

# Advancing Building Energy Efficiency in Cities

In late 2016, The Kresge Foundation commissioned a formative evaluation of the initial phase of the City Energy Project (CEP). The evaluation found that CEP has provided demonstrable benefits to the field of commercial building energy efficiency. CEP has increased city-level capacity and stakeholder engagement, supported passage of building energy policies and related programming, and helped to advance federal and other agencies' tools and resources. Through these efforts, CEP has built a valuable infrastructure of city-level relationships and expertise that may be applicable to new areas, such as deep energy retrofits, reducing on-site fuel use and related emissions, and/or market integration and transformation of older, less sophisticated buildings.

Additionally, CEP provides an opportunity to advance practice in the overall field of building energy efficiency by disseminating CEP experiences, best practices, lessons learned, and relevant considerations to cities not directly involved. This summary – a condensed version of the full evaluation report – highlights 20 key findings that provide insight to the larger field. This Summary Report will be of most interest to those pursuing building energy efficiency at the city level, including city governments, community organizations, non-governmental organizations, and utilities.

A joint initiative of the [Institute for Market Transformation \(IMT\)](#) and [Natural Resources Defense Council \(NRDC\)](#), CEP aims to create healthier and more prosperous American cities by improving the energy efficiency of buildings. CEP is supported by [Bloomberg Philanthropies](#), [Doris Duke Charitable Foundation](#), and [The Kresge Foundation](#).

[Ross Strategic](#), a neutral third-party evaluator, conducted the evaluation from August 2016 through January 2017 and interviewed over one hundred individuals representing a broad range of perspectives, including market actors, CEP staff and leadership, Phase I City participants and partners and non-CEP cities.



## CEP at a Glance

Ten cities were selected for Phase I of the City Energy Project in 2014, with a second round of nine cities and one county selected for Phase II in late 2016. Each participant has a dedicated staff person – the City Advisor – working at the local level, while also receiving complementary technical and strategic assistance from centralized “Hub” staff of NRDC and IMT employees. Involvement in a robust peer network further enhances participants’ support to design and implement city-level building energy efficiency policy and implementation plans and related programming.



## KEY FINDINGS

*Although the CEP policy and program framework focuses on a suite of specific strategies tailored to each city, such as energy benchmarking and transparency, the insights from the evaluation can be applied more broadly. The term “policy” is used to mean legislative actions and the term “program” is used to mean voluntary actions throughout the following findings.*

## Replicable Components of the CEP Model

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**Having a dedicated person on staff in a city government is a powerful way to bring the necessary resources and attention to bear to champion and manage design, passage, and implementation of energy efficiency efforts at the city-level.** In the CEP model, each city has a full-time City Advisor – and in a few cases two co-Advisors – whose full-time job is designing, building support for, and implementing energy efficiency programs and policy. City Advisors were viewed as one of the most valuable aspects of the program in providing needed expertise and capacity for doing the day-to-day work of stakeholder engagement, policy and program implementation, and coordinating between city officials, various local stakeholders, other CEP participants, and the central CEP support staff.

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**While the role and key functions of a dedicated staff person are considered extremely helpful for successful project implementation, these positions may be challenging to fund in the long-term within city government budgets.** Conversations about funding the position for the long-term need to happen early, engaging a broad range of potential partners (e.g., state agencies and organizations, local foundations, and other local partners) who also stand to benefit from increasing building energy efficiency and will jointly carry the mantle with city leadership.

3

**Engaging in a peer-to-peer community of practice is an effective way to harness the collective knowledge of cities working to further advance building energy efficiency policy and programming.** The peer exchange component of CEP Phase I was one of the most highly-regarded aspects of the program. The collaboration of cities via peer learning allows for both easier and more efficient coordination at the national level, as well as one-on-one learning from cities who have faced similar opportunities and challenges.



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**Having access to customized technical assistance and support, as well as tools and resources, is extremely helpful for cities pursuing building energy efficiency initiatives.** Resources such as best practices, example policy language, and communications templates are valuable, and one cost-effective way to share experiences and scale impact. However, these resources are more accessible and useful for cities when paired with customized technical assistance, which helps connect cities with the right resources and/or provides direct help with customizing approaches for stakeholder engagement, coalition building, and navigating the nuances of implementation.

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**Continuous learning should be built into energy efficiency initiatives from the outset to enhance effectiveness and achieve greater success.** Creating opportunities for internal and external stakeholders to reflect on progress at regular intervals can help garner buy-in, foresee and plan for challenges, and identify opportunities for improvement in real-time.

## Building-Related Energy Efficiency Policy and Programming: Adoption and Implementation Considerations

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**Building-related energy efficiency policy design and adoption may take longer than anticipated; having a deep understanding of a city's political and market context can help mitigate delays.** Factors that can affect the timeline for policy passage include: stakeholder engagement of the real estate market; building politically resilient coalitions of supporters; limited city-level capacity; energy data access challenges; lack of a champion at the city level; election cycles and political uncertainty; or potential for state preemption of city-level policies.

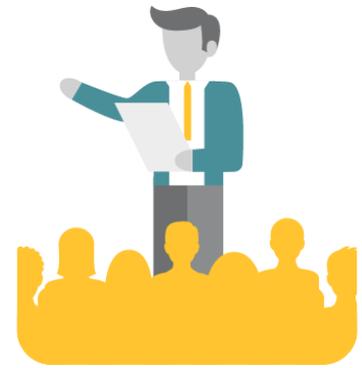
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**Robust stakeholder engagement and outreach is essential to the success of building energy efficiency policy passage and adoption.** Cities that proactively create and/or engage with stakeholder groups from the outset are better able to build goodwill, local ownership and buy-in; directly address opposing views and concerns; and set a foundation for long-term, broader market transformation. Stakeholder mapping is a useful first step, followed by early and ongoing opportunities for involvement.



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**Effective implementation of building-related energy efficiency policy is critical for success and takes at least as much effort as policy adoption.** Implementation planning should take place concurrently with policy development and adoption. Consider city-level capacity and resources for supporting policy implementation and requirements (e.g., data analysts, technical support, and training).



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**Identifying the right sequencing of voluntary efforts, stakeholder outreach, and policy adoption in each unique city context can help build the right conditions for policy passage and implementation.**

Cities with less capacity and less sophisticated commercial building markets may especially benefit from leading with programs that focus on building awareness, demonstrating value, and cultivating leaders to help bring support to future policy adoption.

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**There are significant benefits to having strong local partnerships.** Partners can play a key role in building support for energy efficiency policy and program adoption, supporting ongoing implementation, and strengthening market engagement over time. For example, through building owner and operator training and technical assistance, local partners can also leverage program work into deeper building energy efficiency upgrades.

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**Incorporating building energy efficiency programs and policies into the day-to-day work of city government can help sustain policies and programs over the long-term.** Program implementers and cities may want to consider strategies early on for embedding energy efficiency policy in city government, shifting the responsibility for implementation away from political offices (e.g., the Mayor's office) to departments that oversee buildings or environmental health. By institutionalizing the policy, it is more likely to become a routine way of doing business over the long-term, making it resilient to shifts in the policy priorities of city leadership.

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**Building energy efficiency policies and programs provide the opportunity to incorporate equity considerations by including multifamily housing, public health concerns, and/or small business owners.** Energy efficiency policies and programs affecting buildings could be expanded to include components not commonly considered in order to address the needs of low-income communities and communities of color.

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**Aligning policies and programs with a city's climate or sustainability plans may help speed adoption and increase effectiveness.** Including provisions for building energy efficiency in a city's long-range sustainability goals and planning documents can facilitate policy passage and provide some protection from disruption due to future mayoral/administrative changes.



## Creating a Foundation for Market Transformation

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**Expanding the range of cities pursuing city-level building energy efficiency improvements may require different approaches.** CEP has generated valuable lessons and roadmaps for cities pursuing building energy efficiency through policy and complementary programming. However, the pool of cities for which building energy benchmarking and transparency or related policies and programs are appropriate may be shrinking as many of the larger cities begin implementing programs. Different approaches should be considered for achieving energy efficiency gains in medium- and smaller-sized cities with smaller building stock and/or less competitive real estate markets. This may involve a greater role for state policy, utilities, advocacy groups, and others.



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**Market transformation depends in part on building owner access to and understanding of building energy data, but owners and managers must be aware of its value and understand how to use it.** A strong emphasis on peer-to-peer training to complement building energy efficiency policies can show building owners and operators how to improve performance through low-cost operational changes, saving both energy and money.

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**Evidence of a strong business case in terms of asset value, leasing rates, vacancy rates, and retention would help build support and buy-in from real estate market actors.** Currently it is challenging to attribute specific, concrete economic benefits of building energy efficiency to any one policy or program; however, definitive evidence of market value is considered critical for enabling broader market transformation. In cases where it can be quantified or otherwise characterized, the economic evidence will require targeted communication strategies to reach and influence relevant stakeholders.

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**Voluntary energy efficiency programs and municipal leadership may be the best way to begin given a city's building stock, market, and political climate.** Voluntary programs can lay the groundwork for program operations, build stakeholder support, and potentially show the need for policy if goals are not being met through a voluntary route. Regarding benchmarking, starting with municipal buildings is one way to lead by example and demonstrates the value of energy benchmarking to elected officials, city staff, and other stakeholders.

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**Mandatory benchmarking policy is widely considered the most effective lever to reach owners of older, less sophisticated buildings and less competitive markets.** The generation and use of energy data and energy efficiency upgrades has not yet become standard practice market-wide. Adoption of benchmarking and related sustainability practices is uneven among owners of different building classes and most common with Class A buildings in competitive real estate markets. Owners of Class B and C often face additional barriers to adopting building energy benchmarking or other sustainability practices



(e.g., a lack of human and financial resources to implement benchmarking practices or to invest in upgrades), which makes them less likely to participate in voluntary programs.

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**Utilities play a key role in enabling building energy policies and programs.** Utilities play a considerable role in automating data access, exchange, and aggregation to support building energy data reporting, and they can also play a role as a market aggregator through demand-side management programs and financing. However, lack of access to whole building data from utilities can be a barrier to cities seeking to implement building energy policies or programs.

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**Engaging state and national partners, as well as utilities, enables efforts to complement project initiatives and help to create a broader enabling environment.** State or national tools, resources, technical assistance, user groups, and advancement of best practices can enhance energy efficiency initiatives at the city level, while the city-level work can simultaneously inform and enhance state or national efforts. States can support city-level building energy efficiency improvements with enabling policy, supportive utility rules, and implementation help.

*Concluding Reflection: For all actors engaged in improving building energy efficiency, it will be important to continue developing a foundation to support broader market transformation by increasing market engagement through education and outreach, strengthening links with existing networks, and establishing a compelling business case for benchmarking and other policy and building energy efficiency initiatives.*



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# Factors for Success Compendium

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This Compendium includes a representative sample of case studies on the unique approaches taken by Phase I cities in pursuing building energy benchmarking policy and related programs. These snapshots of CEP Phase I city experiences are by no means comprehensive, but provide high-level insights about best practices and lessons learned from each city's experience.

## Factors for Success: Chicago



**Partnership with a local nonprofit partner for IT support to target notifications and increase compliance:** Chicago partnered with Elevate Energy, a local nonprofit, to create a comprehensive contact list for all buildings affected by the benchmarking ordinance, allowing program staff to send the right notifications to the right building owners at the right time. Elevate Energy also built and maintains a Help Desk to provide comprehensive technical support.

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**Technical assistance and pro bono services for improved compliance:** With support from their local United States Green Building Council (USGBC) chapter, volunteer “benchmarking detectives” sought to ascertain the reasons why some building owners were unable to comply with the benchmarking ordinance. By doing so, Chicago was able to provide direct technical assistance and *pro bono* services to increase compliance rates and improve data quality in reporting systems.

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**Leveraging partnerships with other city networks:** By working closely with networks such as C40 cities and Urban Sustainability Directors Network (USDN) during policy implementation, Chicago was able to work through challenges and sticking points in a timely manner to accelerate progress on building energy efficiency. As a reciprocal effect, those networks are now more attuned to building energy performance metrics, transparency, and other building energy efficiency issues confronted by cities.



## Factors for Success: Los Angeles



**A public and transparent process throughout policy drafting and adoption:** Los Angeles implemented a rigorous two-year stakeholder engagement process to develop their ordinance and educate building owners and managers. It was especially important to bring multifamily building owners into the process early on in order to incorporate the unique needs of that constituency.

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**Key partnerships for policy adoption and implementation:** Throughout the stakeholder engagement process and policy development, the Mayor's Sustainability Office worked with local organizations and associations to reach key constituents and tailor the policy to Los Angeles' needs. Partners included Global Green, the local Green Building Council chapter, the local Building Owners and Managers Association, the Better Buildings Challenge program, LA Department of Water and Power, Department of Building and Safety who will administer the ordinance, and others.

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**Embedding building energy efficiency goals in the city sustainability plan:** The Los Angeles' [Sustainable City pLAN](#) has an entire chapter dedicated to energy efficiency with targets to reduce energy use in existing buildings by 14% by 2025 and 30% by 2030. This cemented the city's buy-in to pursuing the proposed activities for improving building energy efficiency as part of Los Angeles' priorities.

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**Tackling water efficiency with energy efficiency:** Los Angeles' building energy efficiency ordinance also incorporates water efficiency, a vital resource in southern California. Their policy requires buildings to take efficiency actions at least once every five years, such as energy audits or retrofits to reduce energy and water use.



## Factors for Success: Orlando



**CEP promotion through a familiar, city-wide brand:** Launched in 2007, Green Works Orlando is a comprehensive sustainability program that includes building energy efficiency as one of its seven focus areas. Because Green Works already had strong public support, discussing CEP as part of the larger Green Works effort greatly facilitated the stakeholder engagement process and opened doors where pushback was anticipated.

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**Innovative financing mechanisms:** The city is implementing a robust in-house municipal energy-efficiency program by securing a \$17.5M green bond to renovate 10% of City of Orlando's building stock with high-efficiency LED lighting, HVAC renovations, and building automation and control systems. The savings are being used to pay back the bond, and recapture additional savings for future energy-efficiency improvements via a revolving energy fund. The city also developed an energy financing toolkit outlining a series of different financing programs to assist building owners with understanding available financing opportunities, including the recently established Property Assessed Clean Energy (PACE) financing program and the Solar and Energy Loan Fund (SELF).

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**Local utility partnership:** After working together in DOE's Better Buildings Energy Data Accelerator program, the city continued its engagement with Orlando Utility Commission and in summer 2017 a tool to collect whole building energy data will be released and made available to the real estate marketplace.

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**Partnerships with local academic institutions:** The city has worked with local higher education providers to develop a new curriculum around Energy Management and Controls Technologies to train the next generation of energy efficiency professionals. Those institutions also partnered in the launch of the "Central Florida Battle of the Buildings" - a voluntary energy, water, and waste reduction challenge - by training students to use the ENERGY STAR Portfolio Manager tool and providing free energy consulting to participating buildings.



## Factors for Success: Philadelphia



**Full-time staff to support building owners and managers:** Philadelphia employed one full-time employee to the benchmarking program to develop resources for outreach, reporting, and problem-solving, including an external website. This individual managed day-to-day contact with building owners and managers to help them comply with the policy and improve their building energy efficiency. The CEP-funded City Advisor position allowed Philadelphia to maintain this level of outreach throughout the implementation of both commercial and multifamily benchmarking.

**Visualizing benchmarking data for public accessibility:** Philadelphia developed a visualization tool that provides building-level energy performance data. The tool includes charts, maps, and downloadable data sets. Users can filter by building type, year built, and square footage to parse the results and view energy use, building count, and emissions for these buildings. This tool served as an early example of how to make energy-use data more accessible to the market and public.

**Enabling data access through city-utility relationship:** The city and utilities maintained a good working relationship to implement the benchmarking policy. PECO (electricity) and Veolia (district steam) agreed to offer automated upload of customer energy data to ENERGY STAR Portfolio Manager and to customers via Green Button, and Philadelphia Gas Works and the Philadelphia Water Department offered aggregated whole-building data on request from building owners.

**Assessment of program effectiveness:** Philadelphia plans to conduct a robust quantitative and qualitative evaluation of the benchmarking program's effectiveness in order to identify best practices, improve the outreach process, and make the case for the value of benchmarking programs.



## Factors for Success: Salt Lake City



**Forward momentum and continuity through election cycles and mayoral turnover:** During CEP Phase I, Salt Lake City had two election cycles, one of which resulted in an administration change. Despite these challenges, the Director of the Sustainability Department, the local partner Utah Clean Energy, and the City Advisors provided strategic vision and continuity while advocating for CEP initiatives. The City Advisors were also able to take advantage of the “election lull(s)” to plan for implementation.

**Leading with voluntary benchmarking:** Co-Advisors, housed within municipal government and a local nonprofit, divided their workload of policy passage, stakeholder outreach, implementation and education. A programmatic approach garnered significant public support from local market stakeholders, including the local BOMA chapter through a voluntary benchmarking initiative called the Mayor’s Skyline Challenge. These programs began a new conversation around benchmarking, providing an opening to discuss whole-building aggregated data.

**Improving and automating energy data access:** The city partnered with DOE Energy Data Accelerator, Rocky Mountain Power, and Questar Gas (now Dominion Energy) to improve access to whole-building energy usage data. Both utilities developed tools by which business customers may request whole-building, historic and ongoing electrical and natural gas usage data for energy benchmarking and aggregate building data will automatically transfer on a monthly basis to ENERGY STAR Portfolio Manager. The process has improved the relationship between the utility and the city, as well as the utility and its customer base.

