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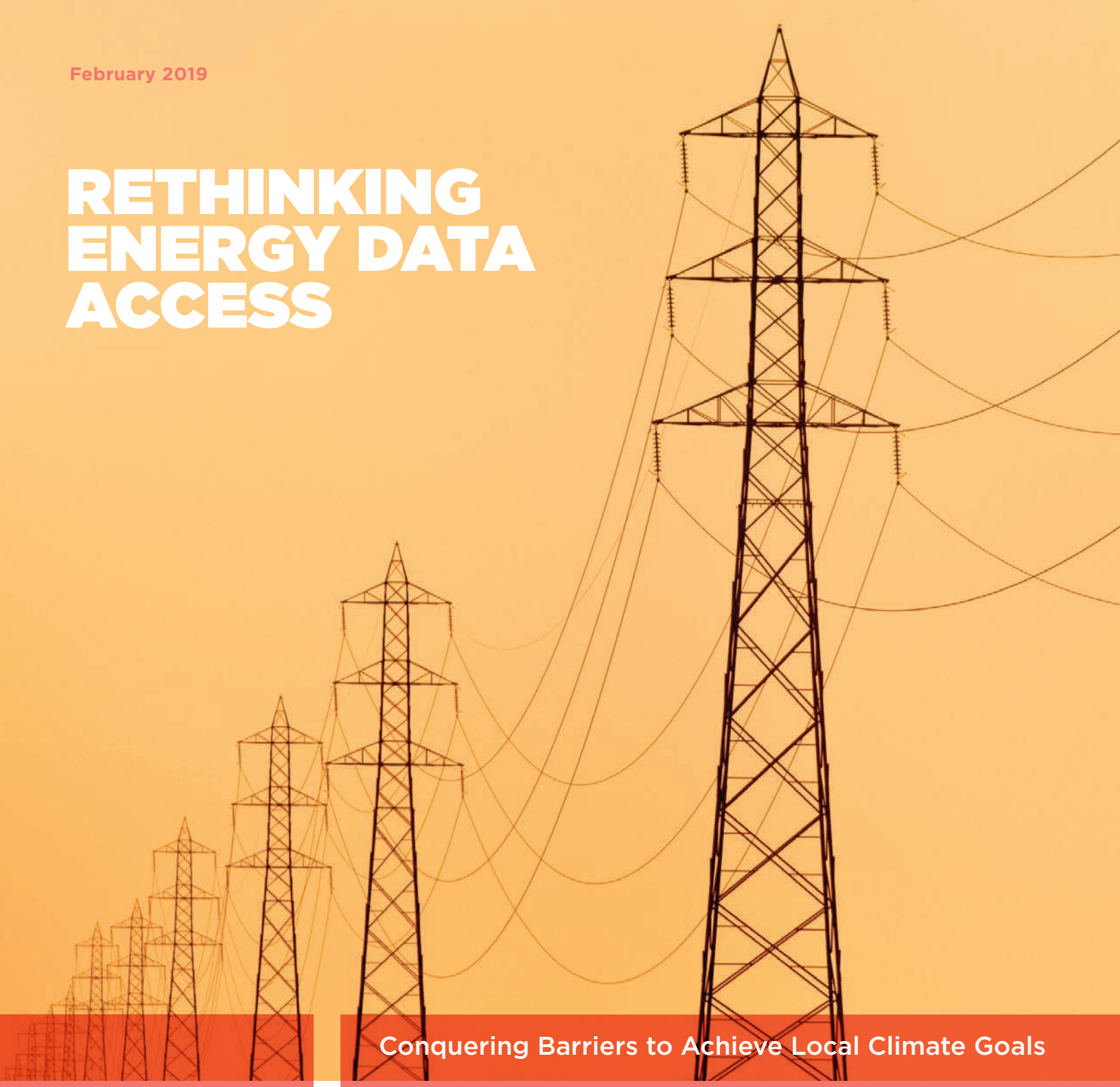
RETHINKING ENERGY DATA ACCESS



Conquering Barriers to Achieve Local Climate Goals

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Introduction

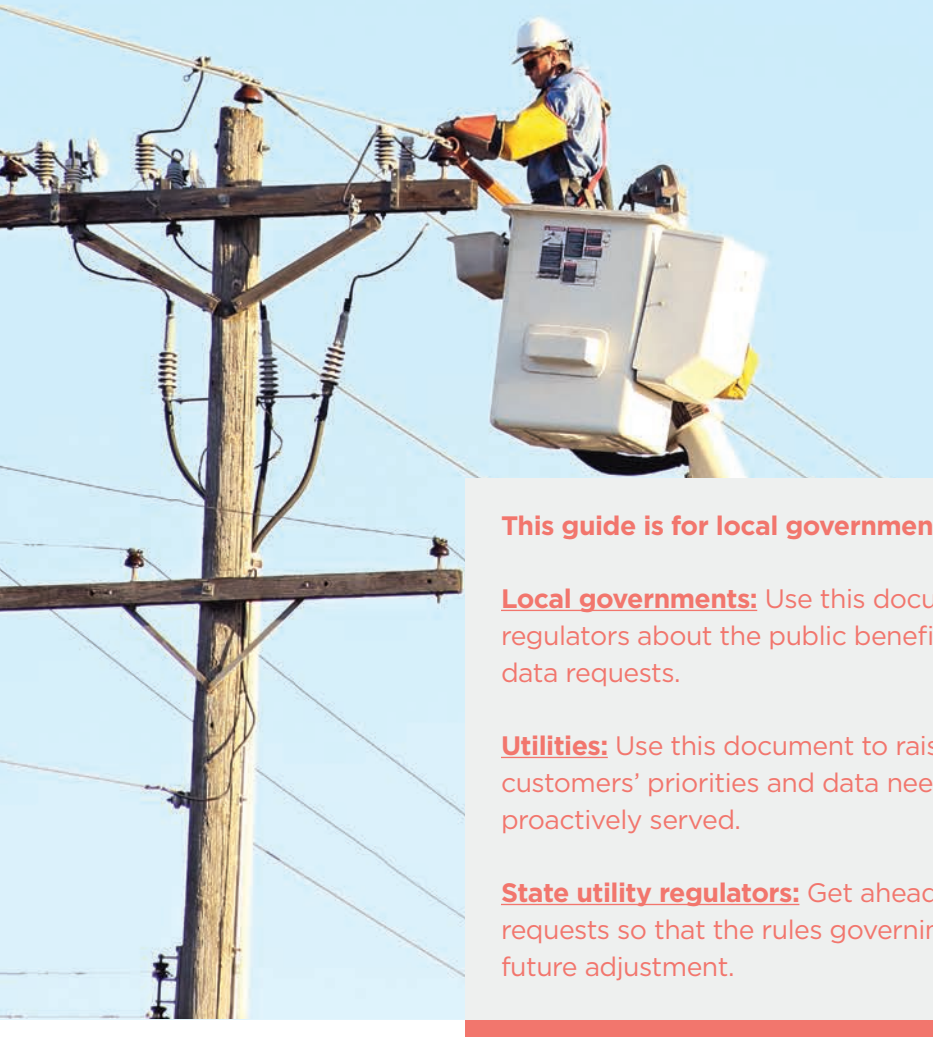
Local governments across the U.S. are aspiring to achieve a variety of complex objectives, which include developing plans to meet long-term climate goals, improving public health, increasing access to energy programs, and enhancing local resilience to extreme weather. Utilities collect energy consumption and program participation data that is invaluable to these efforts, and it is often incapable of being duplicated cost-effectively or extrapolated through other means. This report overviews the types of energy data that local governments, and particularly the sustainability staff of those entities, seek from electric and natural gas utilities in order to develop and implement the policies and programs that their constituents and elected officials put forward.

When local governments seek data from energy utilities to assist in their progress—even aggregated or anonymized data from which all personal information has been removed—they can experience a range of utility and regulatory barriers. For example, state rules intended to protect customer privacy may be ambiguous or overly restrictive with regard to the types of data requests local governments make. Where rules are overly broad or ambiguous as to whether data can be released, providing data may be at the discretion of the utility company, which will tend to err on the side of keeping data confidential, arguing that this is in the best interest of the customer. This is particularly unfortunate given that local governments can use energy data to create programs, policies, and services that benefit utilities' ratepayers and the utilities themselves. Although it is state-level regulation that often restricts what data the utilities can provide, local and state governments are frequently working toward the same objectives.

Unfortunately, municipal creativity is moving faster than utility regulation, and the existing regulations around data access are often not designed to provide the energy data needed to inform public policy decisions. To guide local governments in how to navigate this complex

What Type of Utility Do You Have?

Most energy customers are served by investor-owned utilities,[1] which are private companies that are regulated by state bodies, and this guide is tailored accordingly. Many of the same principles—such as how to discuss data privacy—are applicable when working with city-owned municipal utilities and member-owned cooperative utilities. However, the process of developing data privacy rules and practices can differ at these other types of utilities. For example, a municipal utility may have the ability to develop practices around access to energy data either internally or by adopting an ordinance, as opposed to seeking permission from a state agency.



This guide is for local governments, utilities, and regulators:

Local governments: Use this document to inform discussions with utilities and regulators about the public benefits derived from energy data and to clarify data requests.

Utilities: Use this document to raise internal awareness of local government customers' priorities and data needs, so this critical customer base can be proactively served.

State utility regulators: Get ahead of local governments' emerging data requests so that the rules governing data can be proactively considered for future adjustment.

issue, the Institute for Market Transformation (IMT) developed this report in consultation with the Urban Sustainability Directors Network (USDN). USDN members provided feedback on their own experiences in seeking data from electric and natural gas utilities. USDN members include the largest local governments in the country—cities and counties who are seeking to prevent the worst impacts of climate change, promote equitable access to the benefits of clean and efficient energy, and build robust clean energy economies in the process. Accomplishing these goals requires collaborating with utilities to understand why and how people use energy and to build markets for efficiency and renewable energy.

This report describes the significant and impactful goals that local government sustainability staff are tasked with achieving, and the importance of energy data in achieving these goals. It explains how current policies around utility data access—including state laws and utility practices—limit the availability of useful data. It offers suggestions for how local governments and utilities can work together to develop data-sharing opportunities, managing what traits data should have (consistency, accuracy, etc.) and what frameworks they can consider for data releases.

Finally, the report includes an Appendix detailing five use cases from which local governments can pull lessons learned to communicate what kinds of data they are seeking from their utilities and why. Clarifying what data is useful will not only help cities work closely with utilities to share data, but will also help them navigate conversations with utility regulators, where those actors are tasked with creating effective rules and policies. Three of the use cases included in the Appendix are established and some utilities have already provided data responsive to them; two are emerging, where recommended practices are less clear yet local governments are diligently pursuing them.

How Should Local Governments Use This Report?

Local governments often find it challenging to figure out where to start when requesting utility data. Focusing on specific resources and priorities may increase the likelihood of successful data requests.

If staff resources are limited, local governments can:

- Use one or more of the use cases and best practices in the Appendix to talk to their utility about what kinds of information they would like to receive and why.
- Emphasize that the data must be accurate and the reports must be replicable for other communities and available on a regular basis.
- Consider contracting with a trusted entity, such as an existing utility vendor or a university, to generate specific outputs with the utility's permission.

If a local government has some staff resources, is in the process of developing or implementing energy and climate plans or programs, and its utility has not agreed to provide data:

- Engage with utility regulators to propose targeted carve-outs that enable data access for particular purposes, such as community-wide energy usage data and whole-building energy usage data. Consider requesting that proceedings to address these issues be initiated or participate in preexisting relevant proceedings.
- Emphasize the model examples and data management practices discussed within this report.

If a local government has significant resources and is looking to go to the next level by driving deeper energy savings and broader access to clean power in its community:

- Engage with utilities and utility regulators to explore new legal frameworks for providing more diverse and useful data sets. Consider requesting that stakeholder processes or proceedings be initiated, if they are not already underway.
- Engage data requesters and data analysts to assess the applicability of alternative frameworks for providing data, such as transferring responsibility for data processing to a non-utility entity like a university or state agency for the jurisdiction.
- Engage data analysts, such as statisticians or computer scientists, to assess data and recommend how it should be treated due to concerns like customer privacy.

Local Governments Request Data to Achieve Critical Public Policy Goals

Local governments often seek data to advance critical goals related to sustainability and economic development … Data helps them monitor progress and be accountable to these goals.

Local governments differ from other types of utility data requestors in important ways. For example, local governments often seek data to advance critical goals related to sustainability and economic development. These goals may include commitments that are adopted based on public input, such as ballot items and ordinances or resolutions passed by elected officials. Data helps them monitor progress and be accountable to these goals.

Locally specific data is important to meeting local government goals. While it is possible to assess utility-wide or state-wide trends in particular types of energy data, there can be significant local variations that make those estimates less useful. For example, the cities in the utility's or state's territory may vary in the energy-related codes and ordinances they enforce. They may have differences in demographics, zoning, land use, and local industries that create variations in building characteristics and housing stock—while some cities may have large industrial customers or data centers, others may be dominated by universities with large proportions of rental housing. These variations make data specific to a local government more useful, particularly when it assesses the impact of its programs and policies for particular building types.

The following sections summarize public purposes for which cities may seek utility data and refer to types of data (use cases) which can be helpful to achieve goals, develop programs, and measure progress. These use cases are further explored in the Appendix.

Setting and Monitoring Climate Goals

Local governments may wish to gain a greater understanding of energy usage within their communities to support setting, and measuring progress toward, energy and climate goals. For example, as of January 2019, more than 280 cities and counties had signed onto "We Are Still In," declaring their commitment to achieve the goals of the Paris Agreement by keeping global temperature increase below 2º C.[2] Many local governments have committed to reducing their greenhouse gas (GHG) emissions 80 percent by 2050,[3] or to achieve 100 percent renewable electricity supply.[4] To track and measure progress to these goals, and to be more transparent to their residents and businesses, cities may account for GHG emissions using tools such as the Global Protocol for Community-Scale Emissions, developed by the World Resources Institute, C40, and ICLEI.[5] This methodology recommends working with utilities to obtain data about energy consumption and emissions factors for power supply that enable accurate calculations.

Many local governments select a baseline and track progress annually toward their high-level energy goals, a process for which consistent, accurate community energy usage data is critical. Total energy usage helps communities understand the proportion of GHG emissions attributable to utility energy use as compared to transportation, waste, and other contributors, and therefore where to prioritize effort when it comes to achieving their goals. Where local governments can break down total energy usage into subsectors—for example, residential, commercial, and industrial—they can further understand how economic development may play a role in increasing or decreasing GHG emissions; set realistic sector-specific carbon reduction goals; and prioritize education, outreach, policies, and funding for different types of customers. Moreover, they can assess trends in GHG emissions over time and change course to prioritize what works and address what does not.

Colorado and Massachusetts Make Community Energy Usage Data Publicly Available for Climate Action Planning

In a few cases, such as Massachusetts and Colorado, utilities have been required to produce high-level energy data, on a consistent and ongoing basis, that local governments can use for climate action planning.

In Massachusetts, towns have been able to receive the total energy usage for their community in kWh and therms for prior calendar years, as well as energy efficiency-related savings and incentives paid.[6] The data is produced through the Mass Save program, which is a collaboration of the electric and natural gas utilities and energy service providers in Massachusetts. The Mass Save approach allows towns that have multiple utilities to receive complete, combined data. However, per Massachusetts Department of Public Utilities order, any data set must be redacted when there are fewer than 100 residential premises or fewer than 15 commercial/industrial accounts.[7] This includes deemed MWh and therm savings, despite these using derived metrics.

In Colorado, the Colorado Public Utilities Commission[8] requires regulated utilities to publish Community Energy Reports for cities of over 50,000 residents and counties of over 100,000 residents.[9] Smaller jurisdictions can also request these reports. Community Energy Reports include energy use, energy savings, solar generation, and efficiency and solar rebates by customer class and calendar year. The Colorado approach also includes three unique practices:

- Local governments are allowed to submit GIS data to the utility to clarify their boundaries, and some have done so and feel this approach is more accurate.

- Although utilities are required to apply a "15/15 standard" to aggregate data (see "What is the '15/15 rule"), Xcel Energy and local governments negotiated the ability to have data be rolled up into larger categories, rather than removed if it violates that practice.[10] For example, a city may receive data for a single category of "business" customers where commercial and industrial customers could not be separately provided.

- Unlike in some states, Colorado does not require redaction of data such as deemed energy savings or incentives when there are small numbers of customers, because metrics like deemed savings are derived and because incentives are often already reported by product at a granular level within regulated utilities' annual energy efficiency reports.

RELEVANT USE CASES:
COMMUNITY-WIDE ENERGY USAGE DATA, ANONYMIZED ENERGY USAGE DATA

Seattle Uses Energy Data to Forecast the Impact of Energy Policies[11]

The City of Seattle Office of Sustainability and Environment has developed a data-driven tool that allows it to assess the implications of building energy policies and programs as it strives to achieve an aggressive goal to be carbon-neutral by 2050. By creating a "business as usual" baseline for community energy use and expected energy savings, the city can evaluate the implications of policy changes.

Seattle's tool combines data from multiple sources, including:

- Building stock assessments that included energy use, fuel splits, and end uses for a sample of residential and commercial building types, produced by the Northwest Energy Efficiency Alliance (NEEA) and Seattle City Light, the municipal electric utility;
- Information on building performance from Seattle's energy benchmarking policy;
- Aggregated electric usage data from Seattle City Light, natural gas usage from Puget Sound Energy, and thermal energy usage from Enwave, the district steam provider; and
- Conservation Potential Assessments (CPAs) that project energy efficiency opportunities for utilities.

One important factor in the development of the tool was that Seattle was able to work with a vendor who was developing a CPA for Seattle City Light and had previously completed a CPA for Puget Sound Energy. This experience meant the vendor could integrate Seattle-specific information into the model to help set the baseline in terms of future energy projections absent further city action.

Being able to analyze current and projected energy use and GHG emissions for residential and commercial buildings has allowed Seattle to prioritize. City staff were able to project energy savings associated with a Building Tune-Up policy for existing commercial buildings, which is expected to reduce the average energy use of covered buildings by 10 to 15 percent. In turn, this would reduce annual energy use in the overall commercial building stock by 5 to 8 percent and reduce GHG emissions by 6 to 9 percent. In contrast, the city was able to assess that a residential policy requiring home energy rating disclosure would have a more limited direct impact from a GHG perspective, but address other values like transparency for prospective owners. Seattle continues to use the tool to evaluate actions ranging from energy code changes to building performance standards for existing buildings.

Achieving Deeper Energy Savings and Broader Program Participation

Certain types of data may help local governments design energy programs that can address unique opportunities or barriers that particular types of customers experience on the path to becoming more efficient. For example, anonymized energy usage profiles or information about common energy efficiency measures may help local governments identify whether they should consider running bulk-buying campaigns for particular energy-efficient equipment, similar to the "Solarize" model, to make it cheaper and easier for a large number of residents to participate.[12] Additionally, utilities operate under cost-effectiveness requirements which can have the effect of limiting how much they engage customers representing low-income communities and communities of color. Local governments that have information about underrepresented neighborhoods with efficiency opportunity may be able to work with community-based organizations to promote more equitable participation in utility programs.[13] The ability to draw on community-specific networks, local messengers, and relationships is a benefit of local government involvement in efficiency programs.[14]

Local governments can also use their regulatory authority to promote energy efficiency. Cities and counties that have implemented benchmarking and transparency ordinances work with utilities to provide whole-building energy usage data to private-sector building owners. The process of benchmarking can benefit both owners and tenants. For example, students may be able to save money by choosing apartments off-campus with lower per-bedroom energy costs. Affordable multifamily housing providers that seek Fannie Mae loans may be required to perform ENERGY STAR Portfolio Manager benchmarking to access particular loan products or insurance.

Benchmarking also helps customers demonstrate leadership—for example, by achieving ENERGY STAR certification or participating in the Water and Waste competition led by the Building Owners and Managers Association.[15] Studies have found that ENERGY STAR-certified buildings can assess higher rents per square foot and experience higher occupancy levels.[16]

Benchmarking and transparency policies can also be drivers of deeper efficiency. For example, the City and County of Denver reported that buildings that submitted two years of benchmarking reports reduced energy usage by 4.5 percent and experienced utility bill savings of $13.5 million dollars in 2017.[17] Not only can building owners that benchmark identify opportunities to manage their buildings more efficiently, they may also use utilities' regulated energy efficiency programs to pursue cost-effective upgrades, helping the utility meet its own requirements around energy savings. Elsewhere, a 2017 study by the National Electrical Manufacturers Association found that 75 percent of surveyed facility managers had made investments in new, energy efficiency equipment as a result of New York City's benchmarking and transparency policy, Local Law 84.[18]

RELEVANT USE CASES:
COMMUNITY-WIDE ENERGY USAGE DATA, WHOLE-BUILDING ENERGY USAGE DATA, ENERGY EFFICIENCY PROGRAM SAVINGS AND PARTICIPATION

Commonwealth Edison Makes it Easy for Building Owners to Manage Energy

A growing number of utilities provide whole-building data for building owners.[19] The Commonwealth Edison (ComEd) Energy Usage Data tool[20] enables building owners to sign up for online accounts, request their energy usage data based on a physical building address, review a list of connected units or suites for verification, and then receive a one-time download of energy usage data or set up ongoing electronic upload to ENERGY STAR Portfolio Manager. ComEd will provide building owners with data where there are at least four accounts associated with the building. Currently, ComEd provides data to over 8,600 building owners in Illinois each year.

Promoting Local Jobs and Economic Development

Local governments have a strong role in economic development, whether it is by cultivating new industries, helping existing businesses thrive, or supporting the development of a skilled, diversified workforce. Energy costs—and increasingly, the availability of efficient building space and clean power—are factors in corporate decision-making that local governments may seek to influence.[21]

Energy efficiency and clean energy play a role in ensuring businesses' utility bills are stable and affordable. Local governments may wish to request data to understand how significant a factor energy costs are in business decision making. They may also wish to understand where utilities are anticipating load growth that will drive expensive capital investments and increase customer bills—especially given that local governments can consider using building, zoning, and land use policies to make buildings more efficient through construction incentives or mandates.

Local governments may also want to implement policies or programs that stimulate

Fort Collins Utilities Drives Energy Savings with Data Innovation[23]

Fort Collins Utilities (FCU) is creating a replicable approach to combining information on buildings and energy usage that will help it create analysis, programs, and policies in support of its aggressive sustainability goals. The data sources—including county assessor data, building permits, sales tax and ownership information, energy usage, and energy program participation—are connected using standard spreadsheets and mapping tools. FCU is able to use this information to enhance its customer outreach in diverse ways. For example:

- FCU can use building permits to identify customers with equipment, like rooftop units, that are near end of life, and present them with information about upgrading to efficient equipment.
- By identifying builders of homes with higher versus lower energy performance, FCU can work with the city buildings department to more effectively target education around energy code compliance.
- FCU combined information on building permits for roofs with a solar-potential study to engage customers on opportunities to add solar.
- By identifying the median energy usage of neighborhoods, FCU could reach out to neighborhoods with high potential to benefit from energy efficiency.

FCU's work demonstrates that where local governments have access to energy data, they can combine it with other data sources to develop powerful tools for engaging customers around energy efficiency and renewable energy opportunities.

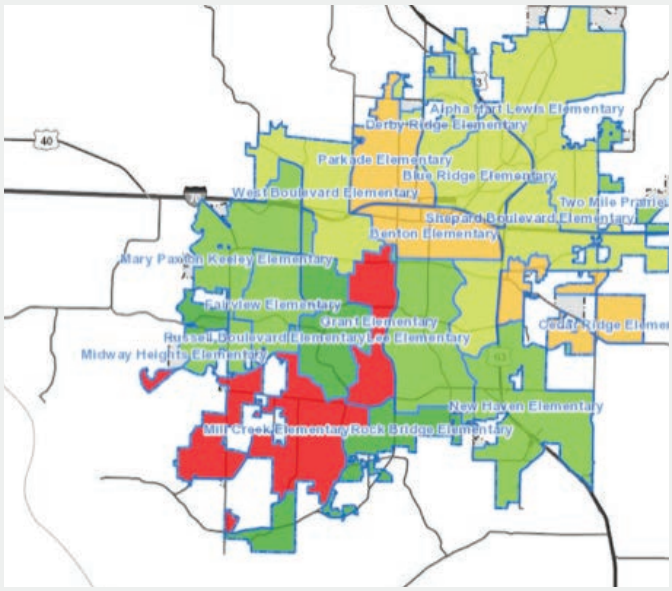
demand for a skilled, local energy efficiency and clean energy workforce. For example, requiring building owners to benchmark their buildings can help build demand for energy efficiency service providers.[22]

Finally, anonymized or aggregated data about energy efficiency and renewable energy projects can help local governments understand the cost impacts of policies and programs on the private sector. For example, they can use information about the typical savings associated with particular energy conservation measures to assess the impact of a prospective city energy efficiency program. Metrics like these can be especially useful if the city is applying for a grant that requires data to make an assessment of expected program impact.

RELEVANT USE CASES:
DISTRIBUTION GRID DATA, WHOLE-BUILDING ENERGY USAGE DATA

The CoMo Energy Challenge Builds Relationships and Energy Savings[24]

As part of its participation in the Georgetown University Energy Prize (GUEP), the City of Columbia, Missouri, built an online map that helped spur neighborhood education, outreach, and energy savings. Columbia's objective was to promote energy efficiency by running elementary school district and neighborhood competitions, an initiative called the CoMo Energy Challenge.



To do this, Columbia needed to be able to set baselines and track progress over time. However, Columbia is served by three energy utilities: a municipal electric utility, Boone Electric Cooperative, and Ameren Missouri for natural gas. Columbia worked closely with each of the three utilities to develop a standardized process for receiving data and integrating it with the city's geographic information system (GIS) to create online maps that provided quarterly energy-usage data aggregated by school district. Being able to describe what kinds of data Columbia needed and why was key to this process.

Moreover, Columbia was able to deliver value to utilities in return. The utilities would share de-identified premise lists with the city GIS team, which could map and organize them by school district, a process which helped the utilities improve their own databases for tracking local taxes and fees.

As a result of the CoMo Energy Challenge, Columbia built powerful relationships with local elementary schools. The city used the data it received from utilities to prioritize districts with high energy use intensity for outreach. City staff participated in back-to-school resource fairs and gave out energy efficiency kits at parent-teacher conference days. Moreover, the city was also able to use the energy intensity maps to identify neighborhoods that had experienced less capital investments, and to prioritize them for special outreach events. The CoMo Energy Challenge website also provided information on local energy efficiency programs for interested residents.

Efficiency and Renewable Program Administrators Produce Anonymized Data to Help Track and Assess Clean Energy Market Conditions

Some state agencies produce anonymized data that includes the size and location of distributed generation or information about energy savings associated with efficiency programs. Examples include:

- The California Solar Initiative (CSI), a partnership between the California Public Utilities Commission and other entities, produces lists of distributed solar systems that have been interconnected in California, including city, county, zip code, system size, customer class, and installer.[25] CSI has analyzed the data to show dramatic increases in capacity over time and by location.
- The New York State Energy Research and Development Authority (NYSERDA) releases anonymized datasets on participation in energy efficiency programs that include the city, state, zip code, rebate amount, and energy savings by fuel associated with upgrades.[26]
- The New Jersey Clean Energy Program, overseen by the New Jersey Board of Public Utilities, produces customer-specific datasets that includes participants in commercial efficiency programs by address and rebates they received.[27]
- The Mass Save program produces program-level, product-level, and zip code-level data about the costs to deliver various programs, and the energy they can save.[28]

Anonymized Data Sets Identify Rate Design Changes That Save Customers Money and Carbon

Per Illinois Commerce Commission approval, Commonwealth Edison (ComEd) offers an Anonymous Data Service that allows for purchase of anonymized interval energy usage data by zip code within its Illinois service territory.[29] The data is duplicative and separated out by customer class, with individual customer identifiers removed. ComEd is required to apply a variation of the 15/15 standard in which there must be at least 15 customers in the zip code and no customer's data can represent more than 15 percent of the total usage.[30] The Citizens Utility Board and Environmental Defense Fund have partnered to undertake analyses on this data, assessing the impacts to customer bills of switching to time-of-use pricing and the impacts of typical customer energy use on overall utility system costs.[31]

Reducing Energy Burden and Improving Public Health

Local governments take an active role in protecting and improving public health. This can include addressing the myriad factors that go into housing insecurity, such as energy burden,[32] as well as developing solutions for complex issues like air quality and environmentally connected diseases, like asthma.

Some types of utility data have the potential to enable local governments to address particular aspects of public health. For example, local governments may wish to better understand trends related to residents being disconnected from utility service due to failure to pay bills. Understanding geographic, demographic, and health factors that correlate to the areas where disconnections are most prevalent may enable them to create policy solutions that reduce the number of disconnections.[33] Local governments may also want to understand how patterns of energy consumption coincide with the use of particular fossil fuel generating units, which can lead to localized air quality programs and health impacts.[34] Moreover, local governments might want to look at seasonal patterns of energy usage within neighborhoods, as they can identify whether particular areas are using heating oils and could be candidates for outreach around heat pump conversion to improve public health.

RELEVANT USE CASES:
COMMUNITY-WIDE ENERGY USAGE DATA, ENERGY EFFICIENCY PROGRAM SAVINGS AND PARTICIPATION

EmPower Chattanooga Draws on Energy Data to Improve Equity Among Residents[35]

As part of their application for the Georgetown University Energy Prize, a team comprised of a nonprofit called green|spaces, the City of Chattanooga, the Electric Power Board (EPB), and other partners developed a powerful approach to directly engaging residents in disadvantaged neighborhoods to increase equity through energy efficiency. The result led to two initiatives, green|spaces' Empower Chattanooga Program, and EPB's Home Energy Upgrade Program.

For both programs, EPB leveraged its state-of-the-art smart grid to create a map of electric energy use intensity of residential accounts, which were anonymized and aggregated into a grid comprised of one-square-mile blocks. EPB conducted multiple checks on the data to ensure customer privacy, including weather normalization and summing usage to the monthly level. This map was paired with another map from United Way of Greater Chattanooga's 2-1-1 hotline that similarly anonymized and aggregated the location of calls for utility bill assistance, which is supported through EPB. Through this process the team identified three high-priority neighborhoods which experienced energy, health, and environmental risks.

After the three neighborhoods of focus were pinpointed, green|spaces held focus groups of residents to better understand the specific cultural and economic dynamics that varied between neighborhoods, built a network of diverse local nonprofits and churches, and researched best practices from around the country. Empower Chattanooga was launched to educate residents using workshops held in the neighborhoods and at direct service agencies that focus on low-cost and no-cost strategies to reduce energy use, modeled loosely on Clean Energy Durham's "Pete Street" program.

Since starting in 2014, Empower Chattanooga has educated over 2,000 residents and continues to provide several workshops per month in the focus neighborhoods, averaging around 100 total attendees per month. EPB estimates that the average savings a resident sees after attending a workshop are around 5 percent, with some instances of savings of up to 40 percent. EPB has continued to leverage data from their smart grid for measurement and verification of the effectiveness of both programs. Empower Chattanooga has since expanded to incorporate workforce development and environmental interventions to reduce asthma in the focus neighborhoods.

The data that underpinned Empower Chattanooga also informed the creation of EPB's Home Energy Upgrade program, which makes energy upgrades to qualifying low-income homeowners valued at an average of $8,000 per household at no cost to the homeowner. The program is supported by close to $3 million in funds from local foundations, the Tennessee Valley Authority, the State of Tennessee, and the Federal Home Loan Bank of Cincinnati. Since launching the program in 2014, EPB has provided 162 Home Energy Upgrades in the focus neighborhoods, with an average energy savings of 26 percent—reducing participating residents' utility bills by $531 annually and for many of them, improving their health as well.

Enhancing Local Resilience to Climate Change and Natural Disasters

Seventy-five percent of the world's population is expected to live in cities by 2050.[36] Cities are already experiencing the effects of climate change, such as heat waves, wildfires, hurricanes, and other extreme weather, which can lead to both economic damages and loss of life.[37] Utilities are also grappling with these challenges in diverse ways, with utilities in several states considering how to build and maintain generation and distribution equipment differently due to sea level rise.[38]

Some types of utility data provide local governments with insight into ways that they can make their communities more resilient in the event of extreme weather. For example, local governments may wish to understand local reliability better so they can know if particular parts of a community are uniquely susceptible to outages, and if those areas coincide with vulnerable customers, such as those with medical needs.[39] Local governments could use this information in diverse ways, including designating community gathering places for residents who lack power, targeting outreach to make housing more resilient through distributed energy resource (DER) investment, or working with the utility to develop prioritized restoration plans for facilities that perform critical services like elder care. Moreover, local governments could help utilities address outages proactively, by collaborating on vegetation management to prevent tree damage to power lines or by dispatching city-utility teams that can de-energize downed power lines and

RELEVANT USE CASES:
DISTRIBUTION GRID DATA, ANONYMIZED ENERGY USAGE DATA

Data on Reliability and Critical Facilities Helps Montgomery County Collaborate with its Utilities to Plan for Natural Disasters[40]

In the aftermath of the 2012 derecho and other major storms, Montgomery County, Maryland, sought increased transparency from its energy utilities to ensure effective natural disaster planning and response. Through participation at the Maryland Public Service Commission (PSC), Montgomery County has been able to receive data on feeder performance and vegetation management as well as information about feeder congestion to promote better planning on distributed solar deployment. Montgomery County and Pepco also actively review lists of critical facilities and restoration priorities, going beyond government facilities to include hospitals, assisted living centers, dialysis facilities, nursing homes, and other important services.

By comparing feeder performance with the locations of known critical facilities, Montgomery County can recommend proactive maintenance improvements for areas that are especially susceptible to outages, and communicate the cost implications of storm preparedness to its community. The County compares key indicators like System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI), and Customers Experiencing Multiple Interruptions (CEMI) to verify compliance with standards in the state as well as merger commitments related to overall reliability and suggest improvements. The County, along with other government and utility representatives, is an active participant in proceedings designed to standardize and make data more comparable to other utilities, such as the PSC's Reliability Targets Working Group (RTWG). Selecting a repeatable and uniform benchmark will help inform reliability investment priorities in the future.

clear roads for emergency response teams in a coordinated way.[41]

Finally, some local governments may be interested in leading public-private initiatives to develop microgrids that can improve local resilience. Microgrid engineers and developers may require information about total energy usage and overall load patterns for a particular portion of a community, like a city block or neighborhood, in order to make recommendations.

Massachusetts Will Require Utilities to Produce "Resilience Heat Maps"

Under newly passed House Bill 4857 (2018), electric distribution companies will be required to file annual resilience reports with the Department of Public Utilities (DPU).[42] The reports will include heat maps identifying areas of their service territory that are potentially vulnerable to outages due to high demand or extreme weather. The DPU has not yet developed reporting requirements, but the maps may be used to inform a related legislative change: that utilities are allowed to solicit competitive proposals for non-wires alternatives, such as energy efficiency, solar, and storage, to transmission and distribution upgrades.

How Local Governments Can Work with Partners to Improve Access to Utility Data

Local governments' access to data sets that can help them achieve the goals described above requires regulations that allow utilities to release data under reasonable conditions. Furthermore, access also depends on ensuring that utilities' implementation of the regulations results in reasonable data sharing practices. Local governments can take several steps to work with partners, including utilities and state public utility commissions (PUCs), to obtain access to energy data. This section focuses on four steps local governments should

What is a Public Utility Commission?

A public utility commission (PUC, also known as a public service commission, state corporation commission, or department of public utilities) is a state agency that regulates electric and natural gas utilities, but often other industries such as taxicabs or railroads. PUCs regulate investor-owned utilities and may regulate municipal utilities or cooperative utilities to varying degrees. The core objectives of PUCs are to keep customers' rates affordable, ensure utilities provide reliable power, and provide utilities an opportunity to earn a profit on their investments. However, some states may have broader missions that include ensuring environmental quality. PUCs are led by elected or appointed commissioners who are the decision makers in legal proceedings in which utilities apply for approval of rates or services.

In the case of data access, PUCs may issue orders or oversee rulemakings that set the standards under which data can be provided. They may take into account the following issues as they make decisions:

What types of data are at issue, i.e., what are the relevant use cases?

What value could allowing access to the data create for ratepayers, the utility, or society?

Is the data requestor asking for customer-specific information, or aggregated or anonymized information?

Are there privacy concerns associated with the data being released to a particular type of requester, like a local government, university, or energy services provider?

Should the cost of providing data be recovered through fees passed on to the data requestor, or paid for by all utility ratepayers?

Does the utility already collect the data being requested, or would it be required to collect something new?

Should the utility be incentivized for providing data in response to particular requests?

Should the utility be penalized if it releases data inappropriately, or fails to release data?

Local governments should be prepared to define the kinds of data they want and explain why, and the best way to identify data needs is to be extremely clear about what the local government wants to do.

consider when seeking data from utilities:

- Defining key use cases that help local governments address policy questions;
- Working with utilities to adopt reasonable data request management practices;
- Working with utility regulators to craft meaningful rules and policies around data access; and
- Where appropriate, evaluating alternative approaches to providing data, drawing from practices used by statistical agencies.

Clearly Define the Data You Need

Local governments should be prepared to define the kinds of data they want and explain why, and the best way to identify data needs is to be extremely clear about what the local government wants to do. Utilities and PUCs will want to know what specific data points or metrics the local government is seeking and what kind of analysis the local government wants to undertake using the data.

Sometimes, local governments may need to specify which portions of their analysis rely on utility data versus other data sources—for example, when seeking whole-building data, local governments should specify that utilities are only asked to provide building energy usage, whereas building owners would be the source for other building characteristics that are input into Portfolio Manager.

Articulating the types of data that are necessary for a policy analysis can be difficult for a local government that has neither conducted a particular study before nor received access to sufficient utility data to even know what is available to answer their questions. Before engaging with a utility around data requests, local government staff should walk through the process of developing one or more use cases that articulate their goals and purposes for the analysis with as much specificity as they can (see "What is a Use Case and How Can A Local Government Develop One?"). Use cases may provide paths to compromise: for example, a utility that is unwilling to produce large datasets directly may be willing to produce averages or other derivations of those datasets, once the purpose is understood.

Local governments can draw on the use cases in the Appendix to define the types of data they are looking for and the standards that data needs to be provided under in order to be useful. The Appendix includes three existing, well-established use cases for which local governments have provided input on best practices associated with providing useful data. A further two use cases are still emerging, as are appropriate data management practices.

Work with Utilities to Adopt Reasonable Data Request Management Practices

In addition to presenting use cases, local governments may also wish to reinforce with utilities the importance of effective data request management practices. In the absence of requirements to provide data to local governments, sometimes utilities treat data requests as one-offs rather than creating scalable and replicable practices that ensure local governments can continue to receive information.

Particularly when local governments are initially engaging with utilities around data, they may need to inform utilities about practices they can adopt that make data capable of being understood and analyzed over time. Utilities should adopt, or be required to adopt, the following practices when they respond to data requests:

- Develop a quality-control process that minimizes gaps and errors, and notifies data requestors, like local governments, when inaccuracies are identified or the methodology for providing data changes in a substantive way (i.e., a rate class change causes customers to be reclassified from residential to small commercial).
- Utilities should adopt, or be required to adopt, the following practices when they respond to data requests. For example, if a utility is considering removing a customer prior to aggregating data, it should communicate with the local government as to whether the local government

would prefer some other metric rather than the incomplete dataset, which may be unusable.

- Ensure that the data is capable of being compared over time. For example, it may be easier for a utility to identify customers by zip code to aggregate their data based on billing systems, but zip codes and zip+4 codes can fluctuate. In contrast, U.S. Census designations like blocks and block tracts are designed to create continuity over time and enable comparisons.[43] Additionally, some utilities have adopted the practice of dropping large customers from datasets, rather than aggregating the data further or protecting the customer's data in some other way. While protection of customer privacy is important, utilities could apply other statistical practices instead of removing customers in ways that may change year-to-year.
- Data should be provided in a readily usable format that does not require time-intensive data entry.

While most of these recommendations should be intuitive, local government experiences suggest

What is a Use Case and How Can A Local Government Develop One?

Use cases are used in fields like software development, business management, and data science. At a high level, use cases help define something a user (such as a city requesting data) wants to accomplish and how to design a system or a process to achieve that goal. Creating a use case clarifies what types of users are involved, what types of data are being sought, what insights that data could generate, and other factors that allow for clearer consideration of important issues like technology, privacy, security, and cost.

In order to develop a use case for discussion with utilities or utility regulators, local government staff can ask themselves the following questions:

- What overall energy goals or objective(s) am I trying to achieve?
- What question(s) am I specifically seeking an answer for?
- What kind of benefits could the answers create, and for whom?
- What data from the utility would be useful to answer my question(s)?
- Should the data be tied to a particular time period or geography?
- What characteristics should the data have to be useful—for example, if data is aggregated and some individuals are removed, will the overall data results still be useful?
- Do I require actual or anonymized data, or would particular summations of data or calculations based on data (such as averages or trends) be sufficient?
- Will I need to combine the data with other information to create derivations, like total carbon emissions from energy usage?
- Is the data necessary for public outreach, engagement, or reporting?
- Are there other local governments who have received this data in ways that were useful?
- Who on the staff would use the data, and how would they protect it if so required?
- Would I be willing to pay a fee to receive the data, if necessary?

that utilities do not consistently adopt these practices, even where they have managerial discretion to do so. Adopting these practices can reduce the need for back-and-forth negotiations over incorrect or useless data releases and enable the utility to ensure that staff resources are available to generate consistent responses to common data requests—for example, an annual request for community-wide energy usage data to create a greenhouse gas inventory.

What Common Standards Are Used to Process Data Prior to Its Release?

Utilities often process data in one of two ways to prevent it from referring to a specific customer when the data is being sent to a third party like a local government or university researcher:

Anonymization. This practice removes unique personal identifiers like name, address, or account number from a customer's individual data, such that actual data could be released without it being attributable to a particular customer.

Aggregation. This practice sums customer information like annual energy usage to create a larger total. PUC rules may further require that an aggregated data set include a certain number of customers or exclude very large customers in order to reduce the risk of individual customers being re-identified.

Universities Can Serve as Trusted Data Managers

Some local governments have worked successfully with universities to be the custodians of utility data, as a way to reduce privacy concerns and sometimes to manage situations in which open records issues may arise. Examples include:

As part of the Energize Phoenix program, funded by a Better Buildings Neighborhood Program grant, the City of Phoenix worked to develop memoranda of understanding between Arizona State University's Global Institute of Sustainability and Arizona Public Service Company that would enable the utility to share aggregated, block-level data directly with the university for goal-setting and measurement and verification.[44]

To create a Neighborhood Quality of Life Survey, the City of Charlotte partnered with the University of North Carolina at Charlotte to manage a request for aggregated, zip+4 energy usage data (with at least five customer accounts per unit) from Duke Energy Carolinas. The City and the University signed a memorandum of understanding with the utility that they would protect data security and not publish customer information except as aggregated.[45]

Some cities have explored sharing data with utilities under memoranda of understanding (MOUs) or non-disclosure agreements (NDAs). While these kinds of legal agreements can be time-consuming to develop, they can lead to greater sharing of data. Engaging university researchers can be beneficial to the process, as research institutions bring both analytical skills and cybersecurity experience to enable secure data transfer (see "Universities Can Serve as Trusted Data Managers"). MOUs or NDAs may include protective measures—such as limiting people within the organization who have access to the information and limiting the use of the data only to the purposes for which it was shared. Cities should not agree to terms that would preclude all public use of the results or conclusions derived from data.

Work with Utility Regulators to Craft Reasonable Data Access Rules and Policies

PUCs are critical stakeholders in developing effective processes to manage data requests, because they can require utilities to adopt particular practices when it comes to protecting or releasing data. State laws and the rules developed by PUCs generally prohibit utilities from sharing information about a customer with entities other than the customer, except where the customer has explicitly consented to their data being shared. These rules came about to address problems like "slamming," wherein telephone companies illegally switched customers' service providers without their consent after the telecommunications industry was deregulated. The types of data that are prohibited from disclosure include personally identifiable information like the customer's name or account number, but some states also include energy usage data or participation in particular utility services.[46]

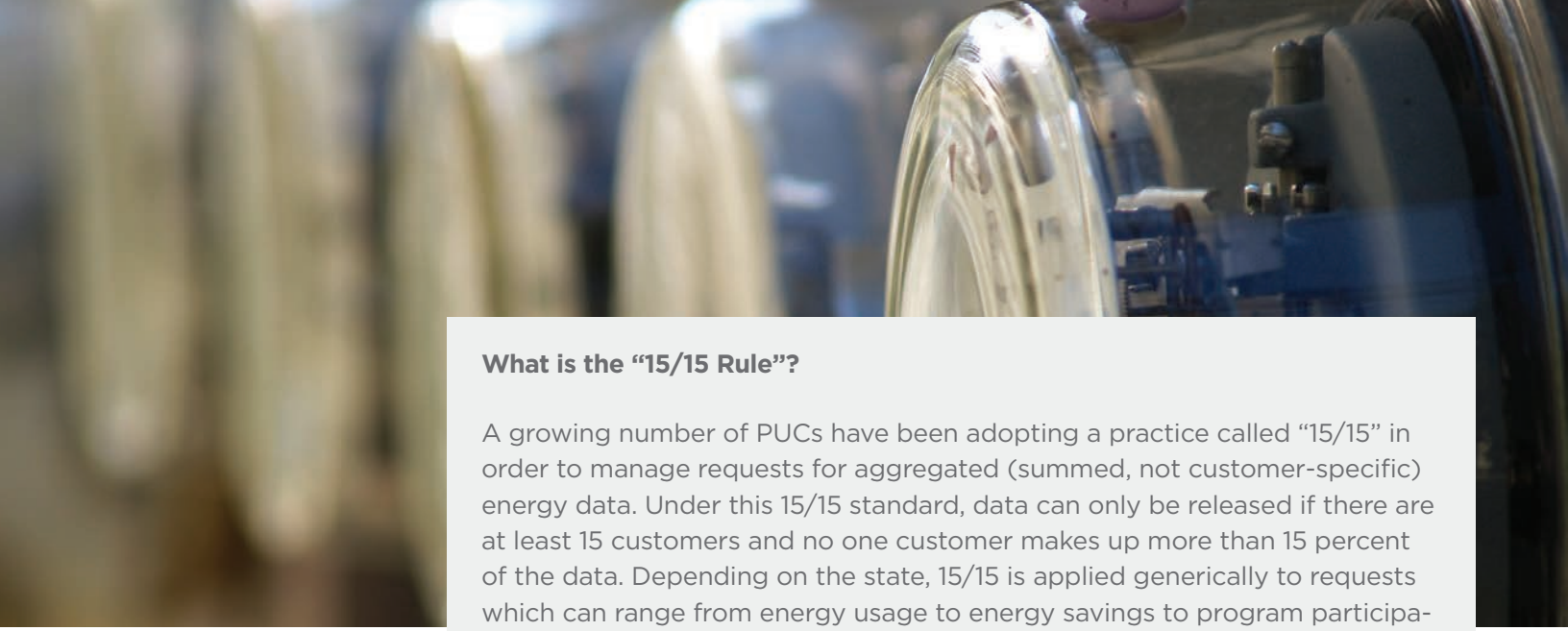
However, local governments are not typically seeking data for the same purposes as marketers, and this kind of broad rule can obstruct their efforts to achieve important local policy goals. For example, many USDN cities and counties are in utility service territories in which they cannot receive data that will allow them to accomplish foundational projects like establishing a greenhouse gas inventory.[47] Additionally, where cities have benchmarking and transparency policies, they may be barred from learning whether the building owners they referred to utility energy efficiency programs actually completed upgrades, because that may be customer-specific. In the absence of this information, cities may not know if their outreach is effective and leading to deeper energy savings.

PUCs can craft rules or adopt orders that provide utilities with meaningful guidance on what kinds of data should be released to particular types of data requestors. The trend in states such as California, Colorado, and Illinois has been to create targeted approaches for particular types of data requesters to request particular use cases, like those in the Appendix. This is because "one size fits all" policies around aggregating or anonymizing data—such as the

Does a Utility Require Commission Approval to Release Data?

It depends on the state, but not necessarily. Some utilities have determined that by aggregating or anonymizing data, they can make the data no longer customer-specific. For example, Rocky Mountain Power and Commonwealth Edison both determined that they could release whole-building data to building owners when there are a certain number of tenants in the building. Neither sought specific permission from regulators to undertake this practice because it is considered protective of tenant privacy while meeting the important goal of helping building owners be more efficient.

Some states have general rules that allow utilities to release data that is aggregated or anonymized. For example, the Washington Administrative Code says that the "utility may collect and release customer information in aggregate form if the aggregated information does not allow any specific customer to be identified."[48] This type of rule can create flexibility for utilities to respond to data requests, but it does not necessarily create oversight over whether they are required to respond to data requests or whether they apply reasonable data request management practices.



What is the "15/15 Rule"?

A growing number of PUCs have been adopting a practice called "15/15" in order to manage requests for aggregated (summed, not customer-specific) energy data. Under this 15/15 standard, data can only be released if there are at least 15 customers and no one customer makes up more than 15 percent of the data. Depending on the state, 15/15 is applied generically to requests which can range from energy usage to energy savings to program participation, regardless of geography and time granularity. An indiscriminate application of the 15/15 rule means that a request for total solar capacity installed in a community might have multiple systems excluded from the total, despite solar installations being visible to the naked eye and through online maps.

The American Statistical Association Committee on Privacy and Confidentiality has called the 15/15 standard "overly restrictive."[49] In that vein, a recent study commissioned by the New York Public Service Commission found that when the 15/15 standard was applied to energy usage data broken out by municipal tax district or zip code and customer class, 35 to 80 percent of geographic areas would not have been able to be released for small commercial customers and 80 to 100 percent of geographic areas would not have been able to be released for "other" (large industrial or transportation) customers.[50] Some cities find that standards like 15/15 mean they are unable to monitor changes in carbon emissions, as customers near the 15 percent threshold can be removed or re-added year-to-year depending on the rest of the community's energy usage.

Anecdotally, the 15/15 standard came about in California to prevent retail energy service providers from requesting data from utilities that would allow them to identify and cherry-pick customers when the state was in the process of deregulating.[51] When 15/15 was subsequently adopted in other states, it was based on its prior use in the industry rather than an assessment as to its effectiveness. Where local governments are faced with utilities adopting practices like 15/15, they could consider making the following requests of utility regulators:

- Request that PUCs order utilities to undertake a study to assess how much data would be withheld in response to a particular use case, such as annual energy usage data by customer class, if 15/15 is applied.

- Request that PUCs engage an independent statistical expert to examine the data at issue and recommend one or more practices that utilities should apply in lieu of 15/15.

"15/15 rule" (see "What is the '15/15 Rule'?") do not allow for flexibility in responding to different kinds of data requests.

Where local governments have the opportunity to work with PUCs to craft rules that create access to particular types of data, they may wish to make the following recommendations[52]:

- Data that is already publicly available in other forms should not be barred from public use when new rules are made. Commissions should acknowledge where data is already public and available. For example, state universities may already disclose energy usage data, and therefore not need to be removed from aggregated data sets due to size. Additionally, where commissions or federal agencies already require utilities to report on particular types of data, data rules should not restrict what has already been publicly available without cause.[53]
- Utilities should be required to produce certain high-impact, high-use datasets publicly on a consistent basis, based on stakeholder need. For example, Colorado[54] and Massachusetts[55] require utilities and program administrators to release annual reports on total energy usage within cities each calendar year. This allows local governments to openly engage the public and elected officials when using data to inform public reports, processes, and ordinances.
- Where rules require utilities to adopt specific practices around aggregation or anonymization, PUCs should consider engaging a statistician to recommend what those practices should be. People with expertise in statistics or data science can be found in other state agencies (i.e., departments of health), at universities, at national laboratories, or sometimes through the chief data officers of state or local governments with open data programs. Commissions frequently rely on precedent from prior jurisdictions, which was often set based on legal compromises rather than based on examination of the data by these kinds of experts. This has led to unfortunate results, such as the prevalence of the 15/15 rule despite its tendency to exclude data and make data outputs useless for the purposes they are being requested.
- Local governments should be allowed to make multiple data requests. In one example, a local government was barred from making two requests for the total annual energy usage of neighborhoods participating in a voluntary energy challenge program out of the concern that multiple, overlapping requests could be used to identify a single customer. The concern was that, if the local government was able to request the energy usage for 16 customers, and then separately for a subset of 15 of those customers, the 16th customer's usage would be revealed. However, the neighborhoods were in different parts of the city and did not actually overlap.[56]
- Rules should avoid creating duplicative requirements. Some states require both aggregation of energy data and agreement to terms preventing public use and disclosure of data.[57] Generally, limiting terms like this, or non-disclosure agreements (NDAs), are only necessary when data could *identify* a customer, not when it has already been aggregated to *de-identify* customers. This extra step means that cities may not get meaningful data to begin with, and also they may not use the data they do get to engage with the public—making the data doubly useless.
- Data requestors should be allowed to create derived datasets. For example, local governments may wish to convert electricity usage information into greenhouse gas emissions or combine neighborhood energy savings with demographic information.
- Rules should create paths for custom data requests. The California Public Utilities Commission allows researchers affiliated with accredited nonprofit colleges and universities to request anonymized data where the outcome will "advance energy understanding in California," the researcher signs an NDA, and projects have been approved by an Institutional Review Board (IRB).[58] This process could be useful for local governments and university researchers in other states to inform critical public purpose work. For example, a university research center studying factors that contribute to evictions and

Utilities should be required to produce certain high-impact, high-use datasets publicly on a consistent basis, based on stakeholder need.

Addressing Energy Data Privacy Concerns

The process of developing rules to enable data access often raises questions about what privacy protections should be in place. While customer privacy is undoubtedly important, it is not always fully analyzed in regulatory proceedings, with specific consideration to the policy objectives that could be achieved through greater transparency. The following questions can help guide this discussion:

- Is the use case under consideration clear? For example, if the focus is on monthly energy usage data for a neighborhood, discussion of privacy issues associated with interval data (e.g., 15-minute data) are inappropriate.

- What are the harms associated with the use or disclosure of data? Do they relate to social, economic, or physical harms? Are these concerns hypothetical, or based on concrete examples? Where there are specific types of harms that are foreseeable, are bad actors regulated by other laws or policies preventing them from improper use of the data at issue?

- Of note, significant claims have been made about the risks associated with the use of interval data, including the possibility that it could be misused by law enforcement, health insurers, or other actors. These claims should be carefully evaluated, as energy disaggregation algorithms remain nascent and few libraries of high-quality, appliance-specific energy usage patterns exist.[59] Furthermore, a focus around interval data can sometimes distract from other use cases that can still deliver benefits without as much real or perceived risk.

- What are the benefits associated with the particular use case? Can they be connected to tangible improvements in public health, environmental quality, economic development, social equity, or other factors? Are there different benefits associated with creating access for different data requestors?

- Are there statistical practices that could be used to protect privacy while still supporting data usefulness, like aggregation, anonymization, or production of statistical properties? Is it possible to have a statistician review the data and recommend appropriate practices? Is it possible to develop data-sharing agreements that allow analysis but prevent disclosure of certain types of information?

In the course of asking and answering these questions, data users, statisticians, and data scientists should be involved to ensure flexible and accurate rules and practices are being applied. Universities or state agencies with statistical expertise—such as public health or open data departments—may be able to provide PUCs and data requestors with guidance in this process.

housing insecurity has been unable to receive data from certain energy utilities on the prevalence of, and causes of, disconnections.

In addition to these rules and recommendations, PUCs may wish to consider whether there should be backstops to ensure the rules work as intended. This may include creating a clear timeline to revisit rules periodically based on consultation with data requestors and utilities as to their effectiveness. Furthermore, PUCs may wish to develop appeal processes or create the position of a commission ombudsman to resolve disputes over data quality or availability. Some states would require a city to file a petition or complaint for redress, and only if they can specifically prove a rule was violated by the utility, which can be onerous. These appeal processes should involve independent third parties and data experts, such as university representatives. Finally, commissions may wish to consider whether utilities should be incentivized to upgrade data systems or produce datasets for public policy through performance-based incentives.

Consider Creative Alternatives to Traditional Data Access Rules

The emerging trend is for PUCs to create use case-oriented rules that enable particular types of data to be requested by particular types of requesters. This approach has its benefits. For example, many utilities and PUCs have approved the ability of building owners to request whole-building data for benchmarking under particular standards because it is considered low-risk.[60] Approximately 11 billion square feet, over 10 percent of U.S. commercial and multifamily space, are now covered by these policies.[61] The participation of data requestors like local governments and nonprofits in regulatory proceedings to work directly with utilities has been key to the development of use case-oriented rules.

However, it may be time to begin rethinking this approach to carving out access to data piecemeal. The types of data that local governments and other entities are requesting are becoming more sophisticated. Accordingly, utilities may find that they do not have all of the requested data or that they lack the staff resources or expertise to manage requests effectively. They may find that data rules do not address the particular kind of request they have received, which can lead to them denying data requests to mitigate risk. Perhaps some utilities deny requests because they have not yet figured out themselves how to monetize data, or because data would be used to increase distributed energy resources in ways that are perceived as impacting revenue. Rules are not subject to quick changes, meaning local innovation can be delayed. Moreover, there is significant societal benefit to be had from greater transparency around certain types of energy data, such that new approaches may be justified.[62]

Accordingly, local governments may want to work with PUCs to develop an approach to data access that draws on lessons learned from state and federal statistical agencies.[63] The Energy Information Administration and the U.S. Census Bureau collect detailed information that they carefully manage for confidentiality, while balancing the need for data to be useful for public policy.[64] Many states have their own agencies that produce statistical data related to issues like public health.[65] Under this framework, PUCs could direct utilities to transfer certain types of data to trusted not-for-profit entities, such as national laboratories, universities, or agencies like state energy offices, for management of data requests. Those entities would bring to bear statistical skills, information technology experience,

Utilities Should Bear the Burden of Demonstrating Why Certain Types of Information Should be Kept Confidential

Claims of confidentiality should be vetted carefully. An administrative law judge at the California Public Utilities Commission found that regulated utilities did not provide evidence to show that maps of distribution grid equipment should be protected from disclosure because the equipment could be easily found on Google Maps and because there was an overriding public interest in third parties being able to identify opportunities for infrastructure to be deferred.[66]

As data requestors, local governments can work with utility regulators to encourage new thinking by articulating clear and actionable use cases and sharing the challenges they face in requesting data.

and cybersecurity expertise. They could combine data across all utilities in a state or region, and integrate demographic information and other public datasets. Importantly, they would also have the motivation to work with data requestors to develop reasonable approaches to address vital public policy questions with energy data.

States seeking to develop something similar would need to make decisions about whether the expertise should be centered in an existing agency or a university; where funding would come from; and whether authority to create such an entity would require legislative or regulatory approval. Given these complexities, some of which implicate legal authority, PUCs have not spent much time considering such an alternative. The California Public Utilities Commission issued a briefing paper on this concept, which it dubbed an "energy data center," in 2012,[67] but chose not to affirmatively create this entity. However, the LA Energy Atlas project, which will be expanded statewide in future years, is de facto beginning to fill that role (see "The LA Energy Atlas Enables Robust Analysis Related to Public Health").

As data requestors, local governments can work with utility regulators to encourage this new thinking by articulating clear and actionable use cases and sharing the challenges they face in requesting data. Because of variations between states, local governments may also need to engage state legislators, state energy offices, or universities to build momentum for a significant change in practice. However, the changing nature of data requests and the need for data to meet important policy goals suggests that it is timely to consider whether energy data should be managed by an entity like a state statistical agency, rather than individual utilities.

Conclusion

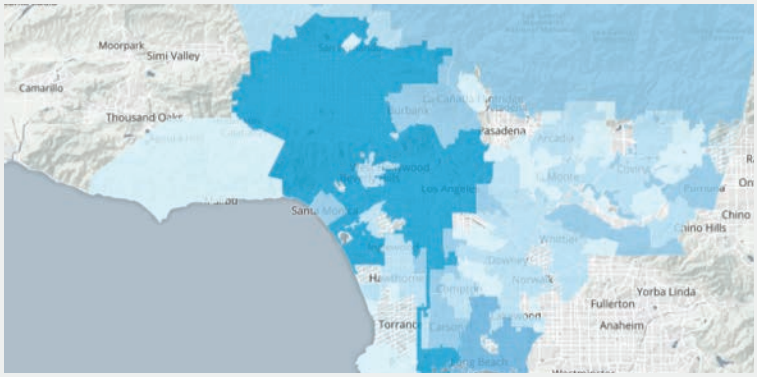
Local governments across the country are taking action to drive deeper carbon reductions, promote equitable access to the benefits of clean and efficient energy, and build robust clean energy economies. Meeting these important goals requires them to understand how energy is generated and used in new ways. Locally specific data on energy use and energy program participation can help them identify real barriers and improve access to efficiency and clean energy within their communities.

Utilities are the most direct sources of the information described in this report, but state laws and regulations are not often developed in ways that consider these emerging uses of data. Where utilities fail to release data due to ambiguity around data access, or release data that is inaccurate, incomplete, or otherwise unusable, local governments are forced to extrapolate from public data sources which may themselves be too generic to be useful, to invest in expensive solutions to duplicate data the utility could have provided, or to go without.

Local governments can work with utilities and utility regulators to be creative in developing approaches that recognize valuable opportunities to advance the public interest through providing more locally specific data. Unfortunately, utilities and PUCs often rely on existing data privacy rules from other states as precedent. While these rules have opened up new use cases that in some instances were not previously available, they are rarely critically examined from the perspective of whether they support or impede goals like policy or technological innovation—which may be blocked at the local level even as they are heralded by state regulators.

But the good news is that over the past several years, examples have emerged in which cities, utilities, and utility regulators—as well as nonprofits and researchers—have worked in concert to enable the use and analysis of data to help local governments meet public policy goals. Utilities have been able to form agreements with local governments and universities to share data to identify energy efficiency opportunities and to measure results. Local governments have worked with utility regulators to include provisions in rules that allow for community-wide data access and whole-building data access to support goal-setting around climate change and to make it easier for building owners to comply with ordinances requiring high-performing buildings. In some states,

The LA Energy Atlas Enables Robust Analysis Related to Policy and Public Health[68]



The California Center for Sustainable Communities (CCSC) at the University of California, Los Angeles is the driving force behind the LA Energy Atlas, an extensive database visualized through an interactive online tool. The LA Energy Atlas allows CCSC to work directly with local governments and other stakeholders to analyze key energy policy questions around equity, public health, and policy impact—thus filling a gap in utility services. For example, CCSC researchers have used the LA Energy Atlas in the following ways:

- Identifying cities in Los Angeles County that have the potential to generate more solar energy than they consume;
- Conducting greenhouse gas inventories related to building energy use;
- Identifying neighborhoods or regions which may be vulnerable to urban heat island effects due to usage trends and demographics;
- Assessing what size buildings should be included within a local government's benchmarking and transparency ordinance; and
- Evaluating the connection between income and energy usage. The CCSC team found that in Los Angeles County, lower-income customers tended to use more energy per square foot, consistent with older housing stock, but residents in newer homes that tend to be larger use more energy per capita, despite higher building energy codes.

The LA Energy Atlas combines monthly energy usage information with building and demographic characteristics. CCSC received the data under a non-disclosure agreement and can only publish it at an aggregated level on the online map, consistent with California Public Utilities Commission requirements. To receive the data, CCSC also had to complete an Internal Review Board process to ensure that its research methodology was consistent with best practices around ethics in human subject research. Importantly, CCSC brings to bear massive computing power, including a database server hosting over a billion records for Southern California energy customers alone, that can be queried for specific research purposes.

Because of its usefulness for policymaking and analysis, the LA Energy Atlas is in the process of being expanded to the rest of the state. The California PUC recently authorized Southern California Edison to oversee a competitive process to create a California Energy Atlas that integrates data from additional utilities, at a projected budget of $2 million.[69]

regulators have authorized researchers to request more detailed data that is being used to understand trends in energy use that can make energy programs more equitable, and energy policies more impactful and easier to administer. As the numerous examples in this report show, these kinds of data-driven initiatives are starting to bear fruit in the form of deeper energy savings, broader program participation, and more structured local decision-making around goals and objectives.

This report explains why certain types of data are important and suggests frameworks that might enable data access to achieve critical policy goals. In some states, local governments may be able to work with utilities to secure data access for a defined set of use cases. In other states, local governments may need to engage with regulators to dramatically reorient their approach to data in order to align cities and utilities in meeting urgent renewable energy and energy efficiency mandates.

In beginning the process of enhancing data access for public policy, the most important action that local governments can take is to engage with utilities and PUCs to help them understand what information is useful and how it can safely be analyzed and shared. For their part, utilities and PUCs may need to identify new ways to engage data requestors or to bring in nontraditional skillsets, like data science.

Collecting, using, analyzing, and protecting data is complicated, and becoming more so as technology advances. Local governments are identifying powerful reasons why data can be useful, and state regulators have an opportunity to re-envision data access policies in ways that support, rather than impede, their combined efforts.

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USE CASE: COMMUNITY-WIDE ENERGY USAGE DATA

Helps local governments calculate carbon emissions, set policy goals, track program progress over time, and identify opportunities for more targeted outreach around priorities like building efficiency.

DESCRIPTION

A request for community-wide energy usage data will likely ask for the sum total of kWh and/or therm consumption by the utility's customers within the city's geographic boundaries. Individual addresses or account numbers are not a component of such a request. These requests may include the following variations, depending on the city's policy purpose:

- A temporal component, such as a request for one or more calendar years so that a city can compare progress to a baseline, or a request for monthly data so a city can weather-normalize.
- A geographic component, such as a request for data to be provided based on zip codes or zip+4, Census blocks, neighborhoods, or another attribute to allow for visualization.
- An industry component, such as a request that usage be split out based on customer class (residential, commercial, industrial), rate class, or industry code (e.g., NAICS).

ROLE MODELS

- COLORADO AND MASSACHUSETTS MAKE COMMUNITY ENERGY USAGE DATA PUBLICLY AVAILABLE FOR CLIMATE ACTION PLANNING
- THE COMO ENERGY CHALLENGE BUILDS RELATIONSHIPS AND ENERGY SAVINGS
- SEATTLE USES ENERGY DATA TO FORECAST THE IMPACT OF ENERGY POLICIES
- FORT COLLINS UTILITIES DRIVES ENERGY SAVINGS WITH DATA INNOVATION
- UNIVERSITIES CAN SERVE AS TRUSTED DATA MANAGERS

[1] California Public Utilities Commission. "Decision Adopting Rules to Provide Access to energy Usage and Usage-Related Data while Protecting Privacy of Personal Data." May 2014. http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M090/K845/90845985.PDF

[2] 4 CCR 723-3 Rule 3035, https://drive.google.com/file/d/0B8qvU2knU8BkcEJneE93YkNRQmM/view.

[3] Massachusetts Department of Public Utilities, Docket 14-141 Response of the Department of Public Utilities to Data Privacy and Data Security Issues Related to the Statewide Energy efficiency Database. December 1, 2014. https://eeaonline.eea.state.ma.us/EEA/FileService/FileService.Api/file/FileRoom/9230790

BETTER DATA PRACTICES

Cities have identified the following practices as useful:

- Developing a reasonable process for aggregating data to ensure that no single customer is identified. In contrast to the more aggressive approaches of California, Colorado, and Massachusetts, the Chicago Energy Data Map[4] provides electric and natural gas usage from 2010 by neighborhood and Census block where there are at least 4 accounts present.[5] The City of Charlotte, N.C., was also approved to receive energy usage data through the University of North Carolina at Charlotte when there were at least 5 customer accounts at a zip code plus four level.[6]

- Providing breakdowns by industry segment or customer class.

- Rolling data up into the next highest unit (such as from industrial to commercial and industrial) or geographic area (such as from neighborhood to city), instead of excluding large customers.

BEST DATA PRACTICES

Cities have identified the following practices as industry-leading:

- Allowing cities to submit GIS polygons so that cities and utilities can agree on boundaries prior to data release.

- Releasing data publicly at least annually.

- Releasing data in executable formats, such as spreadsheets.

- Where a city is served by multiple utilities, have data be combined from utilities by a third party on the city's behalf.

[4] "Chicago Energy Data Map." The City of Chicago. http://energymap.cityofchicago.org/

[5] "Energy Usage 2010." The City of Chicago. https://data.cityofchicago.org/widgets/8yq3-m6wp

[6] North Carolina Utilities Commission, Docket No. E-7, Sub 997, Order Approving Limited Waiver of Code of Conduct, https://starw1.ncuc.net/NCUC/ViewFileaspx?Id=a2cbc260-00a5-4997-a6982202cd555242.

POOR DATA PRACTICES

Cities have found the following practices impede the usefulness of community-wide data:

- Failing to notify the city where an error is discovered such that the current data is inaccurate.

- Requiring both aggregation and an NDA such that data is not useful and is not capable of being publicly used.

- Adopting overly aggressive data privacy practices from which customers are unpredictably removed. States like California,[1] Colorado,[2] and Massachusetts[3] apply fairly restrictive aggregation rules to community-wide data reports—requiring between 15 and 100 premises within a city per customer type. Local governments have found it difficult to assess progress year to year as utilities remove or add back in customers without explanation or context.

USE CASE: WHOLE-BUILDING ENERGY USAGE DATA

Helps building owners understand and improve building energy performance, which local governments may encourage or mandate in order to achieve climate goals and build robust local markets for efficient buildings.

DESCRIPTION

A request for whole-building data will likely ask for total energy usage for a particular building or campus of buildings. It may include the following variations:

- A request for monthly or annual data—while annual data is required for benchmarking, monthly data allows building owners to manage their buildings more effectively in concert with weather.
- A request for cost or demand data—while local governments do not require reporting of this information, making it available directly to building owners can be beneficial to them in managing the building.

ROLE MODELS

→ COMMONWEALTH EDISON MAKES IT EASY FOR BUILDING OWNERS TO MANAGE ENERGY

BETTER DATA PRACTICES

Cities have identified the following practices as useful:

- Developing a process for verifying that building owners are who they claim to be, such as by requiring letters of authentication.
- Developing a process for aggregating data to ensure that no single tenant is identified. U.S. Environmental Protection Agency research suggests that many utilities allow data to be released to a building owner where there are at least four tenants.[1]

BEST DATA PRACTICES

Cities have identified the following practices as industry-leading:

- Providing online interfaces that allow for near-immediate download of data and electronic transfer to the building owner's ENERGY STAR Portfolio Manager account.
- Implementing "opt out" rather than "opt in" approaches to treatment of monthly aggregated data, which is less sensitive than other types of energy data. This means that data from tenants would be presumed to be provided to the building owner even where there are few tenants, unless they affirmatively opt out.

POOR DATA PRACTICES

Cities have found the following practices impede the usefulness of whole-building data:

- Requiring wet-ink notarization and/or physical submission of data release forms by individual tenants where required due to the small number of tenants within a particular building.
- Requiring building owners to submit meter numbers associated with all meters physically located in a building.

[1] "ENERGY STAR Data Access Network." ENERGY STAR. https://www.energystar.gov/buildings/program_administrators/commercial_and_industrial_program_sponsors/energy_star_data_access_network — see PPT modules

USE CASE: ENERGY EFFICIENCY PROGRAM SAVINGS AND PARTICIPATION

Helps local governments understand trends in energy efficiency program uptake, identify under-represented neighborhoods that could benefit from efficiency, and assess trends in costs related to the implementation of particular measures, which may make them more or less likely to be acted upon by building owners.

DESCRIPTION

A request for energy efficiency program data will likely ask for energy savings and program participation by the utility's customers within the city's geographic boundaries. It may include the following variations, depending on the city's policy purpose:

- A temporal component, such as a request for one or more calendar years so that a city can compare progress to a baseline, or a request for monthly data so a city can weather-normalize.
- A geographic component, such as a request for data to be provided based on zip codes or zip+4, Census blocks, neighborhoods, or another attribute to allow for visualization.
- An industry component, such as a request that usage be split out based on customer class (residential, commercial, industrial), rate class, or industry code (e.g., NAICS).
- A programmatic component, such as a request that savings or participation be divided by measure or product.
- A product-specific component, such as information about the average deemed savings associated with a particular measure.

ROLE MODELS

→ **EFFICIENCY AND RENEWABLE PROGRAM ADMINISTRATORS PRODUCE ANONYMIZED DATA TO HELP TRACK AND ASSESS CLEAN ENERGY MARKET CONDITIONS**

→ **COLORADO AND MASSACHUSETTS MAKE COMMUNITY ENERGY USAGE DATA PUBLICLY AVAILABLE FOR CLIMATE ACTION PLANNING**

BETTER DATA PRACTICES

Cities have identified the following practices as useful:

- Providing breakdowns by industry segment, customer class, and program or service.

BEST DATA PRACTICES

Cities have identified the following practices as industry-leading:

- Releasing data publicly at least annually.
- Providing sub-city geographic breakdowns to help understand equity of program access within communities.
- Releasing anonymized metrics on typical energy savings associated with energy conservation measures.
- Providing customer-specific data where available, with customer consent.

POOR DATA PRACTICES

Cities have found the following practices impede the usefulness of energy efficiency program participation data:

- Applying aggregation standards like "15/15"which requires there be at least 15 customers and no one customer comprise more than 15% of the data, to derived metrics, such as deemed energy savings from energy efficiency upgrades, that do not reflect actual usage information.

USE CASE: DISTRIBUTION GRID PERFORMANCE

Helps local governments identify opportunities to improve local reliability and resilience, to improve emergency planning and response, and to encourage targeted investments in distributed energy resources (DERs) for health, safety, and cost reasons.

DESCRIPTION

A request for information about local reliability and infrastructure could include asks for existing DERs installed by the utility's customers within the city's geographic boundaries, as well as information that can be used to make decisions about future DER investment. It may include the following variations, depending on the city's policy purpose:

- A temporal component, such as a request for one or more calendar years so that a city can compare progress to a baseline, or a request for monthly data so a city can weather-normalize.
- A geographic component, such as a request for data to be provided based on zip codes or zip+4, Census blocks, neighborhoods, or another attribute to allow for visualization.
- Information about the frequency and duration of outages on a circuit-by-circuit basis.
- Hosting capacity analyses that indicate if particular distribution circuits could withstand higher levels of DERs prior to requiring additional reinforcement.
- Information about the utility's projections for growth in demand within the city, and how that translates into the utility's distribution capital plan.

SUGGESTED DATA PRACTICES

Cities have identified the following practices as potentially being useful to providing this data:

- Some state agencies produce anonymized data that includes the size and location of distributed generation.
- Claims of confidentiality should be vetted carefully, based on evidence.

ROLE MODELS

While distribution grid-related information is a newer data set that local governments are interested in, certain examples may be worth following as they continue to develop:

→ **DATA ON RELIABILITY AND CRITICAL FACILITIES HELPS MONTGOMERY COUNTY COLLABORATE WITH ITS UTILITIES TO PLAN FOR NATURAL DISASTERS**

→ **MASSACHUSETTS WILL REQUIRE UTILITIES TO PRODUCE "RESILIENT HEAT MAPS"**

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USE CASE: ANONYMIZED ENERGY USAGE PROFILE DATA

Helps local governments understand energy usage trends within the community that may inform the development of energy policies and programs.

DESCRIPTION

A request for information about anonymized energy usage profiles may include a description of types of customers for which the city would like anonymized data or statistical derivations based on the utility's data. It may include requests for annual, monthly, or even interval (time-based data, such as 15-minute measurements) data. Individual addresses or account numbers are not a component of such a request. Data requests may include the following variations, depending on the city's policy purpose:

- A temporal component, such as a request for one or more calendar years so that a city can compare progress to a baseline, or a request for monthly data so a city can weather normalize it.
- A geographic component, such as a request for data to be provided based on zip codes or zip+4, Census blocks, neighborhoods, or another attribute to allow for visualization.
- A request for a large selection of individual, anonymized load profiles meeting a certain set of characteristics (i.e., solar customers vs. non-solar customers).
- A request for statistical properties associated with a set of customers (i.e., for a list of 500 homes built between 2005 and 2010 under a particular energy code, the high, low, and median energy usage per month).

SUGGESTED DATA PRACTICES

Cities have identified the following practices as potentially being useful to delivering this data:

- Where individual anonymized data cannot be released due to concerns about privacy, consider releasing statistical properties or "blurring" data to protect statistical properties.

ROLE MODELS

- **ANONYMIZED DATA SETS IDENTIFY RATE DESIGN CHANGES THAT SAVE CUSTOMERS MONEY AND CARBON**
- **THE LA ENERGY ATLAS ENABLES ROBUST ANALYSIS RELATED TO PUBLIC HEALTH**

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First, utilities that are required to file an annual FERC Form 1 must disclose sales of electricity by rate schedule, including number of customers, revenue collected, and average sales and revenue per customer. A review of several utilities' filings shows that because of this filing requirement, utilities may already disclose that certain tariffs have only one or two customers who consumed a particular amount of kWh in the prior calendar year.

    Second, commissions may have their own unique filing requirements. For example, the Colorado Public Utilities Commission requires utilities providing Community Energy Reports to apply a "15/15" standard to total annual natural gas sales to a city or county. However, the Commission separately requires certain natural gas utilities to file annual sales by city or county for residential, commercial, and industrial customers. See https://drive.google.com/file/d/0B10MNUeCI8FYaGhMX0c2MHJyM1U/view. Utilities seem to have redacted data—if at all—only where there were three or fewer customers in a particular data set. The only distinction between the two reports is that the latter reports include only direct sales, whereas the Community Energy Reports include direct sales and sales of "transported" natural gas if applicable (that which is transported under customer contracts with third parties). The Commission has never provided reasoning for applying two different standards.

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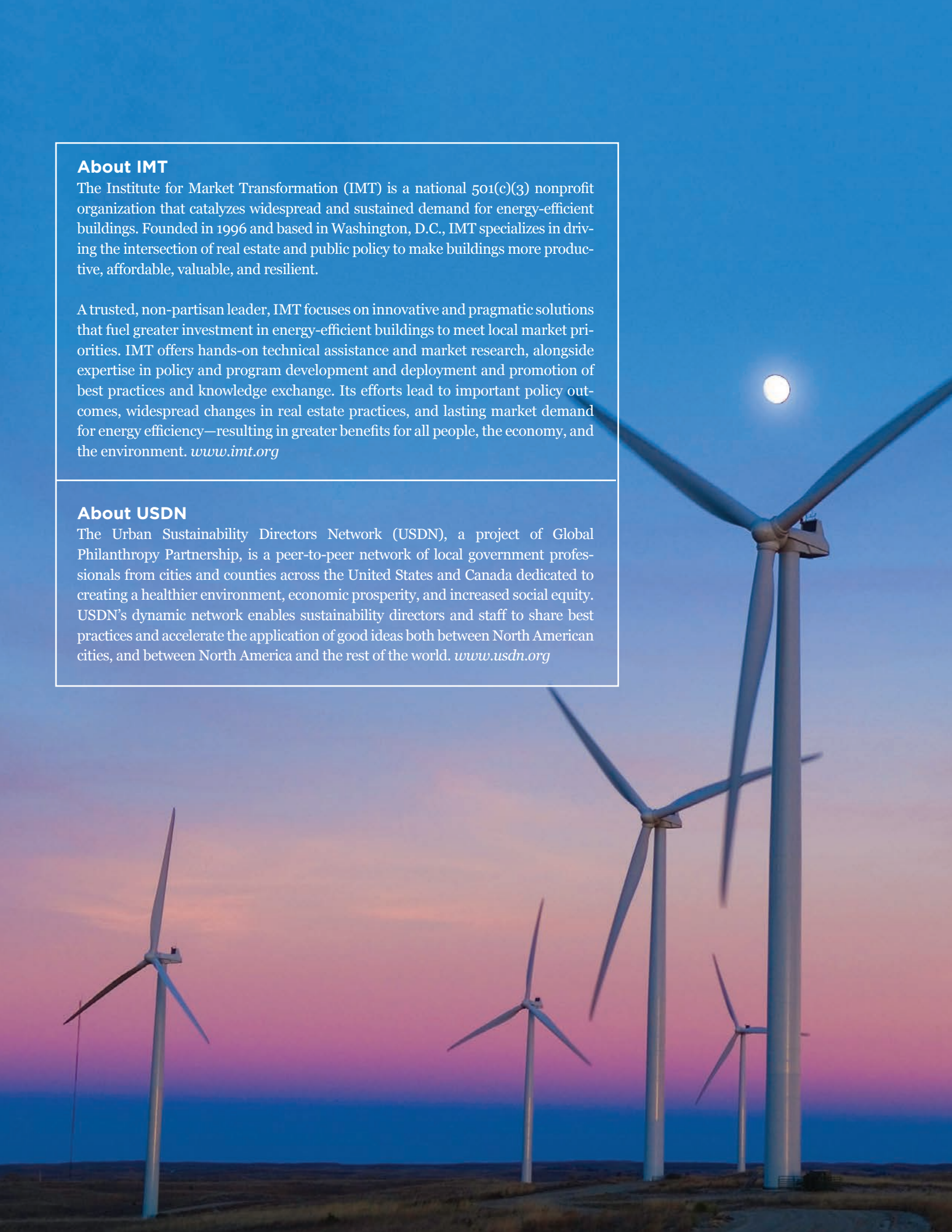

About IMT

The Institute for Market Transformation (IMT) is a national 501(c)(3) nonprofit organization that catalyzes widespread and sustained demand for energy-efficient buildings. Founded in 1996 and based in Washington, D.C., IMT specializes in driving the intersection of real estate and public policy to make buildings more productive, affordable, valuable, and resilient.

A trusted, non-partisan leader, IMT focuses on innovative and pragmatic solutions that fuel greater investment in energy-efficient buildings to meet local market priorities. IMT offers hands-on technical assistance and market research, alongside expertise in policy and program development and deployment and promotion of best practices and knowledge exchange. Its efforts lead to important policy outcomes, widespread changes in real estate practices, and lasting market demand for energy efficiency—resulting in greater benefits for all people, the economy, and the environment. *www.imt.org*

About USDN

The Urban Sustainability Directors Network (USDN), a project of Global Philanthropy Partnership, is a peer-to-peer network of local government professionals from cities and counties across the United States and Canada dedicated to creating a healthier environment, economic prosperity, and increased social equity. USDN's dynamic network enables sustainability directors and staff to share best practices and accelerate the application of good ideas both between North American cities, and between North America and the rest of the world. *www.usdn.org*

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