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BEDA Accelerator Year 1 outcome report and Year 2 planning

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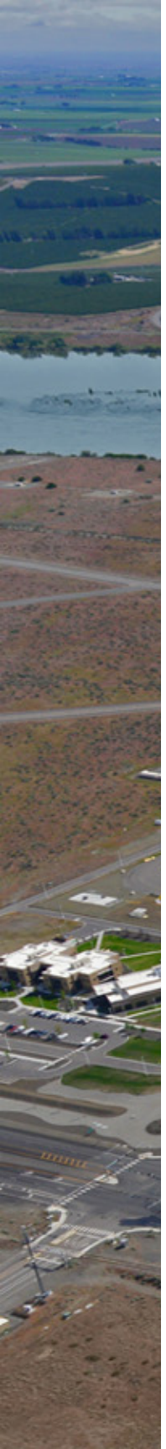

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Use Cases in FY19

- **Energy benchmarking**
  - create UBIDs for covered buildings list and track building energy use and floor area more accurately.
- **Green building certification**
  - create UBIDs for a building, a portion of a building, or a group of buildings to better document what is being certified.
- **Real estate data management**
  - add UBIDs to buildings, properties, or parcels when storing or exchanging building data for real estate transaction.
- **Smart cities**
  - Add UBIDs to multiple building databases and match building data to generate intelligence/insight about building stock for 5G, IoT, etc.
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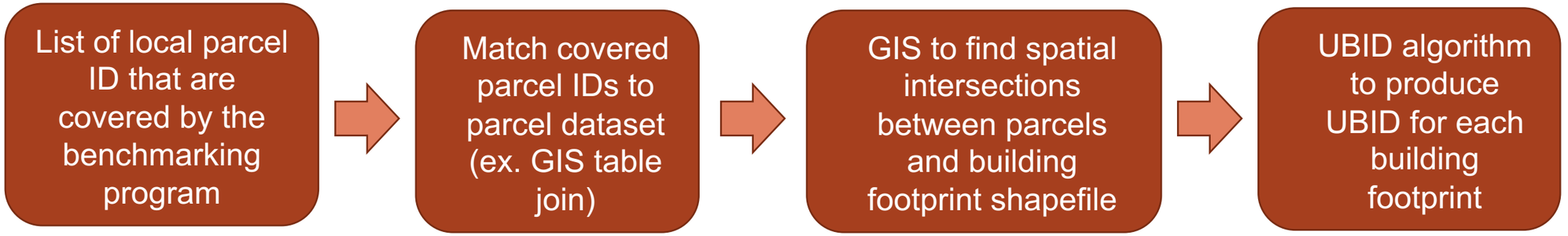
Example of Energy Benchmarking Application

- San Jose (new benchmarking program) and DC (existing benchmarking program)



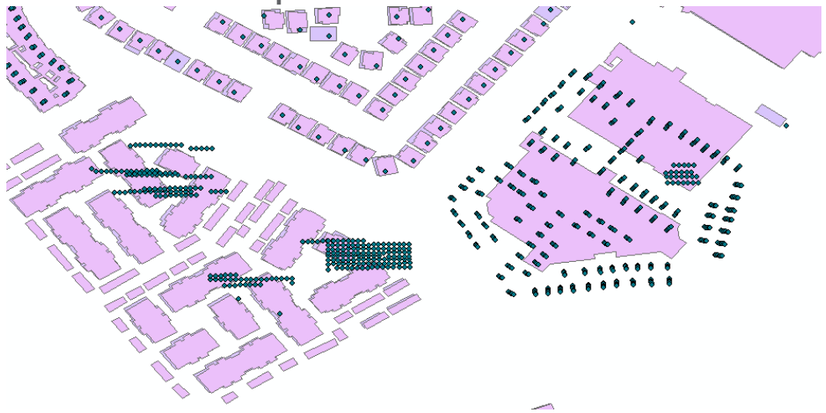
- Some complications in DC with matching covered parcel IDs to parcel data due to organization of common ownership lot and condo IDs
- Question is how to organize the UBIDs in portfolio manager for edge cases (not one meter to one building)

Example of Real Estate Application

- Ran the subset of dataset in San Jose, CA
- Purpose is to be able to assign UBIDs to real estate datasets that only have address information

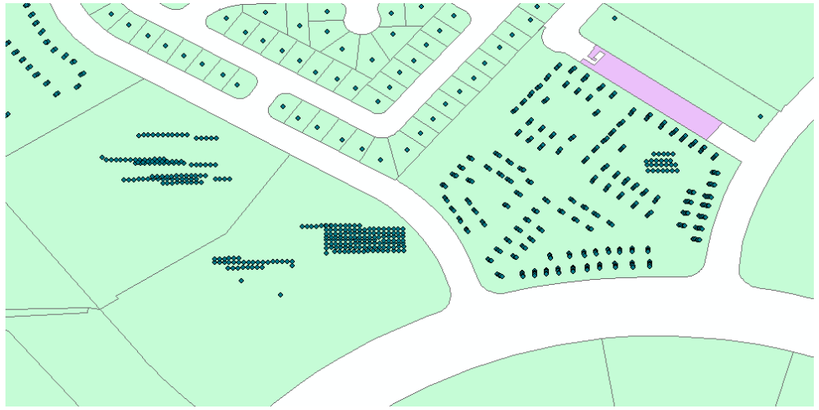
Geolocate addresses from dataset → Assign UBID to parcel and footprint data and $UBID_0$ to addresses → Conduct UBID cross-reference between the address and parcel/footprint datasets → Compare results to GIS matching (GIS not perfect but best possible)

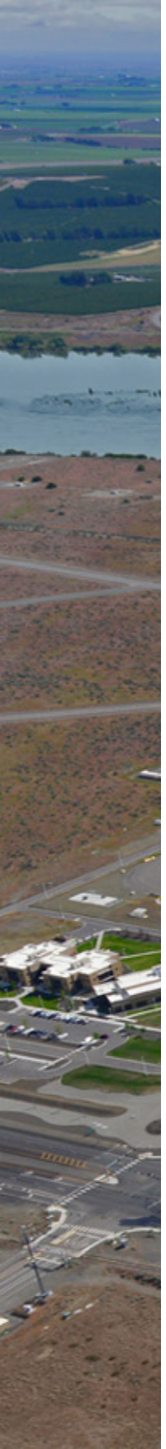
- Parcel matching (94% success) better than building (84%), but real estate data usually stored at parcel level → initiates question of “Parcel UBID”



← Addresses matching to buildings

Addresses matching to parcels →





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Released tooling

Capabilities

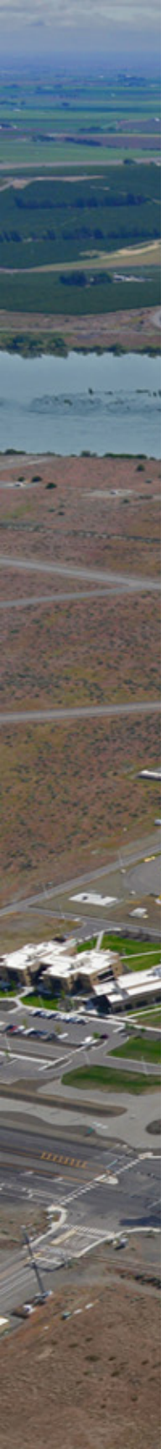
- Assign UBIDs to records in comma-separated values (CSV) and tab-separated values (TSV) files using:
  - Lat/long coords of centroid for geometry;
  - Lat/long coords of centroid for geometry and lat/long coords of minima and maxima for axis-aligned, minimum bounding box for geometry;
  - Geometries represented in well-known text (WKT) format; and
  - Geometries represented in well-known binary (WKB) format.
- Cross-reference records in UBID-assigned CSV and TSV files using a UBID-aware spatial index.

Supported programming languages

- Python (CLI and API);
- Ruby (API only);
- JavaScript (API only); and
- C# (API only).

Documentation

- Source code comments and "docstrings";
- Developer's notes; and
- Frequently asked questions (FAQs).



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Major questions from the partners

- How to assign UBIDs to a property (when multiple buildings exist)?
- How to maintain UBIDs as building stock changes?
- Who is responsible to create and maintain the UBIDs? What skillset is needed?
- How to add UBIDs to the existing tool and workflow?
- How to differentiate Unique Building ID and Unique Land/Parcel/Tax-Lot ID?