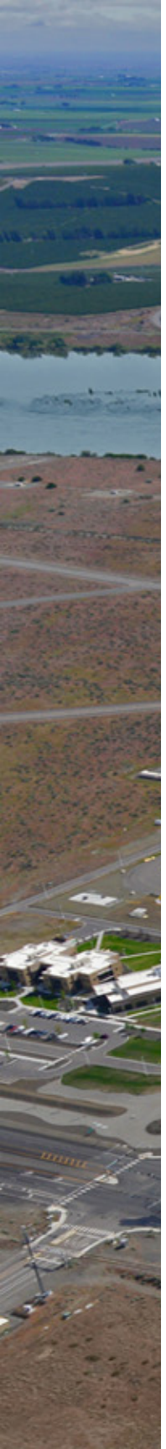

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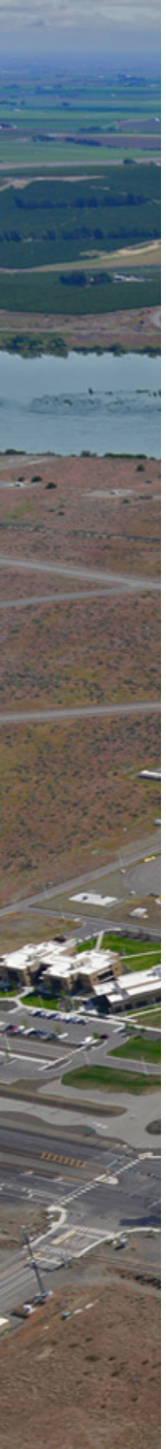
Integration of UBID with Portfolio Manager

Nora Wang, Kevin Keene

U.S. DEPARTMENT OF ENERGY BATTELLE

PNNL is operated by Battelle for the U.S. Department of Energy



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What Standard IDs are in Portfolio Manager?

A Standard ID is a special type of Property ID with a set name. These IDs are associated with local legislation, national campaigns, or other large benchmarking activities. To enter a Standard ID, select the ID name from the dropdown list and enter your value. These are open fields with no formatting, so please be careful when entering.

This is the list of Standard IDs in Portfolio Manager:

- **Atlanta Building ID (ABID)** – A unique six-digit code assigned by the City of Atlanta that identifies all properties required to report annual energy performance to the City of Atlanta per the Atlanta Commercial Buildings Energy Efficiency Ordinance. When there are multiple buildings on a single parcel, the ABID is the property ID plus an underscore ("_") and letter to denote each building (e.g. 012345_a).
- **Austin Building ID** - A unique number assigned by the City of Austin that is based on the Property ID (TCAD or WCAD ID) with an added suffix at the end to identify the multiple buildings associated with one property.
- **Austin Property ID** - A County code that identifies owned properties such as Real Estate Properties and Business Personal properties by Account Number, Owner's Name or Property Address, the County's centralized real property database. Based on the property's county location, the property ID will consist of a Travis Central Appraisal District ID (TCAD ID) or Williamson Central Appraisal District (WCAD ID).
- **Berkeley Building ID** - A number that uniquely identifies buildings required to report energy data under Berkeley's Building Energy Saving Ordinance (BESO).
- **Boulder Energy Reporting ID** - A number that uniquely identifies buildings or groups of buildings required to report energy performance under Boulder's Building Performance Ordinance.
- **BOMA BESt Building ID** - A unique number assigned to each building pursuing BOMA BESt certification. In the case of a complex, each building is assigned its own unique BOMA BESt Building ID.
- **Boston Energy Reporting ID** - A number that uniquely identifies buildings or parcels required to report energy performance under Boston's Building Energy Reporting and Disclosure Ordinance.
- **California Building ID** - A number that uniquely identifies buildings required to report energy data under California AB 802 – Building Energy Use Benchmarking and Public Disclosure.
- **Cambridge Building Energy Reporting ID** - A number that uniquely identifies buildings required to report energy performance under Cambridge's Building Energy Use and Disclosure Ordinance.
- **Chicago Energy Benchmarking ID** - A unique identification number assigned by the City of Chicago to identify buildings that are required to report benchmarking information, as prescribed by Chicago's Building Energy Use Benchmarking Ordinance (Municipal Code of Chicago, Chapter 18-14).
- **CoStar Property ID** - A unique number assigned to each building in CoStar. CoStar is a resource for verified commercial real estate information, including space for lease, property for sale, property and market analytics, and quarterly market reports.
- **Denver Benchmarking Building ID** - A 4-digit number used exclusively for the internal purposes of the City and County of Denver to uniquely identify every individual building that is required to comply with the City's ordinance.
- **District of Columbia Building Unique ID** - The code established by the District Department of the Environment (DDOE) for unique building identification, derived from the District Office of Tax and Revenue's Computer Assisted Mass Appraisal (CAMA) database, and published by DDOE. When there is a one-to-one match between building and tax lot, this is the property's Square Suffix Lot (SSL) or Parcel number. For condominium buildings, this is the Square Suffix + Regime number. When there are multiple buildings on a site, this is the unique site identifier plus a letter code for each building.
- **District of Columbia Real Property Unique ID** - The District of Columbia Government code for real property identification, as determined by the District Office of Tax and Revenue and housed in the Computer Assisted Mass Appraisal (CAMA) database, the District's centralized real property database. For most properties, this is the property's Square Suffix Lot (SSL) or Parcel number. For condominium buildings, this is the Square Suffix + Regime number.
- **Evanston Building ID** - A unique identification number assigned by the City of Evanston, IL to identify buildings that are required to report benchmarking information, as prescribed by Evanston's Energy and Water Benchmarking Ordinance (33-O-16 Title 4 Chapter 22 of the Evanston Municipal Code).
- **Green Globes CIEB Project ID** - A unique number used to identify every building registered for Green Globes for Continual Improvement of Existing Buildings (GG CIEB) from the Green Building Initiative (GBI). GBI assigns the Green Globes CIEB Project ID to each building at the time of building registration in the GG CIEB online assessment module.
- **Green Globes NC Project ID** - A unique number used to identify every project registered for the Green Globes for New Construction (GG NC) assessment from the Green Building Initiative (GBI). GBI assigns the GBI New Construction Project ID to each project at the time of project registration in the GG NC online assessment module.
- **HUD Property AMP ID** - A number used by Public Housing Authorities (PHAs) that uniquely identifies properties or small groups of properties (Asset Management Projects) for the purpose of reporting to the U.S. Department of Housing and Urban Development (HUD). AMP IDs are 11 characters long, comprised of 2 letters denoting the state, 3 numbers denoting the organization, and 6 numbers denoting the property.
- **HUD Property REMS ID** - The Department of Housing and Urban Development's (HUD) Real Estate Management System (REMS) ID is a unique, numeric, 10-digit identifying number assigned by HUD to each property within HUD's multifamily portfolio.
- **Kansas City Building Reporting ID** - A unique building code assigned by the City of Kansas City Missouri that identifies buildings reporting benchmarking information per the Energy Empowerment Ordinance (No 150299).
- **LEED Canada Project ID** - A unique number to identify projects registered for Leadership in Energy and Environmental Design (LEED) recognition from the Canada Green Building Council (CaGBC). CaGBC assigns each project (building or neighborhood) this unique ID at the time of registration through the CaGBC website.
- **LEED US Project ID** - A unique number to identify projects registered for Leadership in Energy and Environmental Design (LEED) recognition from the US Green Building Council (USGBC). USGBC assigns each project (building or neighborhood) this unique ID at the time of registration in LEED Online.
- **Los Angeles Building ID** - A unique code assigned by the City of Los Angeles Department of Building and Safety to identify buildings that are required to report benchmarking information as prescribed by LA City Ordinance No. 184674.
- **Minneapolis Building ID** -The Building ID number identifies unique buildings within the Minneapolis property information and assessment database.
- **Minneapolis Property ID (PID)** - A 13 Digit unique identifier assigned by Hennepin County which can be found on your property tax or assessment statement.
- **Minnesota Cities Energy Benchmarking Collaborative ID** – An ID that uniquely identifies buildings that are required to comply with the Minnesota Cities Energy Benchmarking Collaborative.

UBIDs could be entered as "Standard ID" for some cities, or UBIDs could be a separate field(s) in addition to local ID

- **Montgomery County, MD Building ID (MBID)** -The MBID is a number that uniquely identifies buildings required to report energy performance under Montgomery County, MD's Benchmarking Law. In the common case where there is only one building on a single parcel, it is the Parcel Identification Number/Tax ID. When there are multiple buildings on a single parcel, the MBID is the Parcel Identification Number/Tax ID plus an underscore ("_") and letter to denote each building (e.g. 01234567_a). When a single building sits upon multiple parcels, all Parcel Identification Number/Tax IDs should be listed, separated by commas.
- **NYC Borough Block and Lot (BBL)** - New York City's 10-digit identifier representing a property's borough, block and lot number.
- **NYC Building Identification Number (BIN)** - A seven-digit Building Identification Number (BIN) assigned to each building in New York City, located at the top of each building's Property Profile Overview screen on the New York City Department of Buildings' Building Information System (BIS).
- **Ontario EWRB ID** - A unique identification number assigned by the Province of Ontario to identify buildings that are required to report benchmarking information according to Ontario's Reporting and Energy Consumption and Water Use regulation.
- **Orlando Building ID** - A unique identification number assigned by the City of Orlando to identify buildings that are required to report benchmarking information, as prescribed by Orlando's Building Energy and Water Efficiency Strategy (BEWES). (Municipal Code of Orlando, Chapter 15).
- **Philadelphia Building ID** - The Building ID number that identifies unique buildings within the Philadelphia property information and assessment database.
- **Pittsburgh Building Benchmarking ID** - A code assigned by the City of Pittsburgh to uniquely identify buildings that are required to report benchmarking information as prescribed by the Pittsburgh Code of Ordinances, Title VI, Article II, Chapter 626: Building Benchmarking.
- **Portland, ME Building ID** – The Building ID number that identifies unique buildings within the Portland, ME, property information and assessment database. It corresponds with the CBL number listed on property tax bills.
- **Portland, OR Building ID** – A unique code assigned by the City of Portland, Oregon that identifies all buildings required to report annual energy performance to the City of Portland per the Portland Commercial Building Energy.
- **REALPac Energy Benchmarking Program Building Name** - A unique name used to identify each building with an energy profile entered into the REALpac Energy Normalization Database. Users create their own REALpac Building Name when they save data into the Database.
- **Saint Paul Parcel ID** - A 12-digit unique identifier assigned by Ramsey County, which can be found on a property's tax or assessment statement.
- **Salt Lake City Building ID** – A number that uniquely identifies buildings or groups of buildings required to report energy data under Salt Lake City's Energy Benchmarking & Transparency Ordinance.
- **San Diego Building ID** - A number that uniquely identifies buildings required to report energy data under City of San Diego's Building Energy Benchmarking Ordinance.
- **San Francisco Building ID** - A unique building code assigned by the City of San Francisco that identifies all buildings required to report annual energy performance to the City of San Francisco per the Existing Commercial Building Energy Performance Ordinance.
- **San Jose Building ID** - A unique code assigned by the City of San Jose Environmental Services Department to identify all buildings that are required to report annual energy and water usage data, as prescribed by San Jose's Energy and Water Building Performance Ordinance (San Jose Municipal Code, Chapter 17.85)
- **Seattle Building Energy Benchmarking Reporting ID** - A unique building code assigned by the City of Seattle that identifies all buildings required to report annual energy performance to the City of Seattle per the Energy Benchmarking and Reporting ordinance.
- **South Portland, ME Energy Reporting ID** – A number that uniquely identifies buildings required to report energy and water use performance under South Portland's Benchmarking Ordinance.
- **State of Washington Unique Facilities Identifier (UFI)** - A unique number that identifies assets owned or leased by the State of Washington, in the Office of Financial Management (OFM) Facility Inventory System (FIS), which is the State of Washington's centralized real property database.
- **U.S. Agency Designated Covered Facility ID** - This is a standard ID within the US Federal Government. This ID is the agency-assigned internal covered facility identifier used in the Energy Independence and Security Act (EISA) 432 Compliance Tracking System (CTS). This identifier provides the link between CTS and building data entered into Portfolio Manager and must be unique across the top-tier U.S. department or agency.
- **USDA Property AMAS ID** - The U.S. Department of Agriculture's (USDA) Automated Multi-Family Housing Accounting System (AMAS) ID is a unique 12-digit alpha-numeric identifier tag assigned by USDA to each multifamily housing property within USDA's portfolio.
- **U.S. Federal Real Property Unique Identifier** - The U.S. Government ID code that identifies owned, leased, or otherwise managed assets in the Federal Real Property Profile, the Federal Government's centralized real property database. In Portfolio Manager the Real Property Unique Identifier is entered by the user for individual building assets.

Process Overview

Portfolio Manager Users

1a. **Participating cities** provide $UBID_0$/UBIDs to covered building owners

Either $UBID_0$ (address point, 11-digit OLC) or UBID (if footprint available) from covered buildings list

1b. **Other users** can find their own $UBID_0$

Users search address in Google or plus.codes and find $UBID_0^*$ (10-digit OLC)

Portfolio Manager

2. UBID **City Block** (locally hosted or via API)

User confirms or draws their project UBID(s)

Microsoft footprints can be pre-loaded (optional)

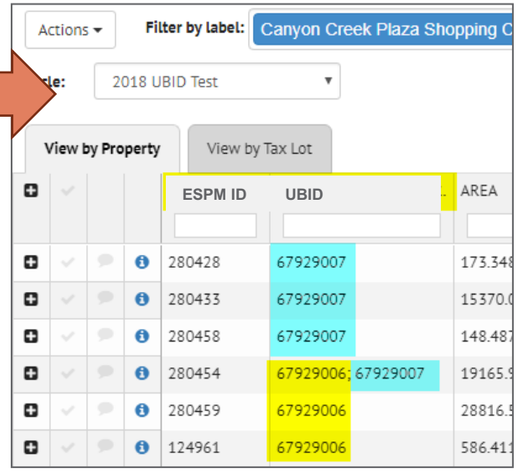
3a. PNNL algorithm detects duplicate entries

3b. Data is entered and stored in Portfolio Manager database

SEED (or city database)

4. Import benchmarking data with UBIDs

Building Footprint		Covered Parcel List		
UBID	Footprint_Area_sc	DC_Real_Property_U	Address_random	Owner_Co
87C4WXGP+W6P-22-32-31-47	214688.85207800000	3129-0801	111 MICHIGAN AVE NW	WASHINGT
87C4WXH8+QHP-42-24-28-34	185470.00958899999	2674-1933	3100 14TH ST NW	DC USA CO
87C4WXX9+262-33-30-34-18	175204.66345600001	2811-0802	4701 14TH ST NW	W
87C5W2X2+648-34-11-39-16	110935.18704000000	3788-0813	4900 PUERTO RICO AVE NE	C
87C4XX6F+Q3G-26-18-26-17	108658.35471499999	2986-0039	5929 GEORGIA AV NW	SCG 5929 G
87C4WXMX+8PQ-26-16-25-18	78414.00764110000	3821-0040	400 MICHIGAN AVE NE	NATIONAL
87C4WXP6+HX2-15-29-16-37	73343.95806980001	2624-0832; 2624-0831	3636 16TH ST NW	ROCK CREE
87C4XX9P+9PR-20-13-22-14	68381.52838580000	3368-0822	6501 - 6527 CHILLUM PL NW	MFS CHILL
87C4XXFP+G94-29-21-30-21	62925.03669260000	3359-0048	6856 EASTERN AV NW	JEMAL'S TA
87C4XX7R+67F-14-26-12-25	62348.10727570000	3379-0820	6031 KANSAS AVE NW	KANSAS AV
87C4WXJP+6MC-12-19-14-20	62274.06231910000	3129-0804	110 IRVING ST NW	WASHINGT
87C4XX9Q+F35-17-12-21-21	61575.39439820000	3368-0822	6501 - 6527 CHILLUM PL NW	MFS CHILL
87C5W2Q3+PCG-19-12-22-15	56307.54369410000	3820-0082	655 TAYLOR ST NE	MECO LLC
87C4XX6R+PG8-11-27-14-30	54014.29093870000	3379-0823	5909 BLAIR RD NW	BLAIR ROA
87C4XX9F+R9G-10-17-11-17	52175.94052830000	2974-0020	6500 PINEY BRANCH RD NW	NAI SATUR
87C4WXFH+QQ9-13-34-10-22	51288.81302390000	3057-0092	2440 6TH ST NW	HOWARD U
87C5W2W3+3M7-23-17-17-16	51126.59620670000	3894-0021	725 BUCHANAN ST NE	PROVIDEN
87C4WXGW+X92-19-22-23-18	50062.88961350000	PAR01200034	125 MICHIGAN AVE NE	TRINITY CC
87C4WXJ9+C8Q-15-18-15-17	49163.15304370000	2837-0079	1345 PARK RD NW	TIVOLI PAR
87C4WXRC+GJC-18-10-15-11	47398.79992370000	2911-0004	1291 TAYLOR ST NW	PENN B RE
87C4WXH8+9G5-11-25-16-15	46587.77715090000	2672-0888	1400 IRVING ST NW	COLUMBIA
87C5W2F4+66G-12-16-20-15	44381.73985140000	3846-0860	0806 CHANNING PL NE	JEMAL'S CH



1a. Cities Provide Suggested UBID for New Projects

→ **Address searching would be a paid service, so to work around this, cities should provide suggested UBID to get reporters close to their project in CityBlock**

New Projects

Option 1. City only has list of covered buildings with **address string or local parcel/building ID**

Option 2. City already has address, footprint, or **parcel shapefile or geolocation** for covered buildings

City matches parcel footprint, address, or building footprint (if available) using GIS tool or PNNL cross-referencing service and creates shapefile or geolocation for covered buildings

City uses City Block (locally hosted or web tool) or UBID command-line tool to produce "suggested" $UBID_0$ (for address, parcel, or unverified footprint)

Cities release covered building list with "suggested" $UBID_0$ for new projects and previously used UBIDs from existing projects

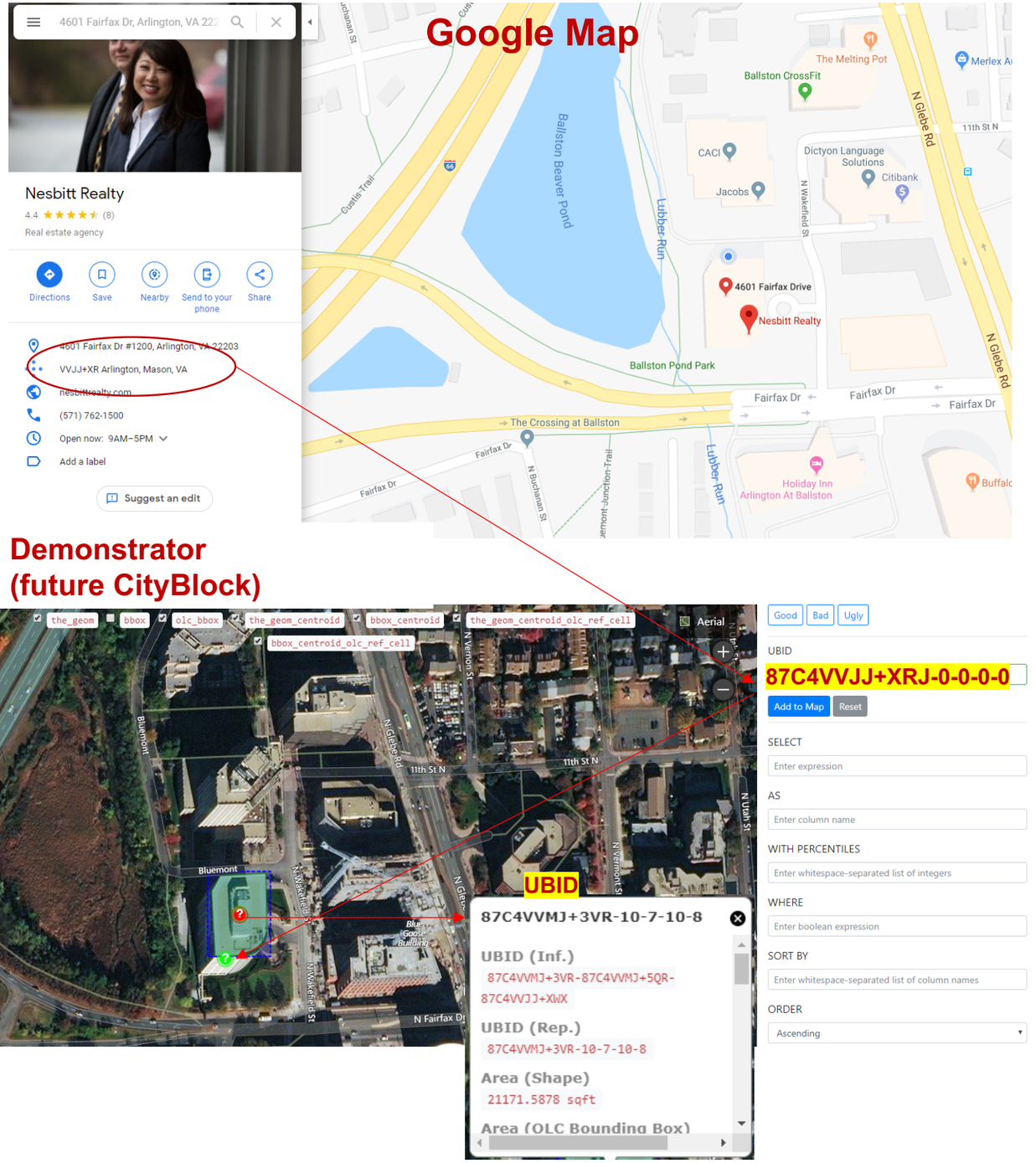
Projects that were benchmarked previously with UBIDs

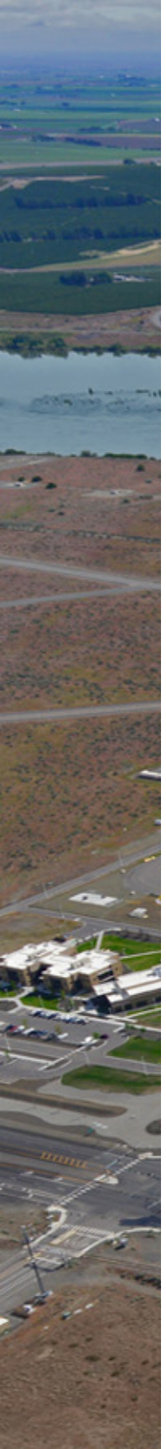
1b. Other ESPM Users

- → This is an alternative to using UBID script
- → Only recommended for one-off users since it's one-at-a-time process
- → Since Google uses 10-digit cells, accuracy is 14x14m instead of 2x3m of UBID script

Search address in Google or Plus.Codes and copy the 10-digit OLC code

CityBlock (UBID demonstrator) currently only supports 11-digit UBID format with zero extents
We can add a function to convert 10-digit OLC to 11-digit $UBID_0$ at append zero extents





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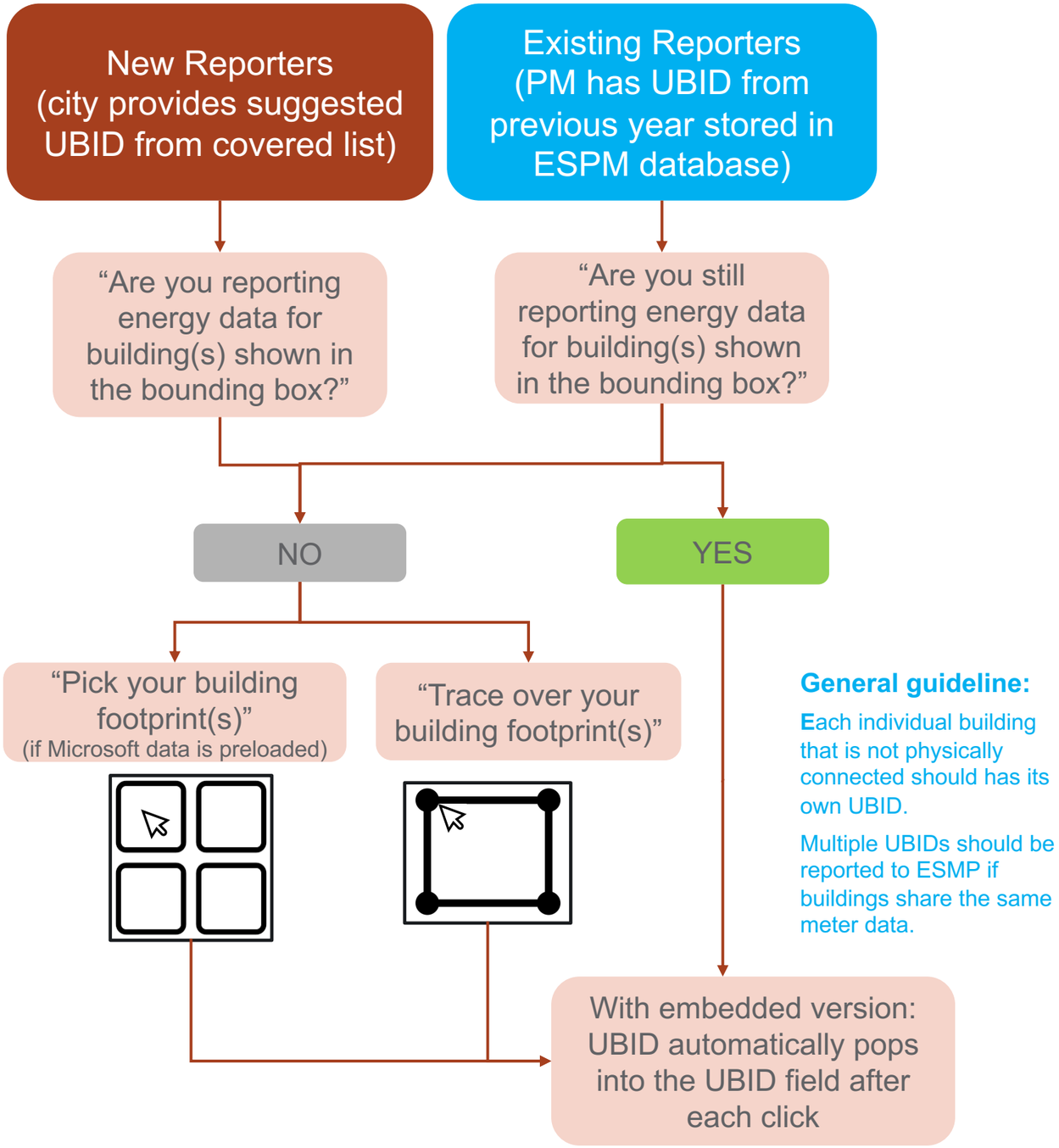
2. UBID CityBlock

- **Short-term Solution: UBID field and CityBlock URL**
  - ESPM adds UBID field and a URL to CityBlock
  - User obtains UBIDs from CityBlock and copy/paste to ESPM
- **Ideal Solution: Embedded CityBlock**
  - ESPM embeds CityBlock as a local function
- **Optional: Microsoft Footprints**
  - Pre-generated UBID from Microsoft footprints can be loaded to CityBlock (and ESPM) to give users option of selecting their footprint instead of drawing
  - This is a transitional solution for the accelerator (make note of when Microsoft footprints "expire")



3. Data Submission and Storage

3a. (optional) PNNL algorithms used for cross-checking for existing UBIDs (equivalency)

- Also can check for correct syntax, correct (general) expected location (not in wrong city/state), buildings are not too big/small, etc.

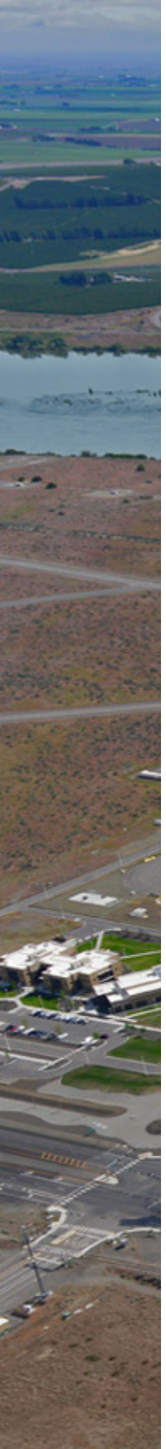
3b. Data entry style into ESPM

Option 1: Concatenated UBIDs

PMID	UBID
123456	87C4WXH8+QHP-42-24-28-34; 87C4WXH8+QHS-23-24-26-32
234567	87C4WXH9+HFT-41-20-20-32
345678	87C4WXH8+TGY-12-56-33-34; 87C4WXH8+TGZ-32-24-21-31; 87C4WXH8+THF-42-21-22-45

Option 2: Multi-field UBIDs

PMID	UBID1	UBID2	UBID3
123456	87C4WXH8+QHP-42-24-28-34	87C4WXH8+QHS-23-24-26-32	
234567	87C4WXH9+HFT-41-20-20-32		
345678	87C4WXH8+TGY-12-56-33-34	87C4WXH8+TGZ-32-24-21-31	87C4WXH8+THF-42-21-22-45



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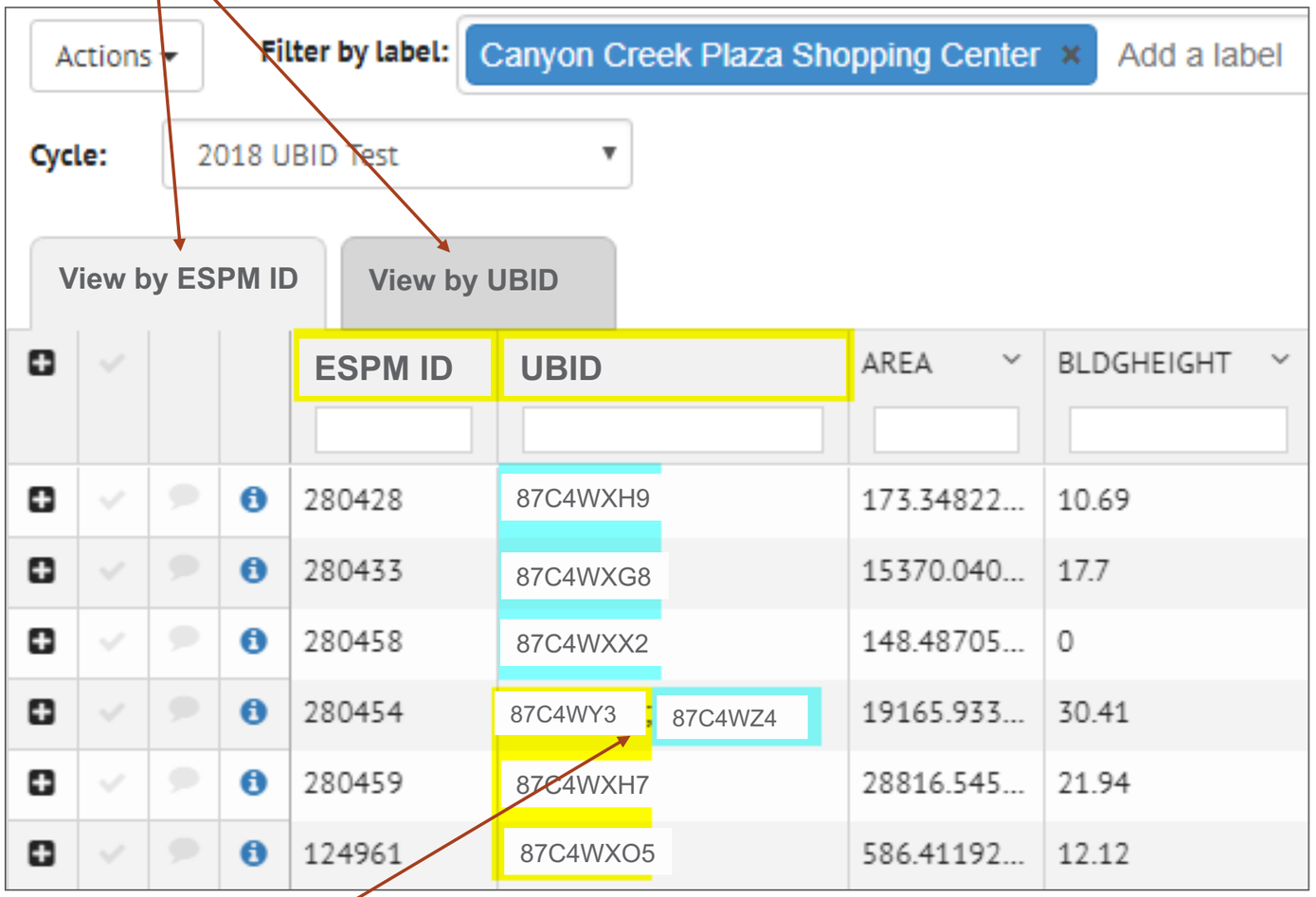
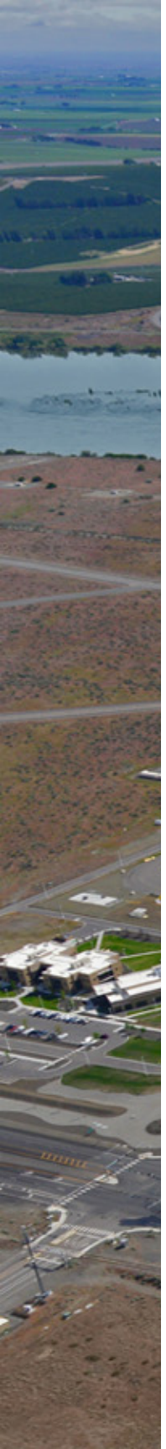
4. SEED

- SEED can sort and instantiate data by field
- With PM data you could see all the buildings associated with each benchmark entry, or sort by building and see the entry associated with each building

Two options to view

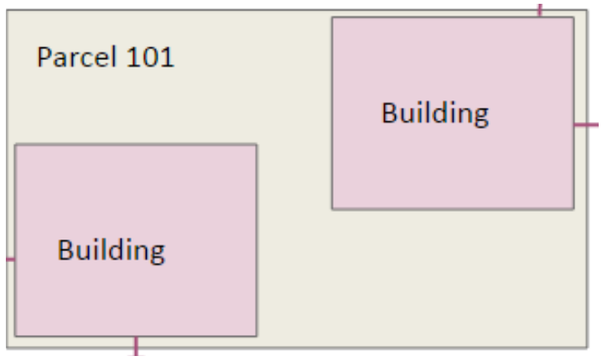


Automatically concatenates projects with multiple buildings

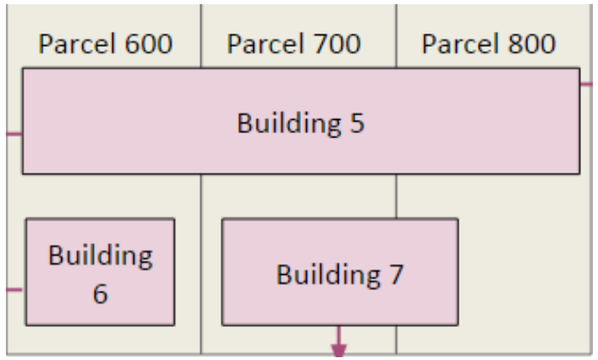


Discussion: Include Parcel UBIDs?

- All parcels and buildings for a project have UBIDs
- SEED useful for maintaining relationship between parcels, buildings, and projects (reports)
- Parcels could be pre-loaded into demonstrator since shapefiles are readily available

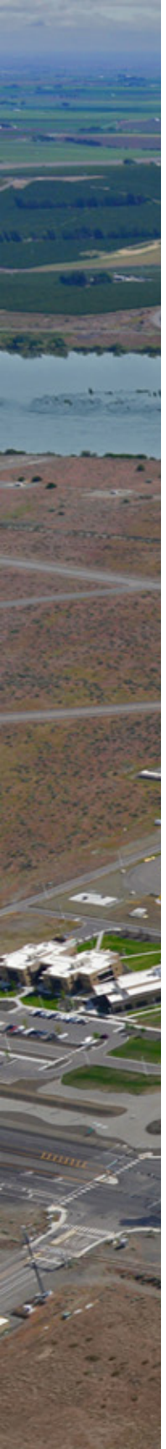


Parcel UBID: QXAYF77-6-7-9-8
Bldg 1 UBID: QXAYF77 ...
Bldg 2 UBID: QXAYF78 …



Parcel 1 UBID: QXAYG26-7-5-3-4
Bldg 1 UBID: QXAYG ...
Bldg 2 UBID: QXAYG …
Parcel 2 UBID: QXAYG27-8-5-4-4
Bldg 1 UBID: QXAYG ...
Bldg 3 UBID: QXAYG …
Parcel 3 UBID: QXAYG31-4-7-7-6
Bldg 1 UBID: QXAYG ...
Bldg 3 UBID: QXAYG …

- Pros of including parcels:
  - Cities have more parcel data than building data – useful to have users manually create relationships than computer matching
- Cons of including parcels:
  - More work for reporters, slightly more complicated
  - Parcels can change frequently



City Block Function to support ESPM integration

- Show a valid UBID or $UBID_0$ (Alert users that $UBID_0$ is the UBID) on the map (start with one map and add other maps overtime)
- Display all public UBID on the map (cities + MSFT footprint)
- Allow user to register an account for storing data (restrict the max data size per user)
- Allow user to upload footprint files (in XYZ format) to their account and create UBIDs to visualize and download
- Return a feedback file
  - Highlight duplicates
  - Highlight UBIDs smaller than 3x3
  - Highlight UBIDs with area increase (from footprint to bounding box) larger than 500%
  - Highlight UBIDs with center distance (center of mass to center of bounding box) larger than 50% of the diagonal of the bounding box
- Provide a simple but complete user guide for how to create UBID through batch upload or drawing tool