

GOVERNMENT OF THE DISTRICT OF COLUMBIA

Department of Energy and Environment

Green Building Advisory Council

Meeting Date: 12/02/2015

Meeting Location: DOEE, 1200 1st Street NW

Attendees: Jay Wilson (DOEE), Carl B. Reeverts (EPA-retired), Marshall Duer-Balkind (DOEE), Katie Bergfeld (DOEE), Eugenia Gregorio (Tower Companies) (ph.), Anica Landreneau (HOK), Sandy Wiggins (Consillience), Lenny Kolstad (IMT), Jessica Zimbabwe (NLC/ULI), Maureen McGowan (DC Water), Saul Kinter (DC Water)

Main Points/Discussion:

Introductions (All)

Green Construction Code

- DC was the first jurisdiction to adopt the IgCC. After three years, it is time to launch the next round of review and consider potential revisions to the code.
- This year, we have had an opportunity to look at both commercial and residential initiatives. To see the potential incremental steps to be taken in order to create a roadmap, we will consider implementing mandatory renewable energy and high rise wood construction, look toward 2032, and back-cast. This roadmap could be incorporated as an appendix in the green construction code and could also drive incentives.
 - This would help us better consider and project impacts to the grid
 - We could also have another Technical Advisory Group (TAG) to talk specifically about the energy related issues with putting that much solar on the market. The Comprehensive Energy Plan (CEP) team will consider this in order to ensure that large infrastructure moves are considered and can be incorporated early.
- We would like to contract a bench of consultants to do small at-will research projects.
- TAGs forming in January 2016 will have representation from architecture, engineering, construction, development, and other communities.
- The code then goes through the code board and then to Council in the Fall 2017.
- Our target is Fall 2017 for the code's adoption into the next cycle.
- DGS launched the largest on site solar PPA of any jurisdiction in the US yesterday. We still have a long way to go in becoming the leader in on site solar (Hawaii is inching up to 20% of on-site solar).

- “Amazing conjunction of projects, programs and ideas all coming together at the same time that could put us on a path to accomplish some really great things.” – Updike
- We should reach out to Montgomery County (they are proposing adopting IgCC in January with no alternative compliance path and no training). Several people have reached out, but they seem to be moving forward.

Heat Recovery Opportunities (Wastewater Thermal) in Washington, DC

Benchmarking Grant Summary – Marshall Duer-Balkind and Katie Bergfeld

- Refer to PowerPoint attached.
- Group Suggestions:
 - Compare the applicant to their peers in the compliance letter
- Vacancy:
 - Active renovation/ under construction – provide permit
 - Special exemption (warehouse occupied 2 months/ year)
 - Talk to Portfolio manager
 - Connect to vacant property contact at DCRA

Roundtable Updates

Carl B. Reeverts (EPA-retired)- Met with the ANC 6B and asked how they could make a difference in sustainability and if they could focus on asking for deeper sustainability outcomes on Planned Unit Developments (PUDs).

Anica Landreneau (HOK)- HOK had 3 great tours as part of Greenbuild. She is going to Charlotte tomorrow to talk about growing transit for a campus.

Lenny Kolstad (IMT)- Working on project with LBNL and UC Berkley during the lending and mortgage process to see if point of sale would be a good time for energy improvements.

Jessica Zimbabwe (NLC/ULI)- Taking a delegation of Rose Fellows to San Juan for a tour of a green roof on a 14th century building.

Dave Epley (DCRA)- Reported that the code summit went well. The delegations from China and Middle East both talked about the green code.

Bill Updike- Discussed the sustainability language in DMPED proposals. There are 2 projects and one NZE project was proposed for each. Also, the PACE deal was announced last week, and Phyllis Wheatley is the first HUD approved PACE deal in the country. Additionally, Weinberg Commons, the first multifamily retrofit passive house in the country, had a ribbon cutting last week.

Date for next meeting: February 3, 2016

Location for next meeting: DOEE, 1200 1st Street NW, 5th Floor

Contact: william.updike@dc.gov



DEPARTMENT
OF **ENERGY &
ENVIRONMENT**

Energy Benchmarking Grant Results and Discussion

Marshall Duer-Balkind

Department of Energy & Environment
Government of the District of Columbia

December 2, 2015

Green Building Advisory Council



NEW YORK UNIVERSITY



CENTER FOR URBAN
SCIENCE+PROGRESS

Washington, DC Building Energy Analysis 2013 and 2014 Data

NYU Center for Urban Science and Progress

Project Lead: Constantine E. Kontokosta, PhD, PE, Assistant Professor and
Deputy Director for Academics

Daniel Marasco, PhD, Postdoctoral Associate

Awais Malik, PhD Candidate

Bartosz Bonczak, Assistant Research Scientist

Maha Yaqub, Research Assistant

Christopher Tull, Research Assistant

William Vidal, Research Assistant

***Work Performed in Furtherance of Grant 2014-2-OPS:
Energy Performance Data Quality Assurance***



NEW YORK UNIVERSITY



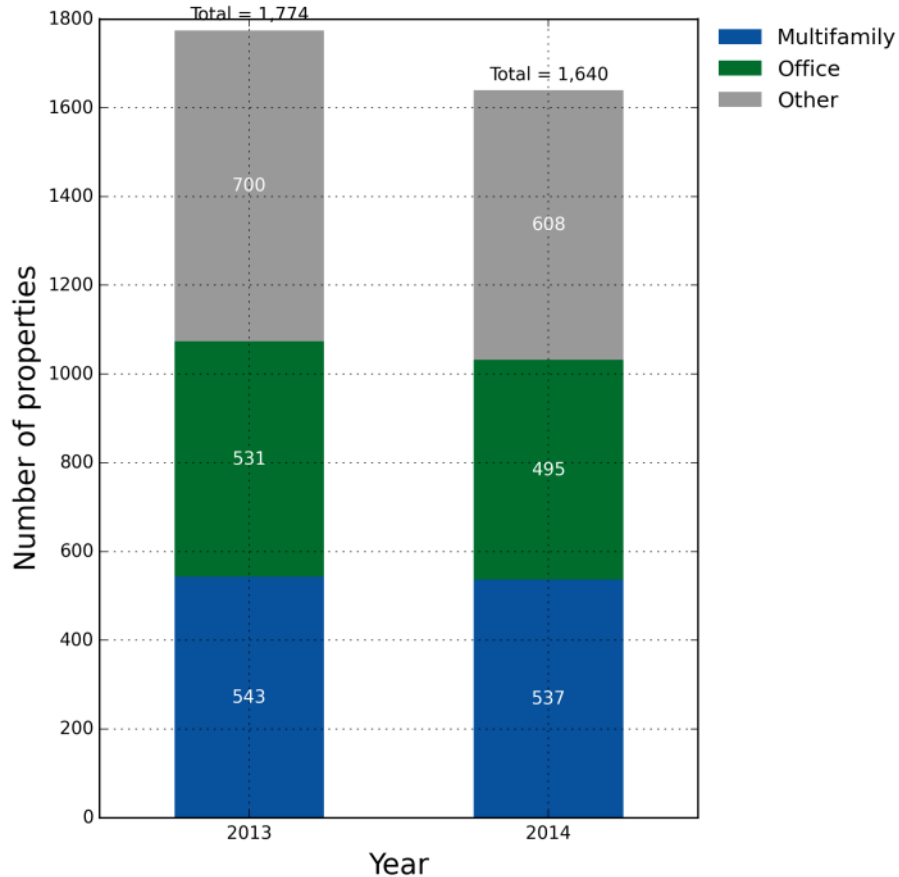
IMT
INSTITUTE
FOR MARKET
TRANSFORMATION

Grant 2014-2-OPS: Energy Performance Data Quality Assurance

- **NYU did descriptive analysis—over 54 pages of charts and graphs!**
 - Will be published with narrative description by DOEE
 - Also provided all underlying equations and models
- **NYU conducted data quality regression analysis and scoring of the EUIs**
- **IMT conducted interviews of buildings with outlier ENERGY STAR scores**
 - 42 buildings were interviewed
 - Key sources of ENERGY STAR score error: use of “default values”, incorrect accounting for vacancy, missing tenant data with no explanation
- **Key recommendations:**
 - DOEE screen reports based on DataIQ EUI score
 - DOEE not accept any reports with default values
 - DOEE improve guidance documents to address key sources of error
 - DOEE revisit vacancy exemption

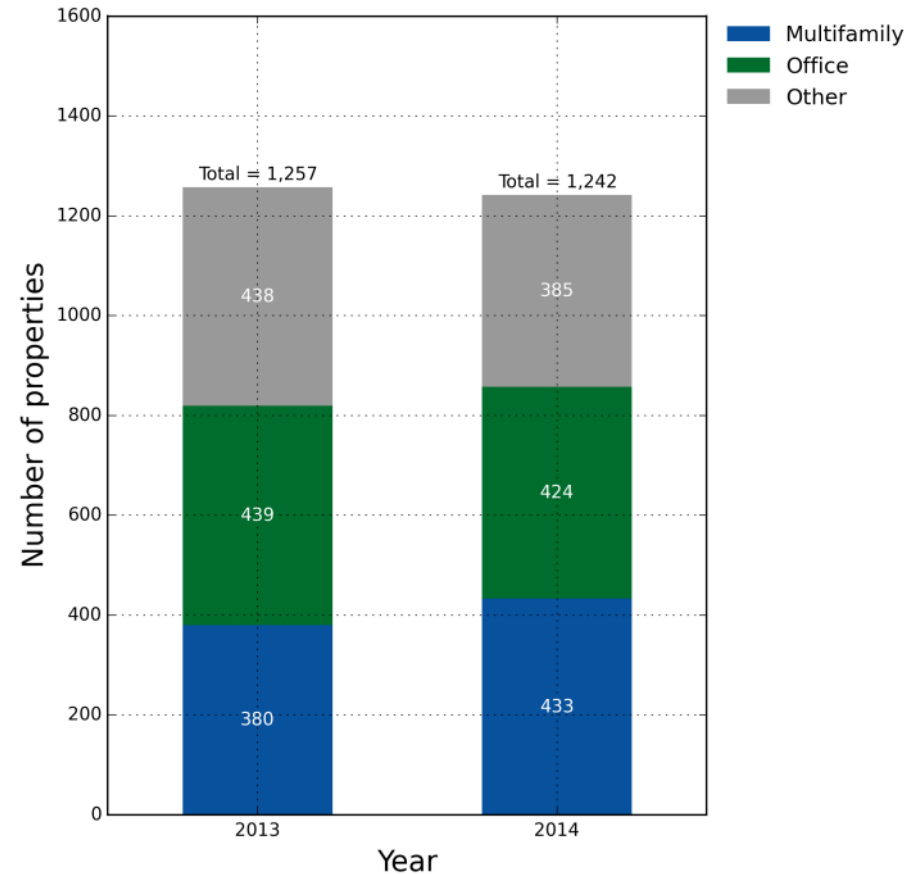
Dataset Summary - Number of Properties

Number of properties by type



Number of properties in 2013: 1774
- Multifamily Housing: 543
- Office Buildings: 531
- Others: 700
Number of properties in 2014: 1640
- Multifamily Housing: 537
- Office Buildings: 495
- Others: 608

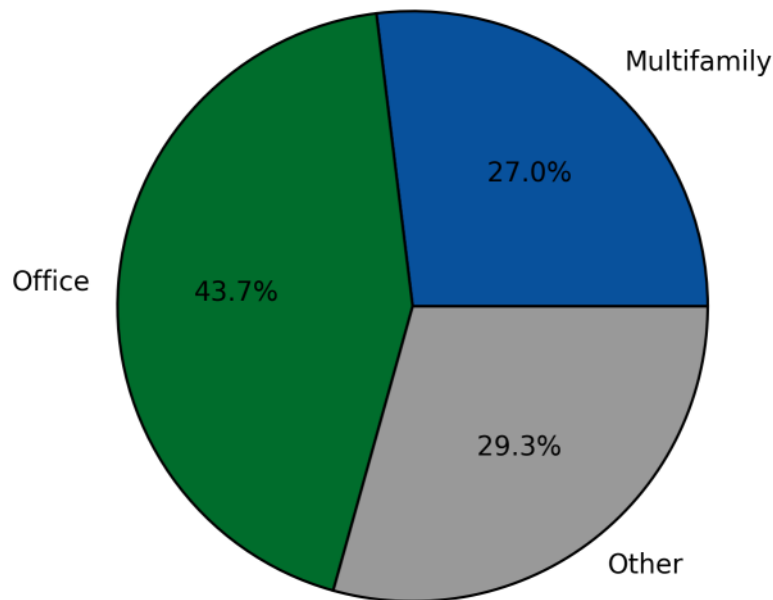
Number of properties by type - clean dataset



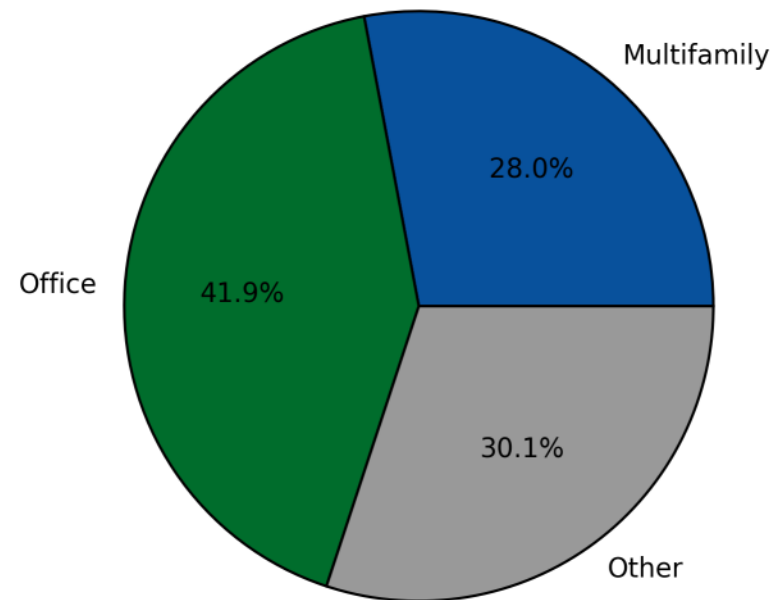
Number of properties in 2013: 1257
- Multifamily Housing: 380
- Office Buildings: 439
- Others: 438
Number of properties in 2014: 1242
- Multifamily Housing: 433
- Office Buildings: 424
- Others: 385

Proportion of Gross Floor Area by Building Property Type

2013

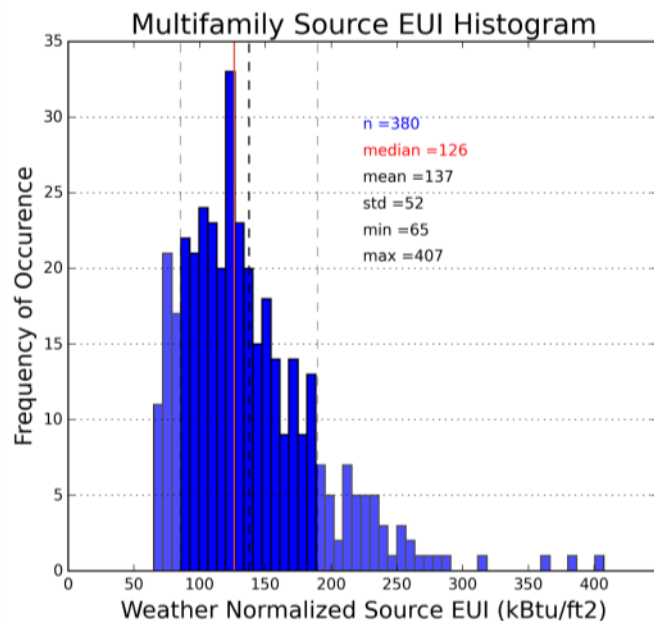


2014

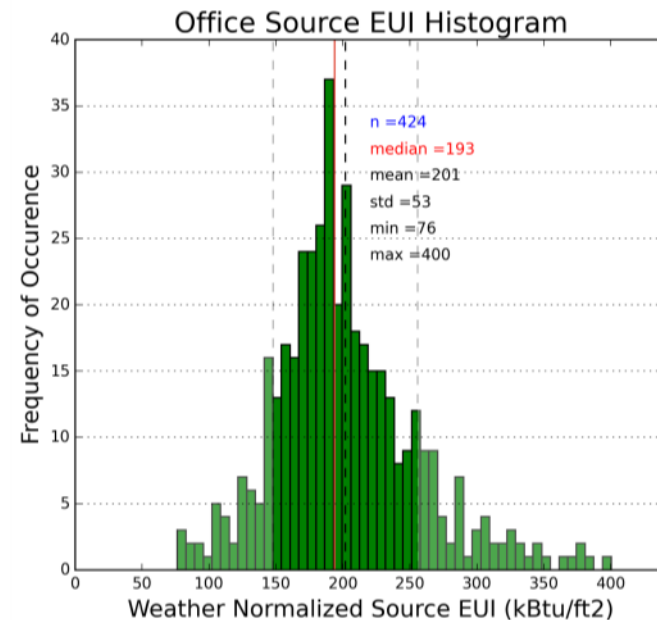
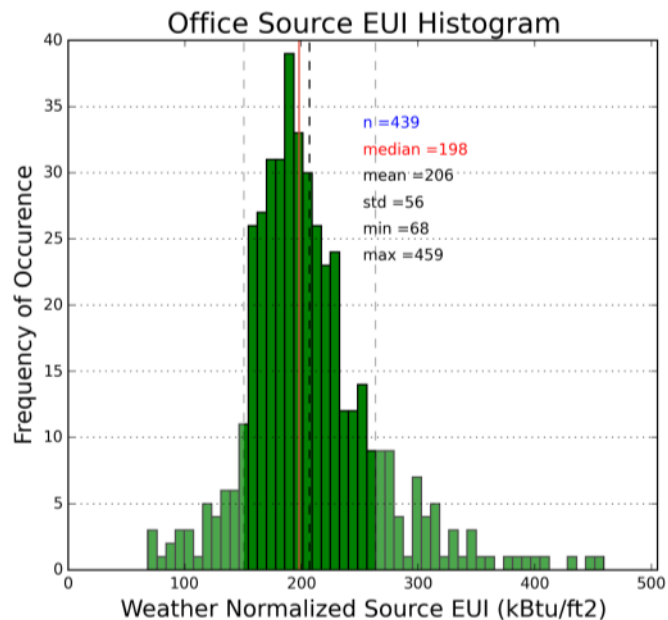
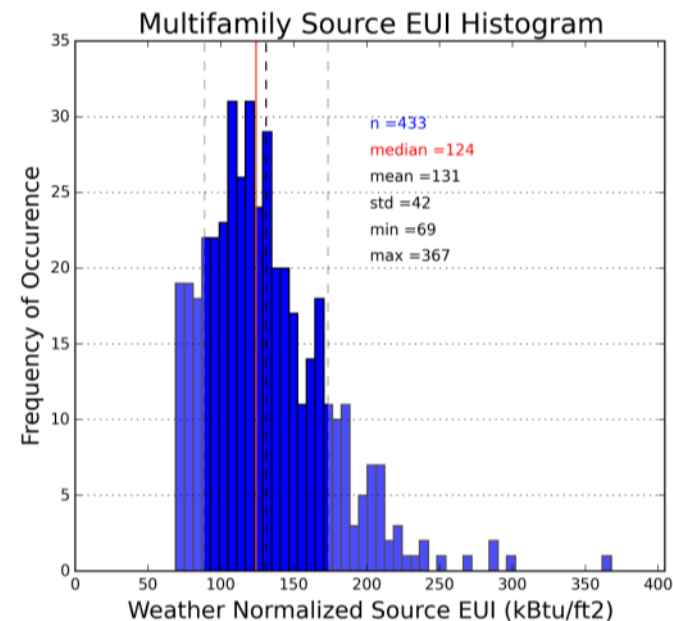


Weather Normalized Source EUI Distribution

2013

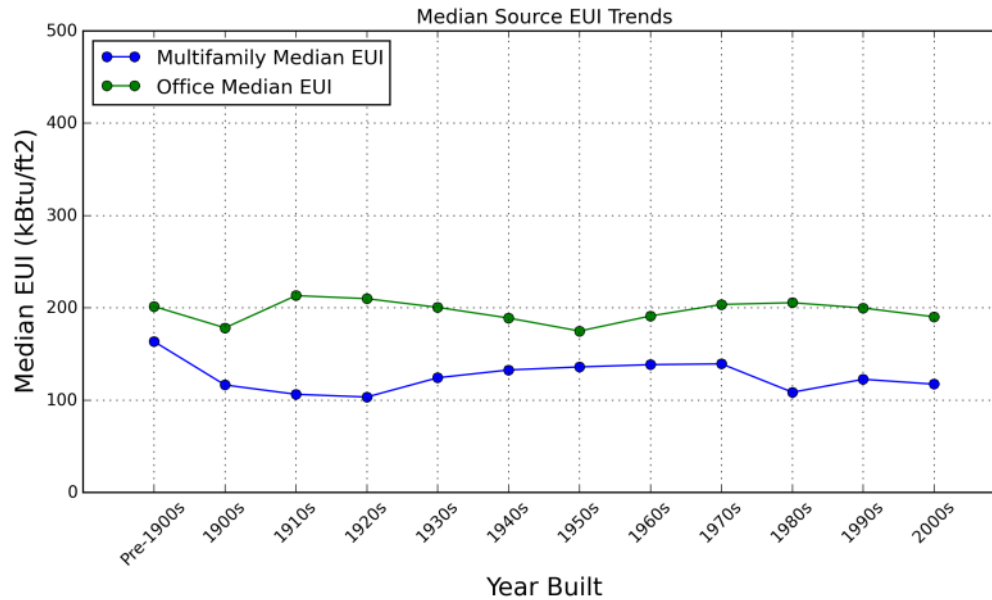


2014

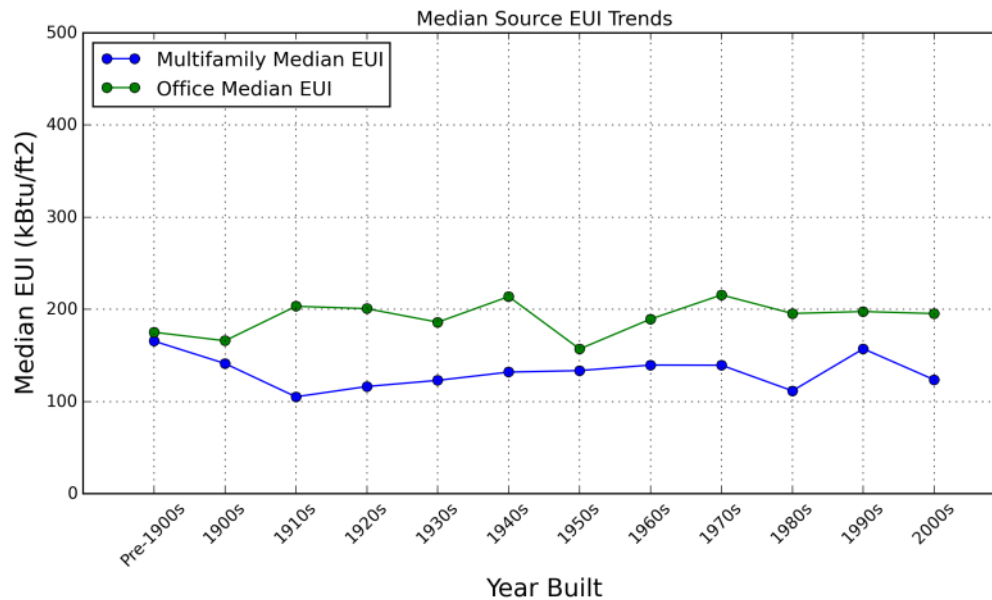


Median Source EUI Trends by Property Type

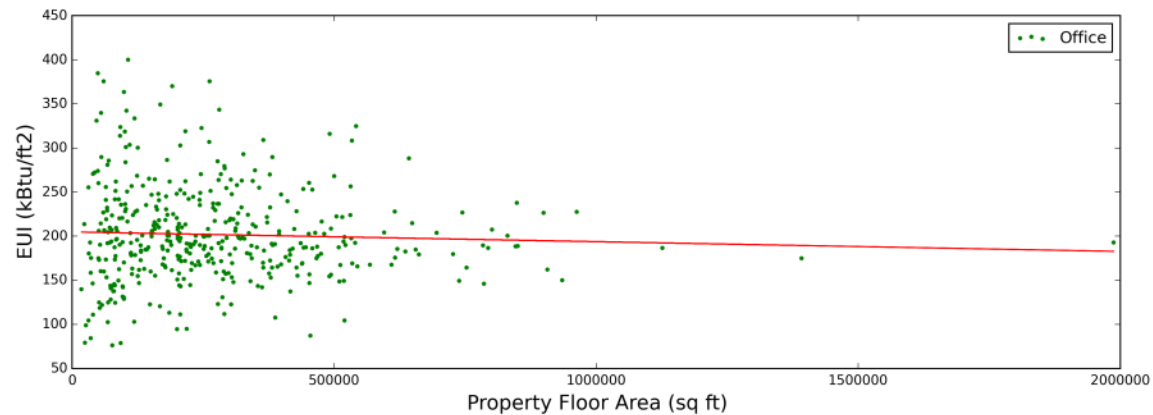
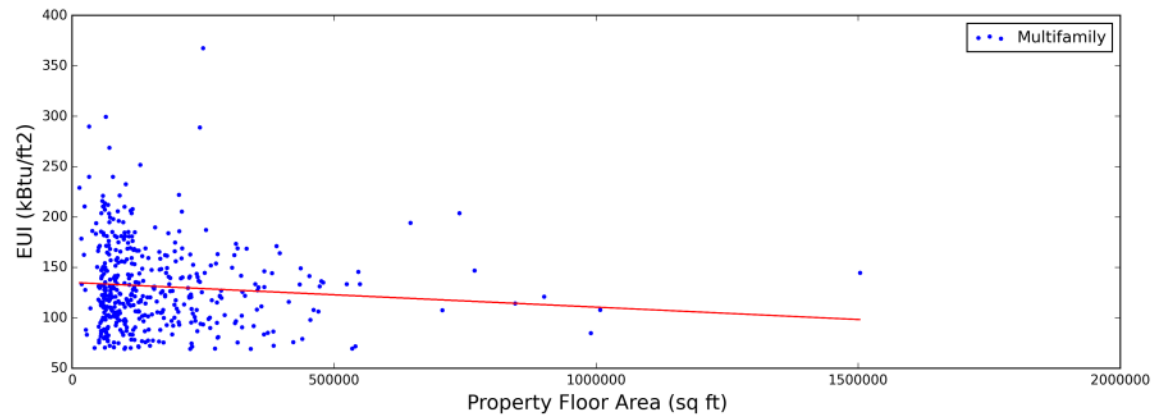
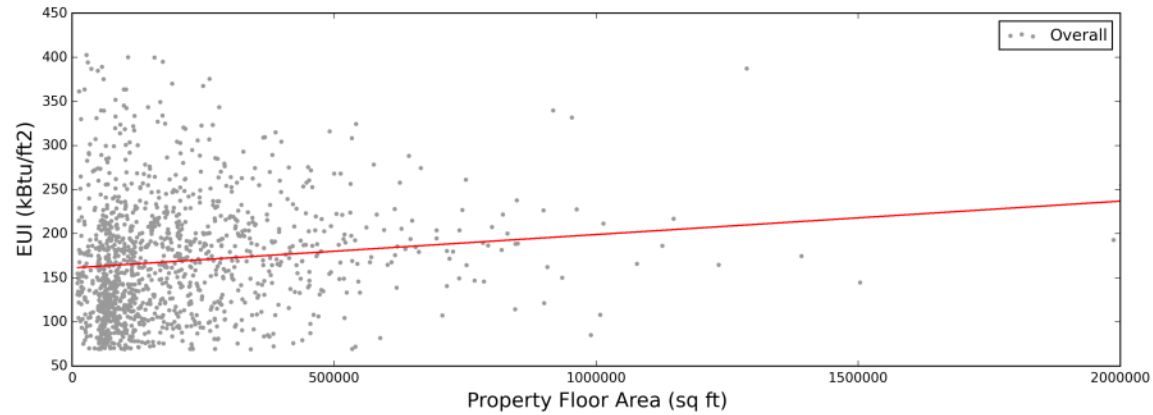
2013



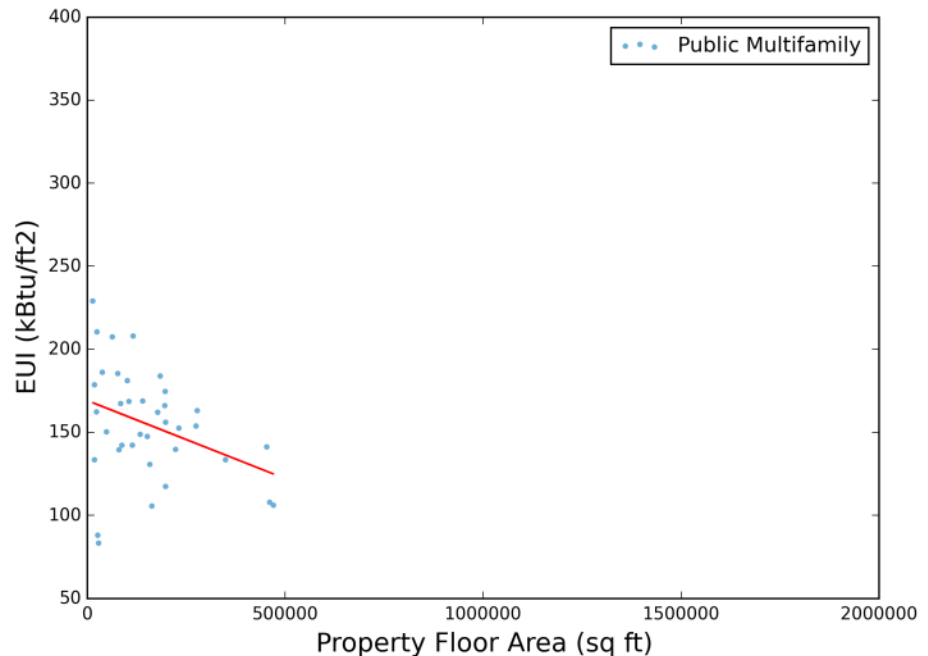
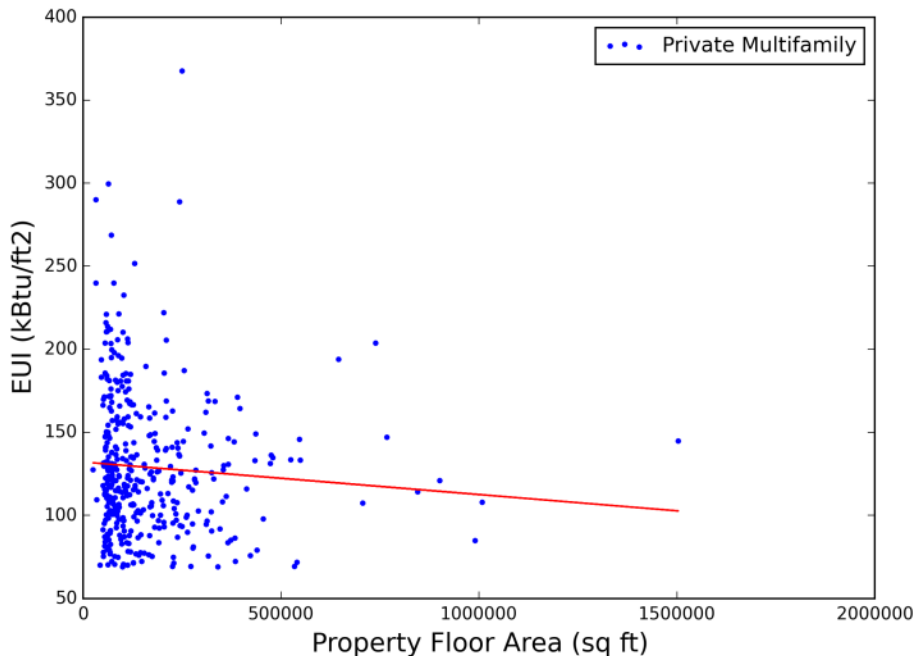
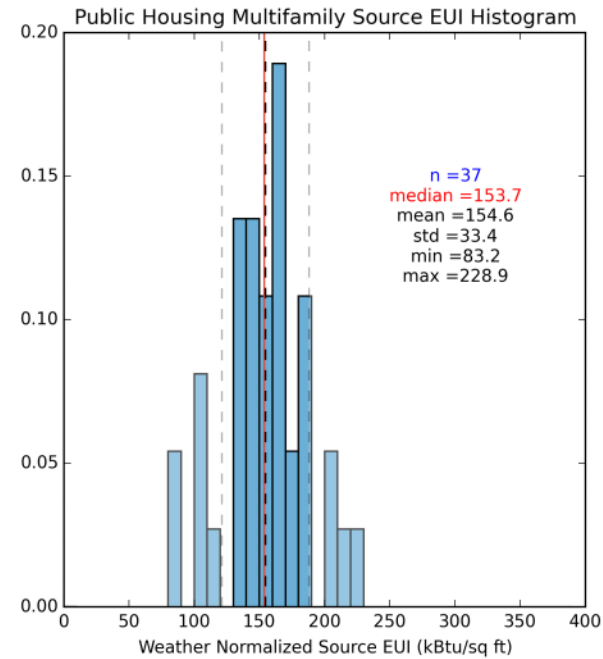
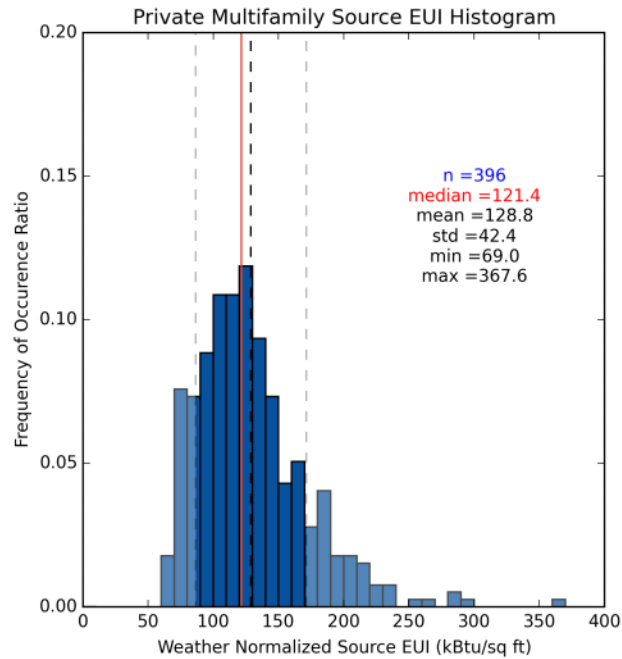
2014



Property Gross Floor Area vs. Source EUI for 2014

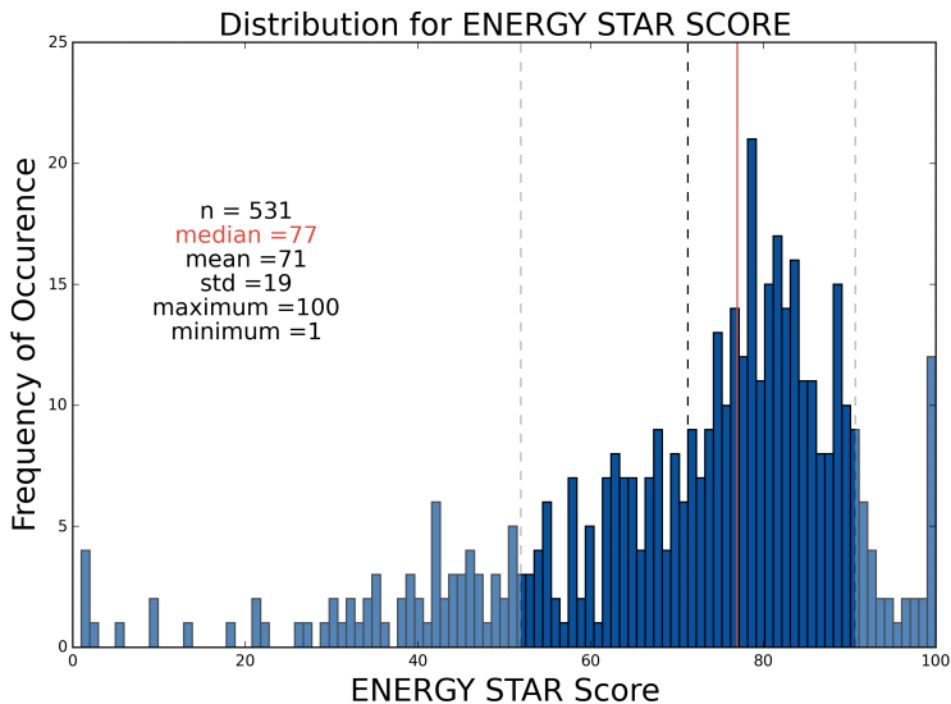


Multifamily Housing Source EUI comparisons - 2014

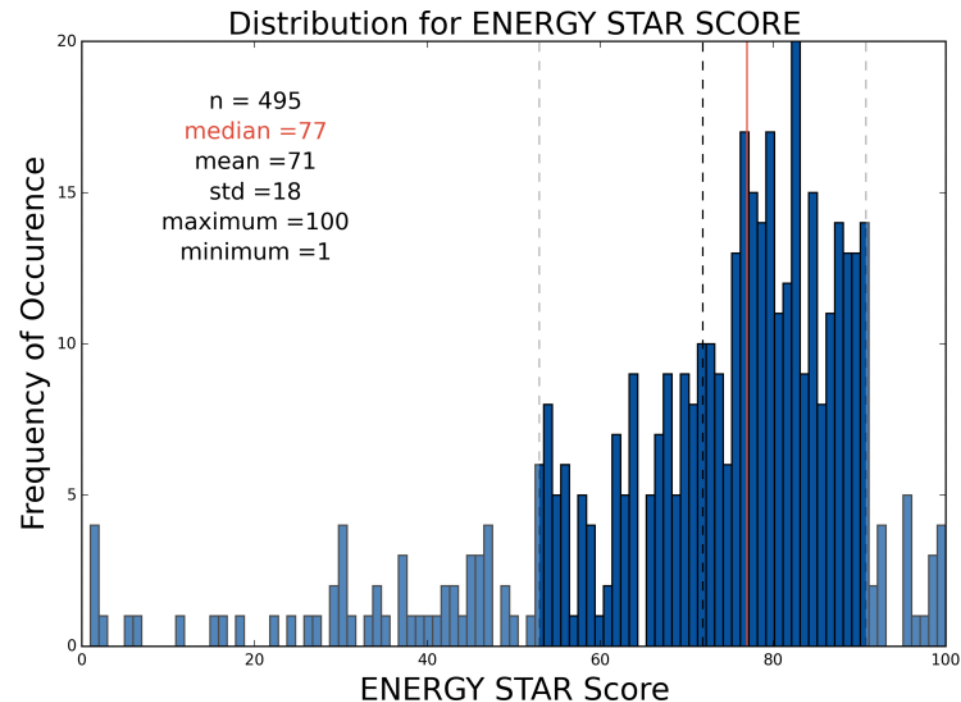


Energy Star Score – Office buildings

2013

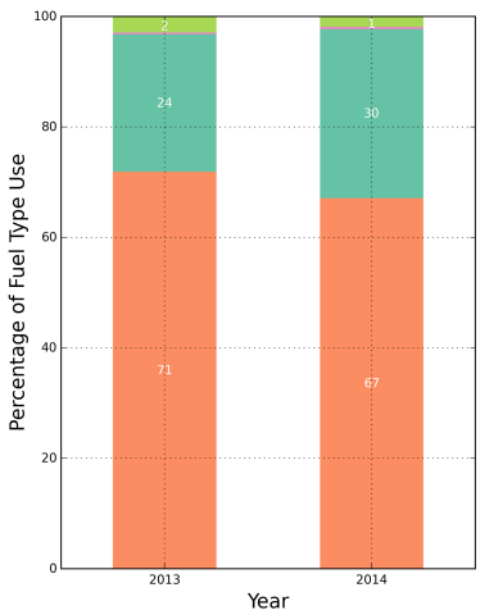


2014

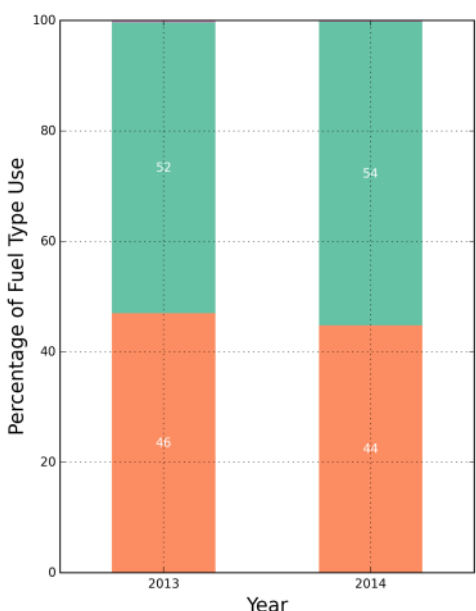


Fuel type composition

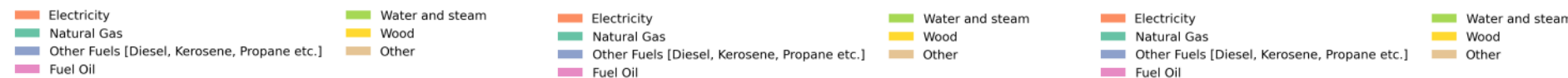
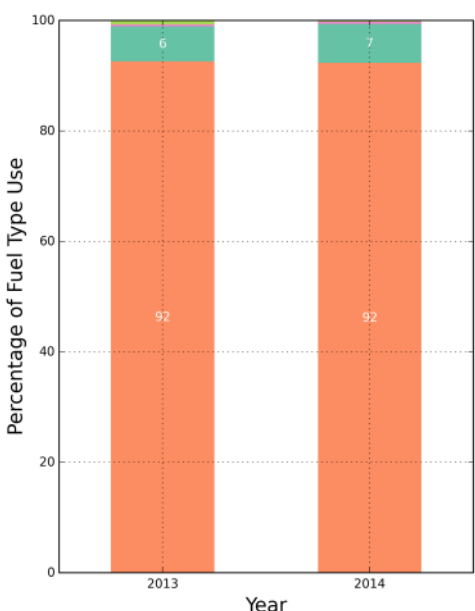
Overall Fuel Composition



Fuel Composition for Multifamily Housing



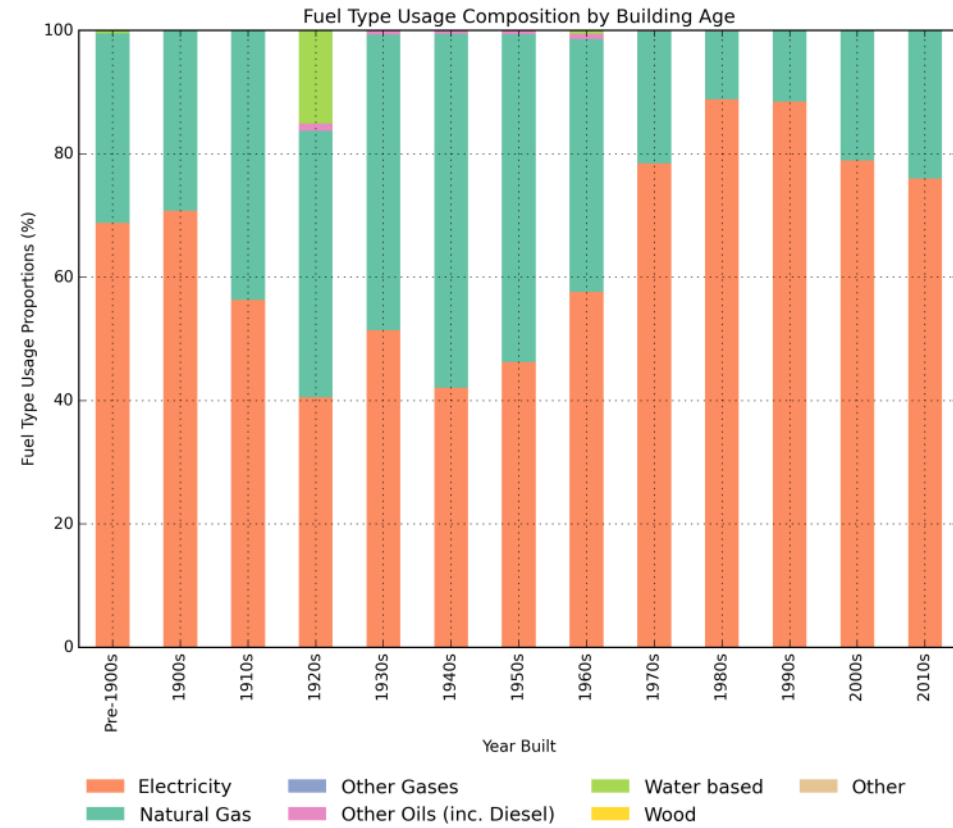
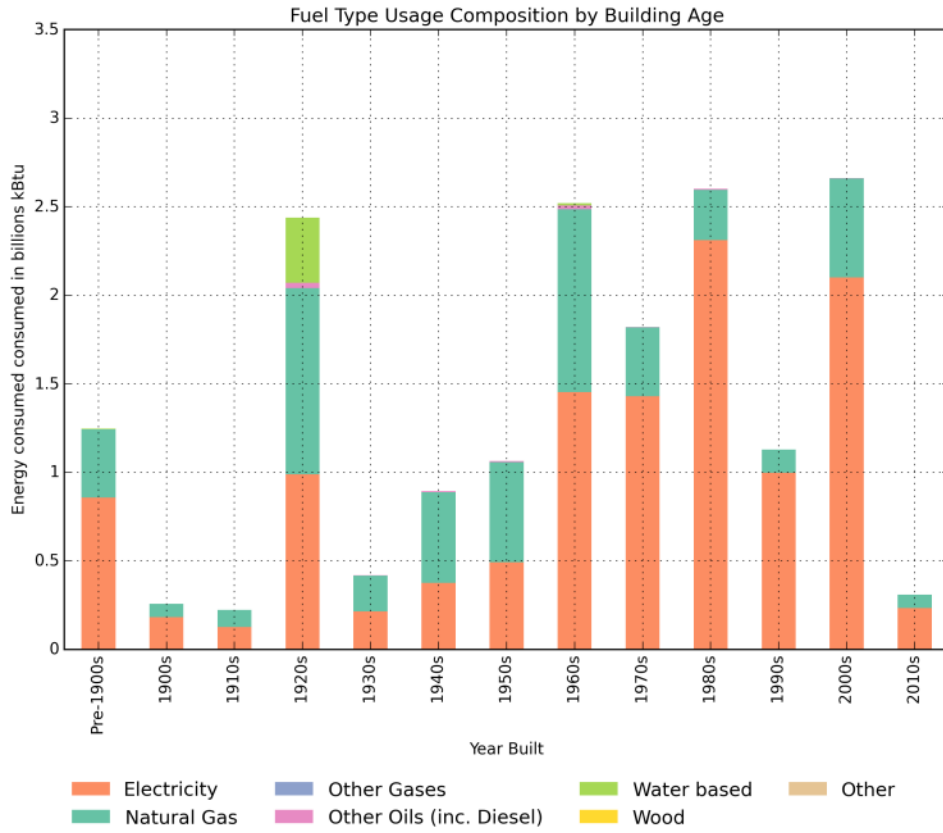
Fuel Composition for Office Buildings



Property Type	OVERALL				MULTIFAMILY				OFFICE			
Year	2013		2014		2013		2014		2013		2014	
Number of properties	1257		1242		380		433		439		424	
Electricity	12424735398	71.9%	11756911585	67.1%	1695499544	46.4%	1924585822	44.8%	6690438686	92.4%	5839616606	92.3%
Natural Gas	4304619716	24.9%	5358811409	30.6%	1901657768	52.0%	2362094772	54.99%	454411902	6.3%	443225574	7.01%
Fuel Oils (#1,2,4,5,6)	57952335	0.3%	74378607	0.4%	12324463	0.3%	9046465	0.2%	27952357	0.4%	28732731	0.45%
Other Fuel (Diesel, Propane etc.)	4257819	0.02%	127797	0.001%	0	0.0%	0	0.0%	4211654	0.1%	121587	0.001%
Wood	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Water and Steam	498362458	2.9%	331215314	1.89%	0	0.0%	0	0.0%	49062175	0.7%	13334226	0.2%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

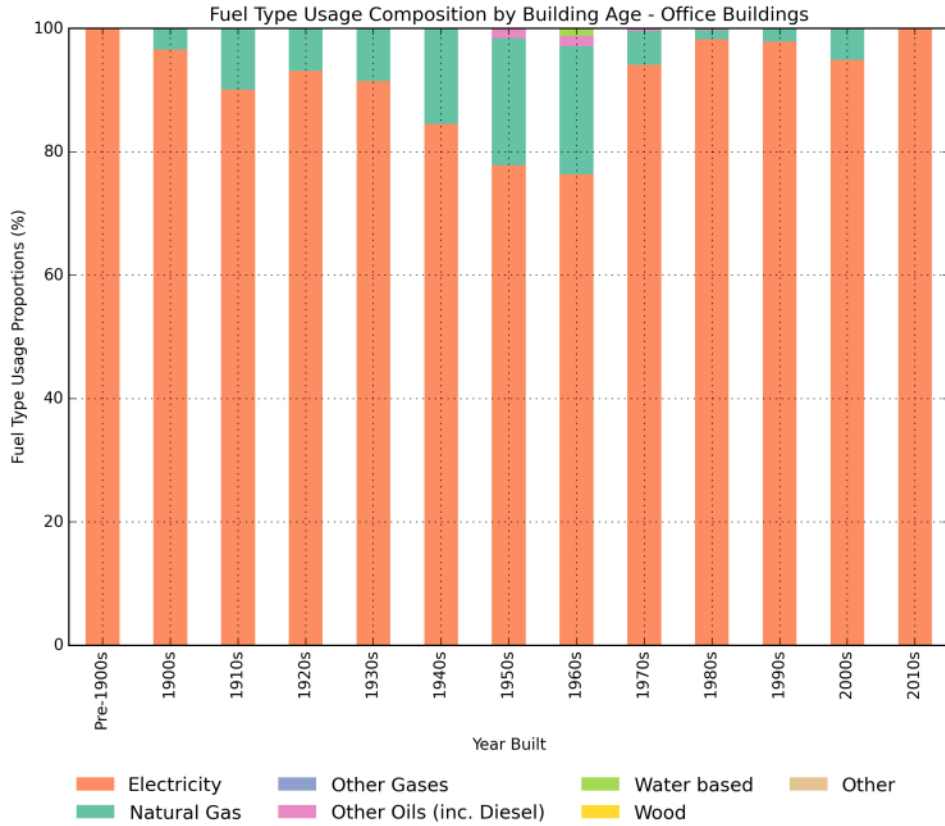
Fuel type consumption

2014

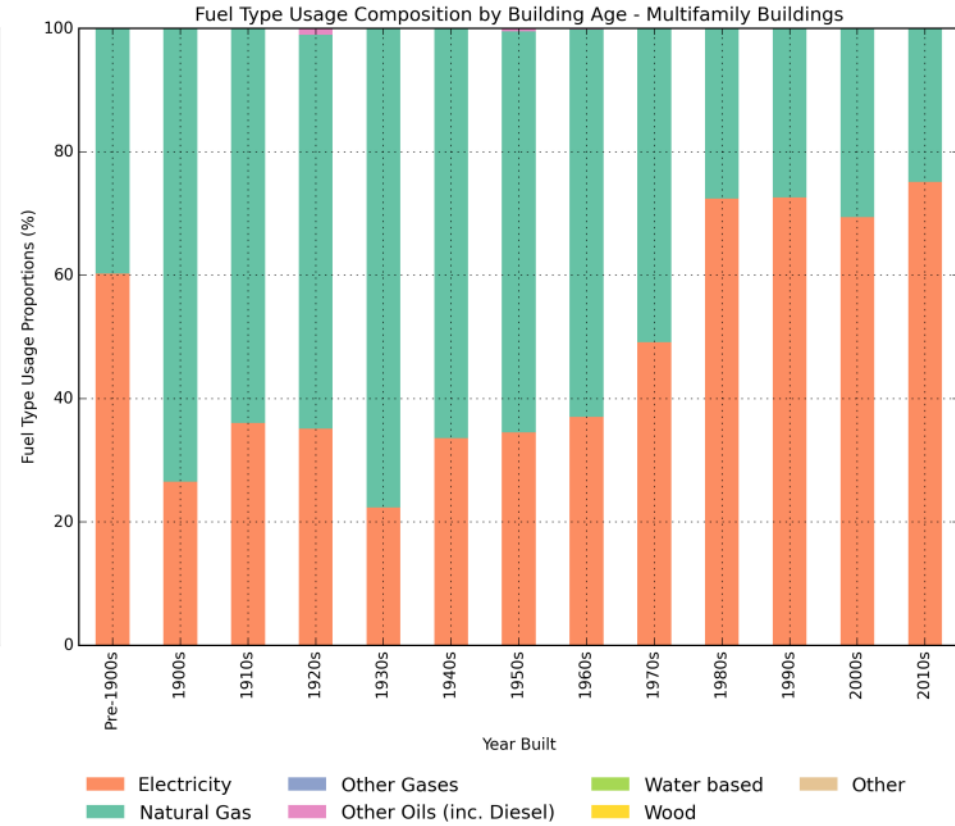


Fuel type composition by year

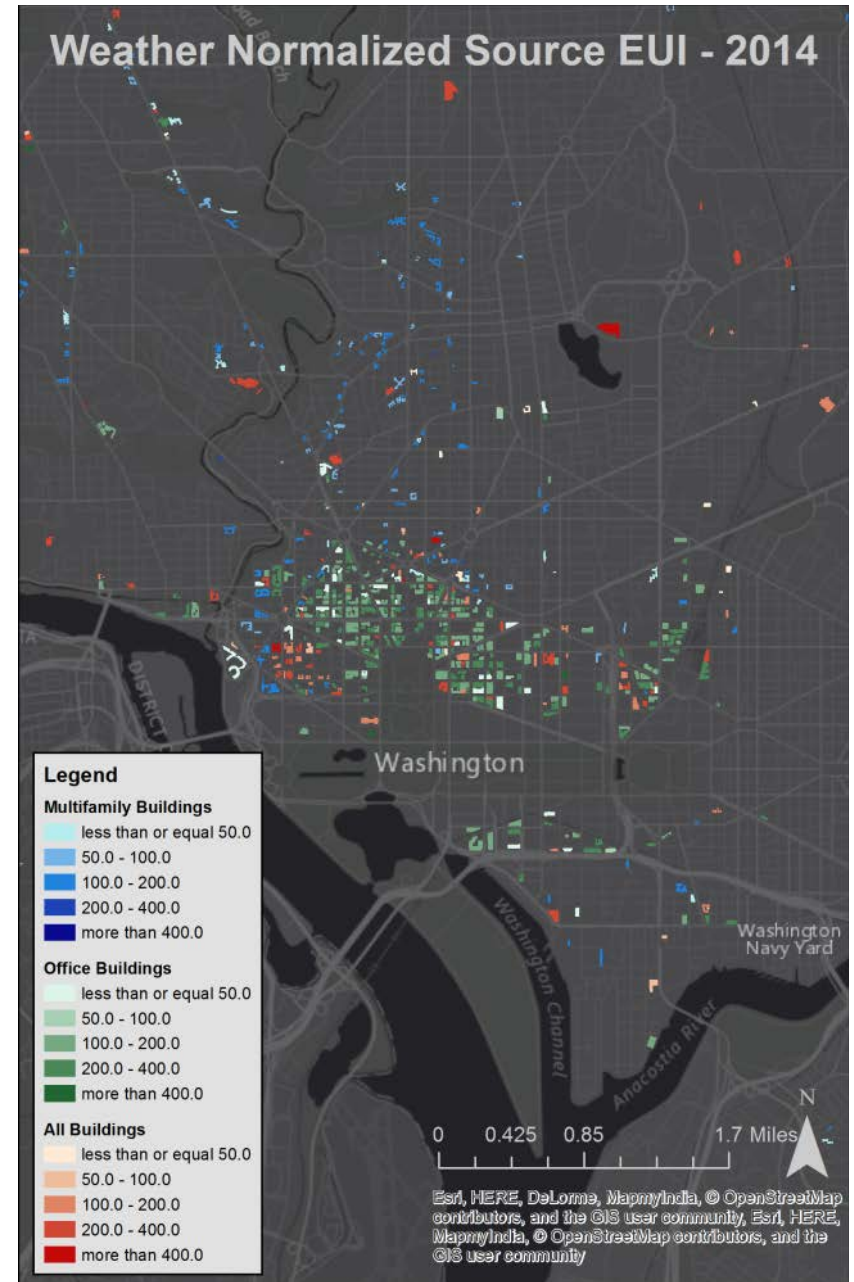
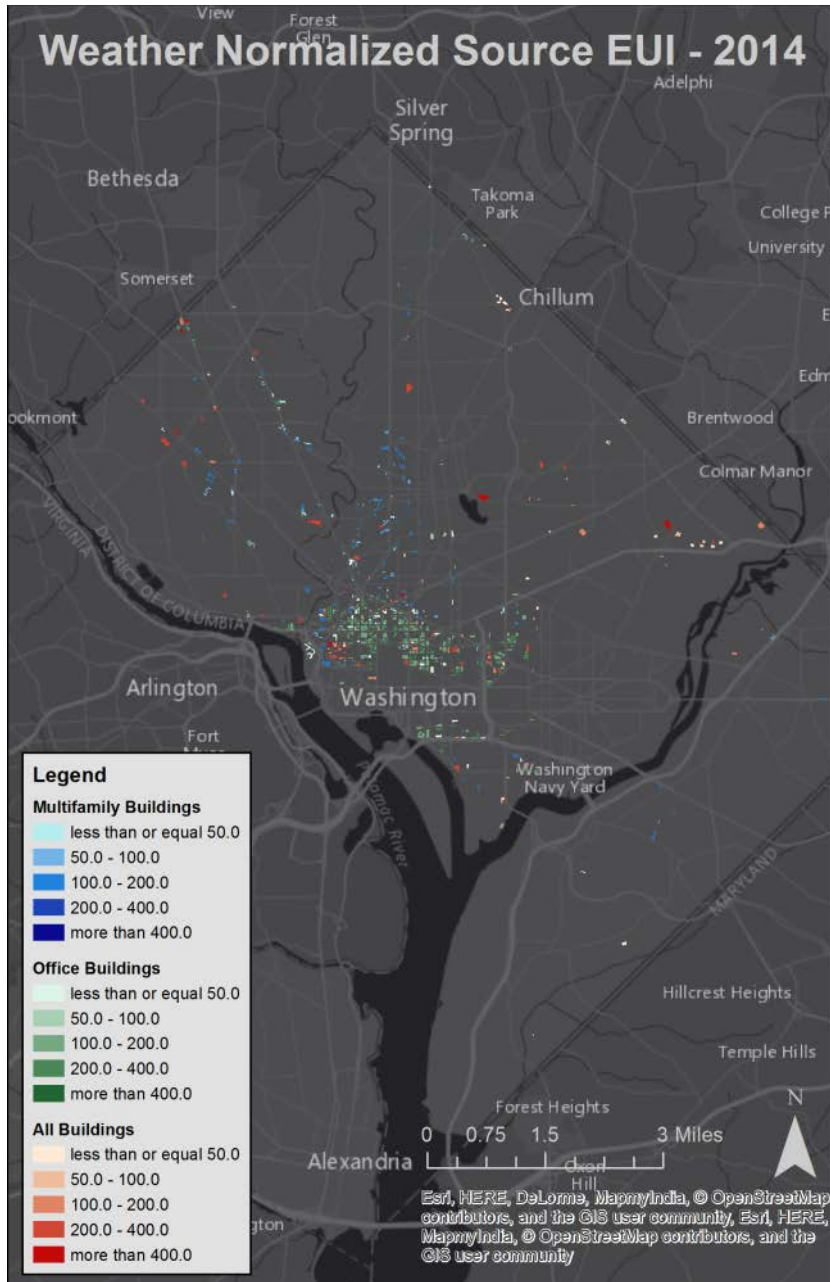
2014 - Office



2014 - Multifamily

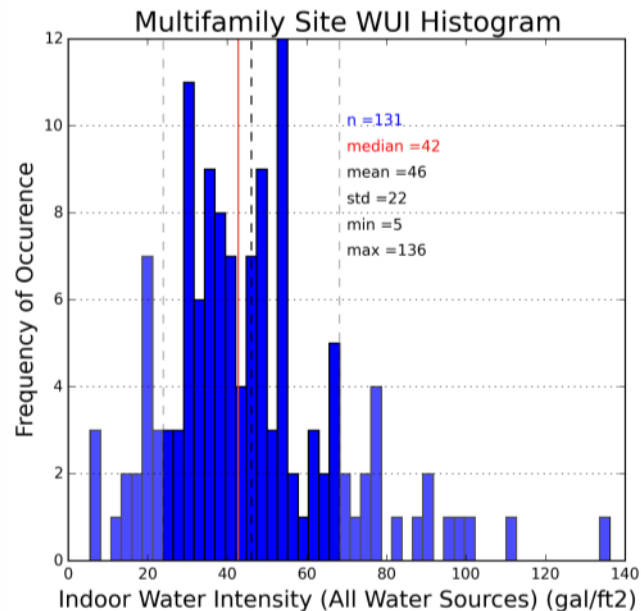


Weather Normalized Source EUI map

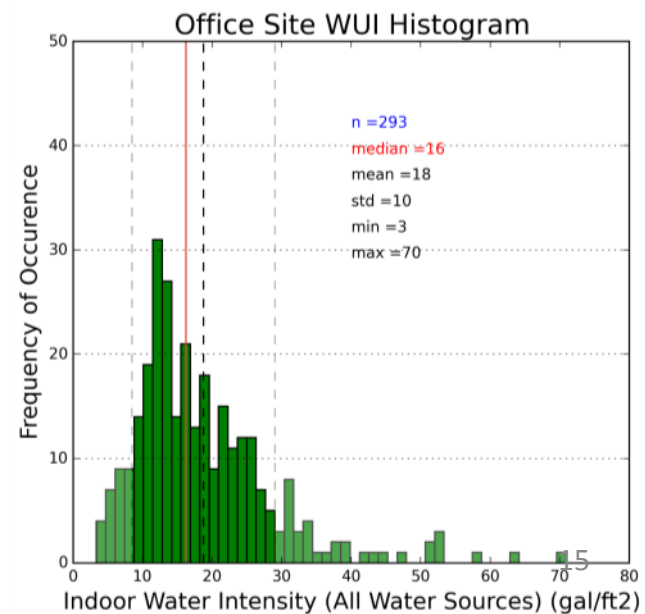
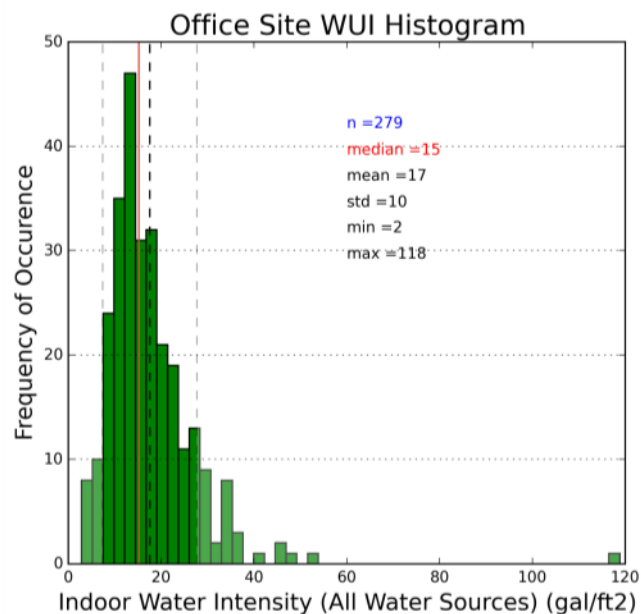
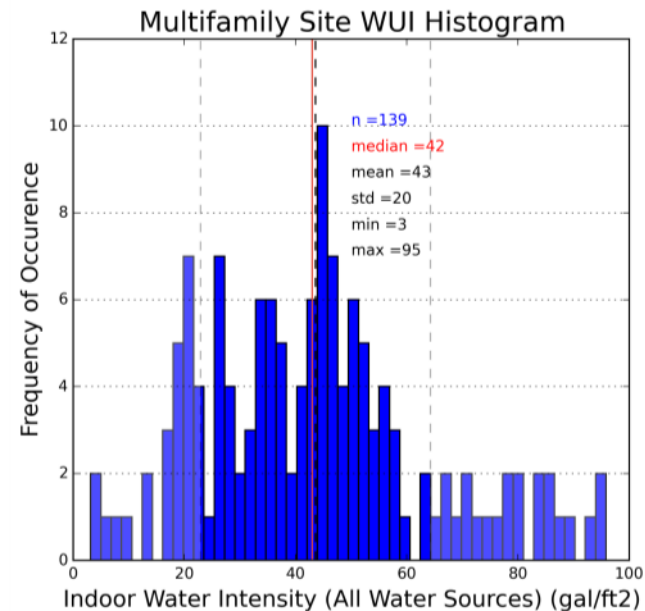


Water Use Intensity Distribution

2013

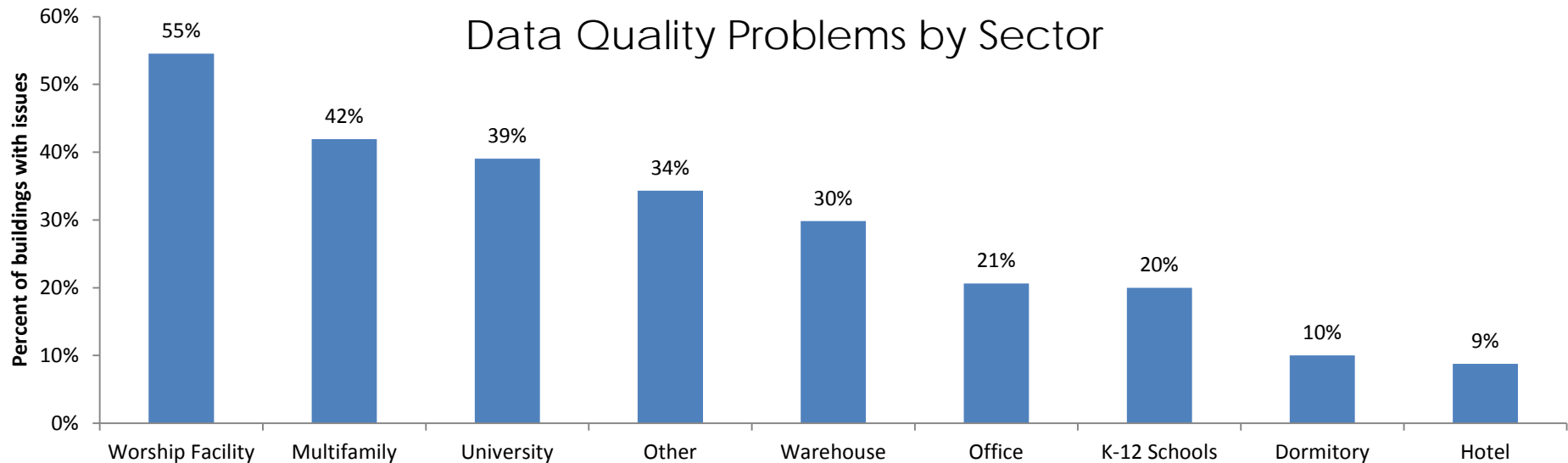
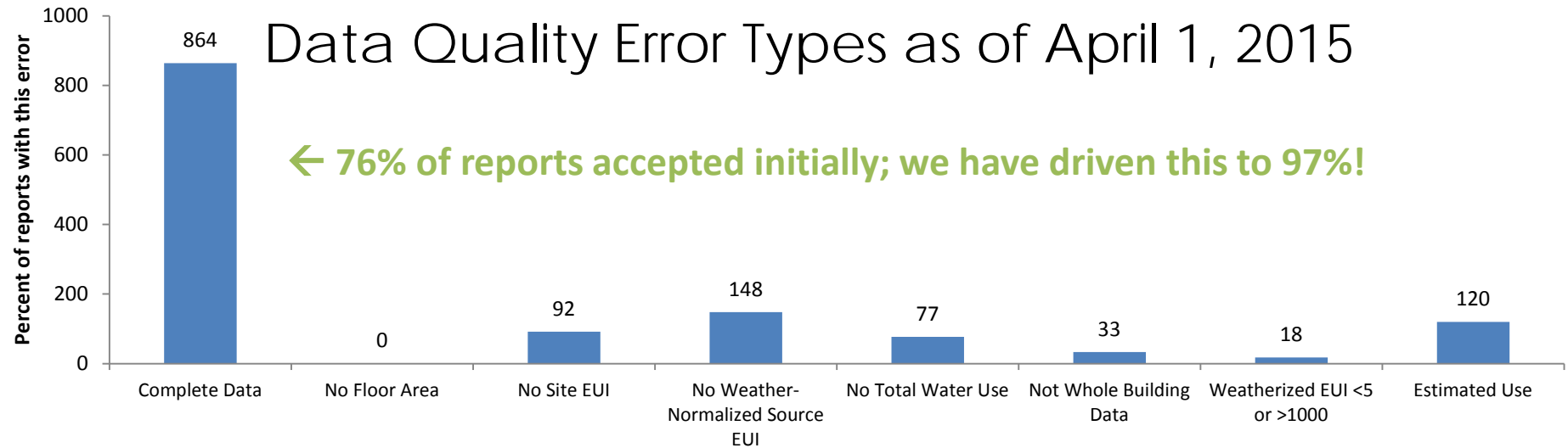


2014

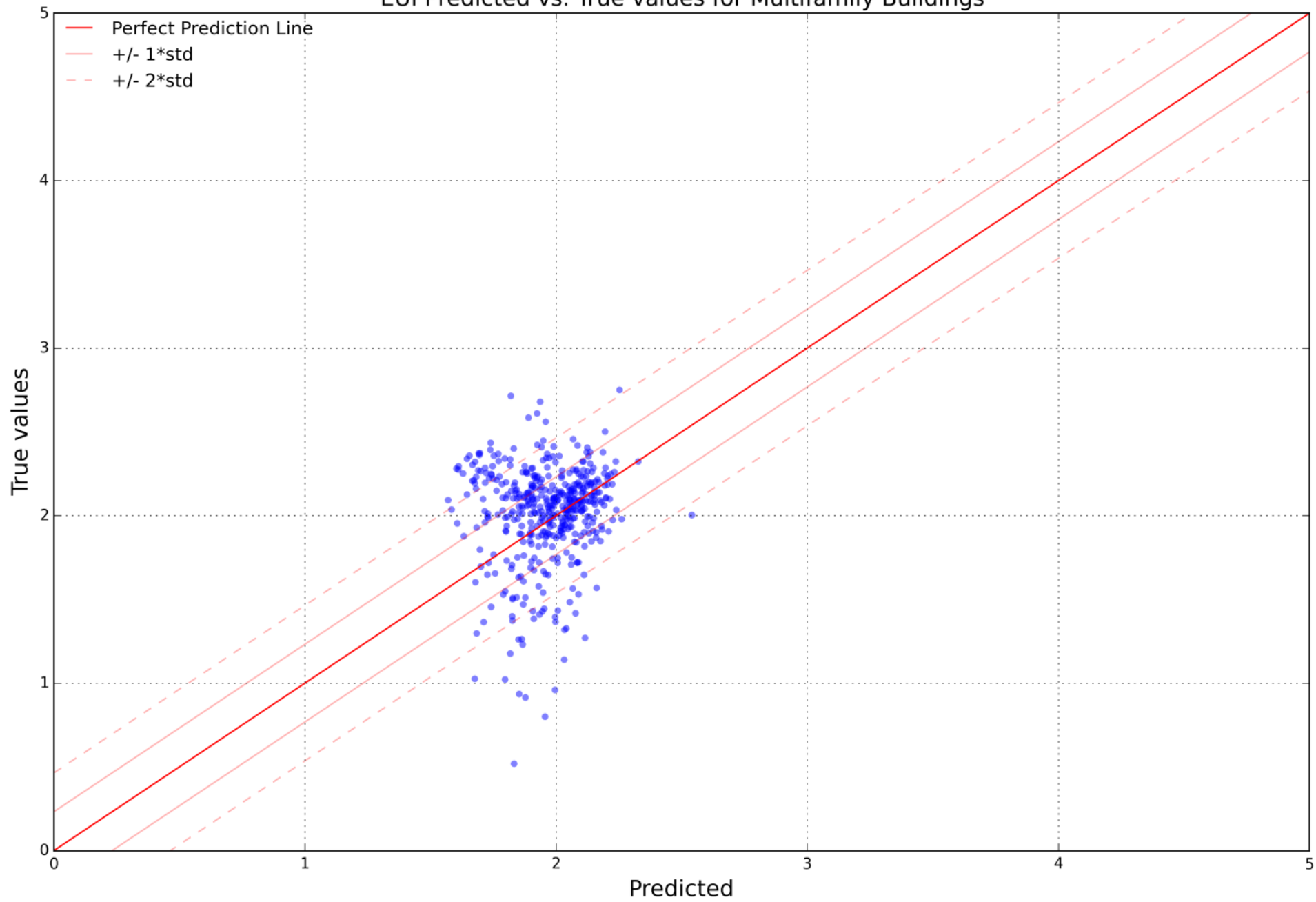


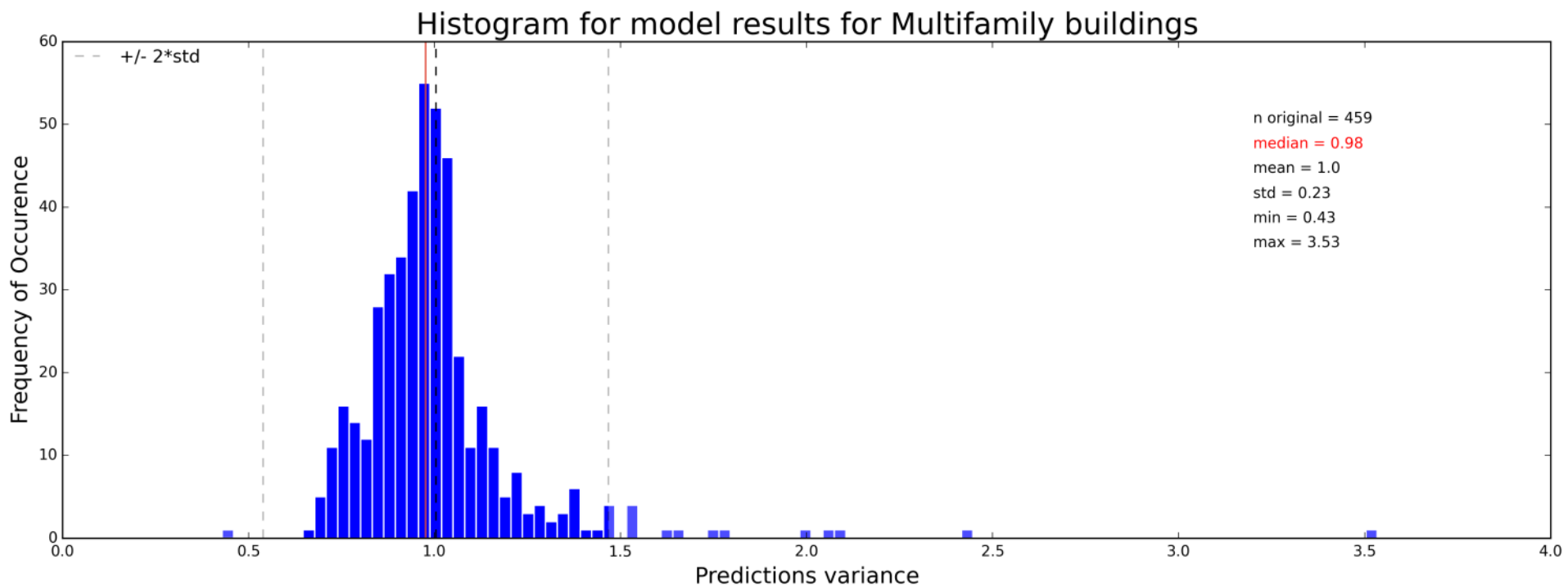
DC Benchmarking

Data Completeness & Quality

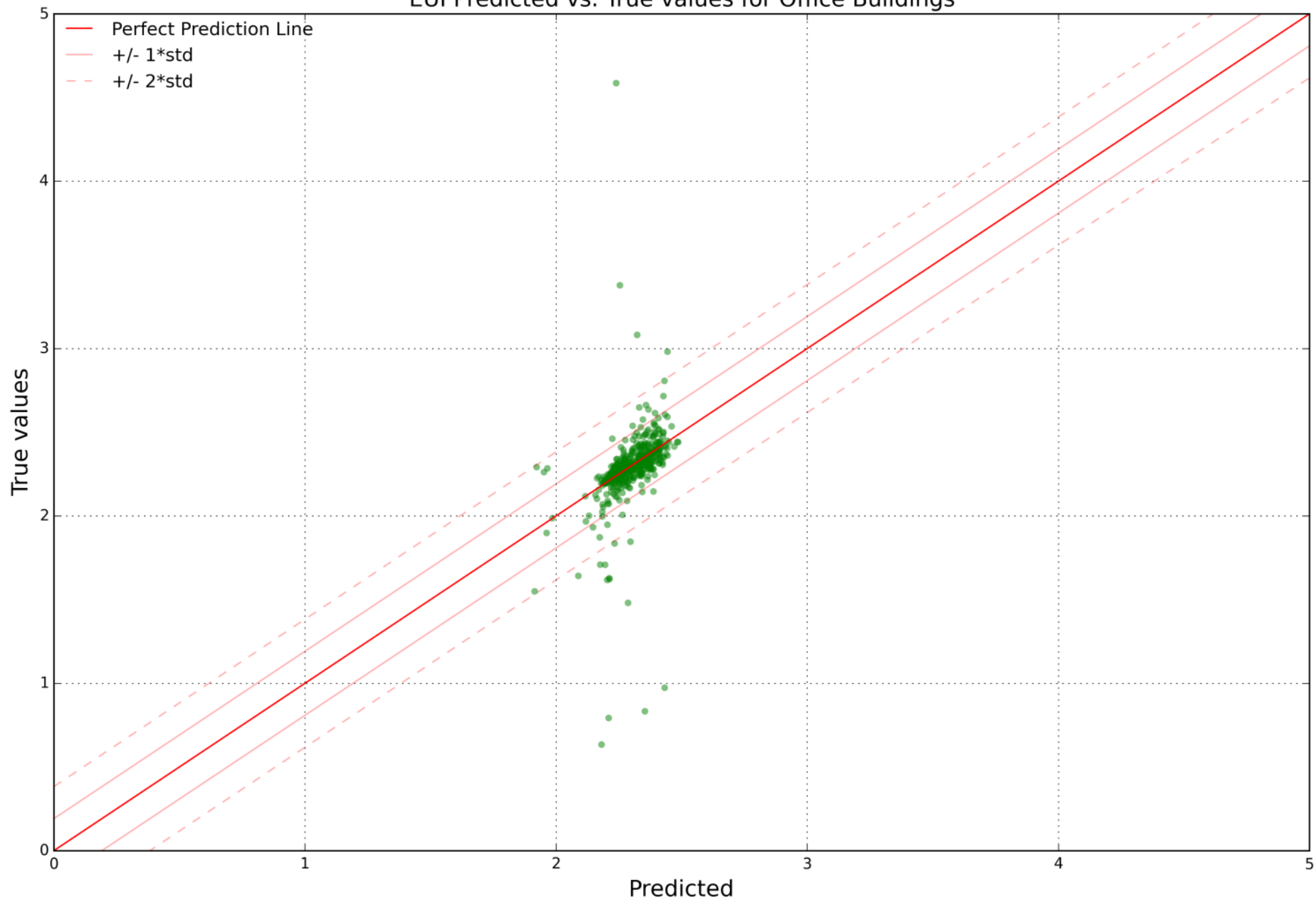


EUI Predicted vs. True values for Multifamily Buildings

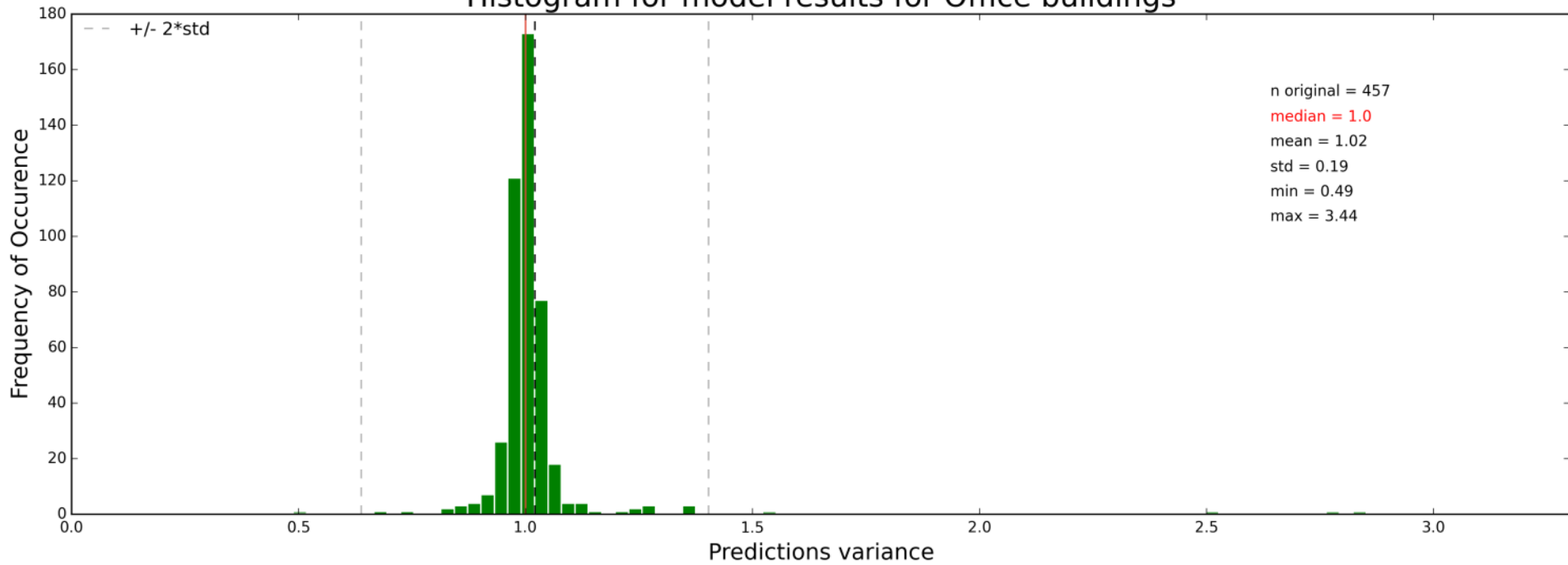




EUI Predicted vs. True values for Office Buildings



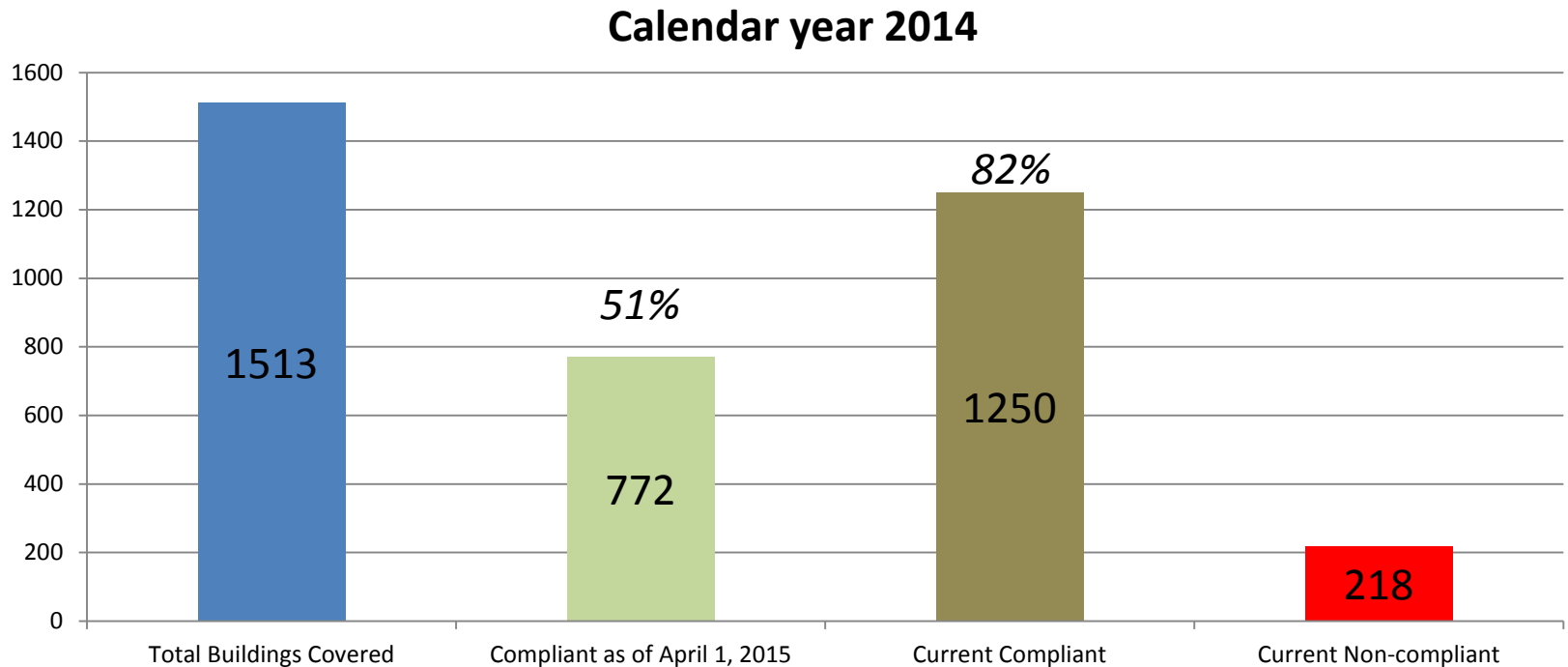
Histogram for model results for Office buildings



Compliance for 2014 Data

Calendar Year 2014 (Due April 1, 2015)

- Total Buildings Covered: 1,513
- Total Compliant as of April 1, 2015: 772 (51%)
- Current Total in Compliance: 1,250 (82%)
- DOEE will be issuing 218 Enforcement Notices (Fines)
- Buildings Exempted for 2014: 79
- Buildings totally exempted: 95



Changes

- Reporting due for year buildings are sold in
- Enforcing on data completeness (already, but improving) and quality (to come)
 - No defaults
 - Better checking on whole building data use
 - Data quality score
- Change Vacancy Exemption?

Current Vacant Space Exemption

“Unoccupied: A building may apply for an “unoccupied” exemption if on average less than one full-time-equivalent employee (less than 40 person-hours per week/2080 person-hours per year) worked in the building, exclusive of security guards, janitors, construction workers, landscapers, and other maintenance personnel during the year being reported. (20 DCMR 3511.2(d))”

Vacancy Issues

- Current exemption does not work for multifamily, data centers, warehouses...
- IMT research finds many buildings not reporting vacant space correctly; recommend we provide better guidance
- Vacancy is not handled well in Portfolio Manager for non-office property types
- Is vacancy confidential?
- How do we best verify a vacancy exemption?

Key Points of Discussion

- Vacant Space
- Enforcement Challenges
- Use of Data Quality Grades
- Putting Data to Work w IMT, DCSEU
- Visualization