy Better Buildings: Benchmarking and Transparency: Resources for State and Local Leaders](#)—Guide that offers state and local governments resources for developing and implementing building energy benchmarking and transparency programs.

[U.S. Department of Energy: Standard Energy Efficiency Data \(SEED\) Platform](#)—Provides an overview of SEED, an open-source, secure enterprise data platform for managing portfolio-scale building performance data from a variety of sources.



<sup>i</sup> U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2020 with Projections to 2050* (Washington, DC: EIA, January 2020), [www.eia.gov/aeo](http://www.eia.gov/aeo); U.S. Environmental Protection Agency (U.S. EPA), *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018* (Washington, DC: U.S. EPA, 2020), EPA 430-R-20-002, <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018>.

<sup>ii</sup> “Interactive Maps for Energy Benchmarking Data, Programs, and Policies,” ENERGY STAR, U.S. EPA, <https://www.energystar.gov/buildings/program-administrators/state-and-local-governments/see-federal-state-and-local-benchmarking-policies>.

<sup>iii</sup> From this point forward, the term “building owner” will be used to indicate “building owner and/or operator,” with the understanding that many property owners rely upon third-party management companies to operate the building on their behalf.

<sup>iv</sup> “Seattle Energy Benchmarking,” Seattle’s Office of Sustainability & Environment, accessed February 2021, <http://www.seattle.gov/energybenchmarkingmap>.

<sup>v</sup> “Benchmarking and Energy Savings,” DataTrends, ENERGY STAR Portfolio Manager, U.S. EPA, October 2012, [https://www.energystar.gov/sites/default/files/buildings/tools/DataTrends\\_Savings\\_20121002.pdf](https://www.energystar.gov/sites/default/files/buildings/tools/DataTrends_Savings_20121002.pdf).

<sup>vi</sup> “Benchmarking and Energy Savings,” U.S. EPA.

<sup>vii</sup> “Next-Generation Building Performance Policies: Maximizing Energy Savings and Environmental Impacts,” Better Buildings®, U.S. Department of Energy, accessed February 2021, <https://betterbuildingssolutioncenter.energy.gov/webinars/next-generation-building-performance-policies-maximizing-energy-savings-and-environmental>.

<sup>viii</sup> “Behind-the-Scenes Interview: St. Louis Building Performance Standard,” Institute for Market Transformation (IMT), May 14, 2020, <https://www.imt.org/behind-the-scenes-interview-st-louis-building-performance-standard/>.

<sup>ix</sup> National Association of State Energy Officials (NASEO), Facilitating Power, and Minnesota Department of Commerce, Energy Division, *Designing Equity-Focused Stakeholder Engagement to Information State Energy Office Programs and Policies* (Arlington, VA: NASEO, July 2020), [https://naseo.org/data/sites/1/documents/publications/13-0376\\_0549\\_000208-KOEHLER%20FINAL%20cover.pdf](https://naseo.org/data/sites/1/documents/publications/13-0376_0549_000208-KOEHLER%20FINAL%20cover.pdf).

<sup>x</sup> Institute for Market Transformation and Natural Resources Defense Council (NRDC), *Engaging the Community in Policy Development* (City Energy Project of NRDC and IMT, December 2018), [https://www.energy.gov/sites/prod/files/2019/02/f59/City\\_Energy\\_Project\\_Resource\\_Library\\_Engaging\\_The\\_Community\\_In\\_Policy\\_De....pdf](https://www.energy.gov/sites/prod/files/2019/02/f59/City_Energy_Project_Resource_Library_Engaging_The_Community_In_Policy_De....pdf).

<sup>xi</sup> Zachary Hart, *Managing Benchmarking Data Quality: Action Team 2: Data Quality and Analysis* (IMT and Urban Sustainability Directors Network (USDN), May 2018), <https://www.imt.org/wp-content/uploads/2018/05/Managing-Benchmarking-Data-Quality.pdf>.

<sup>xii</sup> Institute for Market Transformation and Natural Resources Defense Council (NRDC), *Implementing Building Performance Policies: How Cities Can Apply Legislation for Maximum Impact* (City Energy Project of NRDC and IMT, December 2018), [https://www.cityenergyproject.org/wp-content/uploads/2018/12/City\\_Energy\\_Project\\_Resource\\_Library\\_Guide\\_Building\\_Performance\\_Policy\\_Implementation\\_Guide.pdf](https://www.cityenergyproject.org/wp-content/uploads/2018/12/City_Energy_Project_Resource_Library_Guide_Building_Performance_Policy_Implementation_Guide.pdf).