Integration of UBID with Portfolio Manager

Nora Wang, Kevin Keene
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Portfolio Manager Users

1a. Participating cities provide UBID0/UBID(s) to covered building owners

Either UBID0 (address point, 11-digit OLC) or UBID (if footprint available) from covered buildings list

1b. Other users can find their own UBID0

Users search address in Google or plus.codes and find UBID0 (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

Process Overview

Building Footprint

<table>
<thead>
<tr>
<th>UBID</th>
<th>Project Address</th>
<th>C. Ref. Property</th>
<th>Address (opt.)</th>
<th>Owner (opt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3744WNP-HWP-22-23-31-47</td>
<td>21448.8520700000</td>
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<td>4900 FISHER TICO AVE NE</td>
<td>KIRKLAND</td>
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<tr>
<td>78414.3976411000</td>
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<td>NATIONAL</td>
<td></td>
</tr>
<tr>
<td>72342.8808680000</td>
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Covered Parcel List

<table>
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<tr>
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<th>Owner (opt.)</th>
</tr>
</thead>
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<tr>
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<td>KIRKLAND</td>
</tr>
</tbody>
</table>

1. Participating cities provide UBID0/UBID(s) to covered building owners

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

3. PNNL algorithm detects duplicate entries

4. Import benchmarking data with UBID(s)
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

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

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

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

City uses City Block (locally hosted or web tool) or UBID command-line tool to produce “suggested” UBID₀ (for address, parcel, or unverified footprint)

Cities release covered building list with “suggested” UBID₀ 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 UBID₀ at append zero extents
### 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”)

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**General guideline:**
Each individual building that is not physically connected should have its own UBID.

Multiple UBIDs should be reported to ESPM if buildings share the same meter data.

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**New Reporters**
(city provides suggested UBID from covered list)

- “Are you reporting energy data for building(s) shown in the bounding box?”

**Existing Reporters**
(PM has UBID from previous year stored in ESPM database)

- “Are you still reporting energy data for building(s) shown in the bounding box?”

**With embedded version:**
UBID automatically pops into the UBID field after each click.

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**Existing Reporters**

- “Are you still reporting energy data for building(s) shown in the bounding box?”

**NO**

- “Pick your building footprint(s)” (if Microsoft data is preloaded)

**YES**

- “Trace over your building footprint(s)”

**General guideline:**
Each individual building that is not physically connected should have its own UBID.

Multiple UBIDs should be reported to ESPM if buildings share the same meter data.

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- “Are you reporting energy data for building(s) shown in the bounding box?”

**NO**

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**YES**

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**General guideline:**
Each individual building that is not physically connected should have its own UBID.

Multiple UBIDs should be reported to ESPM if buildings share the same meter data.
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.

<table>
<thead>
<tr>
<th>PMID</th>
<th>UBID1</th>
<th>UBID2</th>
<th>UBID3</th>
</tr>
</thead>
<tbody>
<tr>
<td>123456</td>
<td>87C4WXH8+QHP-42-24-28-34; 87C4WXH8+QHS-23-24-26-32</td>
<td>87C4WXH8+QHS-23-24-26-32</td>
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</tr>
<tr>
<td>234567</td>
<td>87C4WXH9+HFT-41-20-20-32</td>
<td></td>
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<tr>
<td>345678</td>
<td>87C4WXH8+TGY-12-56-33-34; 87C4WXH8+TGZ-32-24-21-31; 87C4WXH8+THF-42-21-22-45</td>
<td></td>
<td></td>
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Option 2: Multi-field UBIDs

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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**

- View by ESPM ID
- View by UBID

**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

- 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
• Show a valid UBID or UBID\textsubscript{0} (Alert users that UBID\textsubscript{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

City Block Function to support ESPM integration