NATIONAL HOUSING TRUST

IRA Bootcamp Session:

Benchmarking and Data Collection

NATIONAL HOUSING TRUST | NOVEMBER 8, 2023

AGENDA

- **Welcome**
  - Madeleine McCullough, NHT
- **Benchmarking Requirements in IRA**
  - Todd Nedwick, NHT
- **What is Benchmarking, Best Practices, Tools & Resources**
  - Marty Josten, New Ecology
- **NHTC Benchmarking Case Study**
  - Michael Miranda, NHT
- **Carbon Emissions Calculator**
  - Ian Poe-Yamagata, SAHF
- **Preview of Upcoming Session**

IRA NEWSLETTER AND TOOLKIT

Thank you for your interest in National Housing Trust's Inflation Reduction Act (IRA) Bootcamps.

This email provides news on IRA programs, funding opportunities, IRA Bootcamp information, and links to additional resources.

Latest IRA Updates

Application Portal Now Open for 48(e) Low-Income Communities Bonus Program
DOE is now accepting applications for the Low-Income Communities Bonus Credit Program, or 48(e). The bonus credit provides a 10 or 20 percentage point increase in the Investment Tax Credit rate for qualified solar and wind energy facilities with a maximum net output of less than 5 MWs that are installed in low-income communities, on Tribal land, as part of a federally subsidized affordable multifamily building, or as part of a low-income economic benefits project. DOE will review applications and make

Email Madeleine McCullough at mmccullough@nhtinc.org to receive our newsletter

Stacking the IRA: Federal Guidance on Coordinating Multiple Funding Sources

NATIONAL HOUSING TRUST

Affordable housing providers can stack multiple funding and tax incentives in the Inflation Reduction Act (IRA) and other funding sources to maximize clean energy benefits. Federal agencies have developed implementation guidance, including rules for combining IRA incentives with federal, state, and local funding sources, balancing encouraging leveraging while preventing duplication of benefits.

This brief summarizes guidance for combining key IRA funding programs and tax credits with other funding sources. Understanding agency guidance is the first step for affordable housing providers and agencies in stacking incentives to maximize IRA's unprecedented opportunities to deliver clean energy benefits to under-resourced communities.

This information presented here is current as of October 2023 and is not intended to be comprehensive. Federal agencies may release more detailed guidance on stacking.

Department of Energy Home Energy Rebates (Home Efficiency Rebates and Home Electrification and Appliance Rebates)

- DOE strongly encourages states to design their rebate programs in ways that allow for effective combinations of various funding sources, including through integration with

https://nationalhousingtrust.org/ira-toolkit

ENERGY/EMISSIONS DATA FOR THE IRA

- There is an emphasis on tracking energy usage and carbon emissions in the IRA for multiple purposes. Examples include:

Program	Data Required	Purpose
HUD Green and Resilient Retrofit Program (GRRP)	Utility consumption and emissions, incl. direct on-site and indirect emissions	• Qualifying for the Comprehensive Cohort* • Pre-construction to model post-retrofit projected savings • Post-construction benchmarking for 5 years to measure property/program performance
DOE Home Efficiency Rebates Program	Utility consumption	• Model post-retrofit projected savings to determine rebate amount • Measure post-construction actual savings to determine rebate amount
EPA Greenhouse Gas Reduction Fund	Utility consumption and emissions, inc. direct on-site and indirect emissions	• Compliance with net-zero emissions building definition

*HUD will also accept the Multifamily Building Efficiency Screening Tool (MBEST) in lieu of an EnergyStar Score if the owner encounters barriers to collecting energy consumption data.

HUD BENCHMARKING ASSISTANCE PROGRAM

- HUD's Energy and Water Benchmarking Initiative will provide HUD funded energy and water monitoring services to owners of eligible properties for up to four (4) years

- Available to owners receiving HUD rental assistance under **Section 8 project-based** rental assistance, **Section 202** Supportive Housing for Low-Income Elderly, and **Section 811** Supportive Housing for Low-Income Persons with Disabilities. **Properties DO NOT need to receive a GRRP award to participate**

- Owners will work with an energy consultant to support the benchmarking process, including:
  - contacting utilities about accessing data
  - providing portfolio-wide cost and energy savings recommendations based on energy and water usage

- Initiative has not yet launched- building owners can sign up to receive updates on program status: visit https://public.govdelivery.com/accounts/USHUDFHA/subscriber/new Enter your email and select “Benchmarking Program” check box under “Multifamily Headquarters News"

POLL: BENCHMARKING CHALLENGES

What is the main barrier to benchmarking energy consumption that you've encountered?

- Costs
- Lack of understanding of how to benchmark
- Lack of staff capacity to dedicate to benchmarking
- Difficulty accessing energy usage data
- Quality of utility data
- Don't know, I am new to benchmarking
- Other

BENCHMARKING OVERVIEW & AVAILABLE RESOURCES

Marty Josten

Principal Director

New Ecology, Inc

Presented to IRA Bootcamp
National Housing Trust
November 8, 2023

BENCHMARKING
BEDS, BATHS, & BEYOND

Benchmarking 101

What is benchmarking?

Comparing a subject building to an appropriate benchmark.

What is an ‘appropriate benchmark’?

Same building use and climate, and other suitable characteristics.

What are ‘suitable characteristics?

Depends on your purpose.

EPA Portfolio Manager

Originally to create a score.

Appropriated for BPS* Compliance.

**Building Performance Standard*

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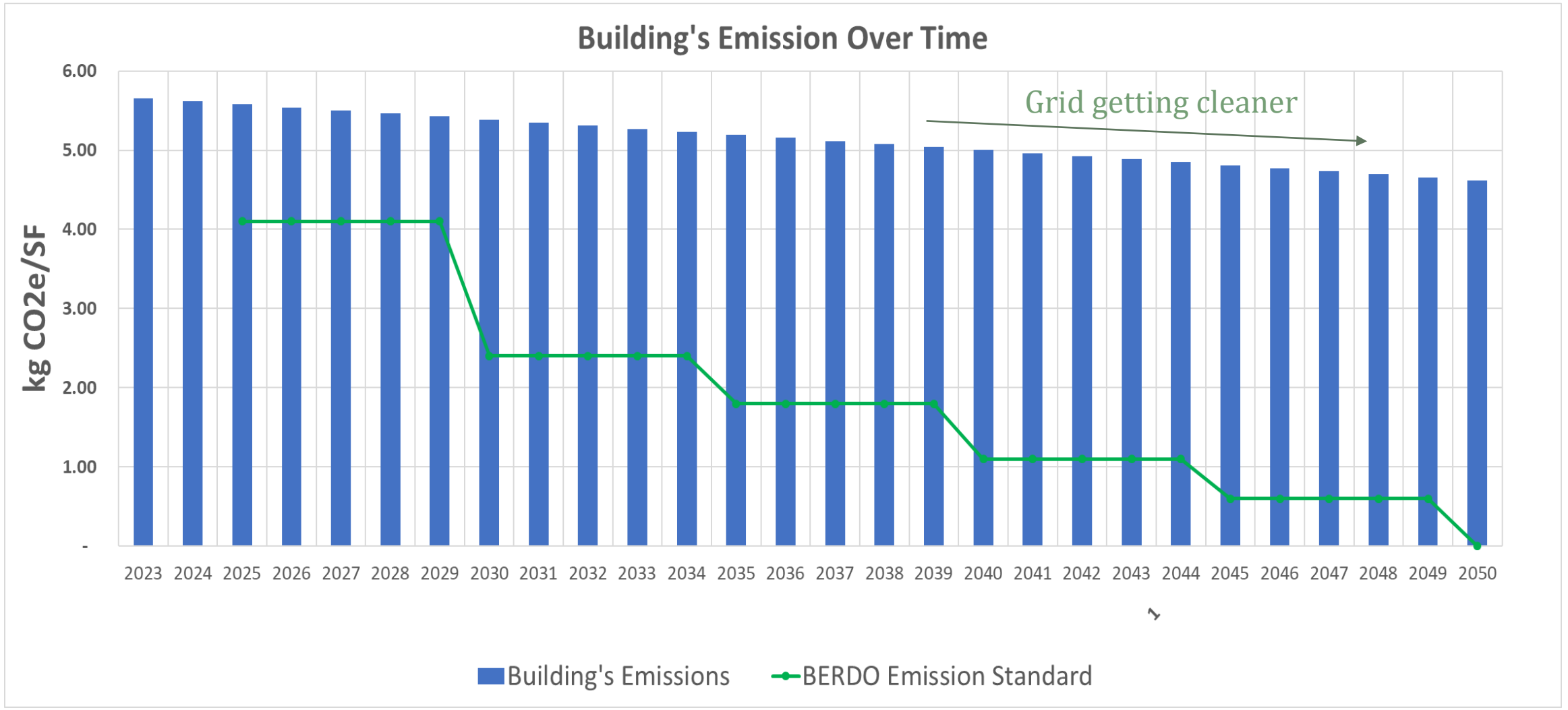
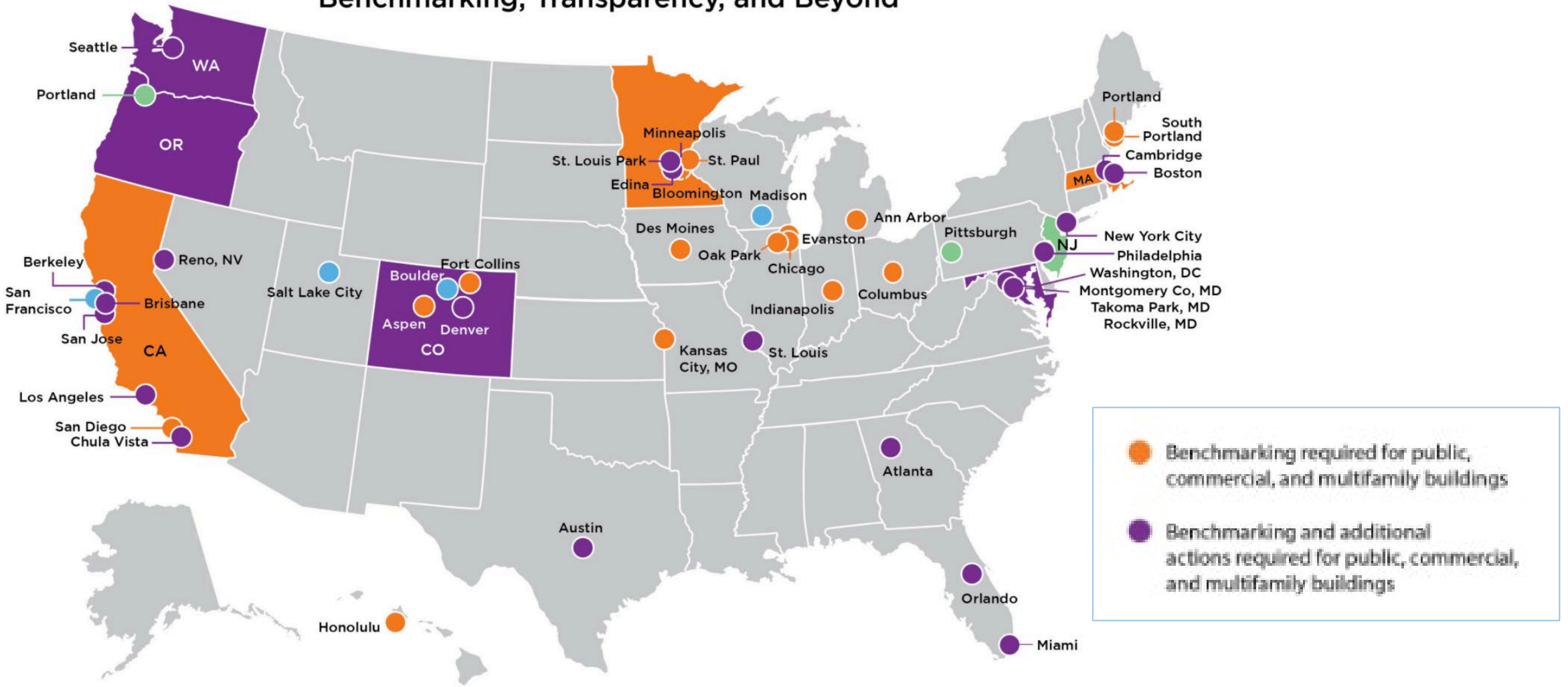
BERDO

BUILDING USE	2025 - 2029	2030 - 2034	2035 - 2039	2040 - 2044	2045 - 2049	2050 -
College / University	10.2	5.3	3.8	2.5	1.2	0
Education	3.9	2.4	1.8	1.2	0.6	0
Food Sales and Service	17.4	10.9	8.0	5.4	2.7	0
Healthcare	15.4	10.0	7.4	4.9	2.4	0
Lodging	5.8	3.7	2.7	1.8	0.9	0
Manufacturing / Industrial	23.9	15.3	10.9	6.7	3.2	0
Multifamily Housing	4.1	2.4	1.8	1.1	0.6	0
Office	5.3	3.2	2.4	1.6	0.8	0
Retail	7.1	3.4	2.4	1.5	0.7	0
Services	7.5	4.5	3.3	2.2	1.1	0
Storage	5.4	2.8	1.8	1.0	0.4	0

*Building Emissions Reduction & Disclosure Ordinance

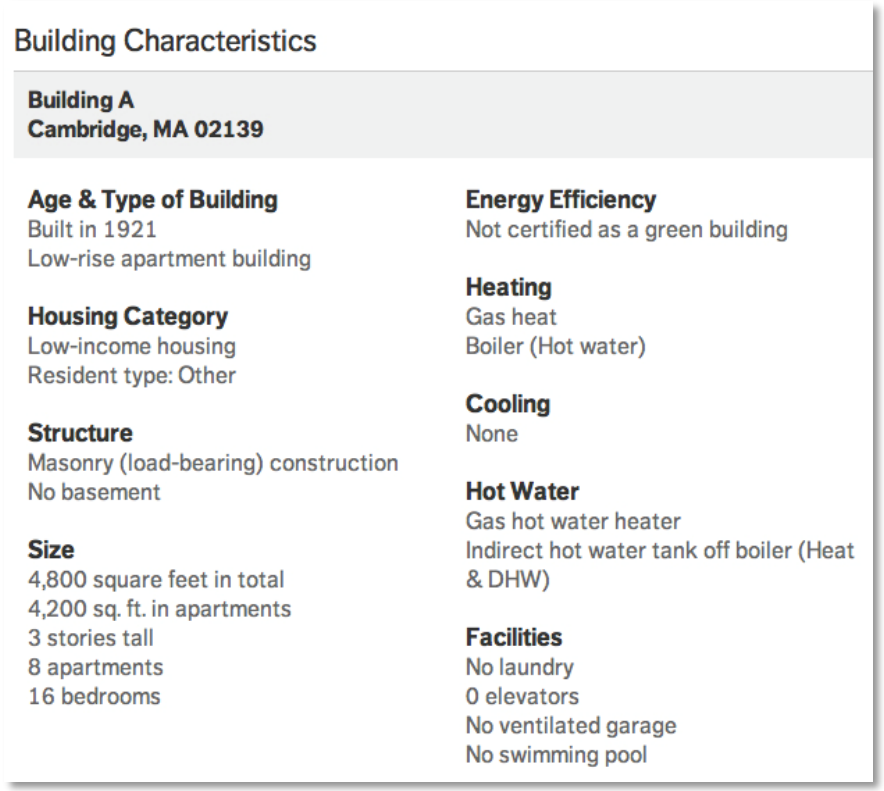

Building's Emission Over Time
kg CO2e/SF
6.00
5.00
4.00
3.00
2.00
1.00
-
Grid getting cleaner
2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050
Building's Emissions
BERDO Emission Standard

U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond



https://www.imt.org/resources/map-u-s-building-benchmarking-policies/

Want to do more?



Building Characteristics

Building A
Cambridge, MA 02139

Age & Type of Building
Built in 1921
Low-rise apartment building

Housing Category
Low-income housing
Resident type: Other

Structure
Masonry (load-bearing) construction
No basement

Size
4,800 square feet in total
4,200 sq. ft. in apartments
3 stories tall
8 apartments
16 bedrooms

Energy Efficiency
Not certified as a green building

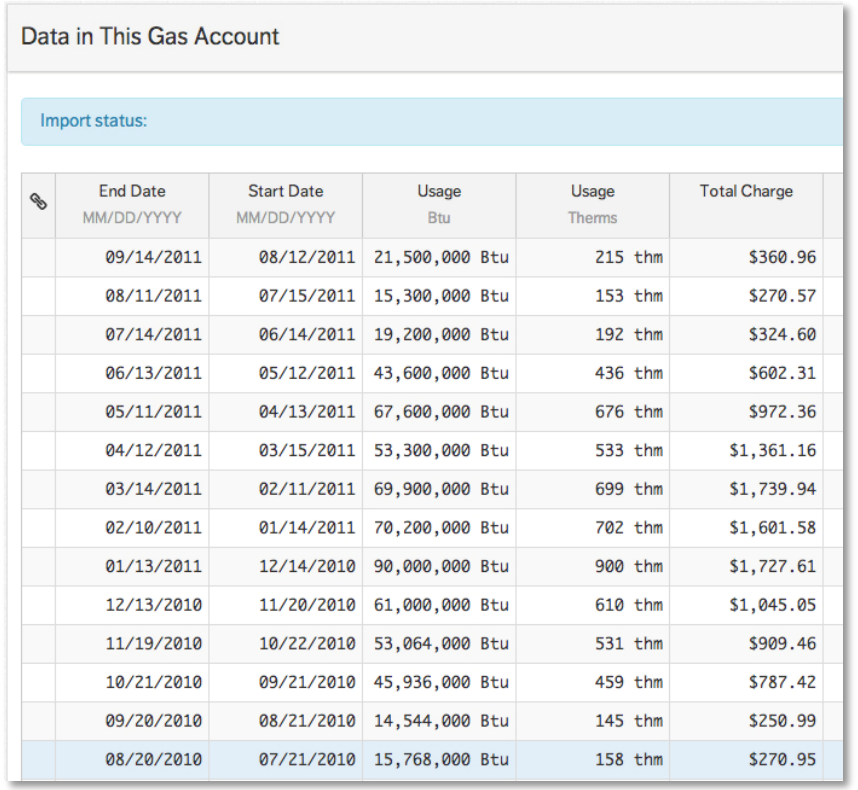
Heating
Gas heat
Boiler (Hot water)

Cooling
None

Hot Water
Gas hot water heater
Indirect hot water tank off boiler (Heat & DHW)

Facilities
No laundry
0 elevators
No ventilated garage
No swimming pool

Building Info



Data in This Gas Account

Import status:

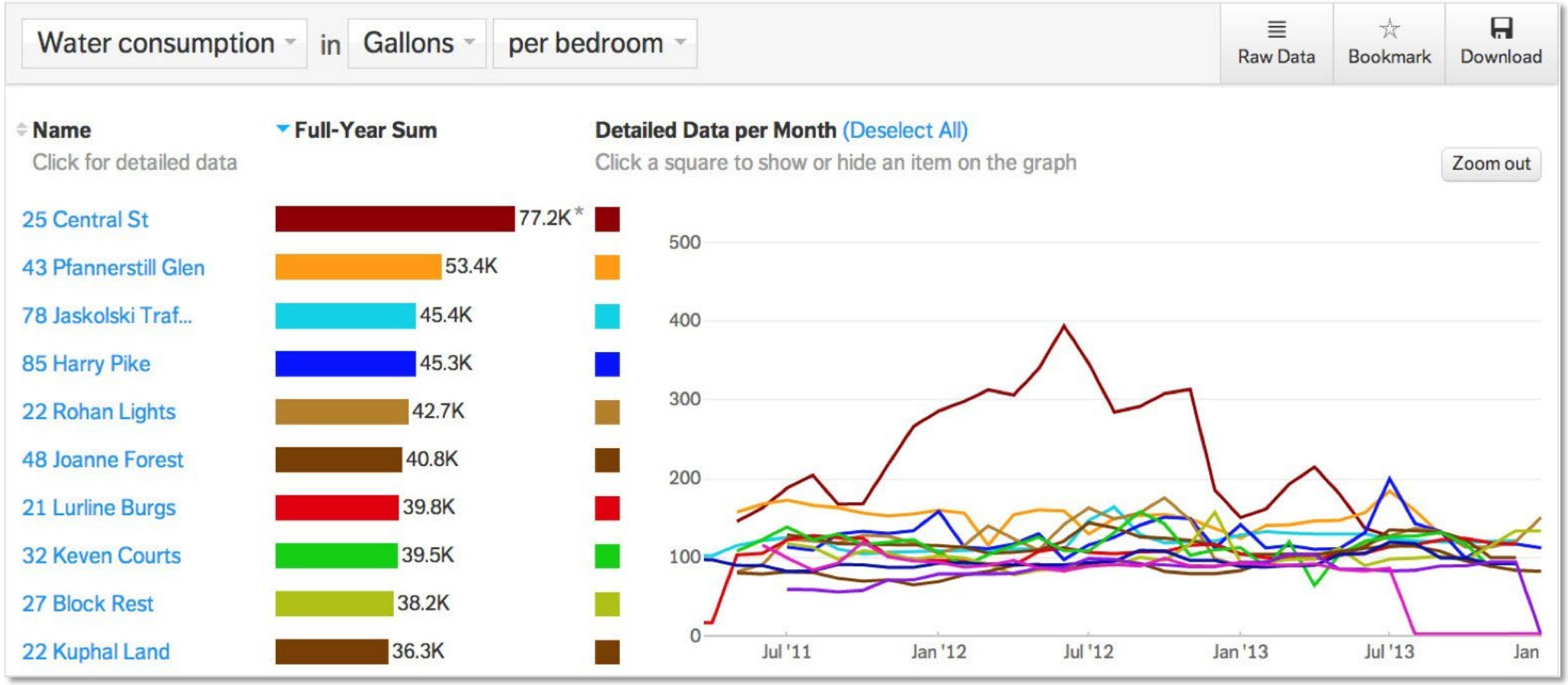
End Date MM/DD/YYYY	Start Date MM/DD/YYYY	Usage Btu	Usage Therms	Total Charge
09/14/2011	08/12/2011	21,500,000 Btu	215 thm	$360.96
08/11/2011	07/15/2011	15,300,000 Btu	153 thm	$270.57
07/14/2011	06/14/2011	19,200,000 Btu	192 thm	$324.60
06/13/2011	05/12/2011	43,600,000 Btu	436 thm	$602.31
05/11/2011	04/13/2011	67,600,000 Btu	676 thm	$972.36
04/12/2011	03/15/2011	53,300,000 Btu	533 thm	$1,361.16
03/14/2011	02/11/2011	69,900,000 Btu	699 thm	$1,739.94
02/10/2011	01/14/2011	70,200,000 Btu	702 thm	$1,601.58
01/13/2011	12/14/2010	90,000,000 Btu	900 thm	$1,727.61
12/13/2010	11/20/2010	61,000,000 Btu	610 thm	$1,045.05
11/19/2010	10/22/2010	53,064,000 Btu	531 thm	$909.46
10/21/2010	09/21/2010	45,936,000 Btu	459 thm	$787.42
09/20/2010	08/21/2010	14,544,000 Btu	145 thm	$250.99
08/20/2010	07/21/2010	15,768,000 Btu	158 thm	$270.95

Raw Utility Data

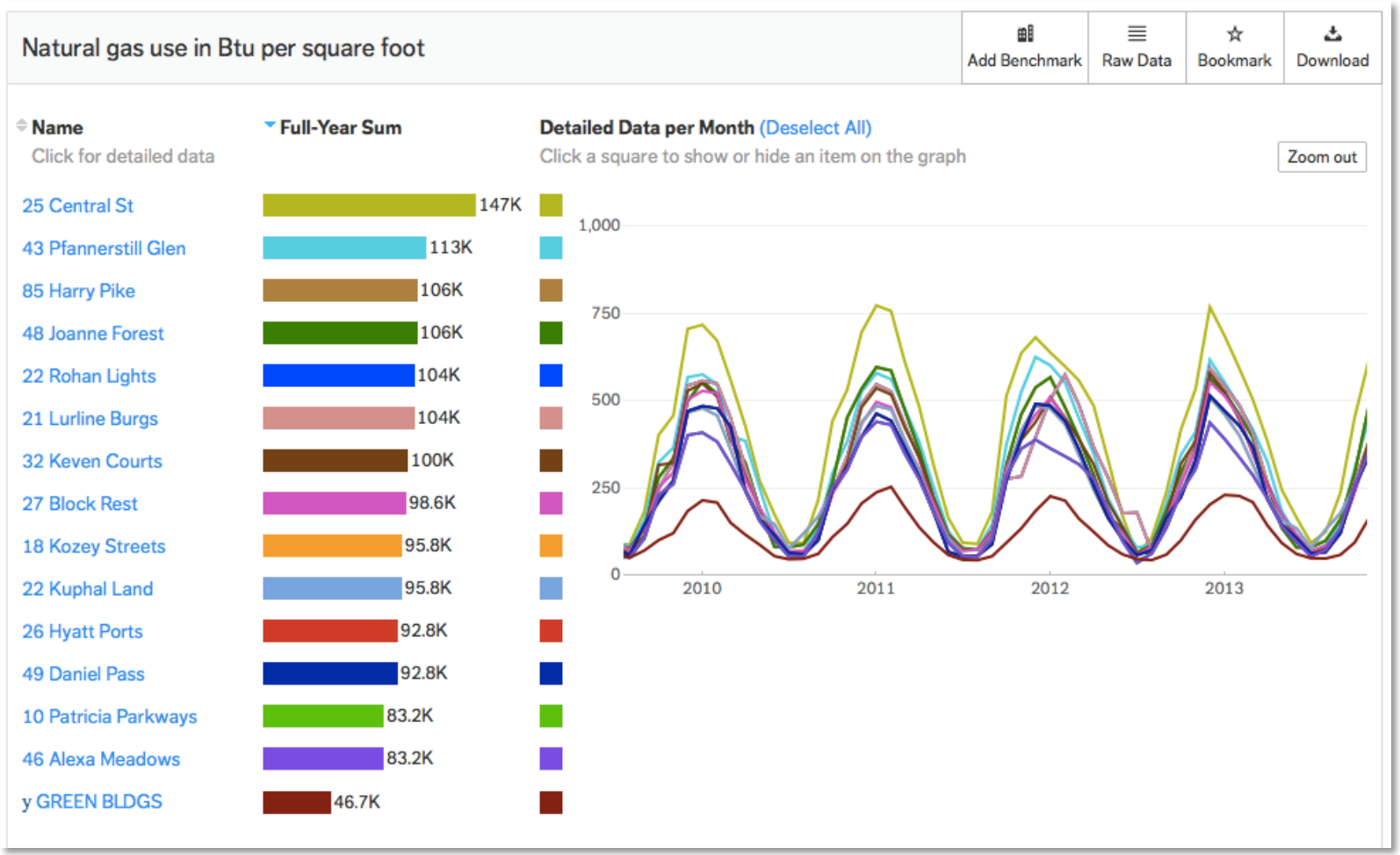
Identify Outliers

- Compare buildings within a portfolio
- Locate outliers
- Sense of priorities

Identify, quantify Anomalies



Custom Benchmarks



Additional benefits …

Data and analysis at the ready.

Available when you need it – auditors, utility allowances, tenant educations.

Widespread access to organized information.

Info in one, known place, accessible by all – consistency.

Historic repository of information.

Useful for new hires (turnover), if selling.

Challenges!

It's a job. There's a cost.

Set-up and maintenance, staffing.

Quality control?

Can't control what others enter.

Utility data entry can be difficult.

Data scrapers working? Tenant release forms? Whole building data?
Human error with manual entry.

Best Practices

"It's a job. There's a cost."

Create SOPs. Video record trainings. Divide and conquer.

"Quality control?"

Have a sense of what doesn't make sense. Don't assume utility data is 100% correct. Pursue benchmarks that include a large number of buildings – law of large numbers.

"Utility data entry can be difficult."

Acquire tenant release at lease up. Create and link on-line accounts whenever possible. Build relationships at utility companies. Manual entry? Engage finance team to do entry into spreadsheet.

Thank you!

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NATIONAL HOUSING TRUST COMMUNITIES CASE STUDY

Michael Miranda

Sustainability Program Manager

National Housing Trust

Multi-Building Communities

Jurisdictions requiring utility benchmark reporting or building energy performance compliance

Reporting and compliance thresholds are based on the jurisdiction's definition of a "building" that can include multiple buildings if one utility meter (electricity, gas, water, etc.) or service (domestic hot water, hot/chilled water, steam, etc.) is shared by multiple buildings.

Clarify how you are required to report, re-organize your records/data as needed, and then fix all the data issues.

You might want to re-organize into "parent" and "child" properties.
ENERGY STAR Portfolio Manager Glossary
https://portfoliomanager.energystar.gov/pm/glossary
"Property Relationships"

Whole-Building Energy Data Metrics

You will need whole-building utility benchmarking data either through actual 100% complete data or from sampling tenant data

Site Energy Use Intensity "Site EUI" (kBTU/SQFT/year)
This energy efficiency metric is "fuel-neutral"
Our Washington DC communities' Site EUI ranges from 29-59 kBTU/SQFT/year adjusted for worst-case 100% occupancy
I do not use Source EUI or ENERGY STAR Scores as these metrics are "source" energy based, which tries to account for all the energy losses from the creation/source of that energy. To calculate source energy use, actual usage is multiplied by 1.05 for gas and by 2.8 for electricity.

Greenhouse Gas (GHG) Emissions Intensity (kgCO2e/SQFT/year)
Our Washington DC communities' GHG Intensity ranges from 2.5-4.5 kgCO2e/SQFT/year adjusted for worst-case 100% occupancy

Lower is better for both!

Gross Floor Area (GFA) in Square Feet (SQFT)

ENERGY STAR Portfolio Manager Glossary
https://portfoliomanager.energystar.gov/pm/glossary
"measure the GFA between the outside surface of the exterior walls of the building"

Increased GFA by 20%+ for a number of our communities

Quick Quality Control for a Multi-Family Building with hallways and stairs:
GFA should at least equal total dwelling unit SQFT plus 10-15%

How:

- If you are pursuing a building certification, ask the sustainability consultant for their GFA measurement
- Measure as-built (or permit) building plans or the building survey using Adobe Acrobat's "Measure" tool or similar software

On-Site Renewable Electricity + Utility Contacts

On-Site Renewable Electricity Systems

https://www.energystar.gov/sites/default/files/tools/How%20To%20Benchmark%20Onsite%20Renewables_April%202023_FINAL_508.pdf

If the system produces more electricity than can be consumed during a utility bill period, you will end up having negative usage (-# kWh) on that electric utility bill. Instead, you need to report that month's -# kWh as 0 kWh in ENERGY STAR Portfolio Manager and then report that "negative" usage as "Energy Exported Offsite" under a separate solar PV or wind turbine meter within ENERGY STAR Portfolio Manager.

Can't Find a Contact at Your Utility

This is a last resort as the information is dated (from ~2017)

https://www.hudexchange.info/programs/utility-benchmarking/utility-data-collection-database/

SAHF Carbon Emissions Calculator

Ian Poe-Yamagata

Associate, Data & Analytics

Session dates and topics are subject to change

Upcoming Sessions

November *(Developers)*	**Cohort Sessions with New Ecology** • Cohort 1: 11/15, 3:30-5pm • Cohort 2: 11/16, 1-2:30pm • Cohort 3: 11/17, 2:30-4pm • Cohort 4: 11/20, 1-2:30pm • Cohort 5: 11/17, 1-2:30pm
November 29th, 2-3:30 *(HFAs)*	**Integrating IRA Funding with HFA Programs** • Mechanics of leveraging different IRA resources in project financing • DOE Loan Programs Office
December 7th, 1-2:30 *(Developers)*	**IRA Funding Opportunities** • How IRA funding can support your scopes of work
December 13th, 2-3:30 *(HFAs)*	**DOE Home Energy Rebates** • Working with State Energy Offices to advance program design priorities for affordable housing

Thank you!
Questions?