Unique Building Identification Kickoff Webinar

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Agenda

- ► **Introduction**
- ► **Vision and Value Proposition**
- ► **Current Methods of Building Data Matching**
- ► **Examples of Local Building IDs**
- ► **Project Plan and Schedule**
- ► **Research Questions**
- ► **Open Discussion**

Vision

To provide a standardized framework under which a unifying field is used to match building data from various sources to a single object.

Humans have unique IDs:
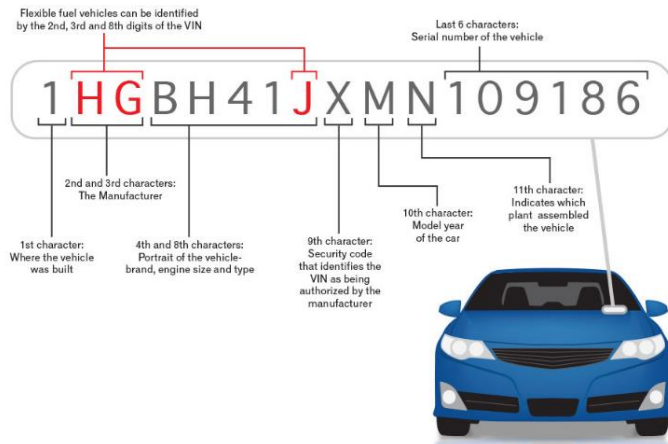Social Security Number (SSN)
Source: https://www.ssa.gov/policy/docs/ssb/v69n2/v69n2p55.html

Vehicles have unique IDs:
Vehicle Identification Number (VIN)
Source: http://www.dmv.org/vehicle-history/vin-decoder.php

000 - 00 - 0000

Area - Group - Serial

Flexible fuel vehicles can be identified by the 2nd, 3rd and 8th digits of the VIN

Last 6 characters:
Serial number of the vehicle

1 H G B H 4 1 J X M N 1 0 9 1 8 6

2nd and 3rd characters:
The Manufacturer

11th character:
Indicates which plant assembled the vehicle

1st character:
Where the vehicle was built

4th and 8th characters:
Portrait of the vehicle-brand, engine size and type

9th character:
Security code that identifies the VIN as being authorized by the manufacturer

10th character:
Model year of the car

Value Proposition

▶ **Emergency response**
- ■ Search building info and locate buildings
- ■ Estimate impact of disasters

▶ **City services**
- ■ Inventory building data (energy use, water use, building owner, etc.) by city departments for multiple purposes
- ■ Reduce time to sort and distribute mails

▶ **Utilities and energy management**
- ■ Link buildings (rather than utility accounts) to (smart) meters
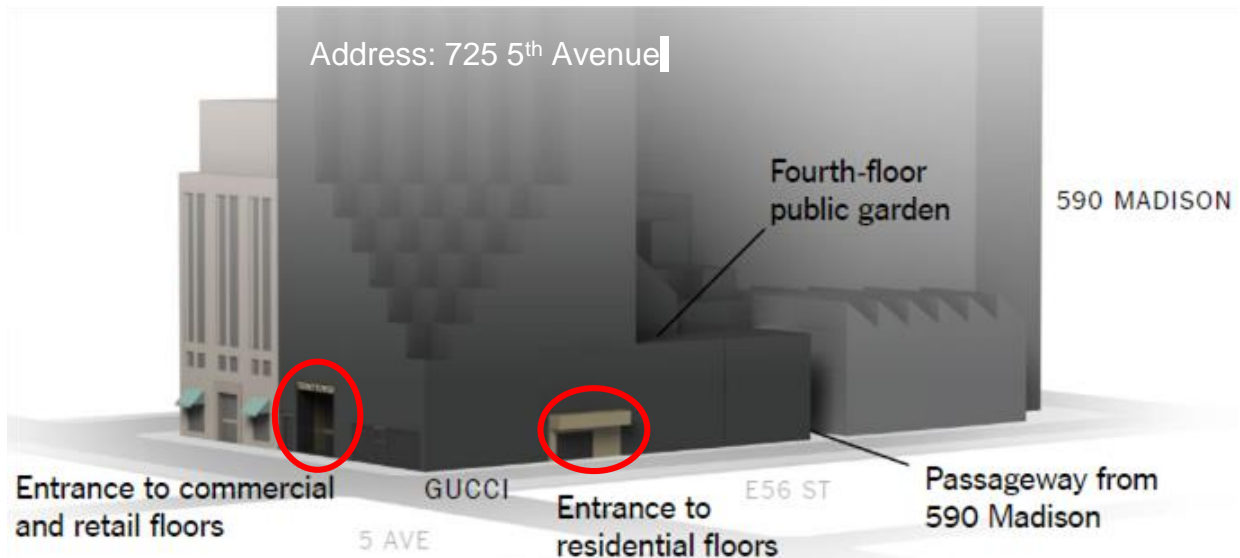- ■ Link sensors to buildings

▶ **Commercial real estate and insurance**
- ■ Query and match building data from multiple sources
- ■ Generate new service and business ideas

Address Matching

- **Different address abbreviation**, e.g., st or street; ave or avenue; apt or #;
- Simple **misspellings or incorrect** addresses
- Large buildings with **multiple entrances** and possibly **multiple addresses**

Address: 725 5th Avenue

Fourth-floor
public garden

590 MADISON

Entrance to commercial
and retail floors

GUCCI

5 AVE

Entrance to
residential floors

E56 ST

Passageway from
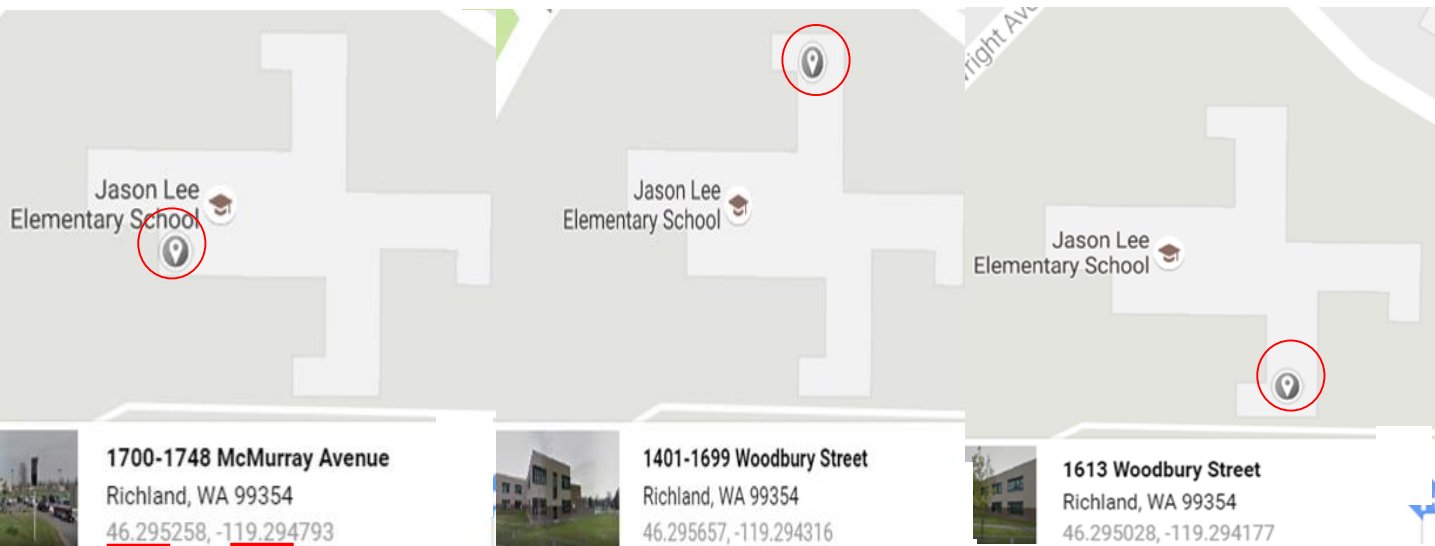590 Madison

Address Matching

- **Campus complexes usually have one single address (postal address) and multiple buildings:**

E.g., Columbia University uses the address "116th street & Broadway" for approximately 20 buildings.

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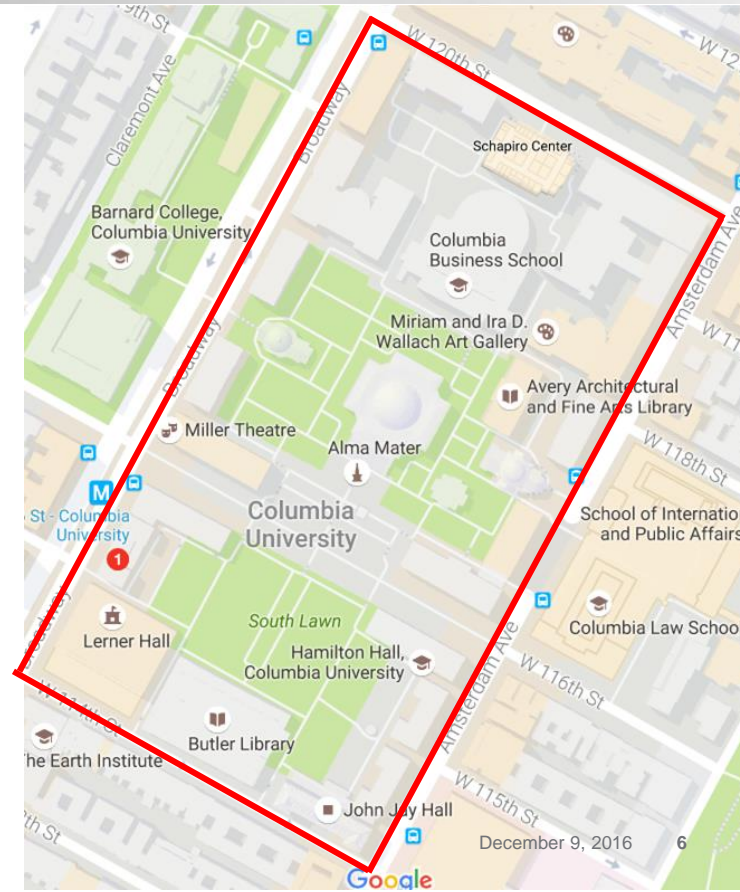
Geocoding

- **Geocode is sensitive to building footprint. A building may correspond to multiple addresses.**

School address: 1750 McMurray Ave, Richland, WA 99354

1700-1748 McMurray Avenue
Richland, WA 99354
46.295258, -119.294793

1401-1699 Woodbury Street
Richland, WA 99354
46.295657, -119.294316

1613 Woodbury Street
Richland, WA 99354
46.295028, -119.294177

Examples of Local Building/Lot IDs

City	ID Name	Example	City Agency	Purpose
Atlanta, GA	Atlanta Building ID	572927	Atlanta "Building Efficiency" (Mayor's Office)	Energy disclosure ordinance
Boston, MA	Parcel ID	1811005000	County Assessor	Tax status
Cambridge, MA	Master Address Blocks UNQ_ID	571-1	GIS City of Cambridge	Energy disclosure ordinance, building data
Chicago, IL	Property Index Number (PIN)	17-25-105-022-0000	County Assessor	Tax status
NYC, NY	Building Identification Number (BIN)	1015219	Department of Buildings	Building data
Portland, OR	Building ID	1S2E01AA-1300-B1	Bureau of Planning & Sustainability	Energy disclosure ordinance, building data
San Francisco, CA	Assessor Parcel Number (APN)	0787/001	Office of the Assessor-Recorder	Property information
Washington, DC	Square Suffix Lot (SSL)	10050801	DC GIS Master Address Repository	Building data

Atlanta: Atlanta Building ID

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Atlanta Building Efficiency

Buildings Information Search

Enter Street Number and Street Name

| 84 | PEACHTREE ST NW |

[Search] [Reset]

Atlanta Building ID	Street No	st	Type	Suffix	Property Type	Bldg SF	Bldg No	Property SF	Year Covered	Needs to Comply
572927	84	PEACHTREE ST NW			Office	51825		51825	2015	Yes

Still having difficulty locating your Atlanta Building ID? Please contact the Southface Atlanta Helpline at 404-604-3665 email benchmarkhelp@southface.org or the City of Atlanta at buildingefficiency@atlantaga.gov and we will help you locate your ID number.

Back to the Atlanta Building Efficiency Site.

Source: http://ditweb.atlantaga.gov/br/

Boston: Parcel ID

City of **Boston**.gov
Official Web Site of the City of Boston

Home | 311 | **Residents** | **Business** | **Visitors** | **Students** | **Government**

Assessing

Home	
Letter from the Commissioner	
Assessing Online	
Abatement Procedures	
Assessed Values	
Betterments and Tax Bills	
Boat Excise	
Boat Mooring/ Docking Compliance Law/ Permits	

Assessing On-Line

« New search   Map

Parcel ID:	1811005000
Address:	74 BEACON ST BOSTON MA 02136
Property Type:	Two Family
Classification Code:	104 (Residential Property / TWO-FAM DWELLING)
Lot Size:	9,652 sq ft
Living Area:	2,783 sq ft
Owner on Friday, January 1, 2016:	CRONIN DONALD F SR ETAL
Owner's Mailing Address:	74 BEACON HYDE PARK MA 02136
Residential Exemption:	Yes
Personal Exemption:	Yes

Source: http://www.cityofboston.gov/assessing/search/

Cambridge, MA: Unique ID
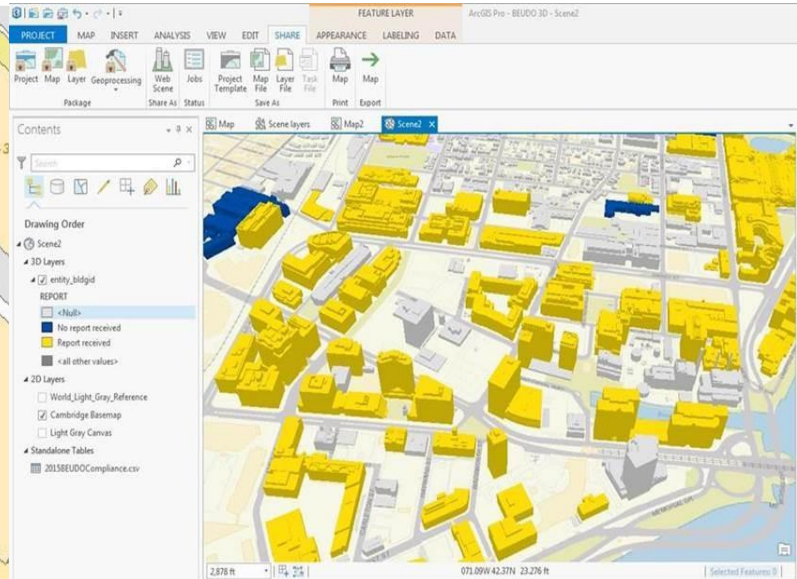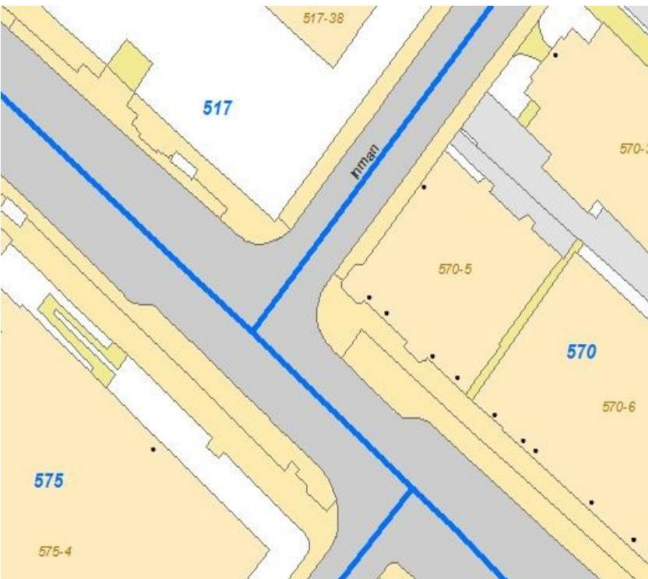
Source: http://www.cambridgema.gov/GIS/gisdatadictionary/Address/ADDRESS_MasterAddressBlocks

Source: http://www.cambridgema.gov/CDD/zoninganddevelopment/sustainablebldgs/buildingenergydisclosureordinance

Chicago: Property Index Number (PIN)

Search by 14 digit PIN:

[   ] [Clear]

8g23g2

[   ]

[Search]

---------- OR ----------

Don't know your PIN? Search by your Address

House Number [   ]   House Range [   ]

Direction [▼]   Street [   ]

City [   ]

8g23g2

[   ]

[Search]

2012 Tax Year Property Information

PIN:	17-25-105-022-0000
Address:	220 N Cleveland Ave
City:	Chicago
Township:	South Chicago
Property Classification:	5-90
Square Footage:	9,071 (Land)
NBHD:	10
Taxcode:	76015

Source: http://www.cookcountyassessor.com/default.aspx?aspxerrorpath=/Property_Search/Property_Search.aspx

New York City:
Building Identification Number (BIN)

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NYC Buildings

NYC Department of Buildings

Property Profile Overview

151 WEST 34 STREET		MANHATTAN 10001		BIN# 1015219	
7 AVENUE	441 - 459	Health Area	: 5200	Tax Block	: 810
BROADWAY	1317 - 1329	Census Tract	: 109	Tax Lot	: 1
WEST 34 STREET	105 - 173	Community Board	: 105	Condo	: NO
WEST 35 STREET	108 - 168	Buildings on Lot	: 1	Vacant	: NO
View DCP Addresses...	Browse Block				

View Zoning Documents   View Challenge Results   Pre - BIS PA   View Certificates of Occupancy

VIOLATION FOR FAILURE TO CERTIFY CORRECTION OF CLASS 1 VIOLATION EXISTS ON THIS PROPERTY - DOB CIVIL PENALTIES DUE

Cross Street(s):	BROADWAY, 7 AVENUE		
DOB Special Place Name:			
DOB Building Remarks:			
Landmark Status:		Special Status:	N/A
Local Law:	NO	Loft Law:	NO
SRO Restricted:	NO	TA Restricted:	YES
UB Restricted:	NO		
Environmental Restrictions:	N/A	Grandfathered Sign:	NO
Legal Adult Use:	NO	City Owned:	NO
Additional BINs for Building:	NONE		
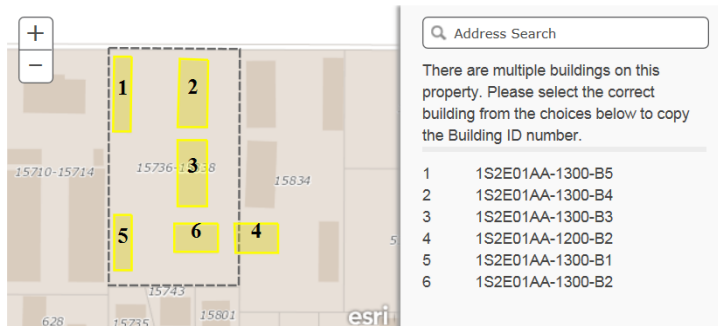
Special District: MID - MIDTOWN

ENERGY

Source: http://a810-bisweb.nyc.gov/bisweb/bispi00.jsp

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Portland: Building ID

Source: http://www.portlandoregon.gov/bps/66315
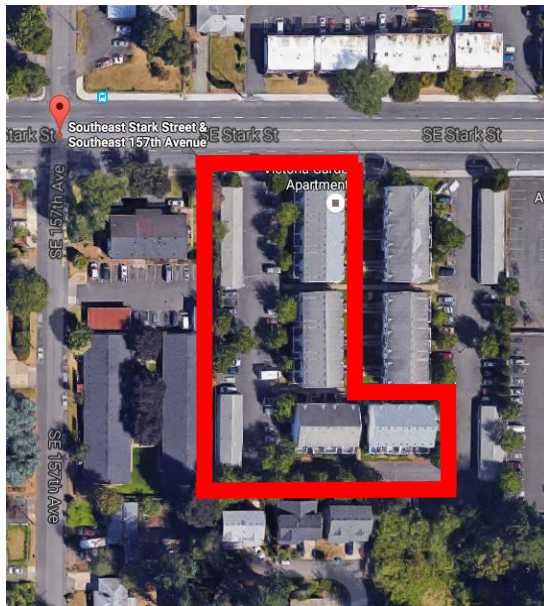
Find Your Building ID

A unique building identification number (Building ID) is assigned by the City of Portland for every building. Use this tool to find your Building ID.

1	1S2E01AA-1300-B5
2	1S2E01AA-1300-B4
3	1S2E01AA-1300-B3
4	1S2E01AA-1200-B2
5	1S2E01AA-1300-B1
6	1S2E01AA-1300-B2

There are multiple buildings on this property. Please select the correct building from the choices below to copy the Building ID number.

The Building ID, including hyphens, must be accurately entered into ENERGY STAR® Portfolio

San Francisco:
Assessor Parcel Number (APN)

Source: http://propertymap.sfplanning.org/

Washington DC: Square Suffix Lot (SSL)

Source: http://geospatial.dcgis.dc.gov/realproperty/

Census Tracts

- **Some local IDs contain GEOID.**

Area Type	GEOID Structure	Number of Digits	Example Geographic Area	Example GEOID
State	STATE	2	Texas	48
County	STATE+COUNTY	2+3=5	Harris County, TX	48201
County Subdivision	STATE+COUNTY+COUSUB	2+3+5=10	Pasadena CCD, Harris County, TX	4820192975
Places	STATE+PLACE	2+5=7	Houston, TX	4835000
Census Tract	STATE+COUNTY+TRACT	2+3+6=11	Census Tract 2231 in Harris County, TX	48201223100
Block Group	STATE+COUNTY+TRACT+BLOCK GROUP	2+3+6+1=12	Block Group 1 in Census Tract 2231 in Harris County, TX	482012231001
Block*	STATE+COUNTY+TRACT+BLOCK	2+3+6+4=15 (Note – some blocks also contain a one character suffix (A, B, C, ect.)	Block 1050 in Census Tract 2231 in Harris County, TX	482012231001050

Source: https://www.census.gov/geo/reference/geoidentifiers.html

FEMA: HAZUS

HAZUS is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes.

General Building Stock uses data from Census and other sources to make generalizations about the building inventory at the Census block and tract level.

Essential facilities are handled separately as point data.

Source:
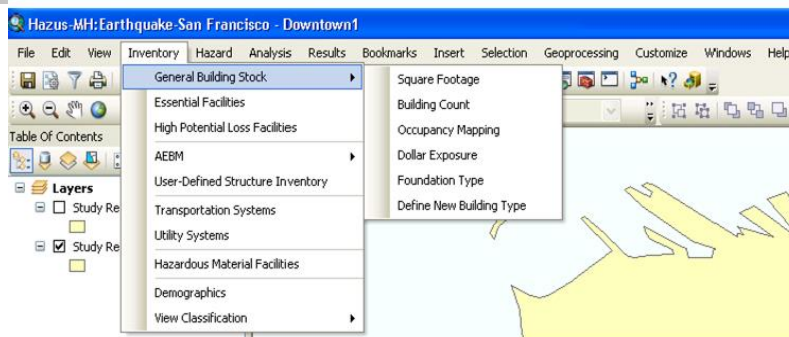https://www.fema.gov/media-library-data/20130726-1820-25045-2520/hzmh2_1_gs.pdf

FIGURE 17: HAZUS-MH INVENTORY MENU

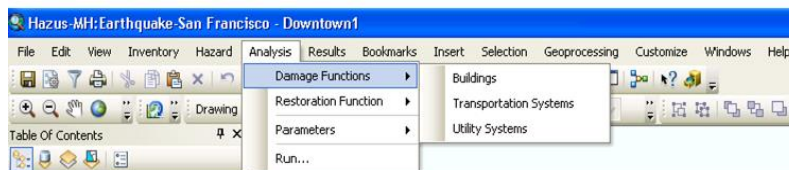FIGURE 18: HAZUS-MH HAZARD MENU

FIGURE 19: HAZUS-MH ANALYSIS MENU

Use Cases

▶ **Emergency response**
- ■ Search building info and locate buildings
- ■ Estimate impact of disasters

▶ **City services**
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▶ **Utilities and energy management**
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▶ **Commercial real estate and insurance**
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Project Plan

APPROACH AND TIMELINE

Literature Research and Interviews.

- Investigate the existing building identification systems developed and implemented in different cities.

- Explore what data are associated with these local IDs and how they are managed.

- Interview city agencies and interested building stakeholders to develop use cases and implementation strategies.

Concluding Workshop. Organize a workshop—tentatively in D.C.—to present the outcomes and collect feedback.

Pilot. Upon agreement on the proposed framework, pilot the designed identification system with select cities, counties, and states through the Standard Energy Efficiency Data (SEED) Platform Collaborative.

Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017

Working Group Discussions. Form a steering committee and a working group to guide and facilitate the scoping study. Organize regular conference calls to discuss topics, such as main drivers behind data collection and exchange, limitations of current identification systems, current and future needs, and technical requirements for a new identification system.

Research Report.

Steering Committee

Jayson Antonoff, Institute for Market Transformation

Steven Bushby, National Institute of Standards and Technology

Marshall Duer-Balkind, D.C. Department of Energy and Environment

Mike Greene, Google

Barry Hooper, San Francisco Department of the Environment

Cindy Jacobs, Environmental Protection Agency

Ross MacWhinney, NYC Mayor's Office of Sustainability

Megan O'Neil, Atlanta Mayor's Office of Sustainability

Ulrich Scharf, Global Real Estate Sustainability Benchmark

Bert Van Hoof, Microsoft

Laith Younis, California Energy Commission

Research Questions

- How to define a building? What built structure should be included?

- How to implemet the UBID?

- How to leverage the existing city IDs and scale up to the national level?

- How much information can/should the UBID reveal? public vs. private information; time scale; horizontal vs. vertical growth.

Join Our Working Group

▶ Receive the meeting minutes/progress/status

▶ Help answer questions via emails/phone calls

▶ Attend the concluding workshop (tentatively at Better Buildings Summit, May 2017 in D.C.)

▶ Comment on the draft white paper

Just email us (buildingID@pnnl.gov**) your contact and indicate your interest**

Thank you!

We'd like to hear your comment/suggestion on

- Use cases

- Interested parties/individuals

- Research questions

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