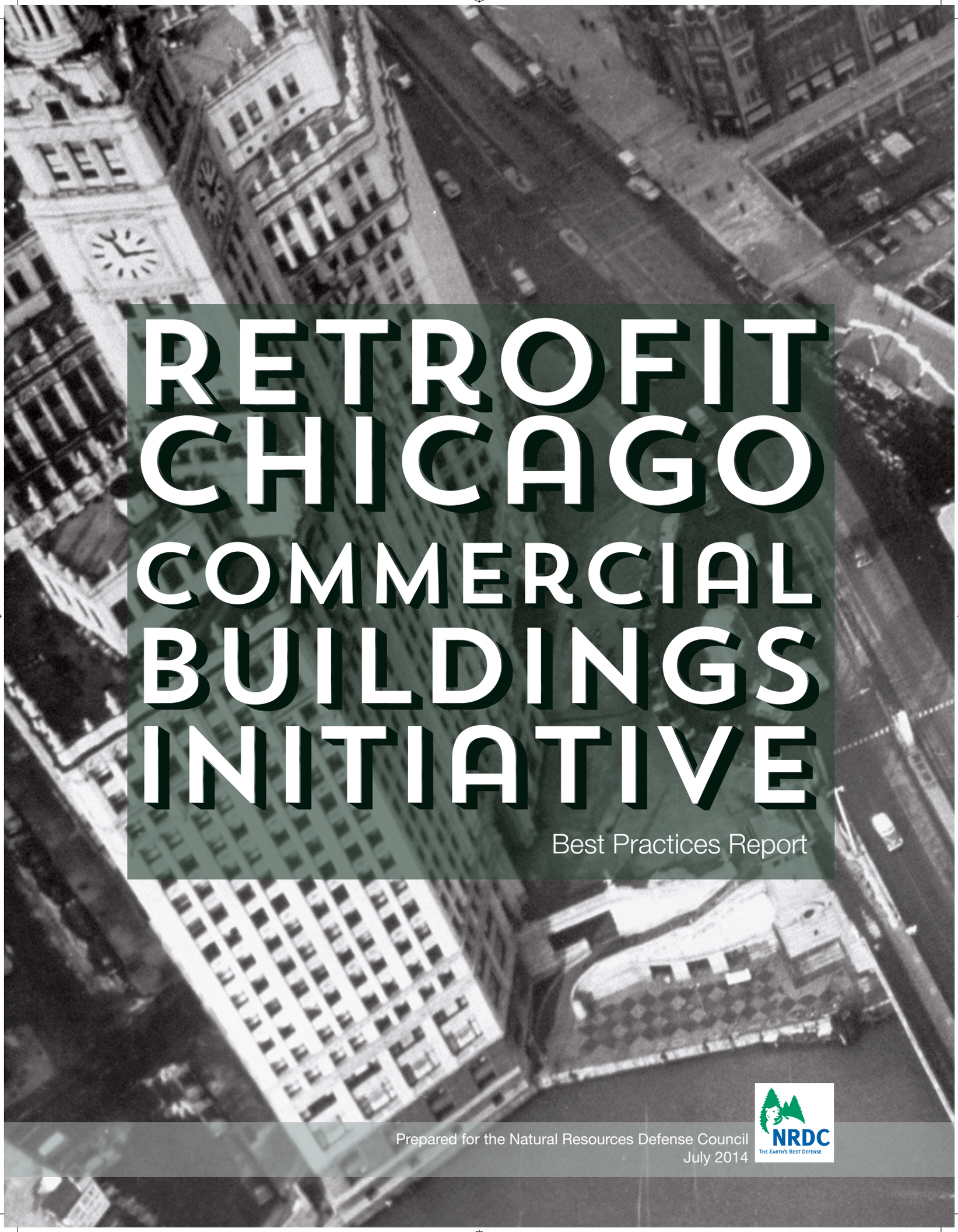

RETROFIT CHICAGO COMMERCIAL BUILDINGS INITIATIVE

Best Practices Report

Prepared for the Natural Resources Defense Council
July 2014

NRDC
THE EARTH'S BEST DEFENSE

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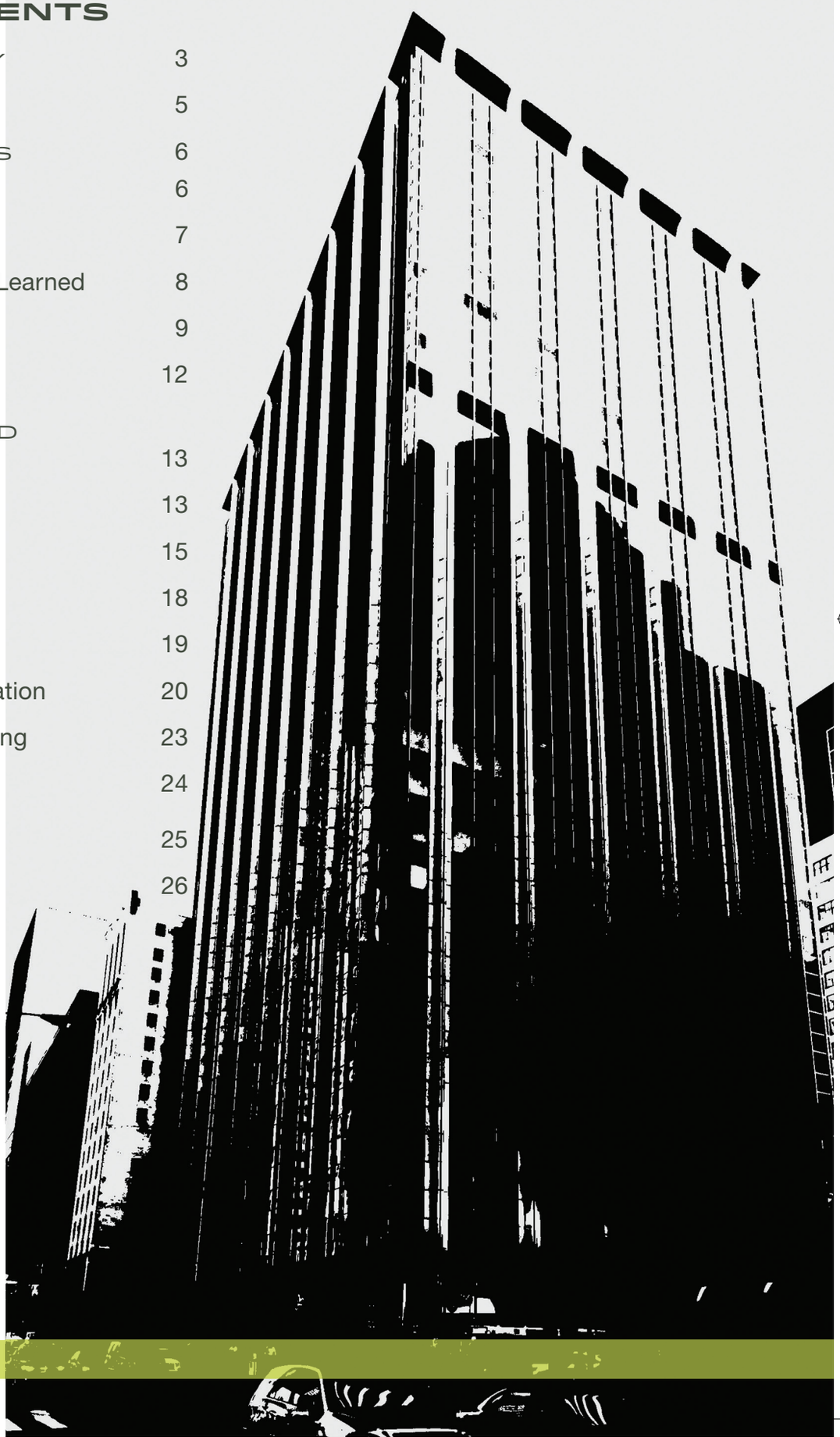
RETROFIT CHICAGO

SAVING GREEN BY **GOING GREEN**



EXECUTIVE SUMMARY

The Retrofit Chicago Commercial Buildings Initiative (Initiative) was developed in 2011 and launched in 2012 by a consortium of public, private, utility and non-profit partners as a voluntary program to promote, accelerate and celebrate energy efficiency action and impact in large buildings throughout the City of Chicago

The Initiative took shape under the leadership of Mayor Rahm Emanuel, and is led by the City's Chief Sustainability Officer, with support from the Chicago City Director of the C40 Cities Climate Leadership Group. The program is backed by Commercial Buildings Initiative partners, including The Natural Resources Defense Council (NRDC), The Joyce Foundation, World Business Chicago, BOMA/Chicago, ComEd, Peoples Gas, Chicago Metropolitan Agency for Planning (CMAP), and the C40 Cities Climate Leadership Group. Technical Advisors include CB&I and Sieben Energy Associates (SEA).

The Initiative was designed to overcome identified market barriers to the sector's investment in energy efficiency, and to support and recognize commercial buildings that commit to reducing energy use by at least 20% within five years. Through the Initiative, participants receive incentives, resources, technical support, and peer learning opportunities to help them achieve energy goals, reduce operating expenses, and receive public recognition for energy efficiency leadership.

The Initiative launched in June 2012 with 14 founding participant buildings spanning 14 million square feet. By March 2013, an additional 18 buildings and 14 million square feet joined the Initiative, doubling participation. In June 2014, the City announced an additional expansion of 16 buildings and 9 million million square feet of university, commercial, and cultural space - increasing participation to 48 buildings and 37 million square feet of committed space.

NRDC commissioned this follow up report to document best practices and key lessons learned from the first two years of the Initiative, June 2012 to June 2014. The report documents approaches taken to accelerate the adoption of energy efficiency improvements in the commercial sector.

Initiative objectives, design, outreach methods, and outcomes are described in detail to aid other commercial markets interested in implementing similar initiatives to reduce energy use and maximize energy savings locally. The Initiative's key lessons learned and outcomes are summarized at right.

KEY LESSONS LEARNED

- **With visible mayoral sponsorship and support, a cross-sector collaboration among public, private, non-profit and utility partners, can be effective at overcoming key commercial market barriers**, demonstrating immediate impact and concrete, measurable results.
- **A quick ramp-up period, with pre-identified incentives, resources and ready-to-go support**, establishes early momentum and enables participants to understand and access available resources to support energy efficiency action.
- **Incorporating utility incentives into capital planning exercises** increases utility incentive participation and resource utilization.
- **Participant commitment and goal setting** drives the implementation of significant energy efficiency improvements.
- **Providing one-on-one and peer support** through Initiative resources offers tailored solutions to participants operating under varied circumstances and opportunities to expose specific barriers and identify innovative solutions.

NOTE: In February 2013, CB&I acquired The Shaw Group, inclusive of Shaw Environmental & Infrastructure, Inc. As a result, from this point forward all references to Shaw in this document have been replaced by CB&I.

WITHIN THE FIRST 18 MONTHS OF THE INITIATIVE'S LAUNCH PARTICIPATING BUILDINGS REDUCED WEATHER-NORMALIZED SOURCE ENERGY USE BY **SEVEN PERCENT**

OUTCOMES

Since the Initiative's June 2012 launch:

- Participation expanded from 14 founding buildings spanning 14 million square feet to 48 buildings and 37 million square feet of commercial, institutional, and residential real estate that has committed to reduce energy use by 20% within five years (based on facility-specific 12-month energy use baselines looking back two years prior to the calendar year in which participants joined the Initiative).
- Collectively, 27 out of 32 participating buildings for which data is available, reduced weather-normalized source energy use by seven percent, and weighted average ENERGY STAR® scores rose by more than three points for 24 out of 32 buildings for which data is available (based on self-reported data tracked through US EPA Portfolio Manager® from 12/2010-12/2013).
- Collectively, by participating in utility energy efficiency programs, buildings have received over $2 million in utility incentives - and are saving over 21 million kWh and over $1.5 million annually from implemented projects.
- Retrofit Road Maps delivered to 19 participant buildings with strategic recommendations to meet the building's energy efficiency goals while maximizing internal rate of return (IRR) and meeting the building's payback requirements.
  - Road Maps were offered as part of the Retrofit Gateway Services program – funded by the U.S. Department of Energy through the Chicago Metropolitan Agency for Planning (CMAP).

The Initiative's success stems from visible mayoral leadership, participating building commitment, and broadly-based partnership across Chicago's real estate industry, utility companies, energy and environmental organizations, private sector technical advisors, and foundation support.

Dedicated program resourcing and management, however, continue to pose a challenge to the City, participating buildings, and Initiative partners. Designated resources drive regular communication between participants, partners and other key stakeholders. This communication seeks to discover innovative solutions to the challenges associated with implementing energy efficiency measures. Others considering similar initiatives should consider as a first priority identifying and securing resources and staff to develop the program and to maintain continued engagement and program momentum.

OVERVIEW

Mayor Emanuel has identified energy efficiency as a citywide priority to save money, create jobs, and reduce negative environmental impact. The Commercial Buildings Initiative is a local initiative designed to encourage large building energy efficiency improvement and provide customized and peer-group assistance to help meet facility-specific energy performance targets as well as citywide energy efficiency goals.

The City of Chicago's support of the Commercial Buildings Initiative is motivated by the City's sustainability goals, outlined in *Sustainable Chicago 2015,* Mayor Emanuel's three-year action agenda to make Chicago more livable, competitive and sustainable.[1] The Initiative also reinforces the City's participation in the U.S. Department of Energy (DOE) Better Buildings Challenge, a national leadership initiative launched by President Obama in 2011 to reduce energy use in the commercial and industrial sectors by 20% before 2020.[2]

Regional discussions about how to encourage, facilitate, and recognize commercial building energy efficiency efforts led to the development of the City of Chicago's Retrofit Chicago Commercial Buildings Initiative. In June 2012, a consortium of public, private, non-profit and utility partners launched the Commercial Buildings Initiative (Initiative) as one component of the City of Chicago's Retrofit Chicago. Retrofit Chicago is a cross-sector plan developed to bring energy efficiency improvements to municipal, commercial, and residential buildings throughout the city.

The Initiative is a voluntary leadership effort designed to promote, accelerate and recognize the adoption of energy efficiency improvement in commercial real estate. The Initiative seeks to reduce energy usage in commercial buildings by at least 20% within five years of participant's joining. To achieve this goal, the Initiative, led by the City of Chicago Chief Sustainability Officer and supported by the Chicago City Director of the C40 Cities Climate Leadership Group, uses an innovative cross-sector partnership model to overcome identified market barriers to energy efficiency investment in the commercial sector.

Participant buildings vary widely in size, age, sector and energy-related opportunities. Some buildings have efficiency plans and capital budgets in place, others are just beginning to analyze energy investment.

Participants have expressed a desire for increased visibility, expert advice, help prioritizing energy efficiency and peer to peer interaction. Common challenges and support needs include:

- Tenant engagement approaches and tools
- Assistance in making the business case for energy efficiency at multiple levels of management and to multiple organizations
- Applicability and eligibility on available incentives
- Peer to peer learning about other buildings' efforts
- Building-specific technology support
- Marketing support
- Interest in quarterly face-to-face meetings, supplemented by content-specific events

In joining the Initiative, participants receive recognition and optional support for their energy use reduction efforts. Partners offer participants tools, technologies, cutting-edge research, technical support, financial incentives, outreach materials and public recognition. Support services offer a strong value proposition for participants looking to increase building asset value through energy efficiency improvements and reduce operating expenses for improved tenant attraction and retention.

PARTICIPANT COMMITMENT

Reduce energy usage in one or more buildings by at least 20% within 5 years

Begin energy efficiency work within 6 months

Track progress and share best practices with the public

Serve as ambassadors to other buildings interested in increasing energy efficiency

PARTICIPANT DIVERSITY

- Participant building age: 7-117 years
- Sectors: 24 commercial office buildings, 10 hotels, 11 university facilities, 2 cultural institutions, 1 residential multi-family building
- Energy Star Scores: N/A – 90+

1 Sustainable Chicago 2015 Action Agenda
http://www.chicagosustainability.org

2 Better Buildings Challenge
http://www4.eere.energy.gov/challenge/home

IN JUNE 2012, THE INITIATIVE LAUNCHED WITH 14 BUILDINGS AND APPROXIMATELY 14 MILLION SQUARE FEET OF COMMITTED OFFICE AND HOSPITALITY SPACE. BY JULY 2014, **PARTICIPATION TRIPLED TOTALING 48 BUILDINGS** SPANNING 37 MILLION SQUARE FEET OF COMMITTED SPACE

INITIATIVE HIGHLIGHTS

PARTICIPATION

In June 2012, the Initiative launched with 14 buildings and approximately 14 million square feet of committed office and hospitality space. By March 2013, 18 additional hotels, commercial buildings, and a cultural institution joined the Initiative – doubling participants and increasing square footage to over 28 million square feet. In July 2014, the initiative expanded again, adding 16 buildings and 9 million million square feet of university, commercial, and cultural space while increasing participation to 48 buildings spanning 37 million square feet.

The City of Chicago and the Commercial Buildings Initiative partners remain committed to increasing the number of buildings in the Initiative and expanding the overall energy impact and savings that will be realized across the city.

Chicago's Commercial Buildings Initiative is designed to help participants reach the 20% energy use reduction goal by identifying resources and providing ongoing support. The Initiative emphasizes swift implementation and utilizes a diverse network of collaborators to aid participants in overcoming barriers throughout the process. Support activities are based on individual building needs and consistent engagement without burdening participants.

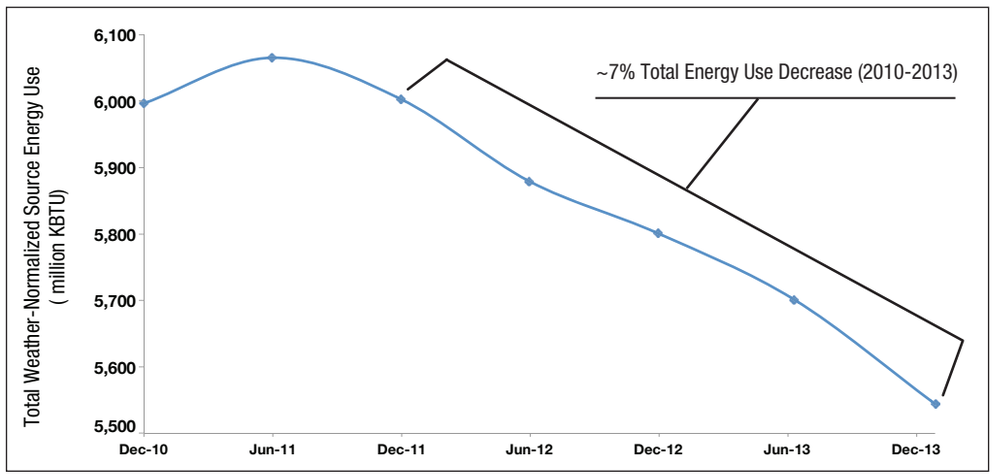
ENERGY IMPACT

The City of Chicago tracks the energy use of participant buildings using an ENERGY STAR Portfolio Manager® master account. Based on self-reported energy data, participants:

- reduced weather-normalized source energy use by seven percent from 2010 to 2013
- increased weighted average ENERGY STAR® scores by more than three points

Although each participant committed to meet the goal independently, collective participant energy savings to-date represents progress toward nearly one third of the total five year goal. Individual facility performance, however, varies significantly, with some buildings achieving the 20% target, many buildings making tangible progress, and some buildings increasing energy use from the baseline.

TOTAL WEATHER NORMALIZED SOURCE ENERGY USE



Source: Retrofit Chicago participant-reported data from US EPA Portfolio Manager (12/2010-12/2013)
Note: N = 27; Excludes 5 properties for which data is not available. Approximately 1% of data is imputed.

BEST PRACTICES AND LESSONS LEARNED

1. **An Innovative Cross-Sector Partnership Model with Key Leadership** ensures a diverse network of professionals maximize available resources and drive measurable energy use reduction from every angle. The partners work together to help building managers tackle identified barriers such as tenant engagement and making the business case for energy efficiency projects at multiple building levels. Under key leadership, public, private and non-profit partners are available to provide outreach efforts and resources including technical expertise, access to utility incentive programs, tenant outreach and innovative lease structure assistance and to facilitate peer learning and share best practices as well as track progress and provide recognition. Additional research conducted by the Building Retrofit Industry Market (BRIM) underscores the benefits of collaborative action.[4]

2. **A Quick Ramp-Up Period**, supported by industry partners, municipal non-profit and utility leaders, establishes early momentum by identifying and making resources available to participants at the onset allowing them to become familiar with and take advantage of incentives and achieve early wins as they prepare to tackle more complex projects.

3. **Commitment and Goal Setting** drives the implementation of aggressive energy efficiency improvements. Property managers are often interested in promoting straightforward tenant upgrades, but lack the time and tools to push for the adoption of energy efficient improvements on a larger scale. By making a commitment to the Initiative, participants prioritize energy efficiency projects at the building level and receive outreach support to help them clearly communicate goals and the value of energy efficiency improvements to both building management and tenants.

4. **Incorporation of Utility Energy Efficiency Incentives Into Capital Planning Increases Participation in Utility Programs.** Utility companies are key strategic partners in providing support and incentives for the implementation of energy efficiency measures. For example, ComEd was able to provide utility partner support and financial analysis tools early on in the capital planning process that were useful to build a reliable business case for energy efficient improvements. The parties working together were able to ensure that the buildings had the most relevant information on utility incentive offers during capital planning.

5. **Providing One-on-One and Peer Support** provides tailored solutions for participants with varied resources, experience, and expertise. Each participant starts from a unique perspective with regard to capital budgets, past improvements, knowledge of energy efficiency, etc. One-on-one “Welcome Calls” conducted by the Chicago City Director and a technical partner pair each participant with relevant incentives, programs, tools, and organizations to help them meet their energy savings goals. Peer meetings yield a wealth of information about efficiency opportunities, successes, and details of real-life experience overcoming known market barriers.

4 Report on Expert Recommendations to Increase the Pace and Scope of the Building Retrofit Market http://www.ef.org/wp-content/uploads/2014/01/BRIM-expert-panel-summary.pdf

CASE STUDIES

Feedback from Initiative participants indicates that learning from peer experience and sharing progress is not only useful, but also enjoyable. What follows are three case studies shared by Commercial Buildings Initiative participants at a participant gathering in March 2013.

THE AT&T BUILDING - 225 WEST RANDOLPH

The one million square feet owner occupied building, with over 30 stories of administrative space, is different from several of the other office buildings in the Commercial Buildings Initiative that house multiple tenants.

TARGET SAVINGS % OVER THE NEXT FIVE YEARS

Property management is targeting at least 20% reduction in energy consumption within the next five years

EFFICIENCY STRATEGY

- Interior lighting
- Building Retro-commissioning

RECENT EFFORTS AND ACCOMPLISHMENTS

3 million kWh and 38,250 Therms:

- Replacement of all intake dampers
- Installation of VFDs on all fan systems
- Economizer optimization
- HVAC schedule and controls optimization

NEXT STEPS AND MILESTONES

- Installation of occupancy based LED lighting on 20 floors
- Fine tune programming as seasons change

KEY PARTNERSHIPS

- Engineering study performed by AT&T Alliance; A&E projects managed with in-house PM staff
- ComEd Retro-commissioning Program by CB&I

CHALLENGES AND OPPORTUNITIES

- Creating dashboard for site energy use to raise awareness
- Changing the culture of on-site staff
- EDF Climate Corps fellow

CASE STUDIES (CONTINUED)

THE SHERATON CHICAGO HOTEL & TOWERS – 301 EAST NORTH WATER STREET

Guest satisfaction is the number one priority in the hospitality sector, and hotel operators are often hesitant to engage in activities that are perceived as reducing comfort. By installing occupancy controlled thermostats in all of the 1,214 rooms in the hotel, the management is making a significant impact in reducing energy consumption without compromising comfort.

TARGET SAVINGS % OVER THE NEXT FIVE YEARS

20%+ reduction in energy consumption within the next 5 years

EFFICIENCY STRATEGY

- Continual efficiency improvements while maximizing profit and enhancing guest experience

RECENT EFFORTS AND ACCOMPLISHMENTS

2.7 million kWh and 15,000 Therms:

- Digital thermostat system
- Boiler optimization
- Guest room upgrades
- Steam conversion
- Make a Green Choice

NEXT STEPS AND MILESTONES

- Focus on efficiency for all on-going improvements
- Property surveys
- Expansion of Make a Green Choice
- Single stream recycling

KEY PARTNERSHIPS

- Utility companies and other providers
- Starwood (management company)

CHALLENGES AND OPPORTUNITIES

- Hospitality=demand variability
- Capital constraints
- Hotel-specific peer group

CASE STUDIES (CONTINUED)

FRANKLIN CENTER – 222 WEST ADAMS & 227 WEST MONROE

As part of Retrofit Chicago's Commercial Building Initiative, Franklin Center is not only pursuing its goal of reducing energy use by 20% over the next five years, it is also testing and demonstrating strategies that can help other buildings overcome persistent barriers to energy efficiency.

TARGET SAVINGS % OVER THE NEXT FIVE YEARS

20%+ reduction in energy consumption within the next 5 years

EFFICIENCY STRATEGY

- Tenant engagement
- Building Retro-commissioning
- Capital measures

RECENT EFFORTS AND ACCOMPLISHMENTS

2.3 million kWh:

- Tenant lighting upgrades
- Base building lighting upgrades
- Building Retro-commissioning

NEXT STEPS AND MILESTONES

- Chilled water pumps
- Elevator modernization
- Fan power box motors

KEY PARTNERSHIPS

- ComEd Retro-commissioning Program - Hill Mechanical Group
- ComEd Commercial Real Estate Incentive Program
- Energy Impact Illinois Road Map - CMAP/PositivEnergy Practice

CHALLENGES AND OPPORTUNITIES

- 'The last 5%'
- Large capital items
- Tenant behavioral opportunities
- Group review of technologies, vendors etc.

"IN ORDER TO EFFECTIVELY PRESERVE AND PROTECT THE ENVIRONMENT WE SHARE, INVESTING IN CLEAN ENERGY TECHNOLOGY AND REDUCING OVERALL ENERGY CONSUMPTION IS CRITICAL. SHEDD AQUARIUM IS PROUD TO BE PART OF THIS VISIONARY INITIATIVE THAT IS DEDICATED TO CREATING SMARTER, CLEANER AND MORE EFFICIENT ENERGY SOLUTIONS AS RESPONSIBLE STEWARDS FOR OUR PLANET."

–JOHN G. SHEDD AQUARIUM

"TOGETHER WE WILL EXPLORE SMART POWER INITIATIVES AND BUILD AN INTEGRATED APPROACH TO ENERGY MANAGEMENT THAT INVOLVES OWNERSHIP, MANAGEMENT, ENGINEERING AND TENANTS."

–77 WEST WACKER DRIVE

"DEPAUL HAS AN ACTIVE ENERGY EFFICIENCY IMPROVEMENT PROGRAM THAT SPANS ALL CAMPUS BUILDINGS. WITH RETROFIT CHICAGO, WE WILL BE ABLE TO NOT ONLY CONCENTRATE ON ONE BUILDING'S EFFICIENCY POTENTIAL, BUT ALSO LEARN FROM OTHER SCHOOLS TO FINE TUNE OUR PROCESS."

–DEPAUL UNIVERSITY

NEXT STEPS

The City of Chicago and its partners continue to support participants through ongoing outreach, periodic progress and resource updates, peer-learning events, educational materials, and technical and financial guidance. Available resources, educational materials, presentations, and tools will continue to be refined based on participant needs. A website (http://www.retrofitchicagocbi.org/) developed and maintained by NRDC shares progress and critical Initiative information with the public. Press archives and other Initiative resources are also available on the website.

As new participants join and begin to develop their own strategies for success, they have opportunities to learn from peers, including buildings that are further along in their Retrofit Chicago commitment. Building owners and managers who initiated the program with varied degrees of knowledge look forward to sharing both challenges and solutions with new participants. As the Initiative expands, so do the partners and with them come new opportunities and resources to support the participants in reaching their goals. For example, at the time this report was being completed, the Environmental Defense Fund (EDF) joined the Initiative with the launch of the 2014 Climate Corps Fellows and a Chicago team dedicated to commercial energy efficiency. The Climate Corps is Environmental Defense Fund's innovative summer fellowship program that places specially-trained graduate students in companies, cities and universities as dedicated energy problem solvers.

Through a related energy efficiency policy effort, the City of Chicago adopted an energy benchmarking and transparency policy in September 2013, which requires covered municipal, commercial and residential buildings larger than 50,000 square feet to benchmark energy use and report to the City annually through ENERGY STAR Portfolio Manager, with professional data verification every three years. With phased reporting deadlines based on covered building size and occupancy use beginning on June 1, 2014, the City's benchmarking ordinance will raise awareness about building energy performance. While the ordinance does not require mandatory energy efficiency improvement, buildings that choose to reduce energy use may turn to the Retrofit Chicago Commercial Buildings Initiative for support and recognition of those efforts. Retrofit Chicago's Commercial Buildings Initiative is part of a broader, citywide collection of programs, incentives, and policies to reduce energy use, utility expenses, and greenhouse gas emissions.

As best practices continue to develop, NRDC seeks to expand the reach of commercial building programs, such as the Commercial Buildings Initiative, to other markets through continued reporting of Initiative progress. Publicly available reports, such as this, will ensure that other municipalities considering similar efforts can build off of progress realized under the Commercial Buildings Initiative to meet their own local efficiency goals and commitments.

A CROSS-SECTOR PARTNERSHIP MODEL ENSURES A DIVERSE NETWORK OF PROFESSIONALS WORK TOGETHER TO MAXIMIZE AVAILABLE RESOURCES AND DRIVE MEASURABLE ENERGY USE REDUCTION FROM EVERY ANGLE

PROGRAM DESIGN AND IMPLEMENTATION

PROGRAM ORIGINATION

The Initiative originated under the leadership of Mayor Emanuel and includes a cross-sector partnership made up of NRDC, Commonwealth Edison (ComEd), CB&I (formerly Shaw), and Sieben Energy Associates (SEA). The Initiative, led by the City of Chicago Chief Sustainability Officer with ongoing support from the Chicago City Director of the C40 Cities Climate Leadership Group – continues to grow and now also includes Building Owners & Managers Association (BOMA) of Chicago, Civic Consulting Alliance, Peoples Gas, Skidmore, Owings & Merrill, LLP, the Chicago Metropolitan Agency for Planning (CMAP) and The Joyce Foundation. This diverse network of organizations (the partners) plays a critical and ongoing role in the leadership, coordination, design, and implementation of the Commercial Buildings Initiative.

Initially the partners targeted several key market barriers to common energy efficient improvements and developed systems to empower participants to take action. The partners focused on:

LEVERAGING AVAILABLE FINANCIAL INCENTIVES
Educate building owners, managers, and tenants on available financial incentives to strengthen the return on investment for energy efficiency upgrades. Provide a direct link to utility partners on available incentives and assist with completing required paperwork.

SECURING SENIOR BUILDING MANAGEMENT COMMITMENT
Approach senior management to become building ambassadors and encourage energy reductions from leadership, building staff and tenants.

BRIDGING THE SPLIT-INCENTIVE MARKET
Educate building owners, managers and efficiency providers on how to communicate a strong value proposition for efficiency with tenants, who are directly responsible for up to 60 percent of building energy use.

The partners offer a wide-variety of additional support services that range from technical assistance, participant recruiting, progress tracking, communication, recognition, and sharing lessons learned. The City also seeks to garner additional support and participation from participants in the Chicago Green Office Challenge, an annual program designed to encourage commercial building tenants to increase sustainability practices within a friendly competition. To participate, tenants must work to reduce energy, water and material use. The Green Office Challenge offers a well-defined program to help building managers engage tenants in energy efficiency practices.

The partners recognize the Initiative as an opportunity to prove the effectiveness of cross-sector partnerships in helping cities to reach aggressive energy efficiency goals, while becoming more competitive and liveable. Below is a list of Initiative components provided by the partners.

INITIATIVE COMPONENTS • COORDINATED EXECUTION BY THE CITY AND PARTNER ORGANIZATIONS

	DESCRIPTION
COORDINATION	• Articulate initiative objectives • Identify and coordinate resources • Monitor participation and progress
PARTICIPANT RECRUITING	• Screen potential building participants • Help potential participants assess opportunity and business case • Obtain building participation commitments
RAMP-UP AND SUPPORT	• Connect participants with resources/support on specific needs • Provide building-specific technical assistance (as resources and expertise allow) • Identify common barriers/topics for peer-to-peer capacity building
ENGAGE AND IMPLEMENT	• Create opportunities for peer-to-peer best practice sharing • Provide technical assistance and group learning on common issues • May include quarterly meetings, webinars, and industry events
PROGRESS REPORTING	• Collect data on building energy performance (every 6 months) • Aggregate, analyze, and verify building performance data • Provide Portfolio Manager support to building participants
PUBLICITY	• Recognize and document progress, best practices, lessons, and impact • Create and disseminate case studies, op-eds, press releases • Maintain web presence and online participant profiles

SCREENING AND RECRUITMENT

Initiative partners used ownership, property management and design portfolios gathered from available datasets such as the CoStar Group to screen buildings and identify potential program participants. The initial screening was limited to Chicago's central business district, due to the high density of commercial real estate, though the intention of the Initiative is more far-reaching.

The partners initially targeted buildings with over 200,000 square feet of usable area and demonstrated leadership in energy efficiency and sustainability. This first review resulted in over 350 commercial office buildings in the central business district – from this list about a dozen property owners and managers were invited by the City of Chicago to launch the Initiative. Invitees were commonly intrigued by the City of Chicago Initiative invitation but it was the partners' direct approach leveraging existing relationships with the properties that signed up the participants. The approach was effective in recruiting committed participants and offered invitees assurance of the united efforts that would increase their ability to meet the commitments of the program.

Each of the partners leveraged their own resources throughout the engagement process. To reach out to other prospective participants and facilitate peer-to-peer learning, the Building Owners and Managers Association of Chicago (BOMA) hosted networking events for building owners and managers. BOMA/Chicago and Jump Start Chicago organized also organized a finance-focused session to highlight available financing options and propose innovative financing approaches. C40 Cities Climate Leadership Group, in partnership with the Clinton Climate Initiative, provided administrative support, documentation, and outreach services to ensure that best practices are shared with the public.

The initial participants were located in Chicago's central business district and represent a full range of building age, architectural style, baseline energy efficiency, and capital budgets. A map of the Initiative participants is shown on the next page.

INITIAL SCREENING CRITERIA

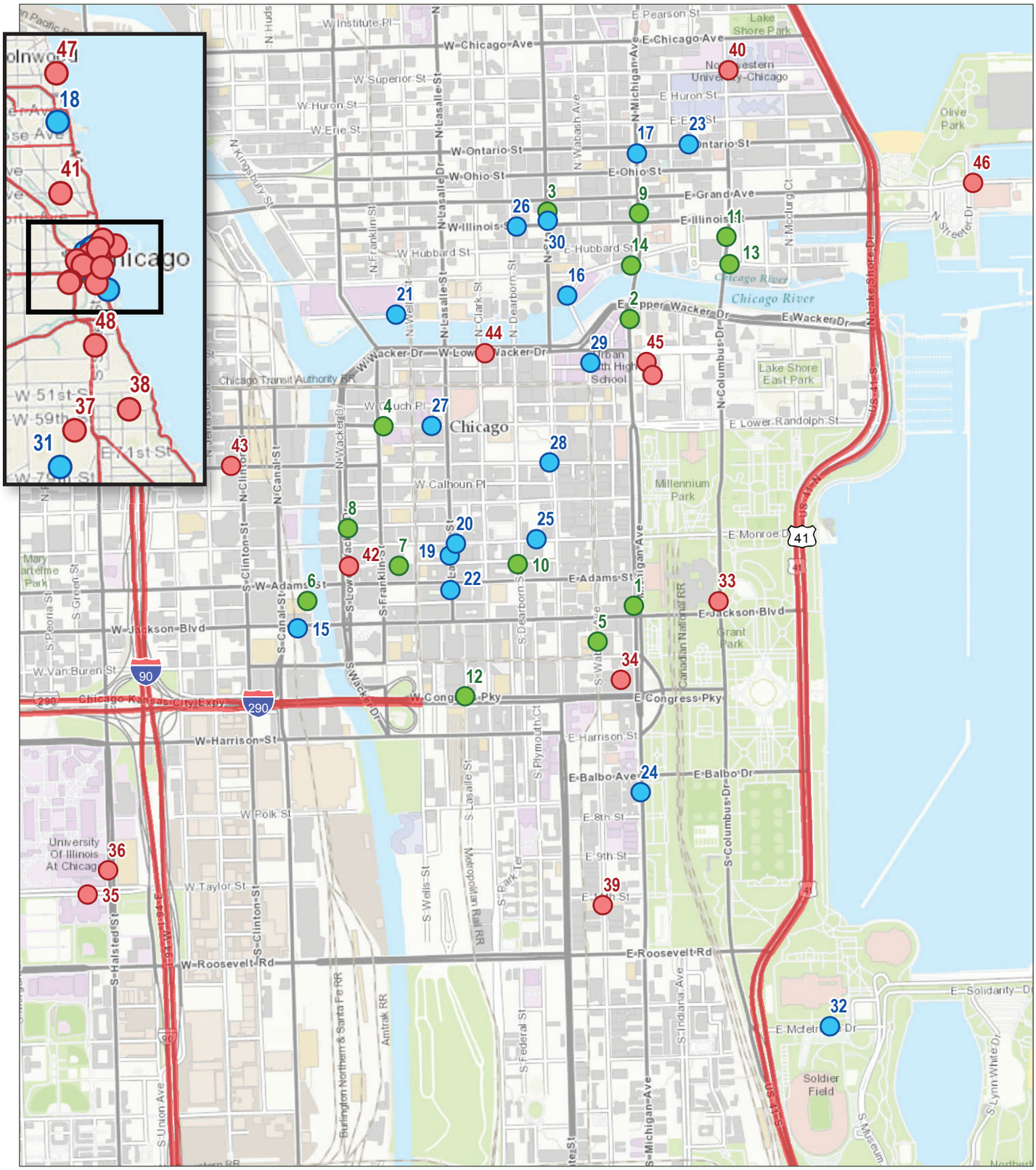
LOCATION
Chicago Central Business District- area with high density of commercial real estate (later expanded to other areas of the City)

PROPERTY MANAGEMENT
Property owners/managers with a portfolio of buildings and a presence in the pilot area

SIZE
Commercial properties over 200,000 square feet (later modified to provide more diversity)

OTHER
Leaders in sustainability, utility incentives participant, LEED rated

RETROFIT CHICAGO COMMERCIAL BUILDINGS INITIATIVE - MAP OF INITIATIVE PARTICIPANTS



JUNE 2012 LAUNCH	
1	224 South Michigan Avenue
2	333 North Michigan Avenue
3	515 North State Street
4	The AT&T Building, 225 West Randolph Street
5	CNA Headquarters, 333 South Wabash Avenue
6	Fifth Third Center, 222 South Riverside Plaza
7	Franklin Center, 227 West Monroe Street & 222 West Adams Street
8	Hyatt Center, 71 South Wacker Drive
9	InterContinental Chicago Magnificent Mile, 505 North Michigan Avenue
10	The Marquette Building, 140 South Dearborn Street
11	NBC Tower, 454 North Columbus Drive
12	One Financial Place, 440 South LaSalle Street
13	Sheraton Chicago Hotel & Towers, 301 East North Water Street
14	The Wrigley Building, 400-410 North Michigan Avenue
MARCH 2013 EXPANSION	
15	300 South Riverside
16	330 North Wabash Avenue
17	625 North Michigan Avenue
18	ICA GreenRise Uptown, 4750 North Sheridan Road
19	The Harris Bank Building, West, 115 South LaSalle Street
20	The Harris Bank Building, East / Center, 111 West Monroe Street
21	The Merchandise Mart, 222 Merchandise Mart Plaza
22	The Rookery, 209 South LaSalle Street
23	Fairfield Inn & Suites, 216 East Ontario Street
24	Hilton Hotel Chicago , 720 South Michigan Avenue
25	Hampton Inn Majestic, 22 West Monroe Street
26	Hampton Inn & Suites, 33 West Illinois Street
27	Hotel Allegro Chicago, 171 West Randolph Street
28	Hotel Burnham Chicago, 1 West Washington Street
29	Hotel Monaco Chicago, 225 North Wabash Avenue
30	Hotel Palomar Chicago, 505 North State Street
31	Continental Plaza Apartments, 1330 West 76th Street
32	The John G. Shedd Aquarium, 1200 South Lake Shore Drive

JULY 2014 EXPANSION	
33	The School of the Art Institute of Chicago, South Columbus Drive
34	Auditorium Building at Roosevelt University, 430 South Michigan Avenue
35	University of Illinois at Chicago - Science and Engineering South, 845 West Taylor Street
36	University of Illinois at Chicago - Science and Engineering Laboratories, 950 South Halsted Street
37	City Colleges of Chicago - Kennedy King Building W, 6343 South Halsted Street
38	The University of Chicago - Joseph Regenstein Library, 1100 East 57th Street
39	Columbia College Chicago - Ludington Building, 1104 South Wabash Avenue
40	Northwestern University - Robert H. Lurie Medical Research Center, 303 East Superior Street
41	DePaul University - John T. Richardson Library, 2350 North Kenmore Avenue
42	125 South Wacker Drive
43	550 West Washington Street
44	77 West Wacker Drive
45	Michigan Plaza, 205 and 225 North Michigan Avenue
46	Navy Pier, 600 East Grand Avenue
47	Loyola University - Quinlan Life Science Building, 1050 West Sheridan Road
48	Illinois Institute of Technology - IIT Tower, 10 West 35th Street

COMMITMENT AND GOAL SETTING DRIVES THE IMPLEMENTATION OF ENERGY EFFICIENCY IMPROVEMENTS

PARTICIPANT COMMITMENT

Property managers are often interested in energy efficiency and promoting tenant upgrades, but lack the time and tools to promote greater adoption.

As they signed on, participants were asked by the City of Chicago to make a commitment to the Initiative. By making this commitment, participants prioritized energy efficiency projects at the building level and received outreach support to help them clearly communicate goals and the value of energy efficiency improvements to both building management and tenants.

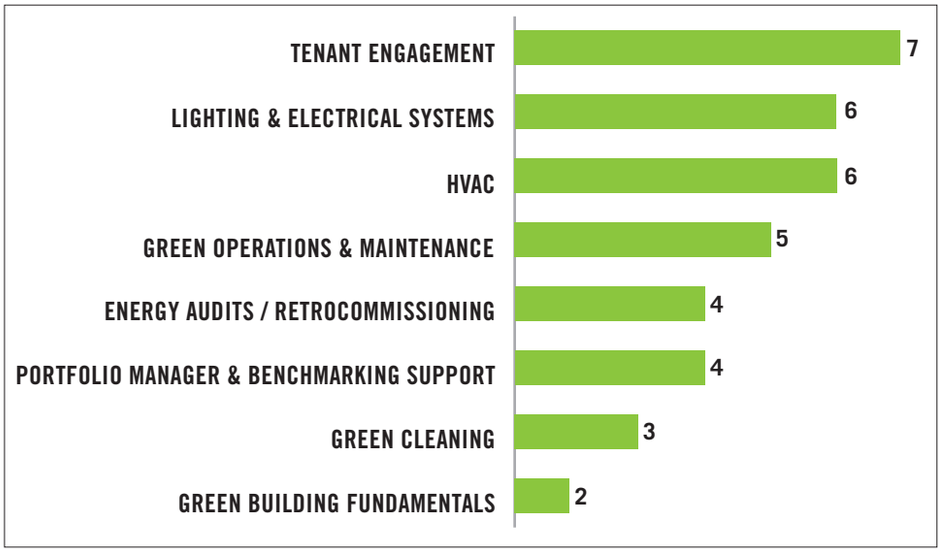
In joining the Initiative, participants committed to:

- Reduce energy usage in one or more buildings by at least 20% within five years
- Begin energy efficiency work within six months
- Track progress and share best practices with the public
- Serve as ambassadors to other buildings interested in increasing energy efficiency

Based on self-reported participant energy data, participants reduced total weather-normalized source energy use by seven percent from 2010 to 2013, and weighted average ENERGY STAR® scores rose by more than three points.

Making a commitment simultaneously meant public recognition for becoming energy efficiency leaders. The commitment sets the bar and generates interest among property owners, managers and tenants. With support from the partners, participants feel more confident that issues that may have delayed implementation of energy efficiency projects in the past will be met with supportive solutions from new allies. In this respect, the first participants paved the way for later participants by identifying common hurdles and working with the partners to devise ways to overcome them.

COMMERCIAL BUILDINGS INITIATIVE SUPPORT INTEREST - EARLY SURVEY OF 14 FOUNDING BUILDINGS
(number of buildings expressing interest in specific topics)



A QUICK RAMP-UP SUPPORTED BY INDUSTRY AND MUNICIPAL LEADERS ALLOW PARTICIPANTS TO GAIN MOMENTUM AND FAMILIARIZE THEMSELVES WITH AVAILABLE RESOURCES EARLY ON

RAMP-UP AND SUPPORT

Upon joining the Initiative, each participant was on a unique starting point to meet the 20% energy use reduction goal within five years. Some participants had already begun identifying and/or implementing efficiency opportunities while others were in need of guidance on how to get started. A number of participants were already benchmarking their building using ENERGY STAR Portfolio Manager®.

An early survey revealed eight areas of interest that may benefit from partner support with tenant engagement as the most common.

The survey helped to identify resources and also revealed new and more nuanced ways for the partners to support each participant. This information was tracked and aggregated with the intent to create educational materials, presentations, and tools to assist participants in meeting the goals of the initiative. At the outset of the Initiative, the partners outlined plans to link participants with pertinent assistance and resources. They also developed tools and strategies to conquer key market barriers, including the following:

- The City of Chicago offered expedited building permits for construction and tenant build-outs involving energy efficiency upgrades.
- ComEd's *Smart Ideas For Your Business*® Commercial Real Estate (CRE) Program offered concierge support and a tailored package of energy-efficiency incentives and services for eligible participant buildings.
- NRDC provided energy aligned lease resources as a means of overcoming the split-incentive market barrier that prevents building owners and tenants from implementing mutually beneficial efficiency measures. The resources are shown in Appendix A.
- Tenants with their own ComEd account and a peak demand under 100 kW were eligible for ComEd Small Business Energy Savings Program incentives covering up to 75% of the cost of lighting upgrades as well as free energy saving products.
- Sieben Energy Associates, a technical expert to NRDC, developed a technical paper on stairwell lighting for participants to use as a model when considering the costs, benefits and code requirements of energy efficiency improvements. The technical paper is shown in Appendix B.
- With partner collaboration, the Chicago Metropolitan Agency for Planning (CMAP) through its Energy Impact Illinois (EI2) program developed a Retrofit Gateway Services[3] program to assist participants by providing customized Energy Roadmaps; 19 participants received the Road Maps conducted by PositivEnergy Practice (PEP).

3 The Retrofit Gateway Services program is funded by the U.S. Department of Energy through CMAP

ONE-ON-ONE AND PEER SUPPORT PROVIDES TAILORED SOLUTIONS TO PARTICIPANTS OPERATING UNDER VARIED CIRCUMSTANCES PROVIDING THE OPPORTUNITY TO EXPOSE SPECIFIC BARRIERS AND IDENTIFY NOVEL SOLUTIONS

ENGAGEMENT AND IMPLEMENTATION

ONE-ON-ONE SUPPORT

To better understand the needs, current efficiency efforts and existing barriers of each participant, partners conducted a one-on-one "Welcome Call". The partners used each Welcome Call to provide background on the Initiative, make potential connections, identify relevant incentives, and outline next steps. The Welcome Call met each participant's challenges with best practices, innovative solutions, and knowledgeable professionals to help accelerate efficiency efforts regardless of where the participant was in the planning process.

The Welcome Calls were led by the Chicago City Director and typically included a technical expert and/or a utility partner. During the call, after determining the extent of a building's efforts to date, the utility representative was able to identify best available incentive programs for the building. The utility representative provided participants with detailed answers to any questions during the call and then followed up to help each participant complete the required paperwork. If no utility program fit, the partners provided information on other available assistance, such as state funding for energy audits.

The diagram at left depicts the incentive identification process used under the Commercial Buildings Initiative during the "Welcome Calls".

PEER COLLABORATION

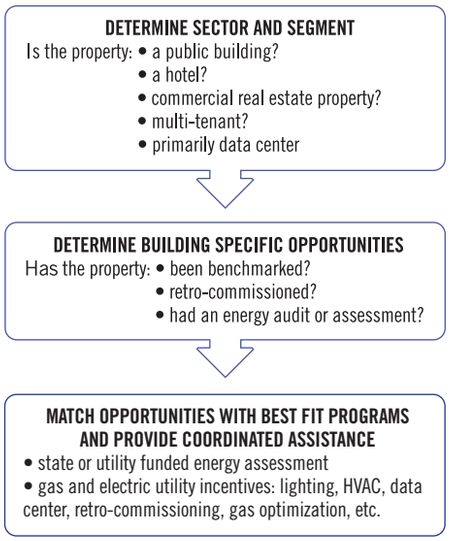
The partners facilitate peer-to-peer discussions on a quarterly basis. Though meetings and events are entirely optional, past events have been well attended and have drawn positive comments from attendees. Open discussion-oriented meetings provide a forum for participants to express successes and challenges and receive immediate feedback from peers.

Meetings often have pre-determined objectives or a primary topic for discussion, which allows for focused dialogue and short presentations. The meetings also allowed the City to get feedback from participants and to identify successes, challenges, obstacles, and opportunities to further facilitate action. Though not a requirement, building managers have consistently expressed enthusiasm for attending and participating in group meetings. Building managers found them especially helpful as they began to launch tenant engagement programs.

A group meeting of particular interest addressed common challenges and solutions to tenant engagement. During the meeting, the partners arranged a short seminar on the subject conducted by members of NRDC's Center for Market Innovation. The seminar suggested that owners review the value proposition for energy efficiency with tenants and showed data from the Empire State Building retrofit to help participants understand the significant impact of seemingly small retrofit measures. Participants took advantage of this opportunity to discuss their own experiences related to tenant engagement with peers and industry leaders.

In addition to green leases for new tenants, building managers have started to find success in non-energy benefits. One building owner commented that in a competitive hiring market, offices found building marketing materials that touted sustainable features and a healthy work environment were attractive to new recruits. Another participant led a discussion about the benefits of involving a small, but significant, core group of tenants to rally around energy efficiency measures. The building owner in this case anticipates that other tenants will follow suit as the early adopters start to realize energy savings and improve indoor environmental quality.

PARTNERS AND PARTICIPANTS IDENTIFY BEST AVAILABLE ENERGY EFFICIENCY INCENTIVES



IMPLEMENTATION

Participants employ five main steps, listed below, in pursuing their energy savings goals:

- Benchmark the building
- Conduct an energy assessment or review previously conducted assessments to identify opportunities
- Develop the business case for a building retrofit that consider utility incentives
- Plan and implement the retrofit work
- Measure and track energy savings in the Initiative's ENERGY STAR Portfolio Manager master account.

Using ENERGY STAR Portfolio Manager is an easy and cost-free way to benchmark energy use in one building or across a portfolio of facilities. Benchmarking using ENERGY STAR Portfolio Manager[4] allow participants to measure and track their building's energy and water consumption, identify investment priorities, and verify improvements over time. To use this free tool, building managers created an account, entered energy use data for all months of the designated baseline year, reviewed data, and sent it directly to program coordinators via the online tool.

Participants were able to use ComEd's Energy Usage Data tool to download aggregate building data directly to ENERGY STAR Portfolio Manager. Interested building managers should check with their electric company to see if this data is available to them. The Initiative provides detailed instructions on how to report building information to the Commercial Buildings Initiative master account directly from the tool and provides contact information for both software and technical support to help participants with benchmarking.

Participants conducted or reviewed existing energy assessments to determine opportunities and plan energy retrofits. Many Participants also participated in utility sponsored assessments and/or received a Retrofit Gateway Services Energy Road Maps. Buildings are often eligible to receive state or utility program sponsored energy assessments that provide detailed, building specific data, and outline potential efficiency improvements.

Energy assessments examine overall building performance and offer recommendations in common areas, tenant spaces and more. Participants were encouraged to contact their local utility or energy efficiency provider for resources on available no-cost or low-cost energy assessments.

To assist with implementation of energy efficiency opportunities, participants learned about and enrolled in existing utility energy efficiency programs. Depending on specific needs of each participant, they also received assistance to develop an energy savings plan and conduct financial analyses to provide a strong business case for targeted improvements.

In Illinois, the utility and state Energy Efficiency Portfolio Standard program year runs from June 1st to May 31st. This means participants would need to start reviewing energy efficiency projects and incentives as early as August of the previous year to make sure that capital planning timelines are aligned with utility incentive timelines.

ComEd's *Smart Ideas For Your Business* programs are open to all eligible buildings in the utility's service territory. A summary of ComEd business incentive programs is shown in Appendix C. For the most recent information on available incentives, visit http://www.ComEd.com/BizIncentives. Under the IL Energy Efficiency Portfolio Standard, utilities are tasked with meeting energy savings goals. With increased building participation, ComEd also learns more about the commercial sector and is able to improve upon existing programs. Therefore, utility collaboration benefits both the participant and the utility.

The founding participants were able to leverage support from ComEd's Commercial Real Estate program available at the time. The program offered energy concierge services and a tailored package of energy-efficiency incentives and services for each building. Tools and resources available through the program focused on tenant participation, identification of energy efficiency opportunities and incentives for energy savings in the base building and tenant spaces.

4 Benchmark with EPA's ENERGY STAR Portfolio Manager
http://www.energystar.gov/ia/partners/reps/ci_program_sponsors/downloads/Portfolio_Manager_Fact_Sheet.pdf

ALIGNMENT OF UTILITY ENERGY EFFICIENCY INCENTIVES WITH CAPITAL PLANNING INCREASES PARTICIPATION IN UTILITY PROGRAMS BY PROVIDING BUILDING MANAGERS WITH UTILITY PARTNERS AND FINANCIAL ANALYSIS TOOLS EARLY ON IN THE CAPITAL PLANNING PROCESS TO BUILD A RELIABLE BUSINESS CASE FOR ENERGY EFFICIENT IMPROVEMENTS

Below is a sample list of recommendations typically found in energy assessments. The list includes the payback and project cost with and without utility incentives.

ENERGY CONSERVATION MEASURES

DESCRIPTION OF PROJECT	ESTIMATED ENERGY SAVINGS (kWh/year)	ESTIMATED COST SAVINGS ($/year)	ESTIMATED UPFRONT PROJECT COST WITHOUT INCENTIVE ($)	ESTIMATED STANDARD/ CUSTOM INCENTIVE AMOUNT ($)	UPFRONT PROJECT COST WITH INCENTIVE ($)	SIMPLE PAYBACK (years)
VSD to chilled water pumps (3) 11000 ton water cooled chillers	64,800	$5,346	$35,700	$1,800	$33,900	6.34
Retrofit T12 fluorescent lighting in parking garage: (300) existing 2-lamp, 8-foot, T-12 fluorescent fixtures with standard ballast factor magnetic ballasts (135 watts)	105,222	$8,681	$24,780	$7,800	$16,980	1.96
TOTALS	**170,022**	**14,027**	**60,480**	**9,600**	**50,880**	**3.63**

Concierge services and incentives available under the ComEd Commercial Real Estate program included:

- Energy assessments for base building and tenant spaces
- Cost and savings analysis and prioritization of proposed energy efficiency measures for both tenants and owners
- Financial incentives for deep energy efficiency savings from retrofits in base building and tenant spaces
- Assistance with tenant outreach and communications

Conducting energy assessments and benchmarking energy use in a system like ENERGY STAR Portfolio Manager® is a great first step to get participants ready to set multi-year goals and track progress.

RETRO-COMMISSIONING EXAMPLE 1M SQUARE FOOT BUILDING	
PROJECT IMPLEMENTATION COST (PAID BY CUSTOMER)	$43,606
PROJECT INCENTIVE (STUDY PAID BY COMED)	$99,948
ESTIMATED ENERGY SAVINGS (kWh/year)	1,664,000
ESTIMATED COST SAVINGS ($/year)	$124,800
SIMPLE PAYBACK WITH INCENTIVE (years)	0.35

BASELINE AND PROGRESS TRACKING

As part of joining the Initiative, participants commit to provide the City with read-only access to each committed facility's ENERGY STAR Portfolio Manager profile. Participants are asked to update energy use and building information at least twice per year.

Progress is tracked and reported annually – individual building data is not shared without explicit consent, and results are tracked and shared in aggregate across all buildings. As buildings approach the 20 percent goal, awards and recognition opportunities will highlight participants' leadership and successes to encourage additional interest and participation.

Tracking and reporting energy use is easy and cost-free using ENERGY STAR Portfolio Manager with added tools. Participants create an ENERGY STAR Portfolio Manager account, enter energy use data for all months of the designated baseline year, review data and send it directly to program coordinators via the tool. Building Managers enter information for each building in the real estate portfolio, and select a facility on which to report for the program. No financial data is needed and individual data is not shared publicly without consent.

BENCHMARKING	PROGRESS REPORTING
• Baseline year: January to December - two years prior to a buildings' joining Retrofit Chicago (two year look-back) • Progress tracking tool: Portfolio Manager - National standard - Enables flexible reporting and automated data sharing • Building data input manually or uploaded directly by utilities into Portfolio Manager • Automated reporting through Portfolio Manager read-only profile access or custom reports	• Read-only access to ENERGY STAR Portfolio Manager profile, with energy use and building information updated at least twice per year • Change from Baseline: Adjusted EUI Energy Star score

There are several support options available in case buildings have any questions about the baseline report:

- **EPA Portfolio Manager Help Desk:** click the "Contact Us" button at the top of every Portfolio Manager screen to request EPA support using Portfolio Manager
- **Retrofit Chicago Team Support:** Info@RetrofitChicagoCBI.org or Sustainability@CityofChicago.org
- **In-Person Commercial Buildings Initiative Help:** Based on building need/ interest, will schedule in-person support on benchmarking

"INVESTMENTS IN ENERGY EFFICIENCY ARE MAKING THE AMERICAN ECONOMY MORE COMPETITIVE BY CREATING JOBS, GROWING INDUSTRIES, REDUCING ENERGY BILLS FOR FAMILIES AND BUSINESSES, AND PROTECTING OUR AIR AND WATER," SAID SECRETARY CHU DURING THE PRESS EVENT. **"BY JOINING THE BETTER BUILDINGS CHALLENGE, CHICAGO IS NOT ONLY LEADING BY EXAMPLE, BUT IS ALSO BETTER POSITIONING THE CITY IN THE GLOBAL ECONOMY BY SAVING MILLIONS IN ENERGY COSTS."**

PUBLICITY AND OUTREACH

Local and national publicity for the Initiative is led by the City of Chicago, with coordination assistance from other partners, including the Joyce Foundation, World Business Chicago and BOMA/Chicago. The publicity effort highlights participants' leadership and successes to encourage additional interest and participation.

At the national level, the U.S. Department of Energy Better Buildings Challenge® showcases projects on their website featuring Initiative participants.[5] Locally, the City of Chicago and partners play a crucial role in communicating overall progress achieved and showcasing the leadership of Chicago building owners and managers. A website (http://www.retrofitchicagocbi.org/) developed and maintained by NRDC shares progress and critical Initiative information with the public. Press archives and other Initiative resources are also available on the website.

In 2014, the City of Chicago plans for building participants to access digital and physical Retrofit Chicago logos and materials to highlight program participation. As part of this, through a pro-bono partnership with the Civic Consulting Alliance, Downtown Partners has developed a new brand and logo for the Initiative.

Founding participants were recognized at a press event kick-off that was led and heralded by U.S. Secretary of Energy, Dr. Steven Chu, and Chicago Mayor, Rahm Emanuel. Subsequent Initiative gatherings and announcements have included Mayor Emanuel, senior city officials, real estate executives, and Initiative partners.

5 https://www4.eere.energy.gov/challenge/partners/better-buildings/chicago

ACKNOWLEDGMENTS

Thank you to the many people who provided content, input and feedback to develop this report.

Bill Abolt, Vice President/National Practice Leader, CB&I

Steve Baab, Manager of Business Programs, ComEd

Nootan Bharani, Architect, CB&I

Heather Bolton, Vice President, Tishman Hotel Corporation

Patsy Dugger, Director, CB&I

Henry L. Henderson, Midwest Director, NRDC

George Malek, Manager of Energy Efficiency Portfolio, ComEd

Brittany C. Mazurek, Energy & Sustainability Consultant, CB&I

Kimi Narita, Outreach Manager for the City Energy Project, NRDC

Antonia Ornelas, Client Program Manager, CB&I

Jamie Ponce, Chicago City Director, C40 Cities Climate Leadership Group

Elena Savona, Client Program Manager, CB&I

John L. Schinter, Executive Director of Energy, AT&T

Craig Sieben, Founder and President, Sieben Energy Associates

Rebecca Stanfield, Deputy Director for Policy, Midwest Program, NRDC

Ryan Tinus, LEED AP, Sustainability Manager, Tishman Speyer

Rick Tonielli, Sr Energy Efficiency Program Manager, ComEd

Karen Weigert, Chief Sustainability Officer, City of Chicago

David Weiskopf, Sustainable Energy Fellow, NRDC


VODKA

APPENDIX

APPENDIX A

NRDC energy aligned lease resources:

- Energy Efficiency Lease Guidance: http://www.nrdc.org/greenbusiness/cmi/files/CMI-FS-Energy.pdf
- Energy-Aligned Lease Language Model: http://www.nrdc.org/greenbusiness/cmi/files/CMI-Energy-Aligned-Lease-Model.pdf

Energy efficiency lease pledges:

- Property Owners: http://www.nrdc.org/greenbusiness/cmi/files/CMI-Doc-Pledge.pdf
- Property Managers: http://www.nrdc.org/greenbusiness/cmi/files/CMI-Doc-PropPledge.pdf
- Tenants: http://www.nrdc.org/greenbusiness/cmi/files/CMI-Doc-TenantPledge.pdf

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January 16, 2013

Prepared for the Natural Resources Defense Council (NRDC) in support of the Retrofit Chicago Commercial Buildings Initiative

RE: Stairwell Lighting Control

Overview:
Often stairwell lighting operates continuously at full output in a building, regardless of intermittent stairwell use. Due to building code requirements, minimum light levels are required to be maintained at all times and stairwell lighting cannot be turned off completely using occupancy sensors. However, with the advent of state-of-the-art lighting control technologies, stairwell lighting energy consumption can be reduced significantly while meeting the building code requirements. Bi-level dimming is one such control technology that can automatically turn off half of the lamps in a stairwell lighting fixture during unoccupied hours. Figure 1 shows a schematic of a bi-level ballast control technology that can be used with an occupancy sensor to automatically turn off half of the lamps during unoccupied periods.

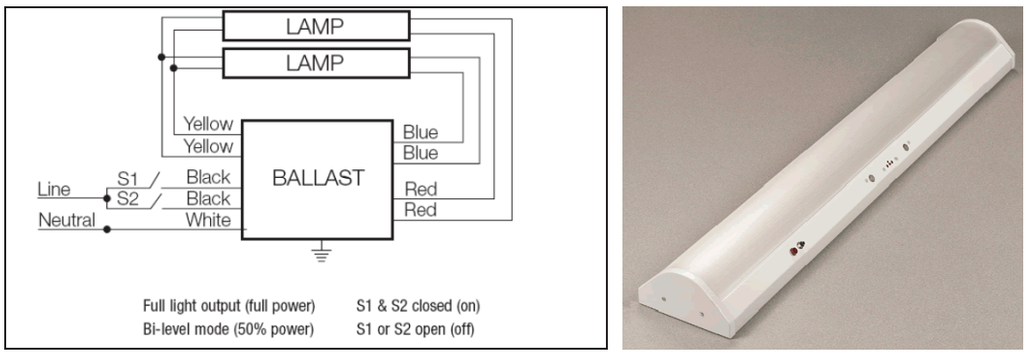

Figure 1: Bi-level Ballast Control for Lighting Fixtures[1]

[1] Bi-level lighting ballast schematic: http://www.masssave.com/~/media/Files/Professional/Training-and-Certifications/Technology%20Track%201/Sylvania-Controllable-Ballast-Presentation.ashx

Energy & Cost Savings Impact:
Energy savings can be realized by dimming light levels in the stairwell using bi-level ballasts during unoccupied periods. Literature suggests that annual energy savings of up to 40-80%[3] can be realized by implementing this measure; in addition, a reduction in operation time can also lead to increased lamp life, thus reducing annual lamp-replacement costs.

Business Case / Simple Payback on Investment:
The economics of this energy savings opportunity will vary with every building as it depends on the number of stairwells, frequency of use, and the type of lighting fixture. The following calculations are based on retrofitting one 4-foot two-lamp T12 fixture with a hard-wired 4-foot two-lamp T8 fluorescent fixture with electronic ballast and a manufacturer-integrated occupancy sensor. It is estimated that a given lighting fixture will operate at full power (2-lamps) for 75% of the time in a 24-hour period and will operate at half-power (1-lamp) for the remaining time. Implementation of this measure can result in 387 kWh in annual energy savings per fixture, it translates to annual energy cost savings of $37 with a simple payback on investment of 3.7 years.

Energy and Cost Savings:

Existing

Fixture Type	Fixture Power (Watts)	Existing Annual Operating Hours (Hours / yr)	Total Existing Energy Consumption (kWh)	Existing Energy Costs ($/yr)
2-lamp T12 Fixtures	78.2	8,760	685	$69
Total	-	**8,760**	**685**	**$69**

Proposed

Fixture Type	Fixture Power (Watts)	Proposed Annual Operating Hours (Hours / yr)	Total Proposed Energy Consumption (kWh)	Proposed Energy Cost ($/yr)	Energy Savings (kWh / yr)	Total Cost Savings ($/yr)
2-lamp T8 fluorescent w/ sensor - full power	54.4	2,190	119	$12	**387**	**$39**
2-lamp T8 fluorescent w/ sensor - half power	27.2	6,570	179	$18		
Total	-	**8,760**	**298**	**$30**		

Incentives
ComEd "Smart Ideas for Your Business" offers a standard incentive of $25 per 4-foot two-lamp T8 fluorescent fixture with electronic ballasts and manufacturer-integrated occupancy sensors[2].

[2] ComEd "Smart Ideas for Your Business" – Bi-Level Stairwell/Hall/Garage Fixtures
https://www.comed.com/Documents/business-savings/SIFYB_PY5_IndoorLighting.pdf

Economic Analysis:

Electric Cost ($/kWh)	$0.10
Electrical Energy Savings per Fixture (kWh)	387
Cost Savings per Fixture ($/yr):	$39
Lamp, Ballast, and Occupancy Sensor Cost per Fixture ($)	$99
Labor Cost ($)	$70
Total Implementation Cost per Fixture ($)	**$169**
Incentives / Rebate per Fixture ($)	**$25**
Net Implementation Cost per Fixture ($)	**$144**
Simple Payback w/ Incentive (yrs):	**3.7**

Implementation Considerations

Building Code

- NFPA requires a minimum illuminance level of 10-fc during all occupied times
- NFPA requires 100% lighting output for a period of 15 minutes after occupancy
- Uniform Building Code requires stairwells to be illuminated at least one-fc at all times

The Uniform Building Code requires stairwells to be illuminated to at least one foot-candle (fc) at all times and the National Fire Protection Association (NFPA) requires a minimum illuminance level of 10-fc during all occupied times[3]. Furthermore, the NFPA allows stairwell lighting to be controlled with occupancy sensors as long as the lights remain on at 100% output for 15 minutes after the area becomes unoccupied.[4]

Additional Information on Energy & Cost Savings Impact

Additional literature on the energy savings potential from installing a bi-level dimming technology can be found in article by Craig DiLouie published in May 2012 that is titled "Stairway to Heaven[5]" and a white paper by the Public Interest Energy Research Program (PIER) titled "Bi-level Smart Stairwell Lighting System[6]".

Approved Products / Vendors

- Columbia Lighting
- Lithonia
- Lutron
- Philips

[3] NFPA 101, the Life and Safety Code – Section 7.8.1.3
[4] NFPA 101, the Life and Safety Code – Section 7.8.1.2.2
[5] Article "Stairway to Heaven": http://www.ecmag.com/?articleID=13657&fa=article
[6] White Paper "Bi-level Smart Stairwell Lighting System": http://www.pierpartnershipdemonstrations.org/file_browser/speed/2%20Case%20Studies/2_2%20Interior%20Lighting/2_2_6%20Bilevel%20Stairwell%20Fixtures/ccc_iou_stairwell_luminaire.pdf

smart ideas®

SMART IDEAS FOR YOUR BUSINESS®
INCENTIVE PROGRAMS

Program Year: June 1, 2013 through May 31, 2014

PROGRAMS	SAMPLE PROJECTS	ELIGIBILITY	BUSINESS EXAMPLES
SMART IDEAS OPPORTUNITY ASSESSMENT			
An on-site facility assessment conducted by an engineer to identify energy-efficiency opportunities eligible for *Smart Ideas* incentives.	» Industrial facility » Office building » Hospital » Museum » Private university » Shopping center	All commercial and industrial customers	Office buildings, grocery stores, manufacturers, warehouses, hospitals, private universities
STANDARD INCENTIVES			
Cash incentives for common energy-efficiency improvements to commercial and industrial lighting, HVAC, refrigeration and other systems.	» T8 and T5 lighting » Indoor and outdoor LED fixtures » Building automation systems » Controls and sensors » Chillers » Laboratory equipment » VSDs	All commercial and industrial customers	Light industrial facilities, warehouses, office buildings, healthcare facilities, retailers
CUSTOM INCENTIVES			
Cash incentives for large, complex energy-efficiency projects, such as industrial process or system improvements not covered by Standard Incentives.	» Process and/or system improvements » Process automation » New technologies (e.g., geothermal)	All commercial and industrial customers	Manufacturers, warehouses, large grocery stores, office buildings
BUSINESS INSTANT LIGHTING DISCOUNTS (BILD)			
Energy-efficient lamps and high-efficiency electronic ballasts available to businesses at a reduced price from participating electrical distributors.	» Screw-in LED lamps and trim kits » Screw-in CFLs » Reduced wattage T8 lamps » T5 lamps » Reduced wattage HID lamps » 3- and 4-lamp high-efficiency electronic ballasts	All commercial and industrial customers; contractors that purchase lamps for maintenance and replacement	Office buildings, warehouses, large restaurants, large grocery stores, retailers
NEW CONSTRUCTION			
Cash incentives and technical assistance, such as energy modeling, to support architects and engineers in designing high-performance buildings.	» Industrial headquarters » Grocery store » Hospital surgery wing » Student Life and Recreation Center	Commercial and industrial customers planning a new building or renovation that is greater than 20,000 square feet	Office buildings, grocery stores, manufacturers, warehouses, hospitals, private universities
BUILDING PERFORMANCE WITH ENERGY STAR® FOR COMMERCIAL REAL ESTATE			
Financial and technical assistance to help office building owners and tenants overcome the barriers that prevent them from investing in energy-efficiency improvements.	» Multi-tenant office building » Full-floor tenants in building » Real Estate Investment Trust (REIT)-owned building	Commercial office customers in a multi-floor, multi-unit property >50,000 sq. ft. with more than one tenant	Office buildings

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SMART IDEAS FOR YOUR BUSINESS®
INCENTIVE PROGRAMS

PROGRAMS	SAMPLE PROJECTS	ELIGIBILITY	BUSINESS EXAMPLES
RETRO-COMMISSIONING			
Expert analysis of building systems that identifies no-cost and low-cost operational improvements to optimize electricity and gas usage.	» Update system operating schedules to improve energy efficiency and provide a comfortable indoor environment » Reduce supply air temperature and fan speed in air handling units » Optimize chiller or other equipment operation	Commercial and industrial customers with demand ≥500 kW	Office buildings, hospitals, educational facilities
DATA CENTERS			
Technical assistance and cash incentives for installing energy-efficient equipment and systems in new or existing data centers.	» Cooling optimization measures, including central plant upgrades, VSDs, high density cooling solutions and economizers » Power delivery improvements, including UPS and PDU upgrades » IT optimization measures, including virtualization, consolidation, thin provisioning and solid state storage	Commercial and industrial customers with data centers	Office buildings, manufacturers, co-location facilities, corporate data centers, hospitals
INDUSTRIAL SYSTEMS			
System assessments and financial incentives to reduce electricity used by compressed air, industrial refrigeration and process cooling systems.	» Compressed air » Industrial refrigeration » Process cooling	Commercial and industrial customers with demand ≥500 kW	Large manufacturers
SMALL BUSINESS ENERGY SAVINGS (SBES)			
Free energy usage assessments and cash incentives for projects that reduce electricity and gas use in small businesses.	» T12 - T8 lighting retrofits » CFLs » Lighting occupancy sensors » LED exit signs and lamps » Furnace and boiler tune-up » Programmable thermostat (gas heat) » Energy-efficient water heater » Steam trap replacement	Commercial and industrial customers with demand <100 kW; qualified Small Business Trade Allies guide customers through SBES program	Small retailers, small restaurants, offices, light industry, convenience stores, dry cleaners

Smart Ideas for Your Business offers cash incentives, technical services and whole-building solutions to help businesses use energy more efficiently. For more information, visit **ComEd.com/BizIncentives**, call **855-433-2700** during normal business hours to speak with a *Smart Ideas* service representative or email us at **SmartIdeasBiz@ComEd.com**.

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smart ideas®

SMART IDEAS FOR YOUR BUSINESS®
BUILDING PERFORMANCE WITH ENERGY STAR®
FOR COMMERCIAL REAL ESTATE

FACT SHEET

BUILDING PERFORMANCE WITH ENERGY STAR
Working to deliver whole-building energy performance that saves money and helps protect the environment.

The average office building wastes up to 30 percent of the energy it consumes. ComEd's Building Performance with ENERGY STAR® for Commercial Real Estate is a strategic energy management program for commercial office buildings. The program offers qualified commercial office buildings no-cost benchmarking and consulting services aimed at helping participants set and continuously track progress towards energy performance improvement targets at their properties. Guidance is also provided to assist building owners and property managers in taking advantage of all of the available incentives from ComEd *Smart Ideas for Your Business®* energy-efficiency programs.

ELIGIBILITY REQUIREMENTS

This program is available to multi-tenant commercial office buildings eligible for ComEd *Smart Ideas®* incentives.

HOW BUILDING PERFORMANCE WITH ENERGY STAR CAN HELP

The Building Performance with ENERGY STAR program offers support to participants during each stage of the process, including:

- Providing initial baseline assessments and benchmarking using ENERGY STAR Portfolio Manager® to identify the best opportunities for improvement
- Guiding participants in setting and achieving energy performance improvement goals
- Approaching energy-efficiency opportunities through whole building assessments
- Identifying opportunities to address energy efficiency in facility alteration and tenant improvement standards
- Identifying and applying for the best available *Smart Ideas* incentive programs
- Engaging tenants in energy efficiency

ENERGY EFFICIENCY: GOOD FOR THE ENVIRONMENT, GOOD FOR YOUR BOTTOM LINE

Energy efficiency provides a measurable way to make your asset more competitive, profitable, and valuable.[1] Energy represents the single largest controllable operating expense for office buildings, typically a third of variable expenses. In a gross lease building, a $1 per square foot savings in energy costs can increase the asset value by $13 per square foot.[2]

BIG SAVINGS ARE ACHIEVABLE

- To date, Commercial Real Estate participants have developed energy-savings plans averaging nearly 750,000 kWh per building
- Existing participants are expected to reduce energy usage by 15,000,000 kWh per year, save over $900,000 annually in utility costs, and receive $1.25 million in incentives
- Savings are not just for the base building – tenants account for over 40 percent of energy reductions

[1] http://www.boma.org/trainingandeducation/beep/pages/default.aspx
[2] Source: Piet Eichholtz, Nils Kok, and John M. Quigley, "The Economics of Green Building", *The Review of Economics and Statistics*, March 2013

ComEd.com/BizIncentives

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ENERGY-EFFICIENCY LEADERS

With help from Building Performance with ENERGY STAR, the large office building at **55 East Monroe** created an energy-savings plan that targeted efficiency opportunities in both the base building and tenant spaces. To ensure the base building and tenants benefitted, the property worked with its lighting contractor to provide quotes for the entire building, coordinated lighting upgrades with tenants to minimize disruption, and worked with the lighting contractor to handle all of the paperwork needed to receive *Smart Ideas* incentives. In total, the property will save more than 2 million kWh annually with more than 42 percent of the savings from tenants. Through Retro-Commissioning, the building also saved an additional 1 million kWh.

One of the best ways to reach significant savings is to look holistically at the property and tackle multiple systems at once. **9575 West Higgins Road** illustrates the value of such an approach. This building is on track to save 1 million kWh from lighting and controls changes, with more opportunities down the road. By moving to a new DDC system, the property is now eligible for Retro-Commissioning, and can leverage its investment to produce additional savings for years to come.

The **Merchandise Mart** offers a great example of how a simple change to LED lamps can bring significant energy savings. By working with its tenants to install LED lights, the Mart is expected to reduce tenant energy usage by more than one million kWh per year. Through incentives from the BILD program and tax deductions available for enhanced lighting efficiency, the Mart was able to demonstrate the cost effectiveness of the lighting upgrades and help tenants realize significant energy savings. Even as the largest commercial property to obtain a LEED-EB Gold certification, greater energy savings were achievable.

BUILDING PERFORMANCE WITH ENERGY STAR
Working to deliver whole-building energy performance that saves money and helps protect the environment.

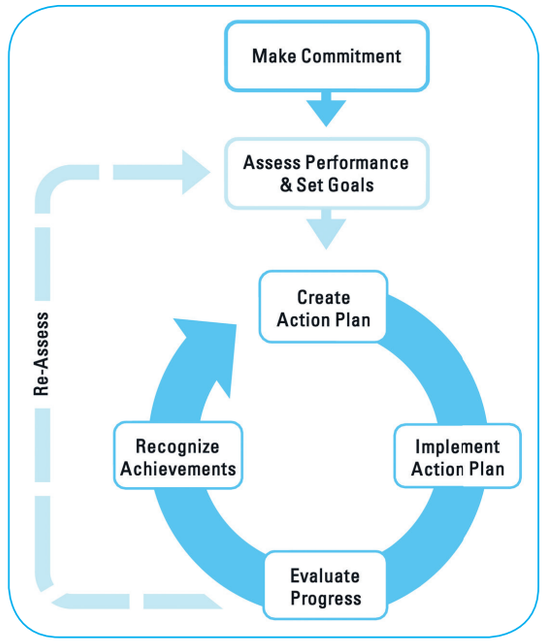
POSITION YOUR BUILDING AS A LEADER

Reducing energy usage is a great way to improve the marketability of your property, control costs, and enhance the value of your asset. ComEd's Building Performance with ENERGY STAR program helps the commercial real estate industry realize that value by building strategic energy management into business decision making.

Owners and operators are realizing a number of financial benefits from improving their ENERGY STAR score and achieving certification. ENERGY STAR certified buildings have 6.5 percent higher effective rents and nearly 13 percent lower operating costs. As a result, these buildings have property values 8.5 percent above comparable properties.[3]

To get started, we suggest following the Building Performance with ENERGY STAR guidelines shown below.

[3]Ibid



Source: US Environmental Protection Agency

CONTACT US

For more information about the Building Performance with ENERGY STAR program, call **855-433-2700**, visit **ComEd.com/CRE**, or email us at **SmartIdeasBiz@ComEd.com** to schedule a meeting.

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