Innovative Outreach Tools for Leveraging Energy Benchmarking Data

Rich Freeh, Office of Sustainability, City of Philadelphia

ABSTRACT

Leading cities around the United States are implementing energy benchmarking and disclosure policies, which aim to affect energy efficiency market transformation by allowing building owners and operators to compare their facility's performance to its local and national peers for the first time.

As these policies become more widespread, an understanding of the most effective tools for leveraging this information is essential, but to date little analysis has been done of the efficacy of benchmarking program implementation.

This paper summarizes efforts by the City of Philadelphia to develop tools that go beyond public disclosure by spreadsheet to better affect market transformation. This paper will describe these tools, including the benchmarking data visualization tool, report cards with localized, sector-specific rankings for building owners, and an in-house "call center", and offer some insight into the efficacy of engaging market actors with these tools.

Introduction

In the wake of the December 2015 Paris climate talks, the importance of urgent, decisive action to reduce greenhouse gas emissions has never been clearer. Yet while the pledges made by nations around the world are critical to moving climate policy forward, the talks also made clear the vital role cities must play as policy implementers and innovators, particularly in the United States.

Cities are already moving forward to meet this challenge. Many jurisdictions have set aggressive greenhouse gas reduction goals, most notably pledges to reduce emissions 80 percent by 2050. In many parts of the United States, particularly those with dense urban cores, the majority of greenhouse gas emissions come from buildings. To help building owners better understand the link between building efficiency and carbon emissions, city and county governments have passed energy benchmarking laws, requiring building owners to report annual utility data. In most cases, this data is then publicly disclosed, allowing owners, operators, and the general public to compare building performance across the city and among jurisdictions.

As described by the Institute for Market Transformation, the leading NGO advocating for benchmarking and disclosure policies, "[c]ollecting, reporting, and sharing benchmarking data on a regular basis allows the market and government agencies to make smarter investment decisions, reward efficiency, and drive widespread, continuous improvement" (IMT 2015). In theory, benchmarking and disclosure programs will lead directly to investment in energy efficiency, saving building owners and tenants money on energy bills, creating jobs, and reducing jurisdictions' carbon footprints.

While benchmarking programs are expanding rapidly (along with accompanying audit and retro-commissioning requirements), relatively little analysis has been done to understand their impact. This paper seeks to outline lessons learned from the comprehensive portfolio of

strategies the City of Philadelphia has implemented to deliver benchmarking information back into the marketplace, the limitations of these approaches, and offer suggestions for areas for further analysis.

Defining the Challenge

The goal of energy benchmarking and disclosure programs is to disseminate building performance data across the entire marketplace, from facility managers and building owners to tenants, brokers, and policymakers. Early adopters of these policies – including New York, Washington D.C., San Francisco, and Austin, Texas – initially released this information as a spreadsheet available for online download. While spreadsheets may engage some real estate actors, targeted outreach is necessary to reach market segments who are not actively seeking this data and/or do not have the technical capacity to parse a spreadsheet.

As implementers of benchmarking programs and the parties responsible for collecting and maintaining benchmarking data, cities (or other jurisdictions with mandatory benchmarking and disclosure policies) are the logical actor to disseminate building performance data. Some initial research has found that that is the preference of the marketplace as well; cities are seen as trusted brokers, with participants having "faith [that cities will] provide unbiased data" (Rutgers 2015). Philadelphia has responded to this challenge by issuing personalized report cards, developing data visualization and mapping platforms, and using benchmarking call centers in an attempt to better inform the marketplace about building performance.

Jurisdictions with benchmarking programs are not the only actors who can potentially play a role in disseminating energy performance data, however. Utilities with mandates for demand side management may be interested in using benchmarking data to identify opportunities to target energy efficiency incentives. Non-profits whose goals align with those of benchmarking jurisdictions are also frequent partners. Key actors in the real estate community are also potential disseminators of benchmarking data, particularly in those places where they are already providing information to the marketplace.

The sections that follow will explore both city-driven and alternative methods of outreach and benchmarking information dissemination, considering both the strengths and flaws of each approach.

City-Driven Solutions

In Philadelphia, implementation for the energy benchmarking and disclosure program has been driven by a municipal agency, the Office of Sustainability (OOS, formerly the Mayor's Office of Sustainability). As such, the city has been the primary driver of outreach solutions to facilitate the introduction of benchmarking data into the marketplace. Outreach tools can reach multiple audiences, and OOS has worked to engage building owners and operators, service providers, and the public at large. OOS has focused in particular on three tools: energy performance profiles (or "report cards"), data visualization and mapping tools, and an in-house benchmarking "help center."

Report Cards

The EPA Portfolio Manager tool used by nearly all jurisdictions with mandatory benchmarking laws (City Energy Project 2015) includes some functionality for reporting on output data, including summary trend graphs in the Summary tab of a building's profile, monthly energy and water graphs, and additional performance metrics in the Goals and Design tabs and in the separate Reporting section of the tool (Portfolio Manager 2016). These resources are scattered, however, and are not immediately noticeable by users benchmarking for compliance purposes.

To supplement these resources, several cities, including Seattle, Philadelphia, and Chicago, have developed and distributed personalized building performance profiles (often referred to as report cards) for a subset or all of the building stock covered by benchmarking laws. A sample report card can be seen in Figure 1, below. These report cards have several key advantages over simply pointing building owners to Portfolio Manager for benchmarking data:

- **Single-page documentation**: Report cards gather relevant energy performance metrics (energy use intensity, ENERGY STAR score, cost data if available) on a single page, allowing a building owner/operator to quickly glance at the document and understand their facility's performance.

- **Opportunity to assess performance separate from compliance**: As Philadelphia Office of Sustainability staff are the primary point-of-contact for compliance issues (see below, Call Centers), they have experienced first-hand the desire for facility managers to disengage from benchmarking data once compliance requirements are met. The report card offers a second chance to "touch" these points of contact in a separate conversation from benchmarking compliance reporting.

- **Composite data unavailable through Portfolio Manager**: By designing report cards with local concerns in mind, jurisdictions have the opportunity to add additional information that may be relevant to owners/operators. In Philadelphia's case, report cards include sector-specific rankings, providing a local benchmark in addition to the national metrics provided through the EPA tool.

- **Access to local resources:** Local report cards also allow jurisdictions to promote local energy efficiency resources, including financing programs, utility incentives, and workshops. A report prepared for the City of Seattle on their report cards found particular value in attaching a staff person's name to report cards, suggesting building owners would be interested in a follow-up conversation (Resource Media 2015).

Figure 1. Philadelphia Building Energy Performance Profile. (Source: Philadelphia Office of Sustainability.)

Report cards can be mailed directly to building owners or facilities managers, or can be emailed using contact information derived from the Portfolio Manager tool. In either case, a key challenge in disseminating this information is getting it into the right hands, as described below.

Mapping and Data Visualization Tools

Report cards can be an effective mechanism for disseminating energy performance data back to building owners and operators, but as a primary goal of benchmarking and disclosure programs is to convey this information to non-owner actors within the real estate community, PDFs sent directly to owners and operators are not sufficient to achieve program goals.

As the Office of Sustainability prepared for the first year of public disclosure of benchmarking data in 2014, it convened a stakeholder group that included building owners, energy service companies, and energy managers to review existing public disclosure methods and recommend strategies for better disseminating this data back into the marketplace.

The key finding from this outreach was that spreadsheets were considered useful (particularly by service providers) but that more visually appealing information could have a

greater impact in the marketplace, particularly for those actors less likely to spend time reviewing a spreadsheet, matching property addresses, and manually comparing the performance of particular buildings.

Given these findings, Philadelphia worked with a local data visualization firm, Azavea, to develop a mapping platform that would allow more casual users of building performance data to access this information without needing to download a spreadsheet. The resulting Philadelphia Benchmarking Data Visualization Tool, which can be seen in Figure 2, has three core elements:

- **Summary metrics**: Visitors to the tool will first see an option to review summary charts and graphs of benchmarking data, allowing them to sort by sector type and fuel use and see energy performance metrics for the most recent year of data available.
- **Geospatial mapping**: A second page contains a mapping interface where users can identify a particular building or set of buildings spatially, or filter by sector or performance metrics to find properties that meet certain criteria (e.g. ENERGY STAR scores of less than 50).
- **Comparisons**: The mapping interface also allows users to compare up to five buildings by selecting the building, clicking Compare on the pop-up screen, and when a sufficient number of properties are selected, clicking Compare on the top-right corner of the screen. This opens up a separate page showing comparisons among all selected buildings across key performance metrics, as well as a histogram comparing those properties to similar buildings citywide.
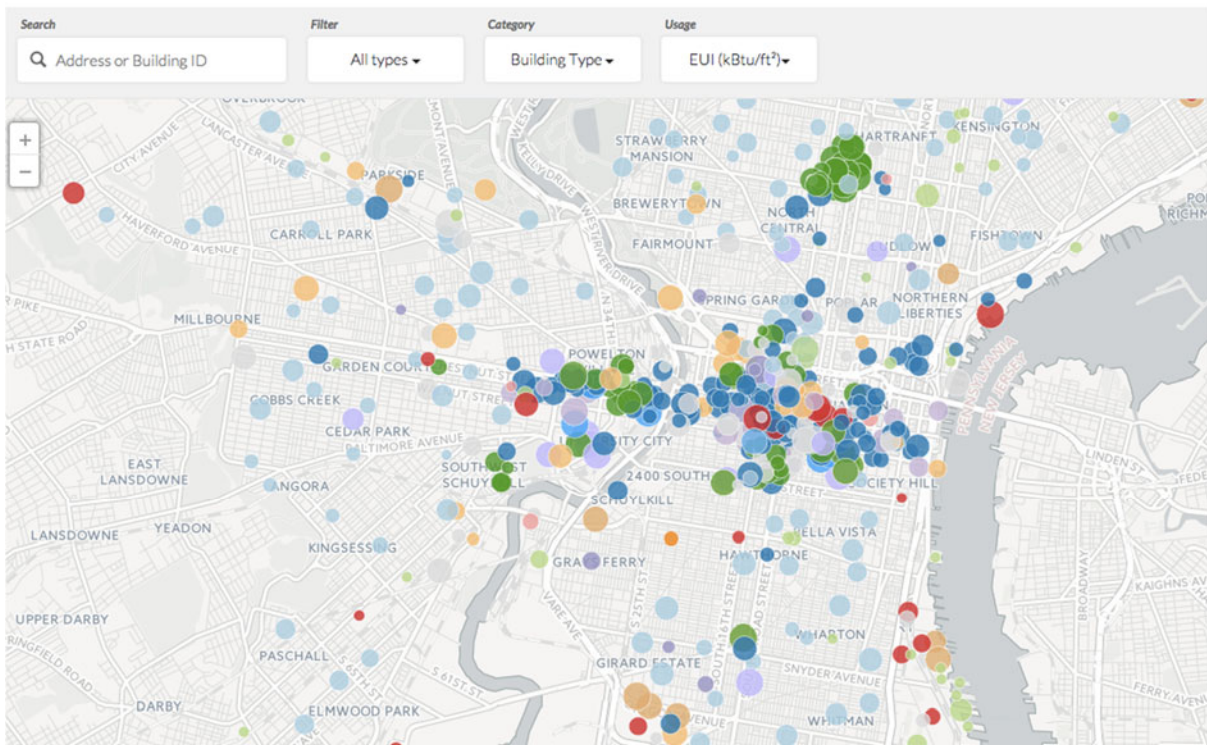

Figure 2. Snapshot from Philadelphia Benchmarking Data Visualization Tool, demonstrating geospatial mapping of building performance data. (Source: http://visualization.phillybuildingbenchmarking.com)

An initial evaluation of the efficacy of this tool was conducted by the Rutgers University Center for Green Building in June 2015. The evaluation validated many of the findings from the working group that developed the tool, including that "most participants [do not] look favorably on working with larger spreadsheets," and that the tool provided the most value as a local companion to the national performance metrics provided by Portfolio Manager (Rutgers 2015). Critically, the report also provided recommendations for further improving the tool, including adding cost information, better landmarks for navigation, and integration with other real estate data platforms, a proposal that will be discussed below (Rutgers 2015).

Call Centers

The first two methods described in this section deal with platforms for delivering information back to the marketplace, but both assume some level of effort on the part of actors to actually seek information out (or, in the case of the report card, at least open a file or letter mailed to them). These methods do not resolve one of the central challenges of scaling energy efficiency: that for many market actors, energy is far from the top priority when thinking about their buildings.

A more urgent priority for many building owners is complying with local regulations. In Philadelphia, the Office of Sustainability has noticed a sharp uptick in mandatory benchmarking reporting after the compliance deadline when building owners are issued non-compliance notices by Philadelphia Licenses and Inspections (the office responsible for code enforcement and building safety in the City of Philadelphia). Notices on L&I letterhead (and carrying the threat of a fine) are a particularly impactful way to get the attention of building owners.

In many cases a failure to benchmark prior to the deadline is not malicious, but a result of ignorance of either the deadline itself or the process required to submit energy performance data. As such, most cities with benchmarking programs, including Philadelphia, have dedicated staff (often referred to as a "Call Center") responsible for helping building owners through the reporting process.

Philadelphia is one of a few cities that manage the call center internally (City Energy Project 2015). This not only provides cost savings to the city, it allows city staff to communicate directly with building owners and operators. By managing call centers internally, the city achieves three key goals:

1) Feedback from building owners on how to improve the benchmarking process (either by strengthening city-offered resources or by providing feedback for the EPA) is logged without filtering through an intermediary.

2) City staff can form relationships with building owners and operators; in some cases the same building representatives contact the Office of Sustainability each year, and come to know and trust the office as a trusted source of information on energy efficiency (Rutgers 2015).

3) While calls are primarily oriented around helping owners and operators comply with benchmarking regulations, they also provide an opportunity for city staff to inform facility representatives about the goals of benchmarking, the availability of report cards and the data visualization tool, and applicable resources for making energy-efficient investments (e.g. utility incentives).

While city staff cannot form relationships and communicate available incentives with every building owner that seeks benchmarking assistance, the volume of conversations staff have with buildings does demonstrate the opportunity these call centers represent. As seen in Table 1, OOS staff has had more than 3,000 unique opportunities to discuss the energy benchmarking and disclosure program with building owners and operators:

Table 1. Summary of benchmarking call center activity, 2013-15.

	Year One	Year Two	Year Three	Total
Number of Emails	1300	661	432	2393
Number of Phone Calls	508	250	220	978
Total	**1808**	**911**	**652**	**3371**

These numbers include multiple requests by a single building representative, but nonetheless demonstrate the opportunity available to cities to discuss energy efficiency with building operators through the benchmarking help center process. Not every building representative will want to discuss building performance when looking for assistance with benchmarking (nor will those representatives necessarily be empowered to make improvements to the building), but it is at least an opportunity to educate and build capacity within the private building sector.

One important note is that just twenty of the roughly 2,000 buildings covered by Philadelphia's benchmarking law requested assistance over the phone or via email all three years of the program's implementation. The more frequently a building reports, the less assistance they'll need (and thus the less likely they are to proactively contact the help center). This suggests that it is a best practice to attempt to building performance and investment opportunities the first time you speak with a building representative; you may not have a second opportunity.

Discussion and Limitations

In each of the three outreach strategies described above, there is a clear common challenge: information distributed to building owners, regardless of strategy, will not necessarily make it into the hands of key decision-makers for that facility. While anyone can use the data visualization platform, the city has not developed a strategy to increase awareness of the tool among building owners. Report cards are emailed to the contact of record through the EPA Portfolio Manager system; while this can at times be a building owner or high-ranking representative, in other cases it is the person directly responsible for submitting benchmarking data to the city. In Philadelphia's experience, this actor is rarely a decision-maker (though they can serve as an advocate for efficiency in their building). Likewise, building representatives reaching out for benchmarking support tend to be toward the bottom of the organizational chart.

Report cards and benchmarking support share another, related challenge: by hyper-targeting the building representatives responsible for benchmarking, these strategies help to build awareness of energy performance among building management. However, that still leaves the rest of the real estate sector (current and prospective tenants, brokers, and energy service

providers, among others) out of the loop. While the data visualization platform does provide information back to those actors, developing tailored outreach to those market segments could also be valuable.

Finally, each of these strategies has a cost to jurisdictions. Mapping tools like Philadelphia's take money and resources to develop and maintain, as well as additional effort to sufficiently market them to the real estate community. Likewise, benchmarking help centers – particularly those run out of city offices – require dedicated staff capable of communicating the complex messages of energy efficiency to building representatives who may have a significant amount of knowledge about these issues or very little. Report cards may be the lowest cost of the three strategies, though they still need staff to develop and distribute, and may require additional software (in Philadelphia's case, the Adobe Creative Suite and the Salesforce customer relationship management cloud-based system).

Given these costs, an alternative to city-implemented outreach strategies is partnering with other groups to bring benchmarking data to the marketplace. The next section will explore some existing and potential partnerships.

Partnerships and National Initiatives

The previous section outlined city-driven strategies for bringing benchmarking data into the marketplace, but it is important to recognize that jurisdictions are not the only possible disseminators of this information. Below are three potential partnerships for using benchmarking information to catalyze the energy efficiency retrofit marketplace.

Aligning Policies with Utility Programs

Utilities are a natural outreach partner for bringing benchmarking data into the marketplace. Electric and gas companies frequently have better contact information for customers than is available to cities through property assessment and benchmarking channels, and thanks to demand-side management program requirements in many states, utilities have a strong incentive to invest mandated funding for energy efficiency in those buildings where it will have the greatest impact.

This clear alignment of goals is tempered by the potential for a fraught relationship between utilities and jurisdictions with benchmarking programs. In some states, utilities have made state-level challenges to data access for benchmarking on grounds of privacy and workload concerns; in California, a state law was required to ensure municipalities and building owners had access to whole-building data for benchmarking purposes (Burger 2015).

This dynamic may be changing, however. Programs like the Department of Energy's Better Buildings Challenge Data Accelerator are helping to align utilities and municipalities to better provide energy data to building owners, and both the Seattle and Philadelphia report cards offer clear links to utility incentive programs.

Building Non-profit Partnerships

Mission-aligned non-profits, including but not limited to chapters of the U.S. Green Building Council and American Institute for Architects, can provide additional outreach capacity while maintaining independence from the city in its role as the enforcement agent for a

benchmarking requirement. Moreover, many jurisdictions are legally prohibited from recommending contractors; for building owners looking to use benchmarking data to make informed decisions on energy-efficient investment, non-profits are often the most trusted source available for recommendations.

In many jurisdictions, non-profits perform much of the required outreach for benchmarking implementation. In Chicago, Elevate Energy has played a primary role, "operating the benchmarking help center and conducting data management" (City Energy Project 2015). On a more limited basis, the Delaware Valley Green Building Council has been active in Philadelphia hosting informational sessions and trainings to help building owners understand both how to comply with benchmarking data and what to do with it once they have done so.

Greater alignment between jurisdictions and non-profits may be in store for the future. Among the most ambitious efforts currently being planned is a partnership between the City of Chicago and Rocky Mountain Institute, dubbed Commercial Energy+. The program is targeted at the large commercial building sector (the first to be benchmarked under Chicago's phased-in policy), and will leverage local incentives and economies of scale to offer low-cost energy conservation measures to building owners (RMI 2016).

Engaging Real Estate Stakeholders

In many jurisdictions, the response from all but the most sustainably-minded real estate actors to mandatory benchmarking and disclosure policies has been lukewarm at best (and outright opposed at worst). Local chapters of the Building Owners and Managers Association frequently speak out against public disclosure of energy performance data, while real estate brokers have generally been silent on the issue.

As the leading non-profit advocating for benchmarking and disclosure policies, it is not surprising that the Institute for Market Transformation has taken this challenge on as one of its core initiatives in recent years. IMT's Commercial Real Estate Engagement division is promoting the value of building performance data to the real estate community through green leases, which help share the value of energy-efficient investments between building owners and tenants when the latter is responsible for utility bills (Institute for Market Transformation 2016). In 2014, IMT worked with the City of Philadelphia and the Consortium for Building Energy Innovation to run a broker training series focused specifically on understanding commercial building energy performance.

These initiatives are effective at building awareness in the real estate community, but to truly ensure benchmarking data is impacting the marketplace it should be displayed in the tools those professionals are using to make decisions (e.g. the CoStar database), or better incorporate real estate data into energy visualization platforms. As mentioned above, research done by Rutgers University suggests the real estate community would consider the possibility of integrating building performance data into real estate transaction databases; doing so could elevate energy to the same playing field as price per square foot or leasable area as a consideration for owners, tenants, and brokers when making transaction decisions.

The Challenges of Evaluating Outreach Tools

In an ideal research environment, cities and other jurisdictions would specialize in one or several of the above-described outreach tools. Over time, they would work with non-profits and

academic institutions to evaluate the impacts of these resources on the ultimate goal of benchmarking tools: reducing energy consumption and greenhouse gas emissions.

Public policy, of course, is not an ideal research environment, and a series of challenges have hindered efforts to evaluate these outreach tools:

- **Difficulty of project measurement and verification (M&V):** The process of simply understanding how much energy (or carbon emissions) has been saved through a retrofit is a time- and cost-intensive process, as suggested by the 121-page federal handbook on M&V (FEMP 2015).
- **Long time horizons for projects and programs**: The City of Philadelphia embarked on a guaranteed energy savings project across its four largest downtown office buildings in 2011; only in 2016, a year after completion of all ECMs, will energy savings appear in the benchmarking results for those facilities.
- **Untangling policy impact**: Even for those projects whose energy savings can be verified in a timely manner, aggregating those impacts and understanding which, if any, policy measures are responsible for building owners choosing to undertake a given project is challenging.
- **Quality of reported performance data**: All energy benchmarking data requires at least some user input (at the least to set up a building profile), making the resulting information susceptible to user error and other challenges researchers associate with self-reported datasets.
- **Understanding the value of anecdotal information**: In Philadelphia, staffers sometimes hear from building representatives that "benchmarking is working" or that an energy company is using performance metrics to sell its services. At what point do such anecdotes reach a critical mass such that they can be used as evidence of success? New York met with benchmarking consultants to gather qualitative data, which may be a best practice for other cities moving forward (PlaNYC 2012).
- **Multiple actors pursuing evaluation**: While not explicitly a challenge, a number of non-profits in the building energy field are thinking through the answers to these questions, but as of yet a single leader has yet to emerge to guide research (repeated requests for similar information from multiple organizations remains one of the most common frustrations cited by municipalities working on climate policy).

Many of these challenges were addressed in a comprehensive way by the Department of Energy's handbook on benchmarking evaluation, an exciting step toward serious program evaluation (DOE 2015). Building on this work and extending it to the outreach tools described above inform the recommendations in the final section of this paper.

Conclusion

This paper sought to highlight some of the key outreach strategies being used in Philadelphia and other leading cities to bring benchmarking data into the marketplace. There is still much work left to be done to understand the efficacy of these and other strategies for educating the real estate community about the value of building performance, but from the benchmarking jurisdiction perspective there are a few early takeaways to consider:

- **Remember the goal**: As a municipality running a benchmarking program, it is easy to get caught up in the day-to-day implementation of the policy, tracking compliance rates, web clicks, and (though it is important for other reasons) data quality. Jurisdictions and their partners should remain focused on the long-term goal of these programs: improving the energy efficiency and reducing the carbon footprint of its building stock.
- **Tailor outreach strategies to market segments**: No single outreach strategy will successfully make the case for energy efficiency across all of the actors in the real estate community. Outreach managers should be thoughtful about which market segments they are seeking to engage with any given program and tailor communication, materials, and strategy to meet the needs of that market.
- **Build and concentrate evaluation activity**: Initial evaluation work done by the Department of Energy around the efficacy of benchmarking policies is a critical first step, but more thorough analysis should be done to address the evaluation challenges described above and better understand the efficacy of building performance disclosure strategies and associated policies (e.g. auditing and retrocommissioning mandates, building operator trainings). Partner organizations interested in undertaking this evaluation should work together, broadening the evaluation knowledge base while limiting redundant research and reporting activity.

It is important to remember that this is still a nascent area of work. The first benchmarking policies were passed within the past six years, and the disclosure of information from those laws is only now fully entering the marketplace. As more jurisdictions pass and implement these programs, it will become easier to evaluate the impact this information is having in the marketplace.

In the meantime, jurisdictions should continue to innovate around ways to better bring building performance information into the marketplace. This paper explored a few ways this could and does happen in Philadelphia and other jurisdictions, but this paper does not limit the possibilities to just those options. New and better options will help policymakers and the real estate market meet our shared goal of making buildings more efficient and reducing their impact on our communities' carbon footprint.

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