Introduction

During the last four years, a number of cities have enacted building energy benchmarking mandates that require building owners to track and disclose building energy performance. The early focus for these cities was on program design and compliance. A handful of cities are now poised to move beyond that initial focus. These cities have programs with strong compliance rates and significant building energy performance data. To achieve their intended energy efficiency goals, the cities' benchmarking programs rely on information transparency in the marketplace which adds value to energy efficient buildings and spurs increased investment in efficiency measures. However, major market segments are not yet accustomed to understanding or acting upon this new category of building data, which limits the impact of these policies. The challenge for implementing cities is to find ways to communicate energy performance information in a way that motivates building owners to increase energy efficiency and to continue to evolve their energy policies to achieve deep energy efficiencies in their communities. With funding from the Bloomberg Sustainability Award of the USDN Innovation Fund, the City of Seattle and Institute for Market Transformation convened leading cities in Washington, DC, for three days in March of 2014 to discuss these issues in detail and map out key strategies for moving forward. This report highlights emerging best practices in the areas of data and communication and summarizes key findings and identified next steps from the convening. It also provides a roadmap for these early adopters as they work to maintain momentum and ensure success in their benchmarking programs, and gives critical guidance for new cities moving into this policy space.

Background: Case Studies

There are numerous examples of communication strategies that have been used to encourage the practice and demonstrate the value of benchmarking, support and improve compliance with benchmarking requirements, or attempt to raise public awareness and the market's valuation of building energy performance information. To provide context for the key findings from early adopting cities with regard to mandatory benchmarking policies, this section provides a brief overview of strategies from various programs and jurisdictions.

The Chicago Green Office Challenge utilizes the online collaborative platform Green per Square Foot (GreenPSF) to engage participants (including tenants) in competition to improve building energy efficiency.

- Participants can interact with each other through the online portal, which has led to increased tracking of progress, more participation throughout the competition, an improved ability to segment the market (the city can focus on specific sectors, e.g. law firms, and build on existent relationships/rivalries), and the use of leader boards.
- The ongoing participation throughout the competition means that there is no longer just a single point of contact with building owners and tenants.
- Chicago utilities recently launched tenant-specific energy efficiency incentives that can be easily incorporated into the platform to help funnel participants into the programs.
- The online platform creates a gateway to private sector service provider engagement.

Additional information available at: www.chicagogoc.com

The Atlanta Better Buildings Challenge partnered with Milepost Consulting to create a platform to provide participating buildings with individualized building 'infographics', compelling and visually appealing profiles showing projected and achieved savings in energy, water, carbon, and dollars.

- The graphics provide a visual for savings potential which helps to increase action.
- The case study documents help building owners understand the opportunity and put savings into perspective.
- The building infographic could be rendered electronically or in hard copy to serve as a concrete material, or fodder for a glossy brochure, that could be shared with potential tenants, helping owners to market their leadership and success.

- The streamlined metrics help the city track and communicate the success of the program and maintain support from the Mayor, funders, and community partners.
- The visual documentation helps participants track and share success and stay engaged for the long term, while the case study materials serve as recruiting mechanisms to attract new participants to the challenge.

Additional information available at: www.atlantabbc.com

MPG Fuel Economy Label

In 2011, the EPA began designing an updated Fuel Economy Label that would better reflect the current market and provide consumers with simple, straightforward comparisons across all vehicles types, including electric vehicles (EV), plug-in hybrid electric vehicles (PHEV), and conventional gasoline and diesel vehicles. The redesigned label was to provide information to consumers about new vehicle fuel economy and fuel consumption, greenhouse gas and smog-forming emissions, and projected fuel costs and savings. The goal of the redesign was to inform and hopefully influence consumer decisions when buying a vehicle.

EPA partnered with the firm PRR for the development of the label design. The process included a literature review, three phases of focus groups, the involvement of an expert industry panel, and a national survey. The industry panel, which included high level representatives from Craigslist, Pandora, Apple, Nickelodeon, MTV, and Zappos, generally rejected the EPA's proposed labels, favoring a simple label with one prominent letter grade metric. Unfortunately, industry stakeholders didn't want a 'grade', so they could not be used. Suggestions from the panel were used to simplify the proposed labels.

A key lesson learned from the process was when you are trying to influence or inform people's buying decisions, you need to first understand their current buying priorities and considerations. With cars, consumers generally have a specific vehicle or vehicle class in mind. From the focus groups it was found that the most important considerations for consumers (in order) were vehicle type, vehicle cost, fuel economy, followed by safety, reliability, size, appearance, comfort, brand name, and performance. Environmental impact was generally not a factor. From this, we learned that those wishing to influence markets must acknowledge these confines and, in the short term, work to influence decisions within them.

Additional lessons learned:

- Keep it simple; one metric is best, or very few metrics; labels must be easy and quick to read and understand
- People don't act on details, they act on emotions; people will make emotional decisions and then justify them with information/details
- Once a consumer is considering a purchase, they are already well into the decision making process. At this point, the information has to be VERY compelling to influence the decision OR you need to find a way to get information into the decision making process earlier
- Allow for comparison across technologies; be consistent in content
- Make it easy to identify the most efficient and environmentally friendly products
- Present information in the order in which people seek it
- Consumers can accept social changes very quickly; people are influenced by other people
- Create an immediate and desirable first impression
- Don't sell to the hardest to convert
- There is likely a better information provider than the government

Additional information available at: http://www.fueleconomy.gov/

Melbourne Performance Visualization

Melbourne's 1200 Buildings Program was created to encourage the retrofitting of 1,200 commercial buildings, or 70 percent of the city's commercial building stock. Two years in, around 10 percent of the city's building stock has been retrofitted. To encourage voluntary data sharing across the city, the program commissioned an art installation project, which sought local artists and consultants to come up with solutions for adorning buildings with a display that captured the imagination and made energy performance and sustainability relatable to the public. Some of the proposals they received included:

- *dot Blush* by Pierre Proske
  Buildings are adorned with dots or freckles that can 'blush', 'flush' or change color when energy usage in the building falls below a certain level (carbon neutral). The more energy use is reduced, or the more surplus energy is available, the more the building lights up, until all of the dots or freckles pulsate with glowing light or shine like a beaming child.
- *Gary Green Spaces has a Good Heart* by Clare McCracken
  A building would have a large neon sign depicting the outline of a human heart pulsing to a regular, healthy rhythm, reflecting the general health of the building and the connection between human and environmental building health. Audibly the green heart would be triggered along the adjoining roadway for automobiles and pedestrians to hear as they approach the building. Recorded conversations would follow of buildings talking about their health as a way of disclosing the sustainable retrofit of green spaces and the impact that the improved space has on the tenants.
- *The Green Transfer* by ARUP Infomatics, team led by Jason McDermott
  Buildings would have an innovative art canvas and operable analog facade that delivers real-time information about the environmental quality of Melbourne and the performance of the building. The focus would be on making invisible patterns of human activity visible, engaging humans in changing the outcome of building's performance.
- *Solar Garden* by Gyungju Chyon and John Stanislav Sadar of Little Wonder
  In this installation, solar panels would be mounted on thin steel rods along a median strip across from the building to give the impression of a quasi-natural solar 'garden', while at night, an LED display would use energy harvested from the solar panels during the day to display simulated cattails blowing in the wind. The installation would help bring life to an area that is generally deserted and not welcoming to pedestrians at night.

Additional information available at:
https://www.melbourne.vic.gov.au/1200buildings/Pages/1200BuildingsPublicArtCommission.aspx

New York City Outreach & Training Partnerships

The City of New York partnered with local organizations to effectively structure and conduct outreach and training for stakeholders in the community. The efforts were extremely successful, due to a number of key elements.

- The consulting firm HR&A conducted a pro-bono study for the city to help determine the most time- and cost-effective strategies for outreach and education. The study identified key building characteristics, including market sector, use, geographic concentration, and ownership and management structure of affected buildings.
- Urban Green Council (the local chapter of the U.S. Green Building Council) and Related Companies worked with the city to put together a high level checklist for buildings owners that laid out step-by-step compliance guidance. Urban Green also created a benchmarking user guide.
- Urban Green Council provided public outreach presentations and private sessions and maintained online resources. For their outreach efforts, Urban Green focused on reaching 'high-leverage' groups that offered access to a large percentage of the target audience. These groups included professional associations serving targeted industries and sectors, owners and managers with the largest portfolios in commercial, residential, and industrial real estate sectors, and Business Improvement Districts in geographic areas where compliance with Local Law 87 was anticipated to be low.

Additional information available at: http://urbangreencouncil.org/content/news/learning-benchmarking

Key Findings: Communication

The following findings are the product of two days of discussion among leading cities, select partners and stakeholders. They represent the key challenges and potential areas of focus for enabling successful communication of energy performance data to market actors.

Further understanding of market motivators is needed because energy efficiency alone is often insufficient
Energy savings alone are generally an insufficient motivator for many building owners because energy costs aren't a significant enough percentage of operating costs to inspire widespread action to reduce them. However, resilience is becoming a more compelling driver for many owners because it relates to business continuity. Other motivators of better energy management are tenant comfort, market competition, and peer comparison. The main objective for owners is attracting and keeping tenants, and energy performance gives building owners an additional talking point on why their building is better than another. If their building is underperforming, that same competition/comparison is a driver to improve performance so that they don't look inferior to their peers. However, comparison of this sort is generally only taking place at the upper end of the scale (large, class A buildings). While mandatory benchmarking policies succeed at getting the majority of large buildings to measure energy performance, and provide cities with an in-road to engage and target them through other types of support and programming, additional market motivators and pressure points related to energy performance should be studied and incorporated into communication strategies.

Additional performance metrics are needed to better communicate energy efficiency value to the market
Energy Use Intensity (EUI) is not a particularly compelling metric for communicating value to building owners or tenants/consumers. A cost metric could be more powerful, but cities don't have all the information they need to create this metric, and most feel that collecting and disclosing cost data is overstepping their role. Additional performance metrics that help building owners contextualize and understand their performance data in comparison to their peers should be explored and/or created.

Cities need better engagement and messaging strategies for reaching non-Class-A buildings
Effectively communicating the value proposition to segments of the market that have not traditionally prioritized energy performance (tenants, consumers, class B & C buildings, lower-performing buildings) is crucial to the larger success of these programs. Cities are seeing a need for better engagement strategies with these groups and a clearer understanding of the messages and motivations that resonate with them. Cities need to develop communication strategies that allow them to engage with a range of building owners with varying interests and levels of resources and be able to speak to the biggest risks (tenant turnover, lost revenue) and opportunities (tenant retention, tenant satisfaction) relevant to the specific sector.

Cities and building owners need better strategies for involving tenants
Tenants play a huge role in building energy performance, as they are typically responsible for 40-60% of the energy use in a building. Engaging tenants on energy use is critical, both for the city and the building owner, but is rife with challenges. Tenants can play many different roles related to energy benchmarking and building efficiency, which can either help or hinder energy performance improvement, depending on the tenant-landlord relationship and the characteristics/values of the specific tenant. These roles can include:

- *Consumers of buildings/market drivers*. If tenants are aware of energy performance and value energy efficiency, they empower the market for energy efficiency, as well as bring brokers to the table.
- *Gatekeepers of energy data*. Tenants are often the utility account holders and, therefore, the gatekeepers of building energy data, but they are harder to engage if they don't actually receive the energy bill (e.g. it is sent to HQ at another location).
- *Partners in improvement*. Cost-conscious/environmentally-conscious/energy-savvy tenants are extremely valuable assets for a building owner working to improve energy performance.

- *Obstacles to improvement*. Tenants who don't see their bills or don't pay their utility costs can be hard to engage. Tenants can also directly impede energy management by doing adaptive things to moderate comfort instead of engaging with the landlord (using space heaters, taping over light sensors, etc.)

Liberty Property Trust, which has been benchmarking its buildings for many years, has found efficient buildings to be more attractive to tenants, and has had the best results improving energy scores when they've successfully partnered with tenants. Because of this high level of influence and ability to affect positive (or negative) energy performance outcomes, building owners and cities should prioritize the development of strategies for engaging with tenants.

Cities should work to understand and engage with the entire ecosystem of building contacts
Cities' attempts to communicate with the building owners around benchmarking policy requirements have broadened the understanding of a 'building contact' to include a whole ecosystem of people (e.g. vice president, compliance officer, building manager, engineer, lawyer) who may all have very different skills and levels of understanding, but who all have a stake in the building or a role in management and who all need to be part of a city's communication strategy. Cities need to gain a better understanding of this ecosystem, and structure their communication and marketing efforts to take the full ecosystem (and its full potential for providing avenues for engagement) into account.

Cities need technical support to better manage building contacts and automate communication
In addition to energy performance data, benchmarking programs are amassing commercial and multifamily customer contact data. This information is often more robust than local utility datasets and it requires proper management and relationship cultivation. Cities are seeing a significant need for better relationship management practices and the incorporation of CRM tools for building owner outreach and communication. However, many of these tools are cost-prohibitive for cities. Low or no cost alternatives, or software sharing between cities, should be explored.

Utilities have the potential to both benefit from and increase the effectiveness of benchmarking programs
Utilities have the potential to play a significant role in driving action and investment from benchmarking. The data that cities are collecting on individual building performance should greatly improve utilities' ability to target efficiency programs to buildings with the greatest opportunities for savings. Additionally, utilities can measure the effectiveness of their programs by cross referencing their data with whole building energy performance data obtained through benchmarking regulations. If utilities understand this value and act on it, benchmarking and disclosure programs will be more effective at generating energy savings. Cities, partners, and other stakeholders should be working to better communicate this value proposition to utilities.

Next Steps: Communication

Of the nine cities that have passed mandatory benchmarking and disclosure policies, many are still in the early stages of a communication strategy, focusing mainly on supporting and improving compliance. Several, however, have begun to think about how best to use communication to motivate action, and when (i.e. during the compliance period) is the best time to engage. The following areas are of immediate interest to the convening cities.

Regional or national help centers. Local help centers have been extremely beneficial in supporting compliance, providing technical guidance, building goodwill between building owners/managers and the cities, generating leads for more targeted efficiency projects, and conducting proactive outreach to building owners/managers who might not know about the ordinance or who have a clear opportunity for improvement. However, the majority of existing funding for these individual help centers has been depleted, and new cities starting to work on implementation don't necessarily have the capacity or funds to create their own help centers. Because of this, there is interest in exploring the possibility of a national help center or several regional centers that could support multiple cities. While such a model may not provide all of the benefits of local help centers, economies of scale

may make them more realistic for long term existence, and may provide crucial compliance support to the growing number of small and medium sized cities considering benchmarking and disclosure policies.

Guidance document library. Cities have created an abundance of helpful resources to support compliance with benchmarking policies. Cities have expressed the need to gather all of these published documents and create an online repository of them so that cities can share, review each other's materials (possibly provide feedback) and avoid duplicating efforts.

Soliciting building owner feedback. To further refine the effectiveness of outreach and educational resources, cities have expressed an interest in conducting surveys of building owners to solicit feedback on guidance materials, help center assistance, etc. Also, better understanding building owner priorities, attitudes towards energy efficiency, barriers and motivators will help refine existing and next step communication efforts.

Contact management. Cities see a need for better ways to segment and target their outreach/communication with building stakeholders, but many don't have the resources to purchase contact management (CRM) software. There is interest in investigating the possibility of a low cost software solution or a license that could be shared among cities.

Forum for continued sharing of best practices, challenges and next steps. Cities have expressed a clear desire to continue working together to map the way forward, and are extremely interested in holding additional city convenings (such as the one this report's findings is based on) on an annual basis, supplemented by semi-regular or quarterly webinars or conference calls to continue building on these topics and discussions.

Key Findings: Data

While several cities are already working through the analysis of one or more years of building performance information, many have not yet reached their initial compliance deadlines and are still considering their options for data collection, organization, and sharing. Despite this, all of the leading cities are thinking seriously about how to align data across cities, and how to analyze and present the data to be most effective at moving the market on energy efficiency. The following findings are a result of discussions around data among leading cities, partners, and stakeholders.

Integration of building performance data into real estate information databases is critical
One of the ultimate goals of disclosing energy performance information is to enable the widespread integration of that information into the other commonly used real estate data resources and to elevate energy performance metrics (such as EUI and ENERGY STAR score) to a level of public awareness and understanding on par with other standard real estate metrics. To this end, cities are very interested in working to get benchmarking data into online databases managed by private real estate information aggregators, such as CoStar, USGBC's GBIG, and the MLS. Integration of this information is critical for ease of access and overall ability to influence real estate decisions.

Data quality must be ensured before benchmarking information can fully penetrate the market
Data quality is extremely important to the success of benchmarking programs. In order for the disclosure of benchmarking information to have a significant impact in the market, the data must be trusted. If data quality is not ensured and maintained, benchmarking metrics will lose value in the market. In addition, most private real estate information aggregators won't include information unless there is some standard for its accuracy. Because benchmarking does not generally require professional verification, this adds a barrier to more widespread uptake in the market. However, requiring data verification as part of a benchmarking policy creates a compliance cost for building owners. Chicago is the first city to require periodic data verification by a licensed professional. It will be important to see how this plays out and whether the added quality assurance step will be enough to satisfy the data rigor tests of independent real estate aggregation groups. In the meantime, other QC/QA checks, at the city level, in Portfolio Manager, or through other tools or systems, should continue to be evaluated for effectiveness and leveraged for overall data quality.

Data collection fields and analysis outputs should be standardized among cities for better data comparisons
The EPA's custom reporting template link was released recently. It gives cities a choice of over 1,000 fields to choose from when collecting data points from reporting buildings. For the purpose of comparing data across and between different cities, data fields being collected and reported, and metrics being produced through data analysis, should be standardized.

Additional performance metrics are needed
Energy Use Intensity (EUI) and the ENERGY STAR score as performance metrics have limitations. Without access to additional building details and occupancy level data, these metrics generally cannot provide context for the unique circumstances of an individual building; a low ES score or a high EUI can occur in an efficient building that offers significant amenities or houses energy intensive tenants, while a high ES score or low EUI can occur in a badly run building that simply uses little energy because it has systems offline or in disrepair. LEED has been a successful sustainability indicator, but it is not a consistent indicator of energy performance. LEED for Existing Buildings is currently the best rating tool available to measure sustainability of an existing building and its current operational status, but the platform is costly and not currently mandated in the private sector. The real estate industry is, therefore, working on new performance metrics that attempt to communicate the context of energy performance and sustainability measures. Cities should also be conducting data analysis that looks at possible characteristics and uses that influence EUIs, particularly in newer, bigger buildings with more complex systems and infrastructure, to help add context on a larger scale.

Despite limitations, Energy Star scores and EUIs provide an important starting point for meaningful conversations about energy performance, and are currently the best way to get preliminary data into the market. Benchmarking, an essential first step in the building energy management process, is now the standard in nine metropolitan U.S. cities that require annual performance tracking and disclosure. Nonetheless, cities are considering the value of various other metrics that could help bolster the market value of an energy benchmark. Energy costs per square foot, potential energy savings, or citywide costs for energy that could go toward local jobs, revitalization, and economic development could all be powerful metrics that should be considered.

Local metrics should be created to provide additional context and motivation for improvement
Several cities have created local energy performance scales based on analysis of citywide reported data. Both Seattle and New York City created local 'grades' intended to help communicate relative energy performance compared to peers in the local market, instead of just the national data model. Local peer-to-peer comparisons give additional context to an ENERGY STAR score or EUI, and may aid a city's ability to communicate with building owners about market performance and energy saving opportunities.

When a building owner joins Seattle 2030 District, they receive a comparative analysis with local peer buildings, which is especially significant because it reflects market competitiveness, not just an individual score in isolation. Many buildings that appear to be high performers on a national level come out near the bottom of their peer group, which is a very effective motivator for improvement. Additionally, achieving the same performance score year after year may seem like success, but isn't unless peer scores are also remaining stagnant. Local context can help raise the bar over time, and cities should create and provide local metrics for context and comparison where relevant.

Guidelines and regulations for utilities to provide energy data should continue to be developed
Despite the fact that many utilities are supporting benchmarking and disclosure policies by providing aggregate whole-building data to building owners, access to building energy data is still a huge obstacle in many places. Many utilities are still stuck on the issue of privacy, although that concern is proving to be overblown and a bit outdated. Others are still struggling with updating their systems to aggregate energy information and match individual meters with buildings. The DOE's Data Accelerator program should help, and continued efforts to engage with utilities and regulators around the issue of data access should be pursued.

Utilities should be encouraged to align benchmarking data with efficiency programs
As administrators of efficiency programs, utilities should be looking at benchmarking data to determine whether there is a link between program participation and energy performance. Furthermore, utilities should be using the information on energy performance to improve targeting of existing programs. Utilities have traditionally done a lot of market segmentation and barrier evaluation within their programs, which should help with effective targeting and communication for future program recruitment. Expanding program reach to encompass a whole building energy efficiency approach will help bridge the gap between component by component approaches and more comprehensive energy efficiency gains. Cities should be actively engaging with utilities to align benchmarking information with existing efficiency programs, and to get information about efficiency programs into the hands of the parties making investment decisions for buildings, and the lowest performing buildings in particular.

Next Steps: Data

Most cities are still grappling with data in terms of basic implementation needs: what metrics to collect, how to analyze and report, how to insure compliance and accuracy of data, etc. However, bigger questions about data are beginning to arise. On planning a path forward, efforts should be made to help meet those immediate implementation needs (helping to ensure success in cities) while prioritizing activities that benefit the whole group around the bigger issues.

Standardization to increase effectiveness. There is interest from cities on standardization of practices; alignment of inputs, outputs, metrics, quality assurance/quality control, analysis procedure, etc., to enable future cross-city data analysis and greater overall market penetration. Collectively educating the market will help achieve the transformation and valuation of energy performance information. There is immediate interest in compiling lists/documentation of the various input fields, output fields, top analysis metrics, quality assessment/quality control (QA/QC) techniques & checks, as well as a more detailed matrix of policy and implementation parameters. Cities have requested an online repository or catalog of benchmarking analyses, including all reports, information material links, and unpublished supplemental material (metrics, visualization) produced to date.

Multi-city analysis and standard report generation. Cities are extremely interested in not only aligning data points and metrics (so that cross-city comparisons and multi-city analysis of energy performance data are possible and relatively easy) but in the creation of a standard data analysis and report generating tool; a program or set of analytics that would automatically perform data quality checks and standard analyses; and output a standard 'report' that would be the same for every city. The creation of such a tool would not only ease the implementation burden of current leading cities, but would help support and enable the success of future cities interested in enacting benchmarking policies.

Improved outputs via coordinated feedback and advocacy. Leading cities are interested in coordinating as a unit to submit feedback and 'wish list' items to the EPA for future ENERGY STAR Portfolio Manager upgrades, research and metric expansion, and to act together to encourage more widespread uptake of benchmarking data in national databases like USGBC's GBIG, CoStar, and the MLS, among others.

Key Findings: Next Generation Policies

Leading cities with established benchmarking and disclosure policies are already considering how to strengthen and augment their programs moving forward. For many, ambitious climate and energy goals are looming, and benchmarking programs are seen as the foundational step on which to base further energy saving measures and requirements. The following findings and recommendations reflect the ongoing discussions among cities and stakeholders considering the next policy evolution.

The effectiveness and potential role for lower cost alternatives to traditional audits should be explored
Many cities have established requirements for periodic audits and retro-commissioning in addition to benchmarking and disclosure. However, it is unknown whether required audits will result in increased energy

efficiency investments from building owners. While audits contribute greatly to the information about a building's performance and its opportunities for improvement, it is unknown whether (or what percentage) of building owners will act on this information. In addition, audits can be cost prohibitive, and may be a diverted investment in some situations. In New York City, the audit requirement is driving significant change in the market, but it is unknown what unique characteristics of the New York City market are contributing to this result.

Software or remote audits, as well as the U.S. Department of Energy's Asset Score, are emerging as potential middle-ground solutions. The hope is that such tools will be able to provide valuable information to augment the benchmarking score with accurate, action-oriented information, but at a much lower cost than a traditional audit. Boston, in particular, has crafted its regulation to allow for flexibility in the 'assessment or improvement' requirement to allow the city to accept future audit alternatives that prove to be effective. The development of alternative audit tools should be monitored, and new tools should be evaluated for effectiveness as they become available.

As policies evolve, the definition of success should be intentionally linked to energy savings, not compliance
Implementing cities are serving as the model for new cities interested in enacting benchmarking and disclosure programs. As such, leading cities need to be intentionally striving for 'success' that isn't about compliance rates but ultimately about how effective these programs are at getting building owners to save energy. Producing a model that only gets new cities part of the way to success is not success.

Benchmarking and disclosure policies may not be the best fit for some cities
The next tranche of cities to pursue benchmarking and disclosure policies are going to include many that fall in the 'small' and 'medium' size categories. For some of them, benchmarking and disclosure as a policy will be a good fit. For others, perhaps for those in which large commercial and multifamily buildings don't capture a significant percentage of citywide building stock, another set of policies and program may be a better fit. Moving forward, benchmarking and disclosure policies should not be universally recommended for every interested city, and research into which policy and program models might work best for small and medium size cities should be conducted.

Leading cities need help providing guidance to a growing number of interested cities
Leading cities are receiving increasing numbers of requests for information and guidance about their programs from interested cities around the country. In some instances, these requests are overtaxing city staff that are already at or past capacity. More work needs to be done to collect the lessons learned and best practices from leading cities into useful, sufficiently detailed, and trusted resources that can be used to answer the majority of the questions coming from interested cities. Work with cities to put together dynamic resources that systemically capture this information and communicate it effectively to interested cities should be continued.

Many questions remain
Many questions still need to be answered: What is the most effective way to turn information into upgrades? How can implementing cities use economies of scale to collaborate on data analysis? What are the best complementary programs for a benchmarking policy? Is a national help center a good strategy for supporting multiple implementing cities? Can utilities be recruited to help fund regional or national support infrastructure? Cities, partners, and stakeholders should be working together to answer these and the many other questions that remain as benchmarking and disclosure policies continue to mature.

Next Steps: Next Generation Policies

Looking ahead, cities are thinking about the next evolution of policies, as well as the appropriate policy structure for new cities looking to establish policies. The following issues were of the most immediate interest.

Policy package structure. There is a lot of interest in policy package structure, as in which complementary policies make the most sense and will have the greatest impact. Audits provide building owners with more information,

but it is yet to be seen whether they will act on it. Would prescriptive improvements, like retro-commissioning and lighting upgrade requirements, be more effective at motivating energy savings? Should cities be skipping such 'additions' and instead looking toward some level of performance standard? Should cities be finding ways to incentivize or require action based on audit findings, or could exemption from public disclosure be tied to improvements in energy performance or participation in efficiency programs? This will be an area of significant interest as leading cities plot their individual ways forward.

Performance scales for advanced markets. In some markets where years of stringent energy codes for new construction have rendered many buildings 'high performers' by the ENERGY STAR standard, cities are considering alternative performance scales for peer-to-peer comparison. There is interest in determining the appropriate 'next scale' for such advanced markets, such as an absolute performance scale with zero being zero net energy.

Defining audits. Several cities require ASHRAE Level II audits for large buildings (over 50,000 square feet), but are less certain of the proper audit standard for smaller buildings. ASHRAE Level I audits are less expensive, but are somewhat loosely defined, and may not be precise or consistent enough to satisfy the intentions of an audit requirement. Cities are very interested in coming up with an audit standard for small and medium sized buildings that is effective and appropriate but less costly than an ASHRAE Level II audit. Options discussed included software or remote audits with on-site verification of recommended measures, or a list of top prescription checks to be done on the building depending on type. Consensus on the best solution and path forward is highly sought by cities.

Quality control and assurance. Quality control and assurance is another policy evolution that has garnered a lot of interest. Data verification requirements in Chicago and Montgomery County, Maryland, will be observed with keen interest as one possible solution. Other cities are exploring the potential for requiring building operator certification as a measure to improve the accuracy of benchmarking information. Consensus on the best forward path is highly desired by cities. Cities are also very interested in the role of asset ratings and programs for new construction, like ENERGY STAR's Target Finder, and how those might be effectively applied or included in building efficiency policy to help improve overall understanding of building energy performance.

Conclusion

The intent of this report is to provide the first framework for answering the question of how to convert energy benchmarking information into energy savings. While many questions remain, and many new questions will emerge, this report aims to provide critical understanding of the current issues facing leading cities and to help guide work and funding to support these cities moving forward. By creating a common baseline of understanding that can be shared among cities, partners, and stakeholders, these parties will be able to work more effectively together and with cities toward mutual benefit.

Leading cities that are trailblazing on energy performance policies are all working toward the same ultimate goals: increased energy efficiency, resiliency, and health of their building stock, reduced carbon emissions, and strong economies based on well-informed markets. The convening held in Washington, DC, and this report on the findings and discussions from that meeting, aim to align and bolster efforts to help cities achieve those goals. By sharing lessons learned and best practices, by reducing redundant work, and by pooling ideas and resources, these cities can work towards actions and solutions that collectively benefit all cities, including efforts to seek future funding to support these collective goals.

Participant List

Carl Spector, City of Boston
Nikhil Nadkarni, City of Boston
Adam Mays, Elevate Energy (formerly CNT)
Jamie Ponce, City of Chicago (C40)
Marshall Duer-Balkind, District of Columbia
Dave Good, District of Columbia
Sam Brooks, District of Columbia
Brendon Slotterback, City of Minneapolis
John Lee, City of New York
Donna Hope, City of New York
Rich Freeh, City of Philadelphia
Alex Dews, City of Philadelphia
Nick Young, City of San Francisco
Barry Hooper, City of San Francisco
Rebecca Baker, City of Seattle
Jill Simmons, City of Seattle
Ngoc-Minh Bruce, Austin Energy
Norman Muraya, Austin Energy
Alisa Kane, City of Portland
Billi Romain, City of Berkeley
Jessica Boehland, Kresge Foundation
Darryl Young, Summit Foundation
Lauren Worth, Summit Foundation
John Wilson, Energy Foundation
Mijo Vodopic, MacArthur Foundation
Diane Ives, Kendeda Fund
Bob Best, Jones Lang LaSalle
Patrick Hughes, NEMA
Jordan Doria, Ingersoll Rand, Center for Energy Efficiency & Sustainability
Marla Thalheimer, Liberty Property Trust
Mike Bahr, ReNewALL
Brian McCarter, Sustainable Real Estate Solutions, Inc. (SRS)
Karen Penafiel, BOMA International
Helen Gurfel, ULI-Green Print Center
Charlotte Matthews, Related Companies
Jonathan Flaherty, Tishman Speyer
Keith Mills, Trillium Asset Management
Constantine Kontokoska, New York University, Center for Urban Science + Progress
Nate Wilairat, EMI (Energy Markets Innovations)
Uwe Brandes, Georgetown University, Urban and Regional Planning
Kathryn Zyla, Georgetown University, Climate Center
Christofer Nelson, Georgetown University, University Energy Prize
Audrey Stewart, Georgetown University, Office of Sustainability
Debbie Slobe, Resource Media
Mike Rosen, PRR
Leslie Cook, EPA
Alena Hutchinson, EPA
Mike Zatz, EPA
Cody Taylor, DOE
Elena Alschuler, DOE
Mona Khalil, DOE
Eric Mackres, ACEEE
Jennifer Amann, ACEEE
Nicole Steele, Alliance to Save Energy
Jeremy Sigmon, U.S. Green Building Council
Diane Doucette, Chambers for Innovation and Clean Energy
Brian Geller, Seattle 2030 District
Johanna Partin, C40 Cities: Climate Leadership Group
Lane Burt, Ember Strategies
Garrett Fitzgerald, Urban Sustainability Directors Network
Brandon Smithwood, Ceres
Laurie Actman, Energy Efficiency Buildings HUB (EEB HUB)
Laurie Kerr, NRDC
Andrew Burr, IMT
Caroline Keicher, IMT
Jayson Antonoff, IMT
Andrea Krukowski, IMT
Cliff Majersik, IMT
Chuck Wilson, IMT
John Andreoni, IMT
Jessica Lawrence, IMT
Chris Potter, IMT
Amanda Kolson Hurley, IMT

Acknowledgements

The City of Seattle and the Institute for Market Transformation would like to thank the Urban Sustainability Directors Network (www.usdn.org) and Bloomberg Philanthropies (www.bloomberg.org) for providing the funding for the convening and resulting report. We would also like to thank Barry Hooper with the City of San Francisco for providing expert guidance on agenda and topic development for the convening, as well as the City of Austin, the City of Minneapolis, and the City of New York for collaborating on the convening proposal and event. We would also like to extend a heartfelt thanks to each and every one of the convening participants, whose insight and thought leadership enabled a truly constructive and invaluable discussion, and who braved an unexpected winter snow storm to join us for this event.