Putting Data to Work

2017 Building Technologies Office Peer Review

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

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Project Summary

Timeline:

Start date: July 15, 2015

Planned end date: July 14, 2018

Key Milestones:

1. DC and NYC use SEED in their ordinance compliance cycles and continuously provide feedback on the Platform to DOE/LBNL; January 2016
2. DC and NYC pilot programs are designed and ready for implementation; June 2016
3. Toolkit completed and ready for dissemination; December 2017

Budget:

Total Project $ to Date (Through CY 2016):

- DOE: $241,013
- Cost Share: $384,161

Total Project $:

- DOE: $999,047
- Cost Share: $1,030,656

Key Partners:

District of Columbia Department of Energy & Environment (DOEE)
New York City Energy Efficiency Corporation (NYCEEC)
New York City Mayor's Office of Sustainability (NYMoS)
New York State Energy Research and Development Authority (NYSERDA)
Vermont Energy Investment Corporation/District of Columbia Sustainable Energy Utility (VEIC/DCSEU)

Project Outcome:

Building energy performance data is used to improve energy efficiency program design and delivery, expanding the market for energy efficiency in multifamily and commercial buildings. Efforts link to BTO MYPP Commercial and Residential Buildings Integration Strategies

Purpose and Objectives

Problem Statement:

The U.S. spends over $400 billion a year to power its buildings, with a significant portion of this wasted by inefficient buildings and operations.

An increasing amount of building performance data is becoming available from local benchmarking and audit ordinances.

This project examines how this information **can help reduce building energy use**—enabling cities and utilities to **optimize efficiency programs** in their jurisdictions to maximize investments, reduce administrative burden, and increase cost savings.

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Purpose and Objectives

Target Market and Audience:

Efficiency program administrators, City officials involved in benchmarking and audit data collection, and ultimately private sector users of information.

Impact of Project:

- Address **~4,400 of the 24,896 commercial and multifamily buildings** covered by city benchmarking and related ordinances within the pilot cities of DC and NYC
- Expect an eventual **10% increase in energy savings** of efficiency programs, **49,826 MWhs** in additional energy savings, **$21 million in annual investment** in energy efficiency improvements.
- Create **toolkit** of resources for other jurisdictions to enable the replication of the successes of the DC and NYC programs
- Deploy in a network of cities could impact 83,000 buildings across 22 cities, annual savings of 2.2M MWhs and $964M in EE investment

Approach

Two-Pronged Approach:

Pilot Phase (Years 1 and 2):

DC and NYC implement pilot energy data application programs, using SEED and BEDES in data collection and management to the extent possible.

Dissemination Phase (Year 3):

Based on lessons learned by DC and NYC, IMT develops a resource **toolkit** for national dissemination so that other jurisdictions can replicate successful efforts.

Approach

Key Issue: Improving energy efficiency program design and delivery using building performance data to increase energy efficiency in the multifamily and commercial building sectors

Distinctive Characteristics: Cross-organizational collaboration

- Working with energy program administrators on the ground in two leading city governments and organizations operating within those cities to centralize and standardize ordinance data management
- Understanding how to use information to best inform energy efficiency program deployment, and capturing the outcomes for use by other jurisdictions to minimize startup barriers
- Working directly with LBNL, NREL and DOE to provide feedback on SEED from the cities' use of the Platform and assisting in business process integration within those cities

Partner Accomplishments - SEED

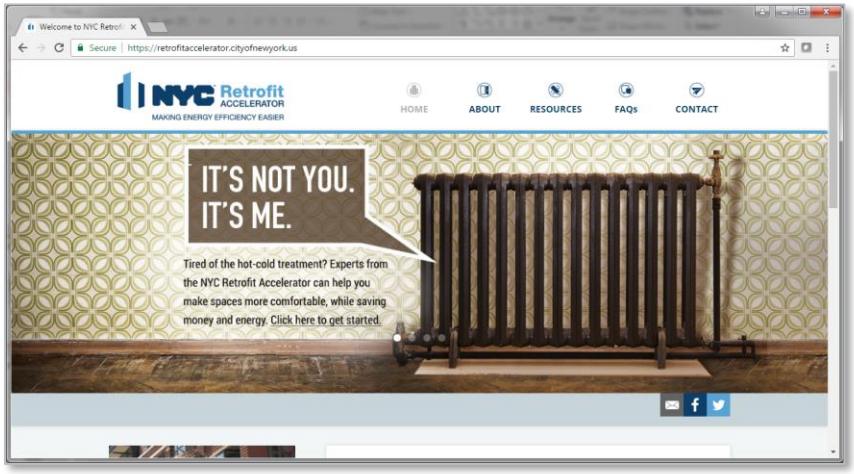
- IMT and DC/NYC mapped integration of SEED into current business processes
- DC/NYC provided the use case for a database redesign of SEED, which resulted in Version 2.0 of the platform, which:
  - More accurately reflects the relationships between tax lots and properties, **making it easier to manage the relationship between complex datasets**
  - Updates the API to industry standards, **making it easier to connect a City's SEED instance with external platforms**
- DC/NYC continue to pilot the use of SEED, provide feedback to the DOE/LBNL/NREL development teams, and participate in the SEED Platform Collaborative community to share lessons learned and best practices

Partner Accomplishments – NYC Mayors Office of Sustainability

Launched the NYC Retrofit Accelerator, a third-party trusted advisor for building owners looking to make energy efficiency improvements to their assets.

As of January 2017:

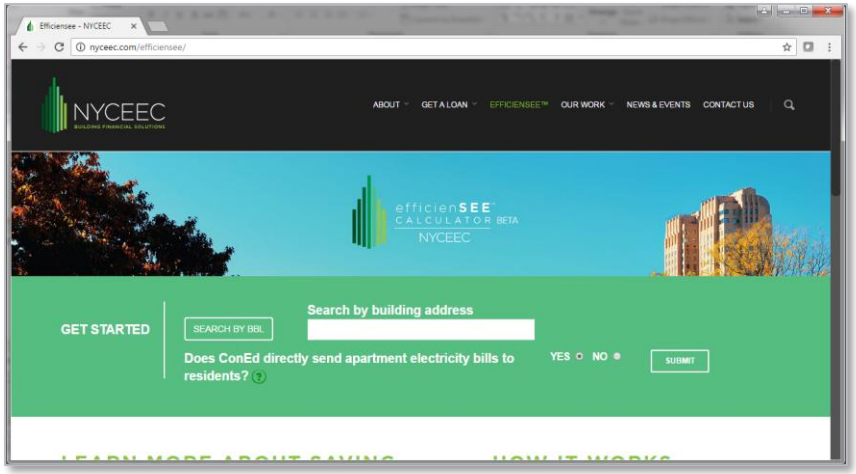
- 361 properties have completed or started construction on EE projects
- 1,463 additional properties are working with the Retrofit Accelerator, and 911 of those are currently pursuing projects



Partner Accomplishments - NYCEEC

Improved accuracy of forecasted savings.

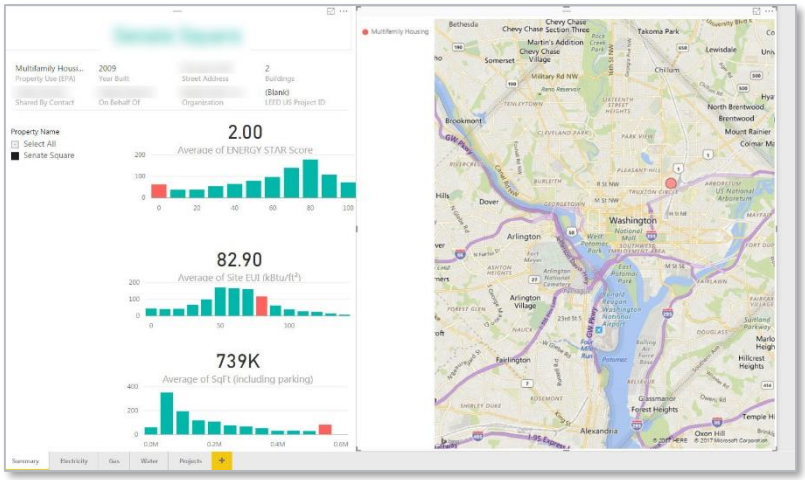
- Lesson learned: efficienSEE™ Version 2.0 energy savings estimates found to be overly conservative
  - Underestimating energy savings could negatively impact investments in efficiency
- NYCEEC to deploy Version 2.1 with 2015 benchmarking data, ensuring accurate savings estimates (September 2017)
- Version 3.0 will be deployed to incorporate commercial buildings (December 2017)

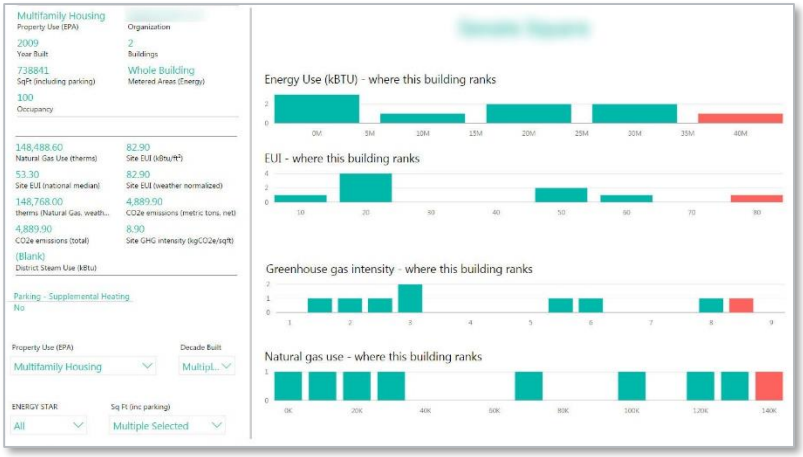


Partner Accomplishments - DCSEU

Pilot program and outreach strategy designed and deployed

- **Data/work analytics to date**:
  - 56 property records tied to 90 buildings converted into 8 visualization presentations for various customer groups
- **Outreach Efforts**:
  - 5 of the 8 presentations are results from cold-calling efforts
  - 68 total cold call accounts made to date, equating to a conversion rate of 7.35% (Phone call exchange to “front door engagement”)





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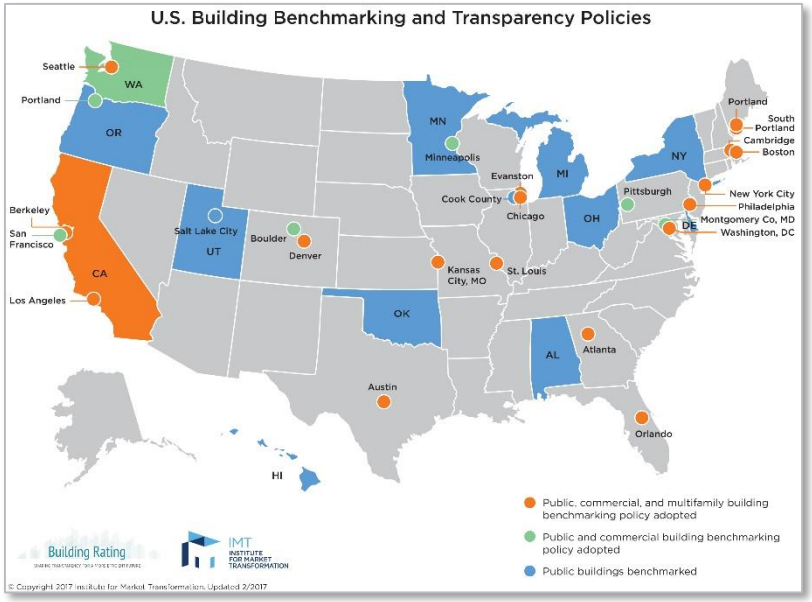
Toolkit Development

- IMT and project partners are developing a **toolkit of resources** to be disseminated nationally so that other jurisdictions and efficiency program implementers can build off of the successes of project partners
- IMT is interviewing cities and efficiency program implementers to understand
  - Current use of benchmarking data
  - Useful resources
  - Specific topics of interest
- To date, we have solicited feedback from **13 leading cities**, conducted **in-depth interviews with six cities**, and have interviewed numerous **utilities and efficiency service providers** for input into the toolkit



Project Integration and Collaboration

Project Integration: Diverse group of partners leverage a broad existing dialogue within an extensive network of jurisdictions, market actors, and the NGO community, along with an intimate understanding of their own jurisdictions' unique challenges and current business processes.

Partners, Subcontractors, and Collaborators:

- District of Columbia Department of Energy & Environment (DOEE)
- New York City Energy Efficiency Corporation (NYCEEC)
- New York City Mayor's Office of Sustainability (NYMoS)
- New York State Energy Research and Development Authority (NYSERDA)
- Vermont Energy Investment Corporation/District of Columbia Sustainable Energy Utility (VEIC/DCSEU)

Communications:

- Paper summarizing the project presented at the ACEEE Summer Study in August 2016. Co-authors included IMT, DOEE, NYMoS, DOE, and LBNL.
- IMT and NYC will present the project at the ACEEE National Symposium on Market Transformation in April 2017.

Progress and Accomplishments

Market Impact: DC and NYC will continue working to improve the sustainability performance of their cities, using building energy efficiency as a tool to achieve ambitious goals. Among other things, this will involve:

- Working with the SEED Platform Collaborative—using SEED and providing feedback on the city-level use case
- Piloting energy efficiency programs that enable data-driven decision making and investment, sharing lessons learned and best practices with other Cities
- Nationwide replication and energy savings, enabled by a publicly-available toolkit, based on DC and NYC's models.

Lessons Learned:

- Tremendous opportunity nationwide to make energy- and cost-saving building improvements by leveraging policy data
- Vast opportunity exists for city-utility collaboration, yet complexities remain in educating account managers, as well as making data relevant and user-friendly
- Cities and the private sector lack resources to develop supporting data infrastructure, highlighting importance of Federal investment

Next Steps and Future Plans

Near term:

- NYC and DC continue work with DOE, LBNL, NREL and the SEED Platform Collaborative Community to implement SEED and BEDES within their data collection and management processes
- March 2017: List of resources to be included in toolkit
- April 2017–September 2017: Toolkit resources developed
- September 2017–December 2017: Toolkit finalized

Long term:

- January 2018–July 2018: Toolkit disseminated through webinars, online media channels, presentations, and network of city and efficiency program implementers

REFERENCE SLIDES

Project Budget

Variances: Initial delays in the project resulted from logistical challenges coordinating subrecipient agreements post-award. Deliverables related to the efficienSEE™ tool have resulted from additional analysis needed to ensure that the tool accurately estimates energy savings, and deliverables related to SEED have been pushed back as the tool continues to be enhanced and improved by DOE, LBNL, and NREL.

Cost to Date: Through the end of December 2016, 30% of the total project budget has been expended, including 37% of total project budgeted cost share and 23% of total project budgeted fee.

Budget History					
July 2015 – FY 2016 (past)		FY 2017 (current)		FY 2018 – July 2018 (planned)	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
$232,225	$383,624	$465,159	$409,314	$301,664	$237,716

Project Plan and Schedule

Project Start: July 15, 2015 (Awarded August 2015)
Project End: July 14, 2018
Milestone or activity met
Milestone or activity deadline (initial: grey - revised: red)

Task and Milestone	Duration of Tasks and Quarter of Completion for Milestones													
	15	FY 2016				FY 2017					FY 2018			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
Task 1: Project Management Plan														
Task 2: Integrate SEED and BEDES into project workflows														
Milestone 2.1: SEED established as data tool and plan established to align existing databases														
Milestone 2.2: BEDES is established as protocol for data collection and transfer														
Milestone 2.3 :Feedback to DOE provided based on processes established. Technical integration pathways documented and budgeted.														
Subtask 2.1: Prepare for Pilot Programs														
Milestone 2.1.1: NYC and DC pilot programs designed														
Milestone 2.1.2: Benchmarking data ready for project use														
Task 3: DC Pilot Program														
Milestone 3.1: DC trends in benchmarking data are identified, best practices for data analysis captured, and recommendations for sectors and measures to target are developed for program design and implementation														
Subtask 3.1: Integrate DC Benchmarking Ordinance Data														
Milestone 3.2.1: Existing DC data tools updated and populated with DC data, using SEED for all activities in which SEED functionality meets city needs														
Subtask 3.2: Implement protocol for use of ordinance data														
Milestone 3.3.1: DC program participation relative to using ordinance data is evaluated, and customer experience surveys are collected														
Task 4: NYC Pilot Program														
Milestone 4.1: In NYC program, trends in benchmarking data are identified and captured into recommendations														
Milestone 4.2: In NYC program, market-facing information is available and recommendations are communicated														
Milestone 4.3: NYC data combined with other datasets, using SEED for all activities in which SEED functionality meets city needs.														
Subtask 4.1: Update the Energy Savings Potential (ESP) Tool for Multifamily Properties														
Milestone 4.1.1: EfficienSEE tool update														
Milestone 4.1.2: Program design best practices														
Subtask 4.2: Develop EfficienSEE Tool analysis for commercial buildings														
Milestone 4.2.1: EfficienSEE tool application method														
Milestone 4.2.2: NYC Retrofit Accelerator commercial integration														
Subtask 4.3: Implement protocol for use of ordinance data														
Milstone 4.3.1: In NYC program, participation and methods of using ordinance data evaluated														
Task 5: Create Toolkit Task Summary														
Milestone 5.1: Toolkit completed														
Task 6:Disseminate Toolkit as Replicable National Model Task Summary														
Milestone 6.1: Toolkit is published and disseminated to extended deployment network														

Go/No Go Decision Point 1 - Achieved

Present

Go/No Go Decision Point 2

Go/No Go Decision Point 3