

The Building Performance Database

Understanding and Acting On Existing Building Energy Performance

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ENERGY TECHNOLOGIES AREA

The Building Performance Database (BPD)

The nation's largest publicly-accessible dataset of information about the physical and operational characteristics of real buildings.



Over 1 Million buildings



bpd.lbl.gov

What's in BPD?

BPD focuses on **energy performance** and **building characteristics**.

It **does not** currently include any information on **costs**.



Basic Building Characteristics

- City, State, Zip Code
- Usage type (office, retail, home)
- Building floor area
- Year completed



Operational Information, e.g.

- Types of activities and associated floor area
- Operating hours
- Number of occupants



Equipment & Asset information, e.g.

- Lighting type and controls
- Air distribution configuration, controls, etc
- Heating and cooling equipment types & efficiencies
- Hot water equipment type & efficiency

How it Works

DATA SOURCES



AGGREGATION PLATFORM



ANALYTICAL TOOLS



Public Web Site

- Explore Tool
- Compare Tool



Third Party Tools

BPD Value Proposition

High Quality Data

- Transparency with anonymity
- Well-documented data cleansing / calculation methodologies

Diverse Data Sources

- ~ 70 public + private data sources
- ~ 1.1 million buildings with performance data spanning 20+ years

API Integration

- Leverage BPD as knowledge foundation for applications
- 40+ active API licenses

Actionable Insights

- Over 30 fields for filtering, including building characteristic info, system types, weather regions, and more
- Dynamically explore relationships between variables and over time

Target Audiences



Energy Software
Developers

Building Owners /
Operators



Architects +
Engineers

Commissioning
Providers



Energy Program
Analysts

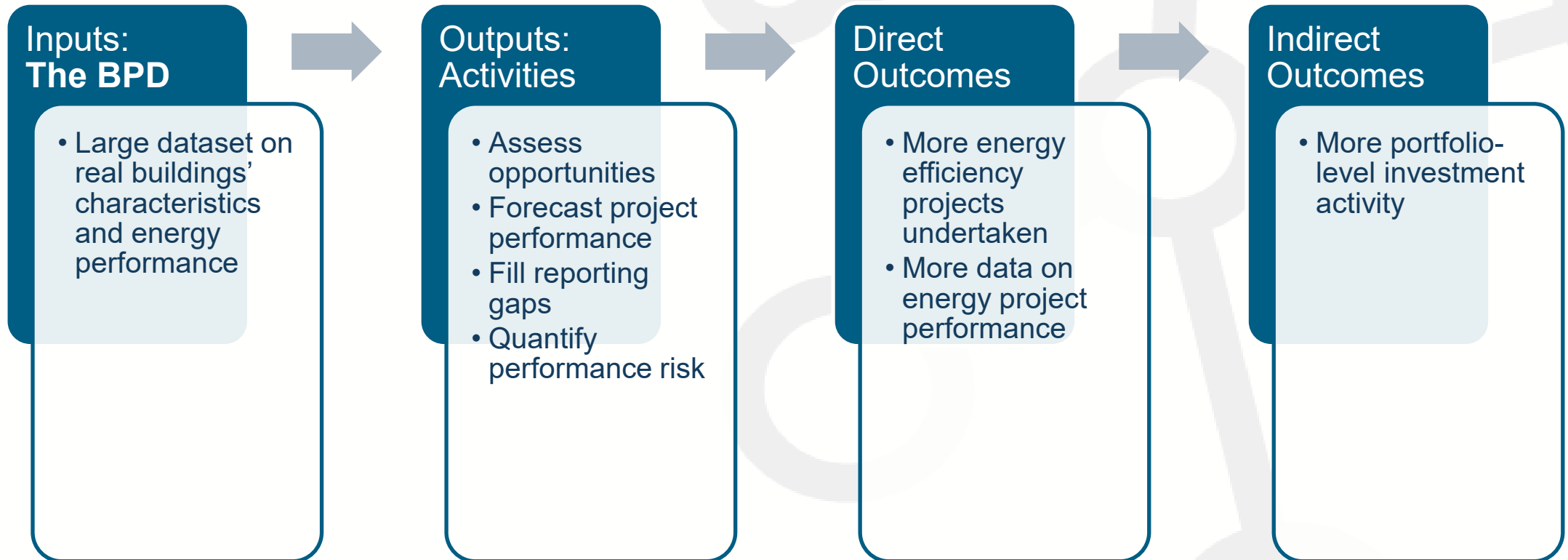
Researchers



Energy Consultants

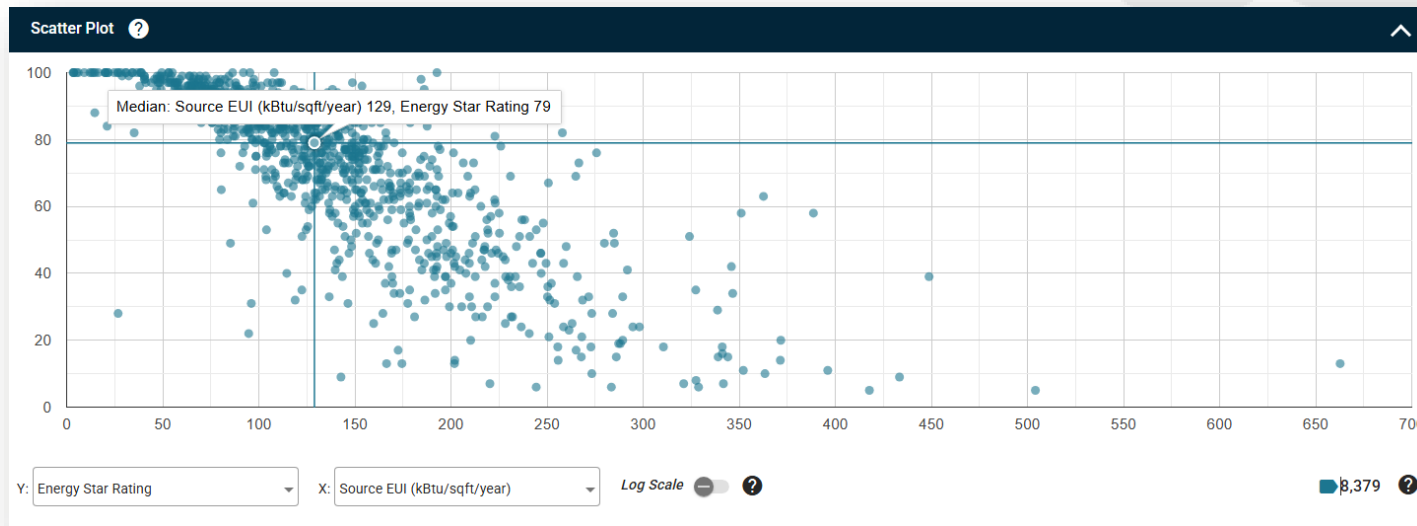
BPD as a Component of Commercial Real Estate Energy Strategy

The BPD was designed to statistically analyze likely project performance and risk based on real performance measurement



Caveat: BPD's value depends on the amount and quality of data it contains

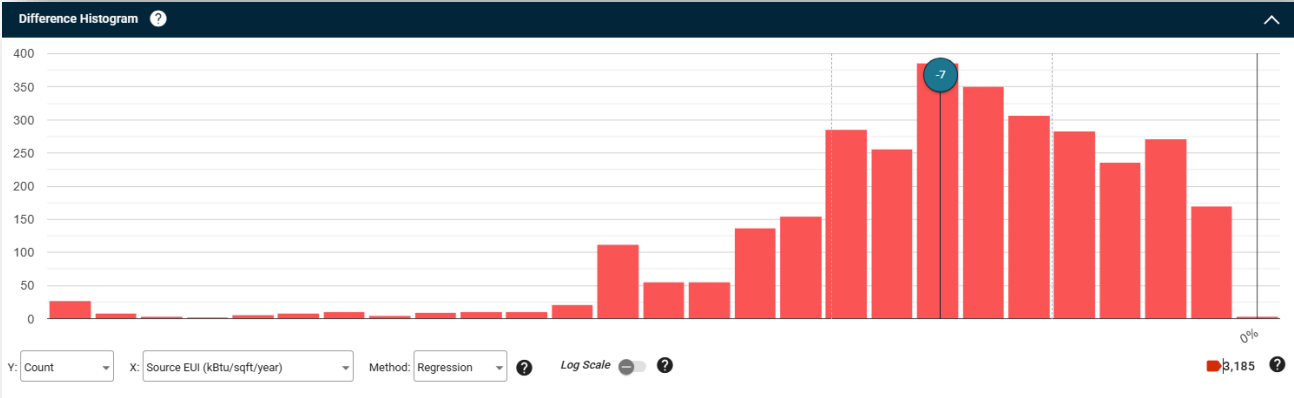
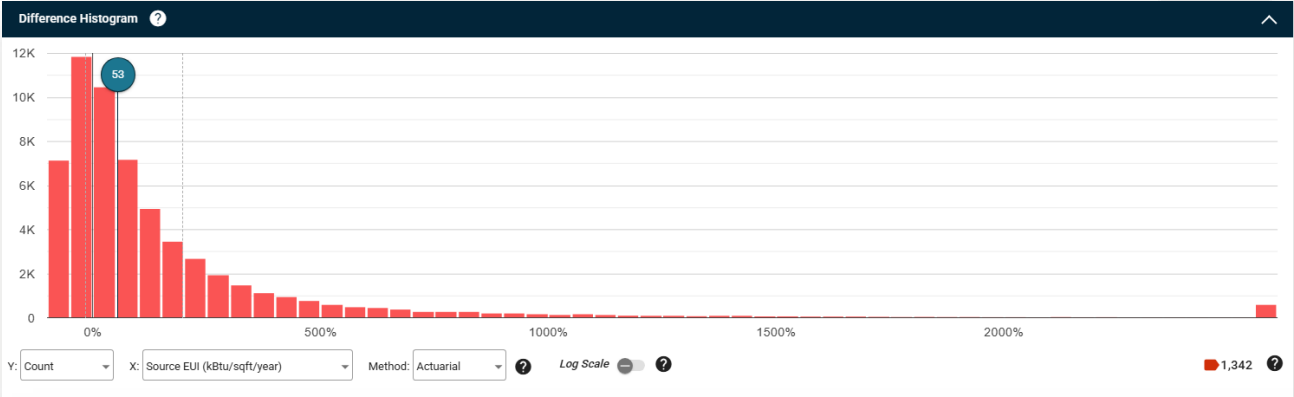
BPD Aggregates Critical Data to Enable Advanced Analysis of Building Characteristics and Operational Parameters



Available Filters/Aggregators	
Property Types	Weather Regions
Property Sub-Types	Lighting
Gross Floor Area	Air Flow Control
States	Heating Type
ENERGY STAR Certified?	Heating Fuel
ENERGY STAR Rating	Cooling Type
LEED Rating	Wall Type
Years Built	Wall R-Value
Operating Hours	Roof Type
Occupant Density	Window Types

Tell the story of your portfolio energy performance beyond the reporting metric.

BPD for Actuarial/Regression-Based Energy Analysis



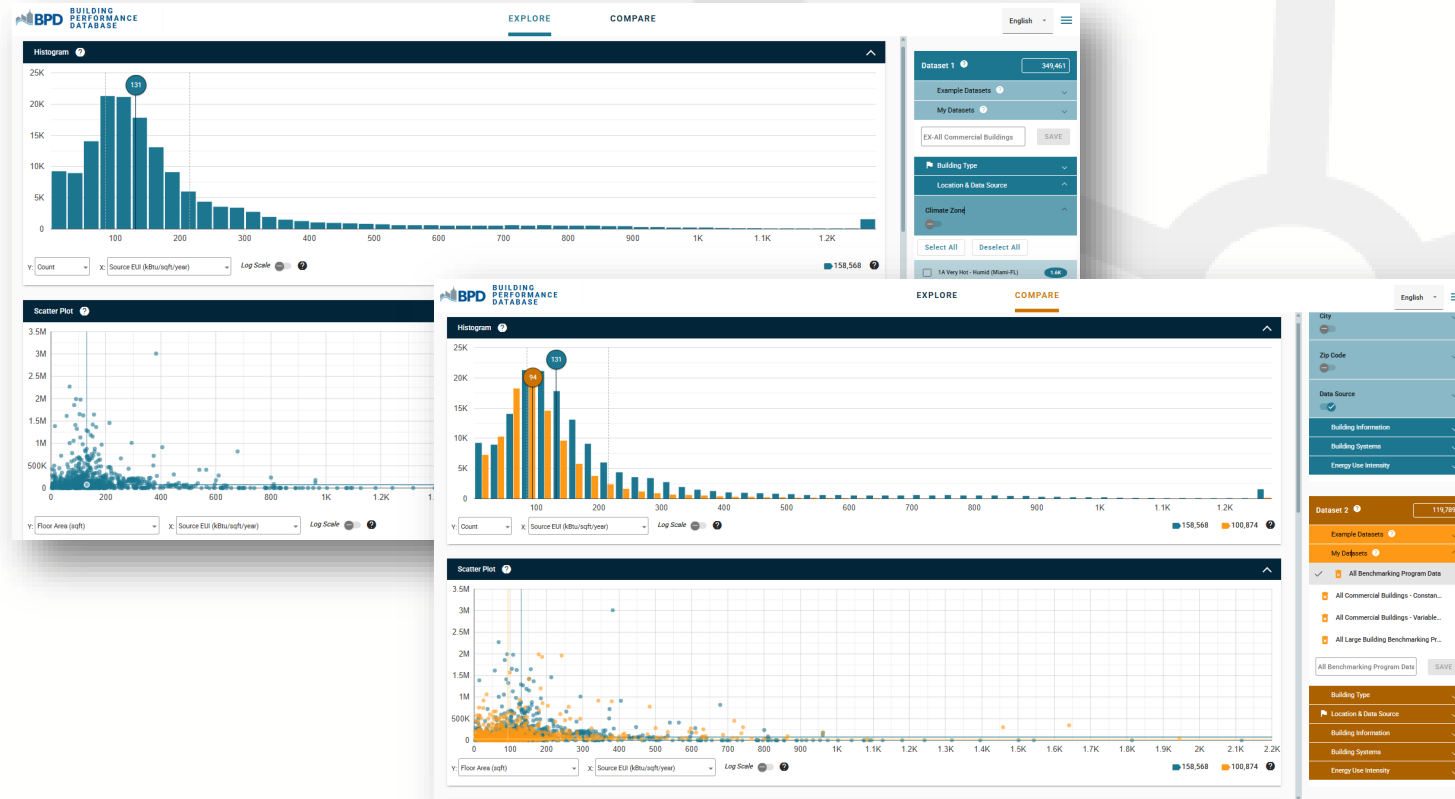
Buildings w/
Constant Air
Volume

Buildings w/
Variable Air
Volume

Control for Other Parameters
e.g. – Building Age, Region, Operating Hours

Empirically-Derived
Energy Savings of
VAV Over CAV
Systems

DEMO!



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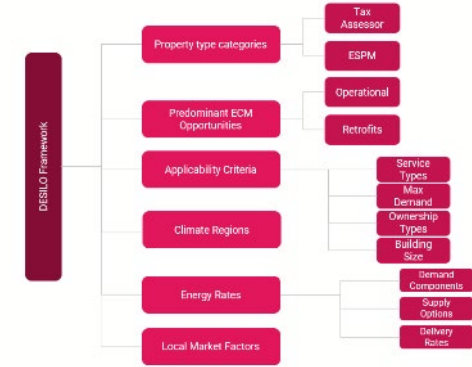
My Research Portfolio



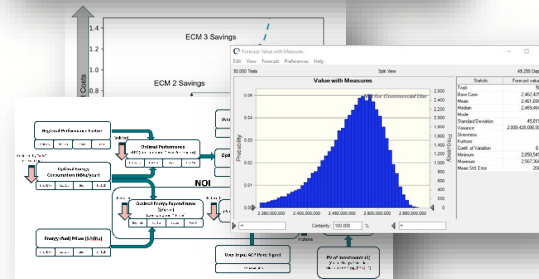
Josh Kace



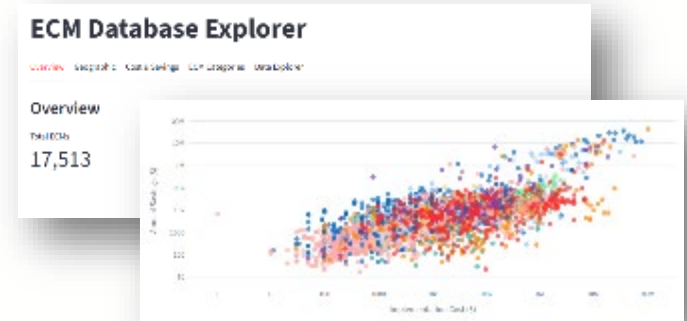
DOE Data Tools for Existing Buildings



Generalizing Regional Factors in Strategic Energy Management (DESILO)



Value-At-Risk Modeling for Energy Retrofits



Industry-Led Retrofit Cost Data Collection



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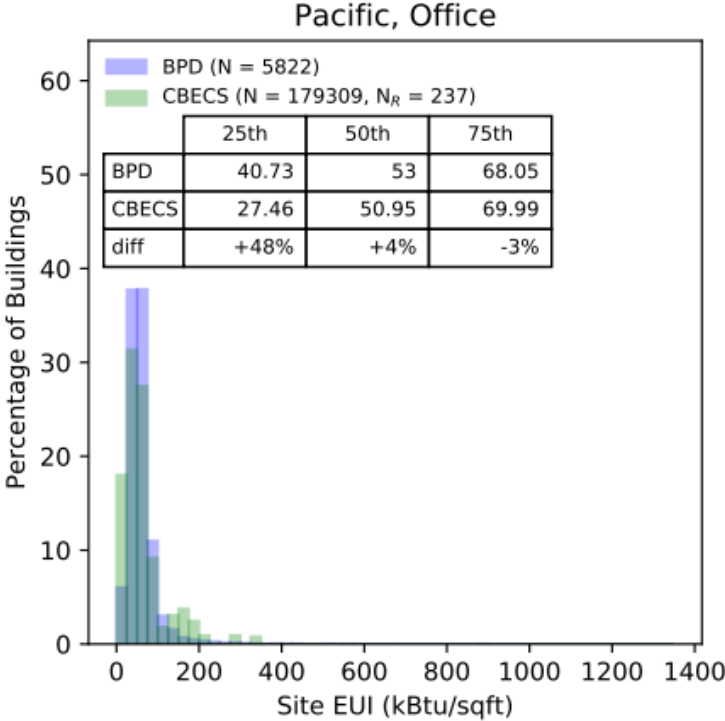
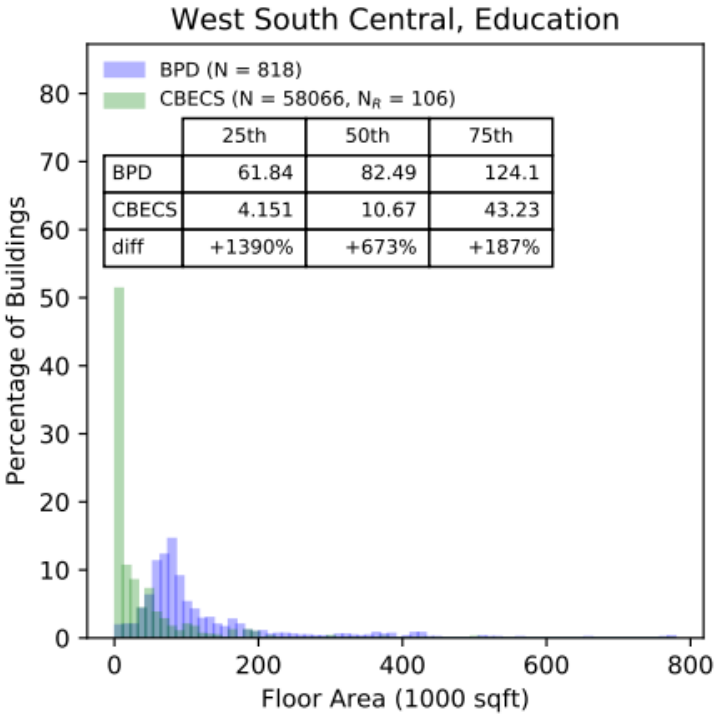


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ENERGY

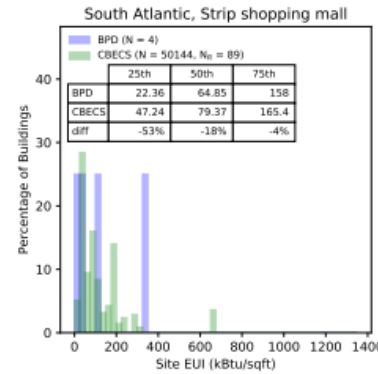
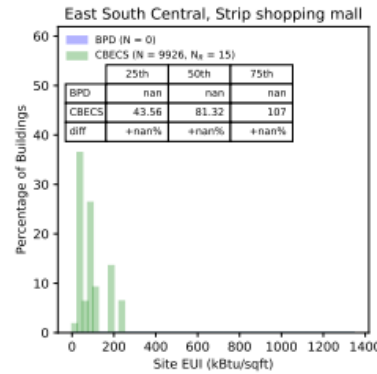
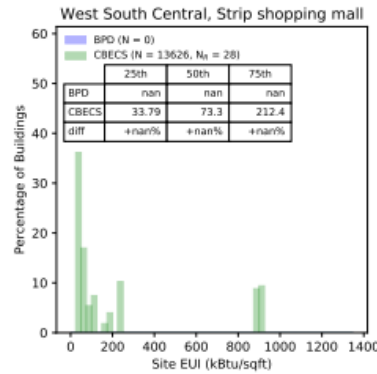
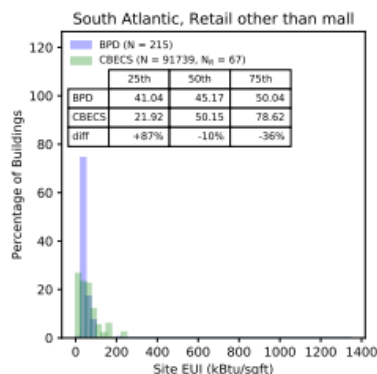
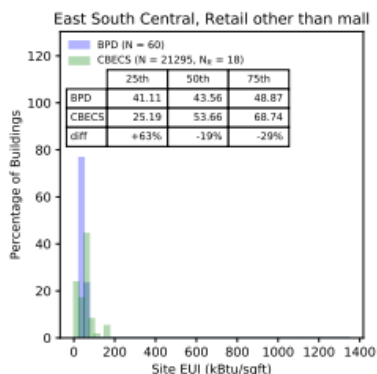
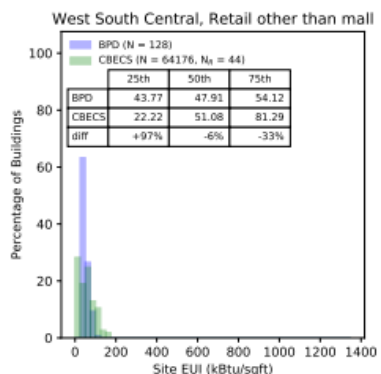
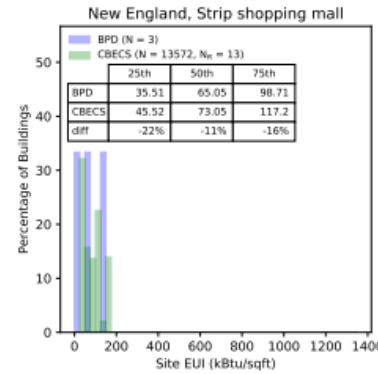
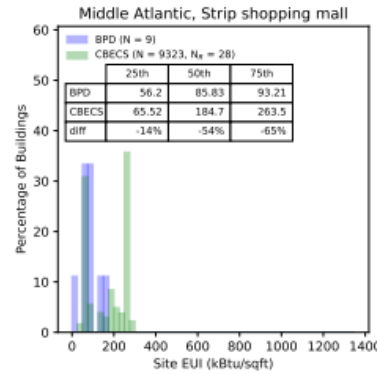
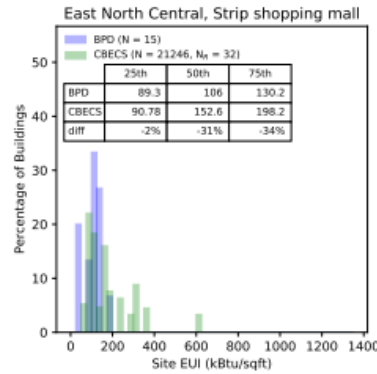
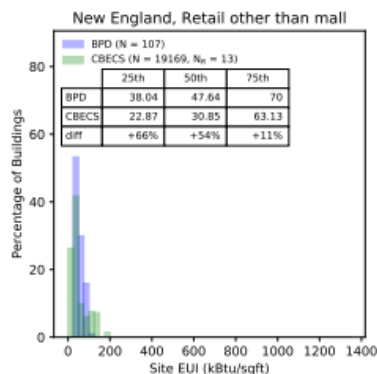
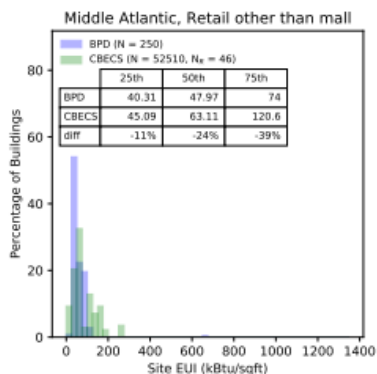
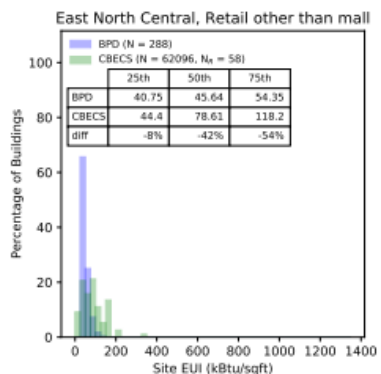
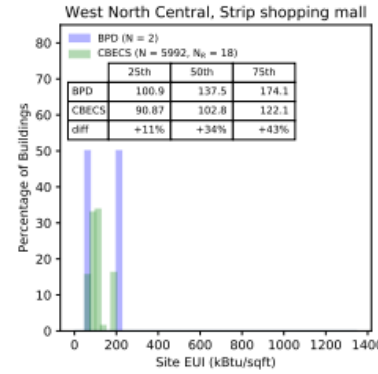
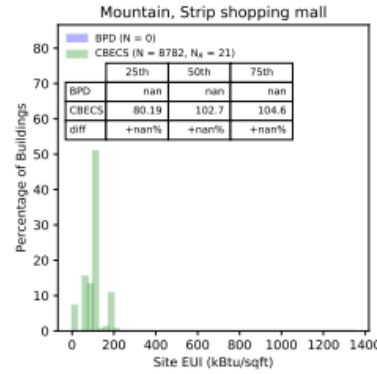
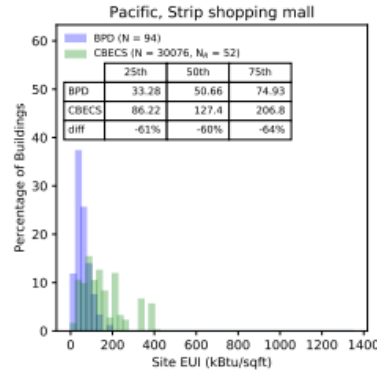
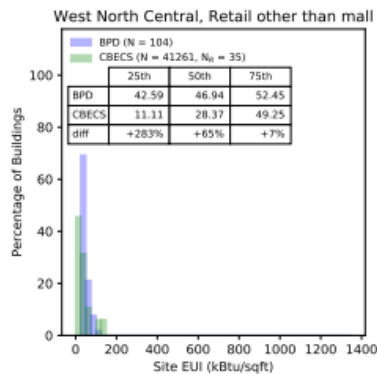
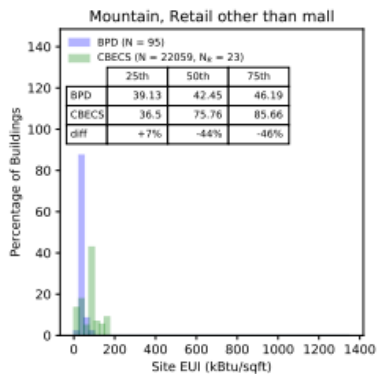
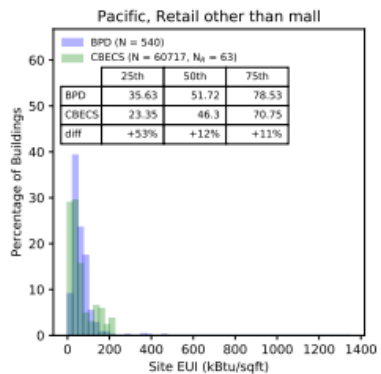
Appendix – Is the BPD Nationally Representative?

Is the BPD nationally representative? Comparing BPD vs. CBECS

- Analyzed building-type and census division peer groups
- Some peer groups represented well, some not

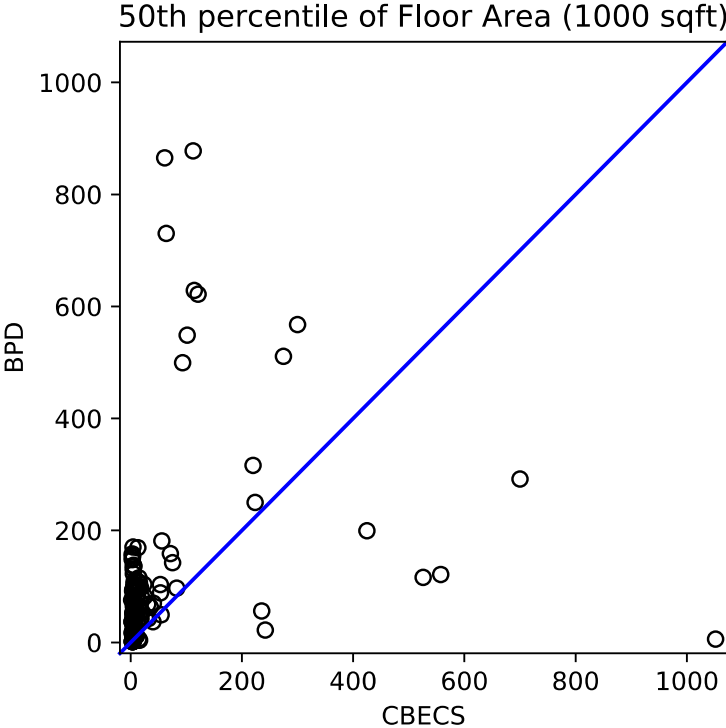


Building Type = Retail other than mall

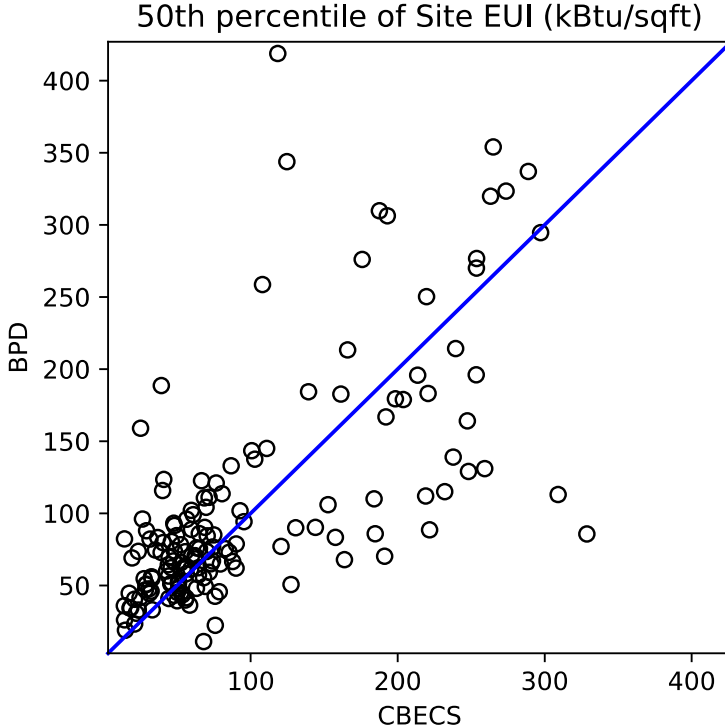


Building Type = Strip shopping mall

Is the BPD nationally representative? Comparing BPD vs. CBECS



Floor area: BPD has significantly more larger buildings



Site and source EUI: No significant bias (e.g., towards efficient buildings)