



Buildings Performance Database

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Data Platforms and Initiatives

DATA SOURCES



Standard Data Taxonomy

PLATFORMS



- Combines many datasets
- One publicly managed database
- Anonymous: supports statistical-level analysis only



- Many private databases
- Combine and analyze data about one's own portfolio

ANALYTICAL TOOLS



DOE tools:
energy and financial performance forecasting



Third Party Tools



DOE tools:
weather normalization and basic reporting



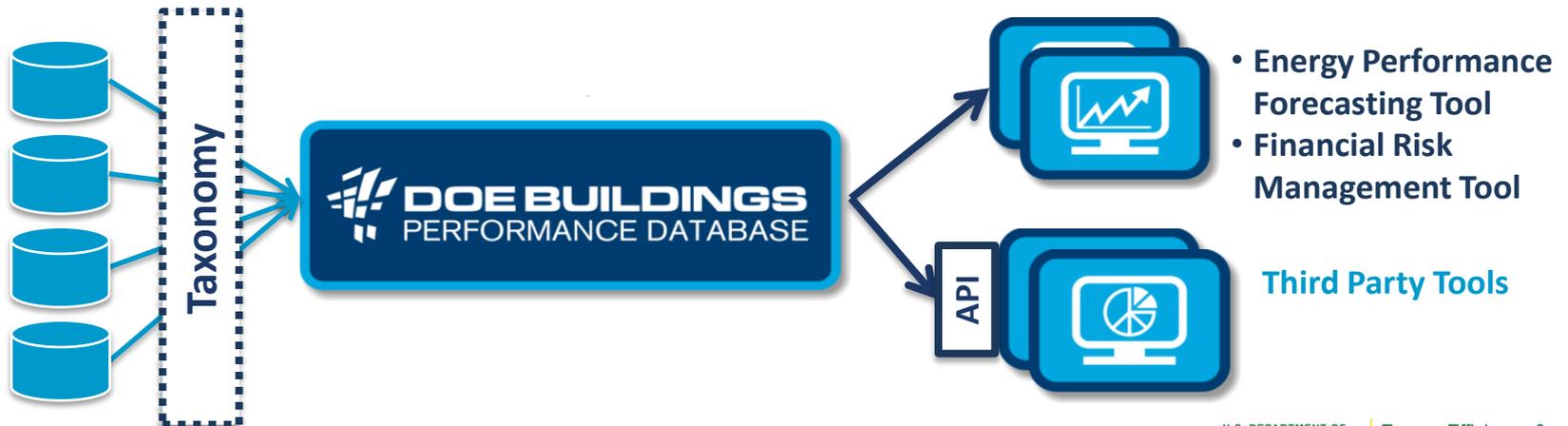
Third Party Tools

- The Buildings Performance Database (BPD) is a decision support tool that enables analysis of energy efficiency upgrades
- It contains information about the physical and operational characteristics and energy consumption of real buildings.
- The BPD enables statistical analysis without revealing information about individual buildings.
- The BPD cleanses and validates data from many sources and translates it into the standard taxonomy.
- In addition to the BPD's analysis tools, an API will enable third parties to create applications using the database.

DATA SOURCES

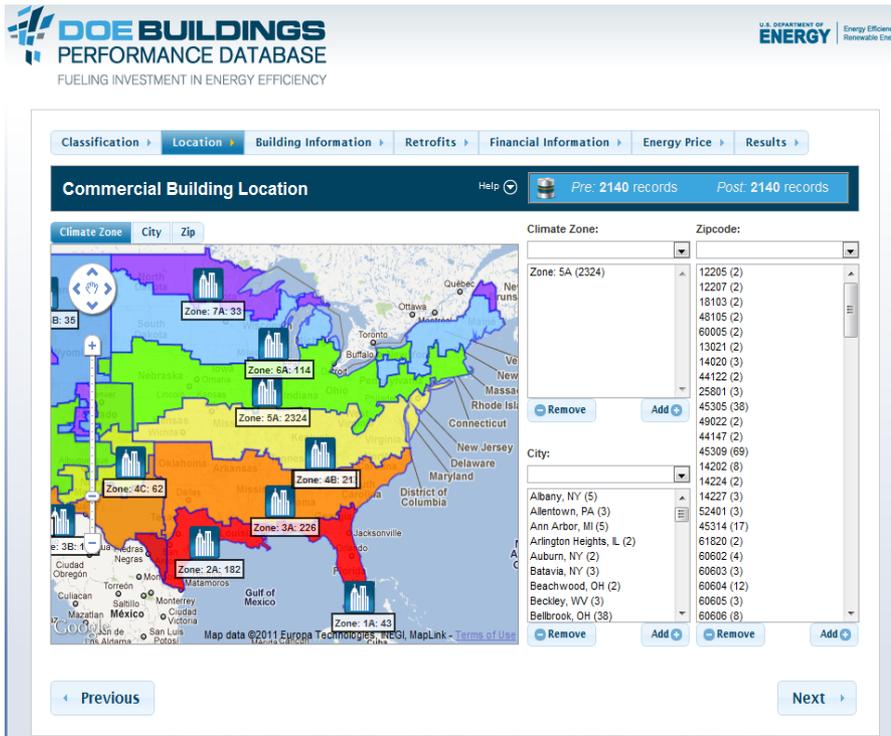
PLATFORM

ANALYTICAL TOOLS



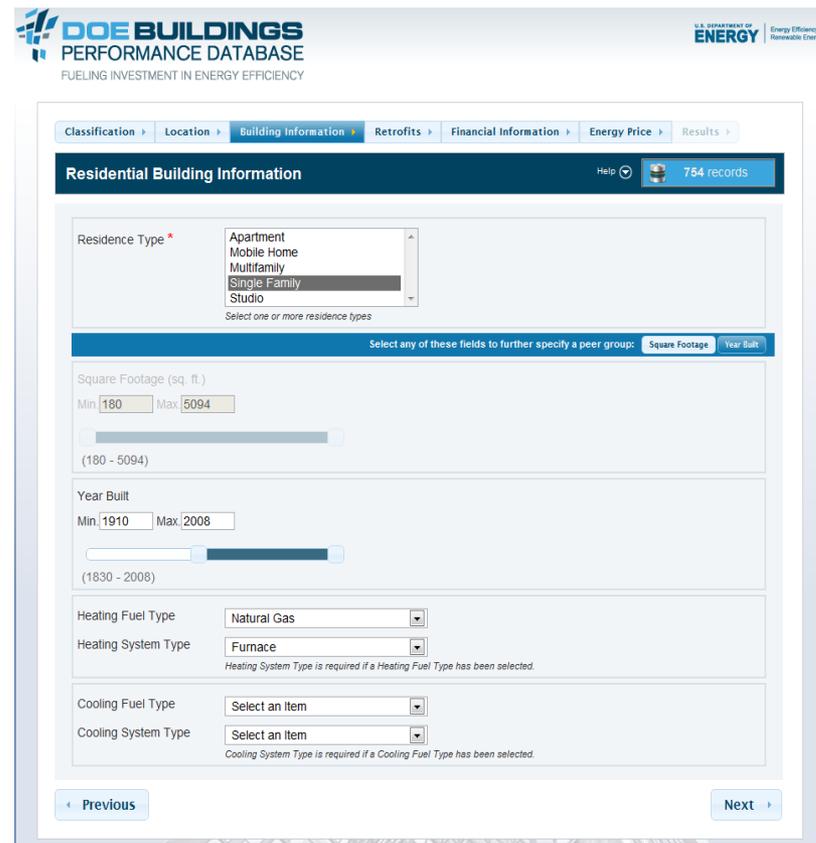
- The BPD compares groups of buildings based on use, location, size, and equipment type.

Selecting a Comparison Dataset



The screenshot shows the 'Commercial Building Location' interface. It features a navigation bar with tabs for Classification, Location, Building Information, Retrofits, Financial Information, Energy Price, and Results. Below the navigation bar, there are filters for Climate Zone and Zipcode. A map of the United States is displayed, showing various climate zones. The 'Climate Zone' dropdown is set to 'Zone: 5A: 2324'. The 'Zipcode' dropdown is set to '12205 (2)'. The 'City' dropdown is set to 'Albany, NY (5)'. There are 'Remove', 'Add', and 'Add All' buttons for each filter. The interface also shows 'Pre: 2140 records' and 'Post: 2140 records'.

Building Location

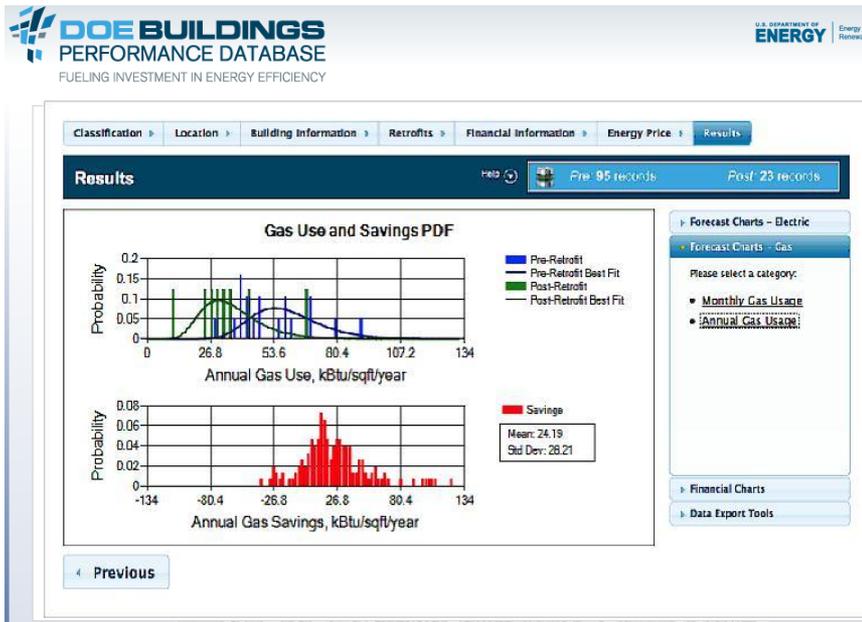


The screenshot shows the 'Residential Building Information' interface. It features a navigation bar with tabs for Classification, Location, Building Information, Retrofits, Financial Information, Energy Price, and Results. Below the navigation bar, there are filters for Residence Type, Square Footage, and Year Built. The 'Residence Type' dropdown is set to 'Single Family'. The 'Square Footage' filter is set to 'Min: 180' and 'Max: 5094'. The 'Year Built' filter is set to 'Min: 1910' and 'Max: 2008'. There are 'Remove', 'Add', and 'Add All' buttons for each filter. The interface also shows '754 records'.

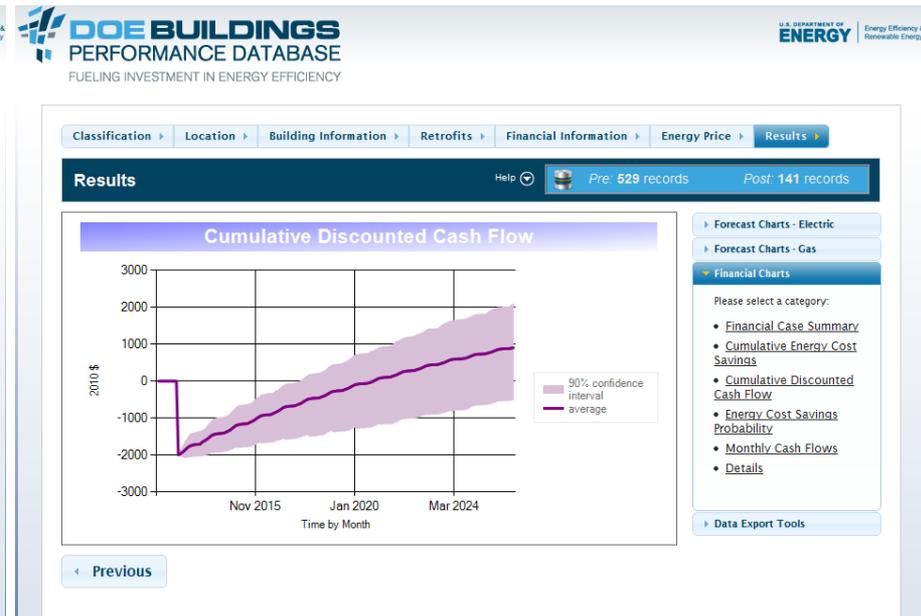
Building Characteristics

- The BPD can analyze multiple buildings at a portfolio level, based on actuarial methods.
- The analytical tools quantify the energy use, financial performance, and risk profiles of specific building improvements.

Residential Heating Retrofit

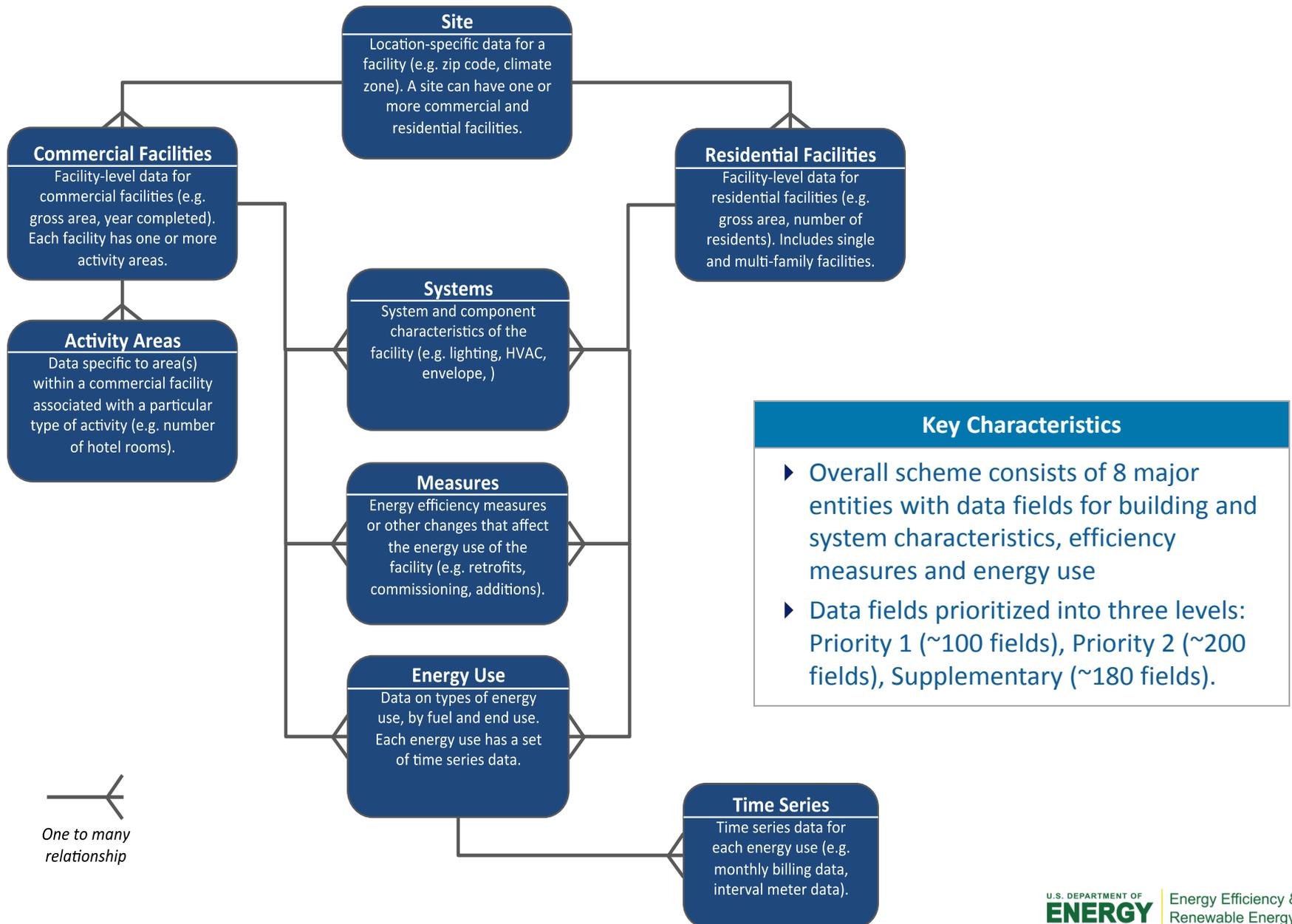


Energy Savings Analysis



Cumulative Cash Flow Analysis

Building Energy Performance data taxonomy schema



BPD relationship to common building energy tools

Data Formats	Functionalities		
	Data collected	Comparison framework	Analyses
<p>Buildings Performance Database</p>	<ul style="list-style-type: none"> • Asset characteristics • Operational characteristics • Energy consumption (monthly utility bills or interval meter data) 	<ul style="list-style-type: none"> • Growing dataset of real buildings (cleansed and validated by national labs) 	<ul style="list-style-type: none"> • Energy and financial savings projections for retrofit measures • Energy performance distributions of similar buildings
<p>Portfolio Manager</p>	<ul style="list-style-type: none"> • Operational characteristics • Energy consumption (monthly utility bills) 	<ul style="list-style-type: none"> • Commercial Building Energy Consumption Survey (CBECS) • Static dataset; representative sample of buildings 	<ul style="list-style-type: none"> • Whole building score, based on actual energy performance adjusted for operating characteristics
<p>Commercial Building Energy Asset Score and Home Energy Score</p>	<ul style="list-style-type: none"> • Asset characteristics 	<ul style="list-style-type: none"> • Energy model of the building as built • Compared to an absolute scale of energy use intensity (EUI) 	<ul style="list-style-type: none"> • Whole building score, based on as-built physical characteristics • Identification of inefficient systems and potential upgrades

Lenders and Investors

Assess opportunities

- Identify high or low performing buildings, and identify improvements that will likely have a significant savings impact

Increase confidence in returns

- Analyze actual building performance (as opposed to modeled or predicted performance)

Conduct performance risk analysis

- Quantitatively distinguish between expected returns and performance risk

Support portfolio-level investment strategy

- Diversify risk by investing in a range of buildings and measures

Building Owners & Managers

Assess opportunities

- Identify high or low performing buildings, and identify improvements that will likely have a significant savings impact

Understand performance risk

- Analyze the range of likely returns from an investment

Evaluate investment performance

- Compare efficiency project performance to similar projects

Federal, State & Local Governments

Assess opportunities

- Identify high or low performing buildings, and identify improvements that will likely have a significant savings impact

Understand performance risk

- Analyze the range of likely returns from an investment

Evaluate investment performance

- Compare efficiency project performance to similar projects

Influence local real estate markets

- Enable public access to general statistical information about buildings, without sharing building-level information

Energy Efficiency Program Administrators

Help participants assess opportunities

- Help building owners, managers, and contractors identify improvements that will likely have a significant savings impact

Target program design

- Identify buildings and efficiency measures with the greatest savings potential

Support M&V

- Optimize M&V requirements based on measured savings uncertainty and persistence

Current Data Sources for BPD

- There are currently 50,000 buildings in the BPD, with information from both public and private datasets.
- More datasets are being added regularly. There is no upper limit for the number of buildings the BPD could hold.
- More analyses will become possible as the dataset grows.



Required Fields

✓ *Basic Building Requirements*

- City, State, Zip Code
- Usage type (office, retail, home)
- Building floor area
- Year completed
- Electricity/fuel use for at least one year

At Least One Field Required

✓ *Detailed Building Characteristics*

Asset characteristics, such as:

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

(And, If Available)

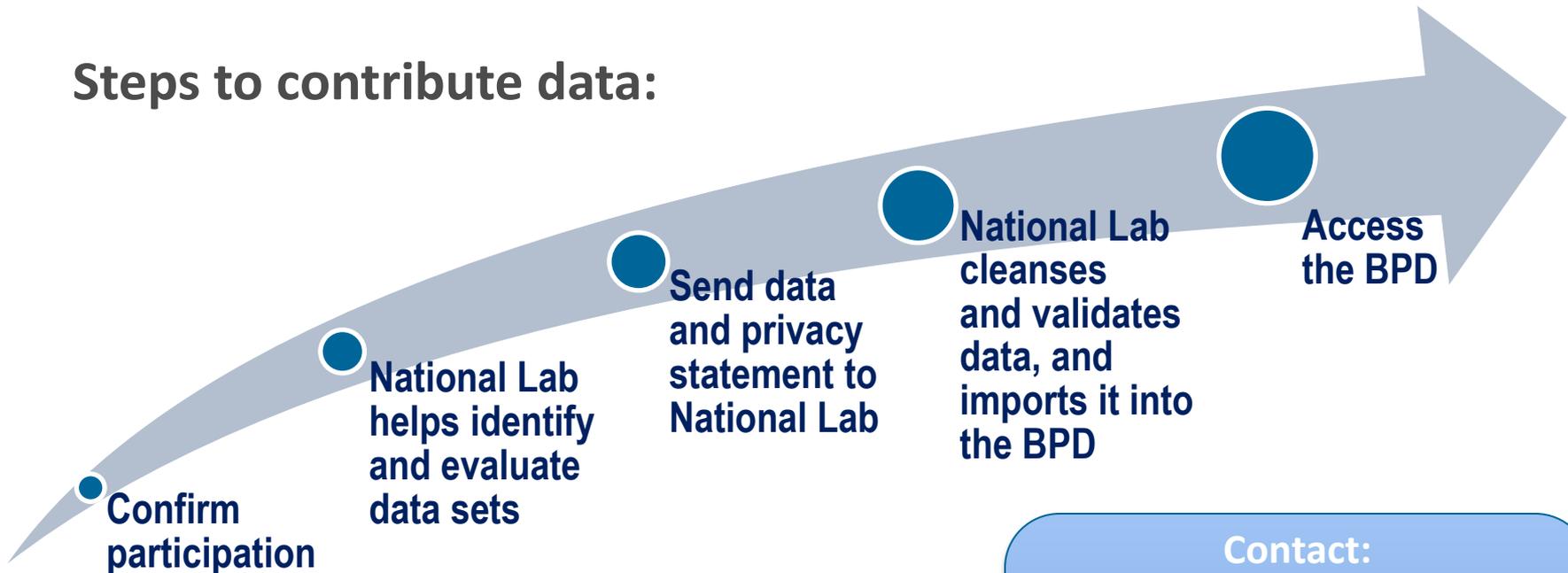
Operational characteristics, such as:

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

- **The BPD has clear use restrictions, and stringent privacy and security policies:**
 - Data can only be analyzed in aggregate through the BPD interface. The BPD analyses will never allow identification of specific buildings.
 - All the records contained in the Database is anonymous. All personally identifiable information, such as name, street address, etc. of buildings or individuals are removed from the records prior to entry.
 - Individual building records will not be released publicly. Any data that is properly marked as “proprietary data” is fully protected from release under the Freedom of Information Act.
 - The Database’s security policies align with DOE policies and Information Security best-practices. The BPD employs Secure Sockets Layer (SSL) certificates with 2048-bit RSA encryption.
 - *DOE can provide a standard confidentiality statement to attach when providing your data for the BPD.*

- The Buildings Performance Database is currently in beta. Beta partners can access the BPD and comment on its interface and functionality.

Steps to contribute data:



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