



CBECS

Commercial Buildings
Energy Consumption Survey



Westat[®]

Using Westat's Virtual Listing System to Replace Listing in the Field

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CBECS Overview


CBECS – Commercial Buildings Energy Consumption Survey



- Conducted by Energy Information Administration (EIA) of U.S. Department of Energy
- Examines current trends in energy use in commercial buildings
- Collects statistics on:
 - Building characteristics
 - Energy-related equipment
 - Quantity and costs of energy used



U.S. DEPARTMENT OF
ENERGY



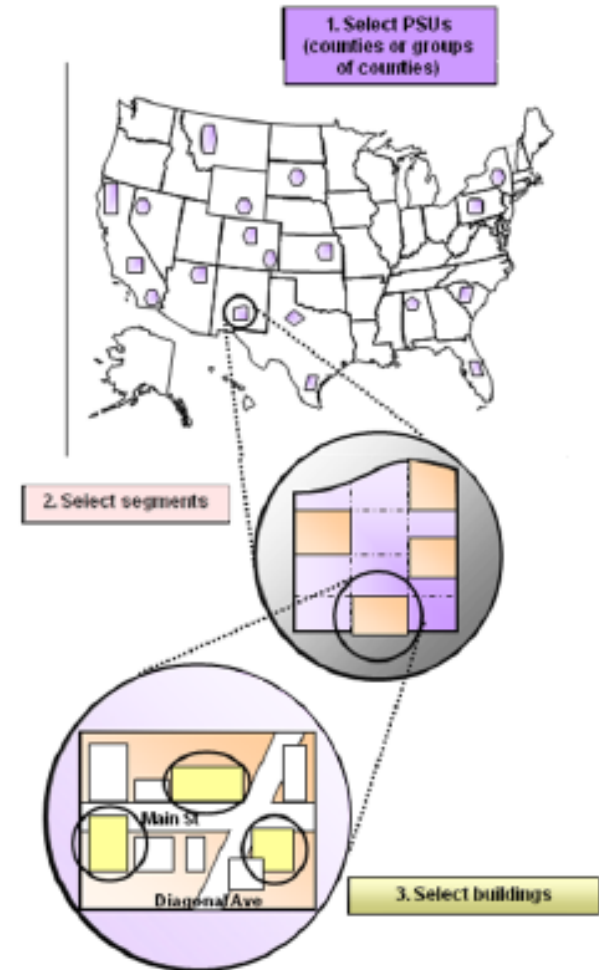
Use of Listing for Sample Frame Development

Sampling Stages

1. Identification of Primary Sampling Units (PSUs)

2. Selection of Segments

3. Selection of Buildings – requires listing!



Drawbacks to field listing

1. Expensive
2. Time-consuming
3. Data quality?



CBECs-specific listing needs

1. Principal usage of building
2. Non-visible sampling criteria – floor-to-ceiling walls, internal egresses
3. Strip malls and campuses
4. Square footage



Square footage calculations

1. Pacing
2. Measure using parking spaces
3. Measure using architectural features
4. Buildings with unusual shapes

Building square footage =
Length x width x # of floors





VIRTUAL LISTING SYSTEM - VLS

Virtual Listing System Overview

- Virtual Listing System (VLS) is a fully integrated, custom, web-based system, of observing, cataloging, and documenting CBECS eligible commercial buildings
- Developed by Westat's Geospatial Services Group
- VLS environment leverages Google Maps and includes custom enhancements

Virtual Listing System Overview

- Multiple user roles enable all work to be handled within the system
 - Lister
 - Assigner
 - Reviewer
 - Administrator

VLS Home Page

Map Frame

Filters

Tables

Lister name and user role

PSU: Segment Status: Person:

Status	Segment	In PSU	# Buildings	# Campuses	# Smalls	# Problems	Lister	% Listed
Lister Assigned	201-01	201	4	1	1	0	Emily Burkhardt	0%

Listing a Building in VLS

CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Lister ▾ Logout

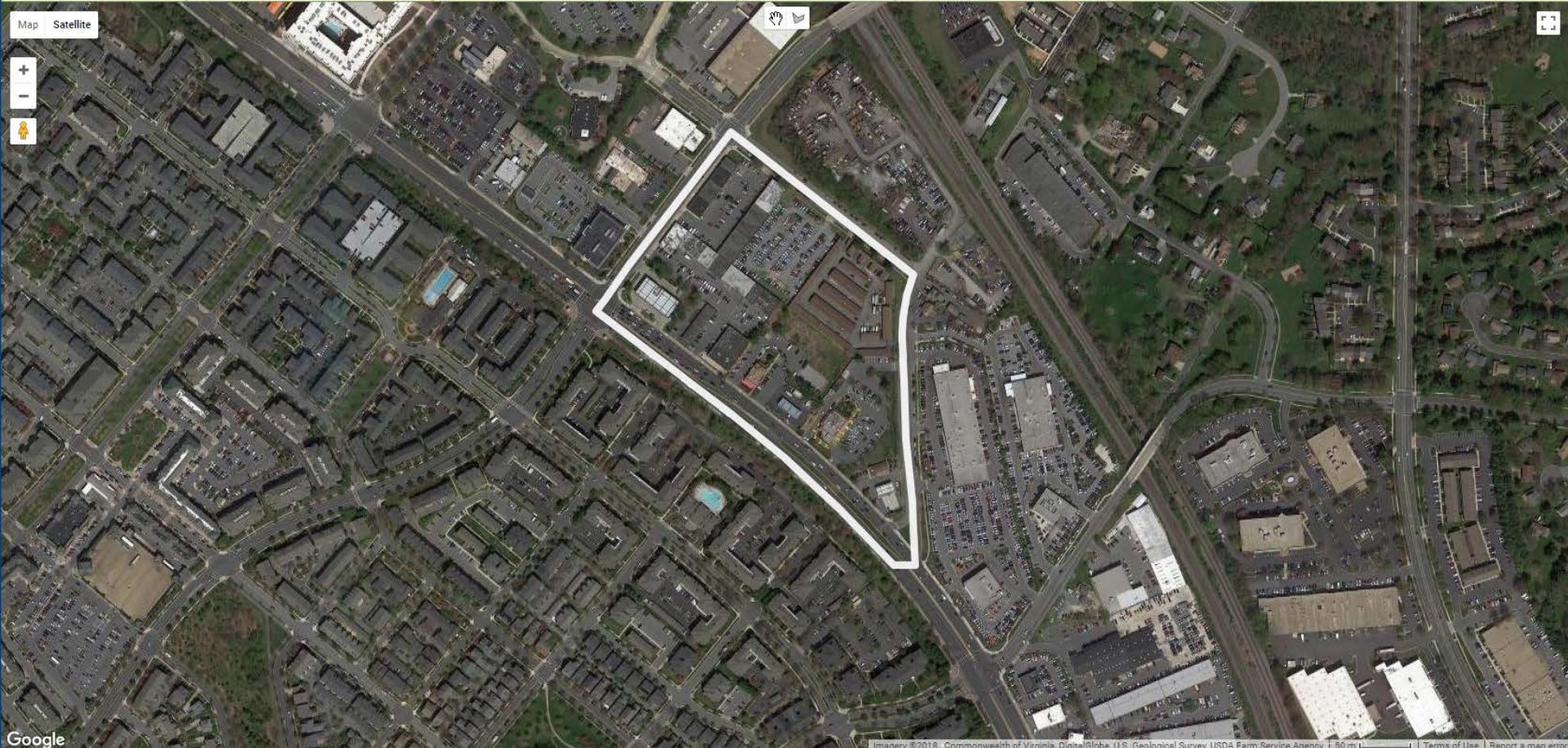
Listing Block 2001 in Tract 3 in Segment 201-01

Lister: **Michael Giangrande** Buildings Smalls Campuses Problems
Reviewer: - 0 0 0 0

Block is complete

Full ▾ Show POIs Show resolved

Map Satellite



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Listing a Building in VLS

CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Lister Logout

Listing Block 2001 in Tract 3 in Segment 201-01

Lister: **Michael Giangrande** Buildings: 0 Small: 0 Campuses: 0 Problems: 0

Reviewer: - Zoom to Block View Problems Block is complete Return to Segment

Full Show POIs Show resolved

Map data ©2018 Google Imagery ©2018 Commonwealth of Virginia, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency | 50 m

Listing a Building in VLS

CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Lister Logout

Listing Block 2001 in Tract 3 in Segment 201-01

Lister: Michael Giangrande Buildings Smalls Campuses Problems
Reviewer: - 0 0 0 0

Block is complete

Show POIs Show resolved

Map Satellite

Google

Map data © 2018 Google Imagery © 2018 Commonwealth of Virginia, U.S. Geological Survey 1.5 m Terms of Use Report a map error

Listing a Building in VLS

The screenshot displays the CBECS Virtual Listing System (VLS) interface. At the top, the title "CBECS Virtual Listing System" is followed by "© 2017 Westat". On the right side of the header, there is a "TESTING" button, the user name "Michael Giangrande", a "Lister" dropdown menu, and a "Logout" link. Below the header, the current listing is identified as "Listing Block 2001 in Tract 3 in Segment 201-01".

The interface includes a control bar with the following elements:

- Lister: Michael Giangrande
- Reviewer: -
- Buttons for "Buildings", "Smalls", "Campuses", and "Problems", each with a corresponding count (0, 0, 0, 0).
- Buttons for "Zoom to Block", "View Problems", "Block is complete", and "Return to Segment".
- Options for "Full" view and "Show P.O.I.s".
- Checkboxes for "Show resolved" and "Show P.O.I.s".

The main area is a satellite map showing a commercial district. A white outline highlights a specific building complex. A pop-up window for "7-Eleven" is displayed over the building, providing the address "15821 Frederick Rd, Derwood, MD 20855" and a link to "View on Google Maps". Other labeled points of interest on the map include "My Thyme Catering", "Dente's Boxing Gym", "Capitol Office Furniture", "A Sign Store Car Audio Rockville", "Absolute Electronix", and "Remodel USA".

At the bottom of the map, there is a "Google" logo and a small copyright notice: "Map data ©2018 Google Imagery ©2018 Commonwealth of Virginia U.S. Geological Survey 1.5 m".

Listing a Building in VLS


CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Lister Logout

Listing Block 2001 in Tract 3 in Segment 201-01

Lister: Michael Giangrande Buildings Smalls Campuses Problems
Reviewer: - Zoom to Block View Problems Block is complete Return to Segment

Full Show POIs Show resolved

MD-355
Derwood, Maryland
[View on Google Maps](#)



Huntington at King Farm Apartments
McDonald's
DARCARS Nissan Rockville

Map data ©2018 Google Terms of Use Report a map error

© 2018 Google Terms of Use Report a problem

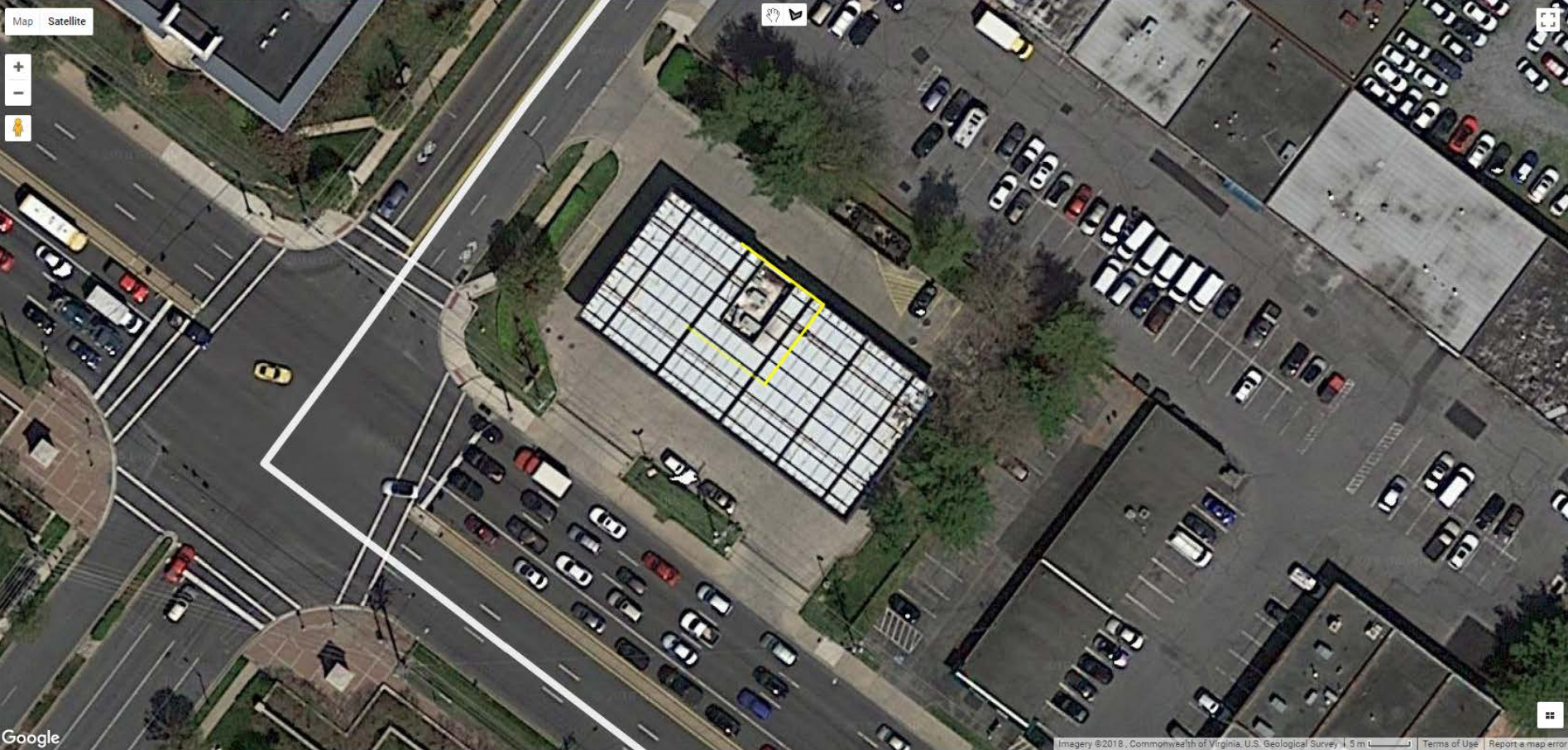
Listing a Building in VLS

CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Lister Logout

Listing Block 2001 in Tract 3 in Segment 201-01

Lister: Michael Giangrande Buildings Smalls Campuses Problems
Reviewer: - Zoom to Block View Problems Block is complete Return to Segment

0 0 0 0 Full Show POIs Show resolved



Map Satellite

Google

Imagery ©2018, Commonwealth of Virginia, U.S. Geological Survey | 5 m | Terms of Use | Report a map error

Listing a Building in VLS

CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Admin Logout

Listing Block 2001 in Tract 3 in Segment 201-01

Lister: Michael Giangrande Buildings: 1 Smalls: 0 Campuses: 0 Problems: 0

Zoom to Block View Problems Block is complete Return to Segment

Full Show POs Show resolved

Map Satellite

Building Campus

Properties of Building 24

Building Info

Name:

Number of floors:

× 2,078 sq. ft. = total sq. ft.

Building is free standing: Yes No

Floor sizes are inconsistent: Yes No

Building usage:

Addresses: [+ Add address](#)

Address	Del
Street number: # <input type="text"/>	Street name: <input type="text" value="street name"/>
City: <input type="text" value="city"/>	
State: <input type="text" value="MD"/>	Zip Code: <input type="text" value="20855"/>

Photo date: 2017-10

Notes:

Re-draw footprint | Cut out hole in footprint

Save Cancel

[Add new problem](#) Open problems: 0 | Resolved: 0

[Remove this building](#)

Listing a Building in VLS

The screenshot displays the CBECS Virtual Listing System (VLS) interface. At the top, it shows the user's name, Michael Giangrande, and their role, Admin. The main heading is "Listing Block 2001 in Tract 3 in Segment 201-01". Below this, there are several navigation and control buttons: "Zoom to Block", "View Problems", "Block is complete", and "Return to Segment". A status bar indicates the number of buildings, smalls, campuses, and problems, along with a "Full" dropdown menu and "Show POIs" and "Show resolved" checkboxes.

The central part of the interface is a satellite map showing a commercial area. A building is highlighted in yellow, and a tooltip provides its details: "7-Eleven, 15821 Frederick Rd, Derwood, MD 20855".

On the right side, there is a "Properties of Building 24" panel. It includes a "Building Info" section with the following details:

- Name: 7-Eleven
- Number of floors: 1
- Area: 2,078 sq. ft. = 2,078 total sq. ft.
- Building is free standing: Yes No
- Floor sizes are inconsistent: Yes No
- Building usage: 10. Food Sales (grocery, convenience, liquor, seafood, butcher)
- Addresses: + Add address
- Address: 15821 Frederick Rd, Derwood, MD 20855
- Photo date: 2017-10
- Notes: optional building notes

At the bottom of the panel, there are buttons for "Save" and "Cancel", and a status bar showing "Add new problem" and "Remove this building" options.

Listing a Building in VLS

The screenshot displays the CBECS Virtual Listing System (VLS) interface. At the top, the header includes the system name, copyright information, a 'TESTING' status, and the user's name 'Michael Giangrande' with 'Admin' privileges and a 'Logout' option. Below the header, the current listing is identified as 'Listing Block 2001 in Tract 3 in Segment 201-01'. The interface shows a lister 'Michael Giangrande' and a reviewer '-'. A navigation bar contains buttons for 'Zoom to Block', 'View Problems', 'Block is complete', and 'Return to Segment'. A status bar shows counts for 'Buildings' (1), 'Smalls' (0), 'Campuses' (0), and 'Problems' (0), along with a 'Full' dropdown and checkboxes for 'Show POIs' and 'Show resolved'. The main area features a satellite map of a commercial district with a 7-Eleven building highlighted in yellow. A tooltip for the 7-Eleven provides its address: 15821 Frederick Rd, Derwood, MD 20855. On the right, a 'Properties of Building 24' form is open. The 'Building Info' section includes a red circle around the 'Number of floors: 1' and '2,078 sq. ft. = 2,078 total sq. ft.' fields. Other fields include 'Building usage: 10. Food Sales', 'Addresses' (15821 Frederick Rd, Derwood, MD 20855), and 'Photo date: 2017-10'. The form also has 'Save' and 'Cancel' buttons, and a footer with 'Add new problem' and 'Remove this building' options.

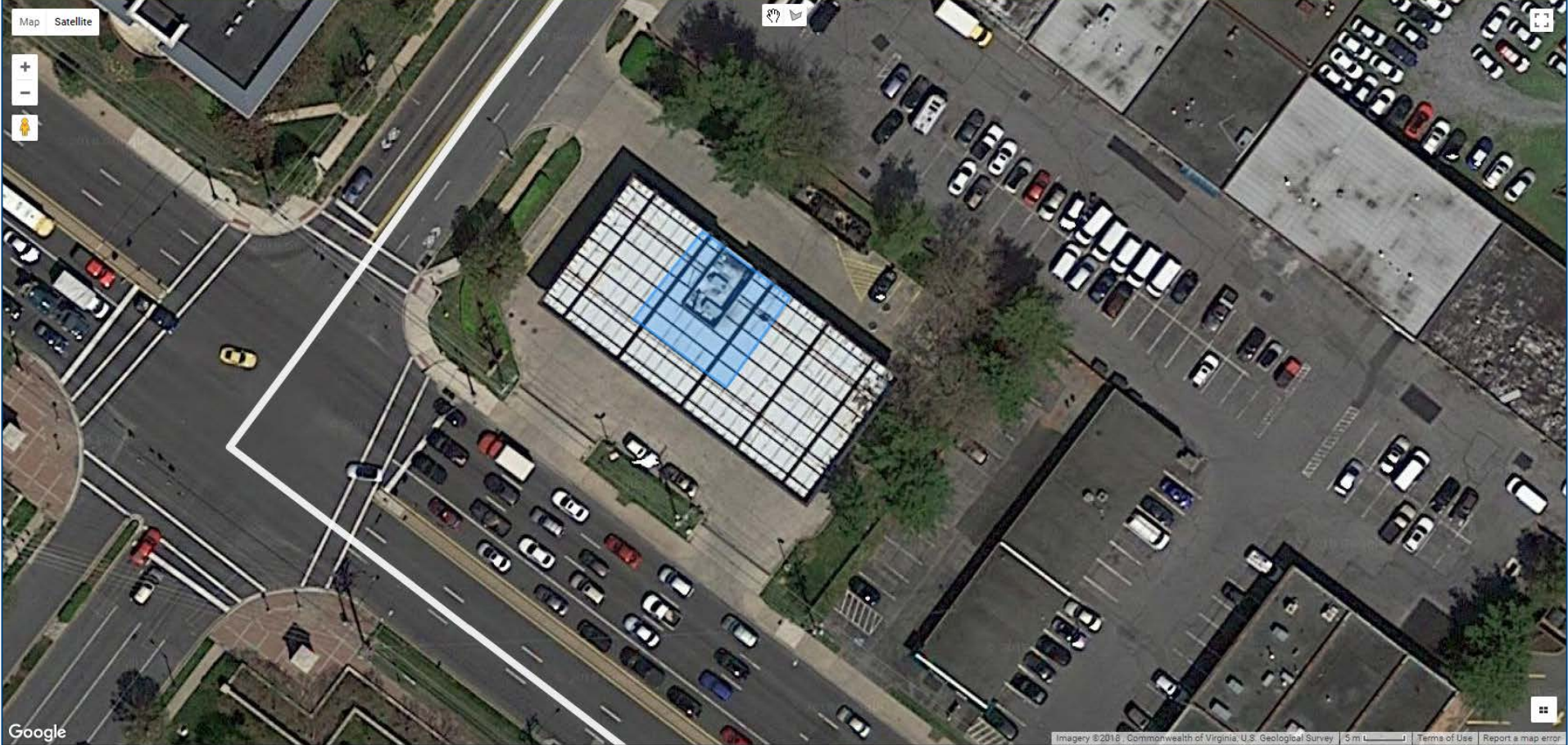
Listing a Building in VLS

CBECS Virtual Listing System © 2017 Westat TESTING Michael Giangrande Admin Logout

Listing Block 2001 in Tract 3 in Segment 201-01

Lister: Michael Giangrande Buildings Smalls Campuses Problems
Reviewer: - Zoom to Block View Problems Block is complete Return to Segment

1 0 0 0 Full Show POIs Show resolved



Map Satellite

Google

Imagery © 2018 Commonwealth of Virginia U.S. Geological Survey 5 mi Terms of Use Report a map error

Listing a Building in VLS

The screenshot displays the CBECS Virtual Listing System interface. At the top, the header reads "CBECS Virtual Listing System © 2017 Westat" on the left and "TESTING Michael Giangrande Admin Logout" on the right. Below the header, the current listing is identified as "Listing Block 2001 Tract 3 Segment 201-01". The Lister is "Michael Giangrande" and the Reviewer is "-". A red circle highlights the "Buildings" tab, which shows a count of 1. Other tabs include "Shells" (0), "Campuses" (0), and "Problems" (0). The interface includes a "Zoom to Block" button, a "View Problems" button, a "Block is complete" checkbox, and a "Return to Segment" button. The main area is a satellite map from Google showing a large building with a blue grid overlay, indicating it is the selected listing. The map includes navigation controls like zoom in (+), zoom out (-), and a person icon. At the bottom of the map, there is a scale bar for 5 miles and a "Report a map error" link.



Next Steps – Evaluation

Thank you!