



Vermont's Geographic Information System

House Committee on Ways & Means
February 15th 2023

John E. Adams
Director, Vermont Center for Geographic Information

WHAT VCGI DOES



BUILD

Foundational
Datasets



LEAD

Development and
use of Statewide
Geographic Information
System (GIS) and the
Coordination it requires



EMPOWER

Data access,
visualization and use

WHAT VCGI DOES



ELEVATION

[Learn More](#)



IMAGERY

[Learn More](#)



PARCELS/BOUNDARIES

[Learn More](#)

Example of our primary data stewardship programs.

1992



17 MB



TODAY



APPS



DATA DOWNLOAD



SERVICES

> 17 ~~MB~~ TB

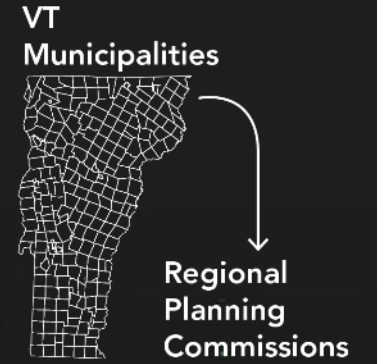
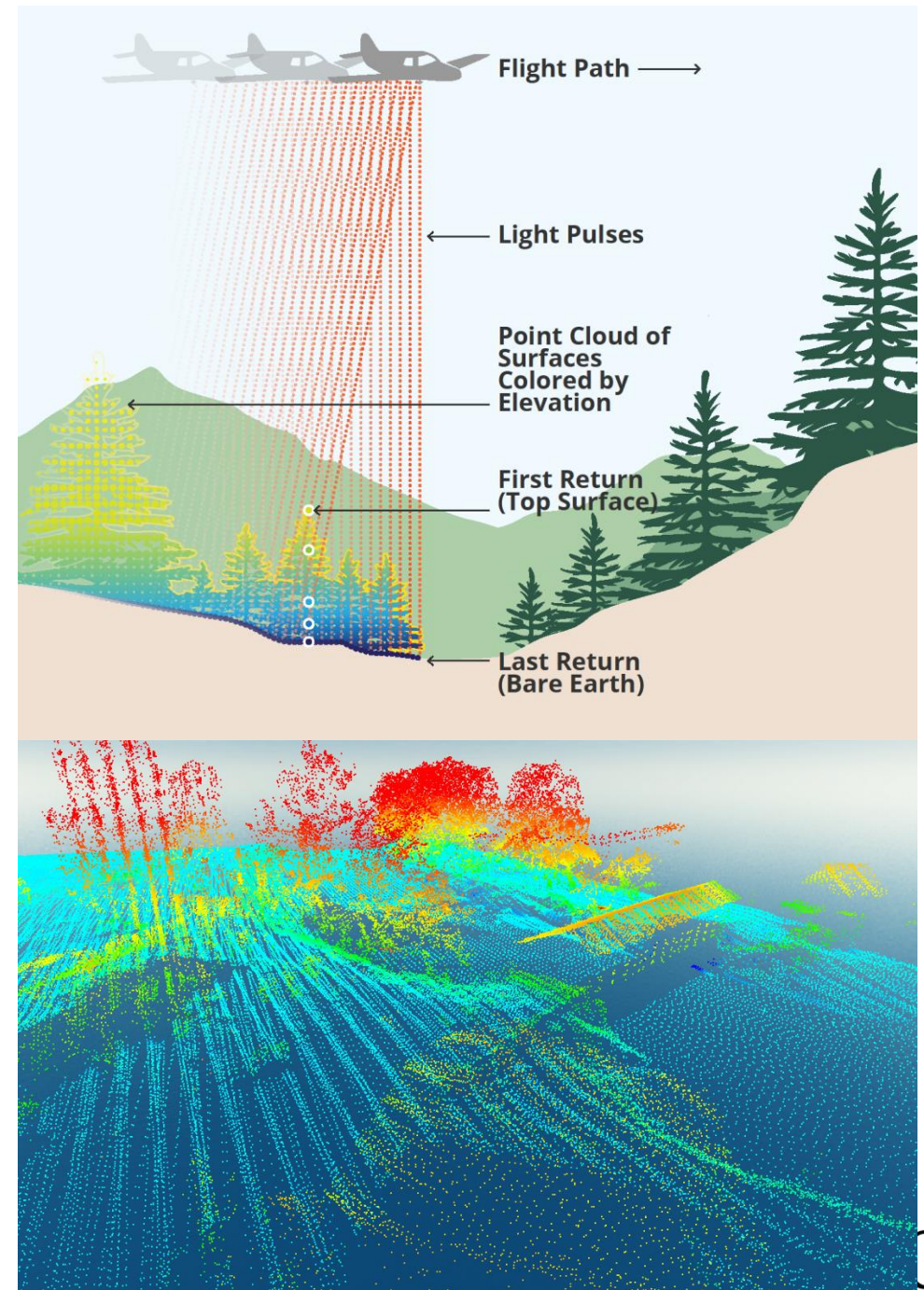


Photo Credit: Taylor Vick

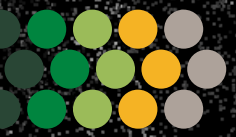
g With Needs VCGI

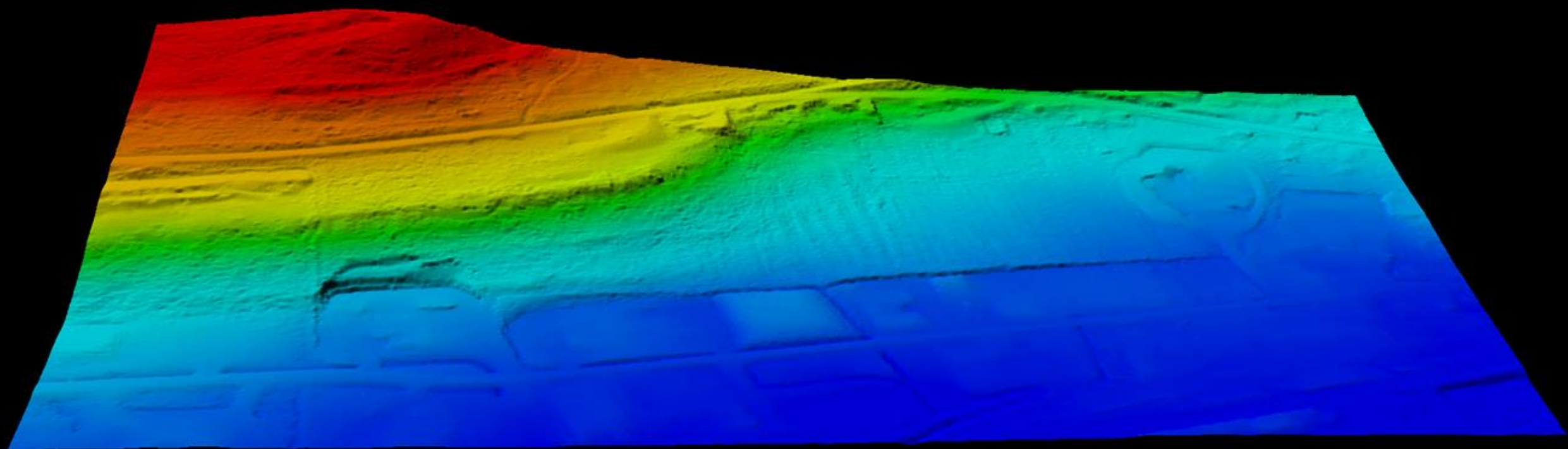
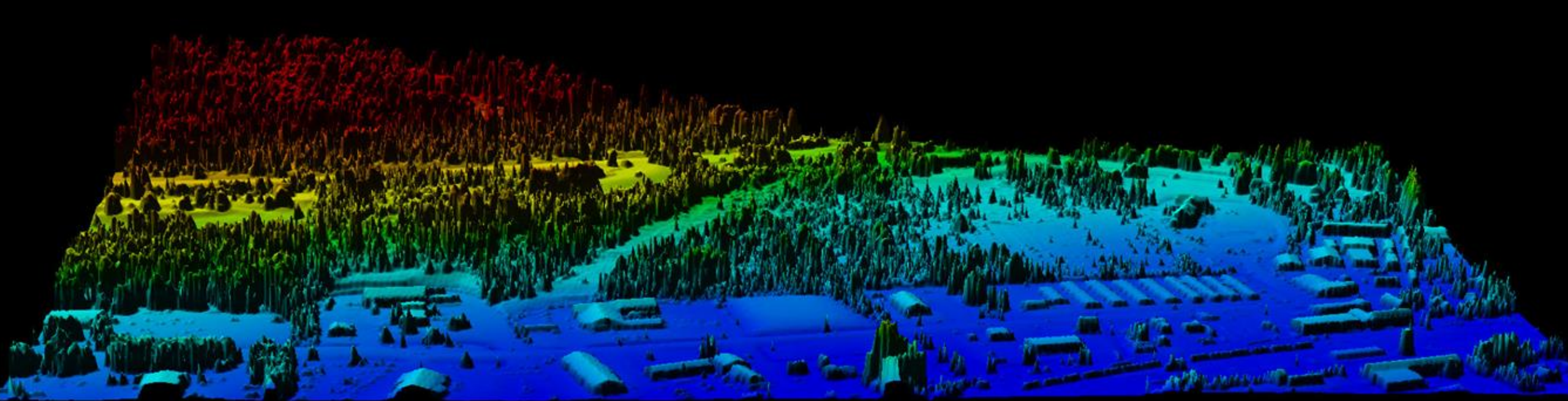
What is lidar?

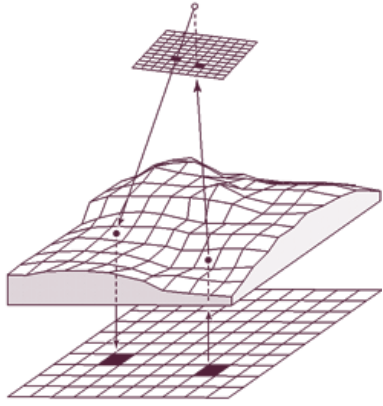
Light Detection and Ranging (lidar) is a technology used to create high-resolution models of ground and surface elevation. Lidar data are collected from aircraft using sensors that detect the reflections of a pulsed laser beam. The reflections are recorded as billions of individual points, which are processed into digital three-dimensional models of Vermont in formats readily accessible for use by state agencies, partners, and the public.



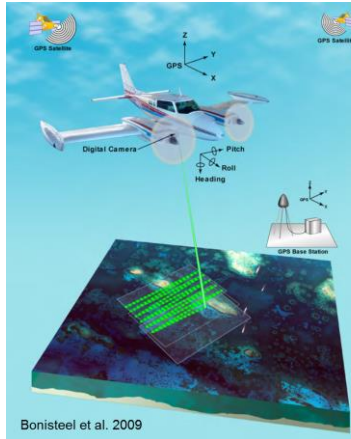
Point Clouds



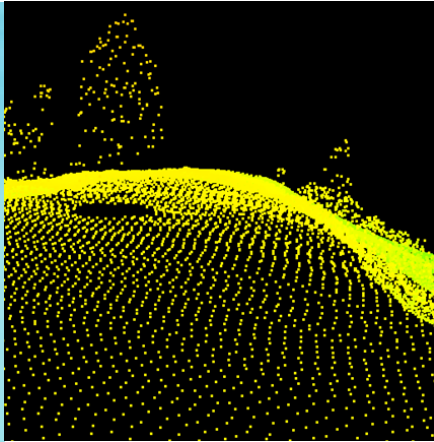




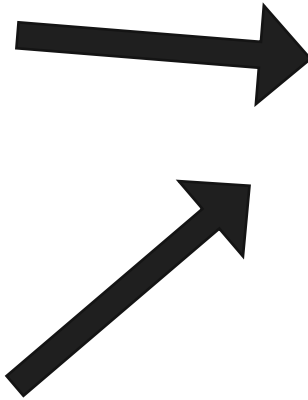
ORTHOIMAGERY



Bonisteel et al. 2009



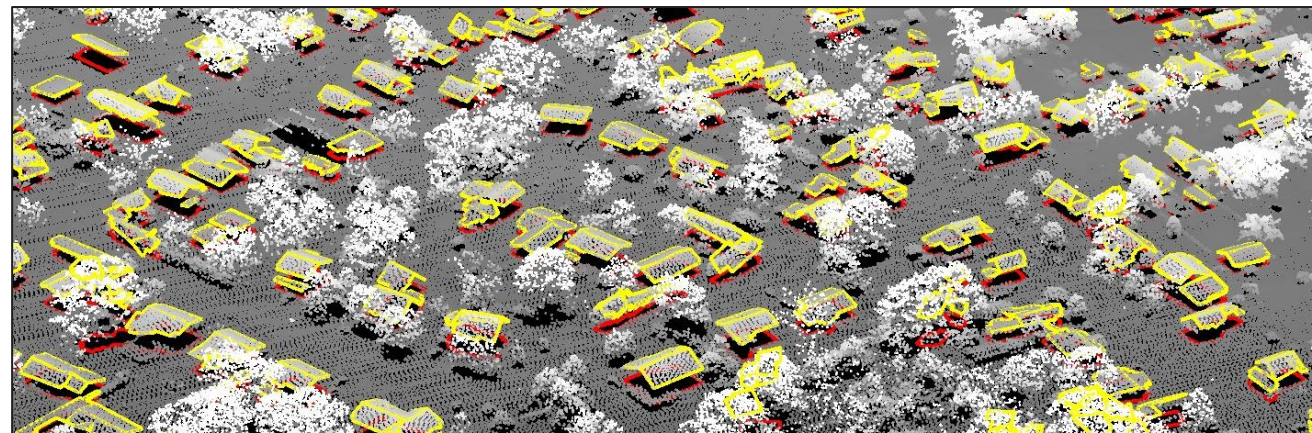
LIDAR



Land Cover

Automated Building Footprint & Roof Facet Extraction

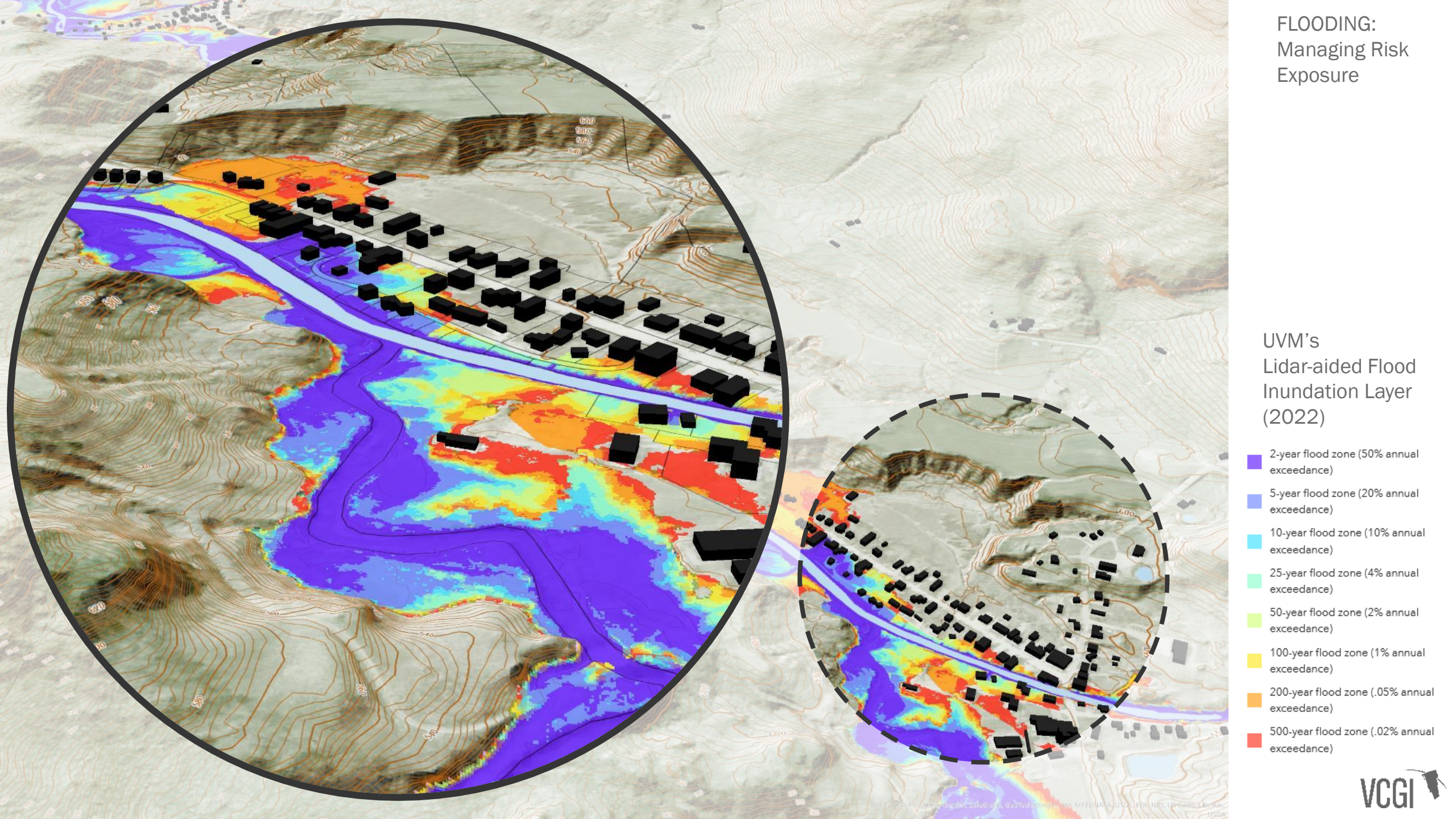
University of Vermont Spatial Analysis Lab



FLOODING: Managing Risk Exposure

UVM's Lidar-aided Flood Inundation Layer (2022)

- 2-year flood zone (50% annual exceedance)
- 5-year flood zone (20% annual exceedance)
- 10-year flood zone (10% annual exceedance)
- 25-year flood zone (4% annual exceedance)
- 50-year flood zone (2% annual exceedance)
- 100-year flood zone (1% annual exceedance)
- 200-year flood zone (.05% annual exceedance)
- 500-year flood zone (.02% annual exceedance)





Parcel Data Program

Central Vermont
Medical Center

Goldsbury Hill

West Hill

Usle Rd

Jensen Rd

Morrison Rd

Hill St

Windywood Rd

Sierra Lavin Rd

Phelps Rd

Jalbert Rd

Sunset Rd

Curtis Rd

Cutter Corner Rd

Barre
Montpelier Rd

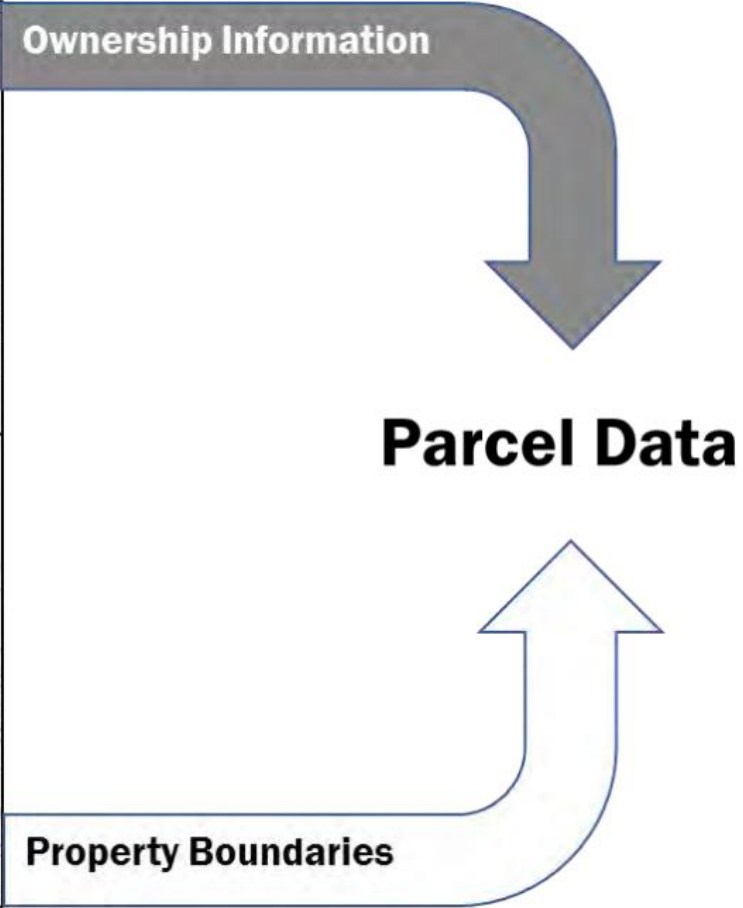
Hill St

Phelps Rd

Curtis Rd

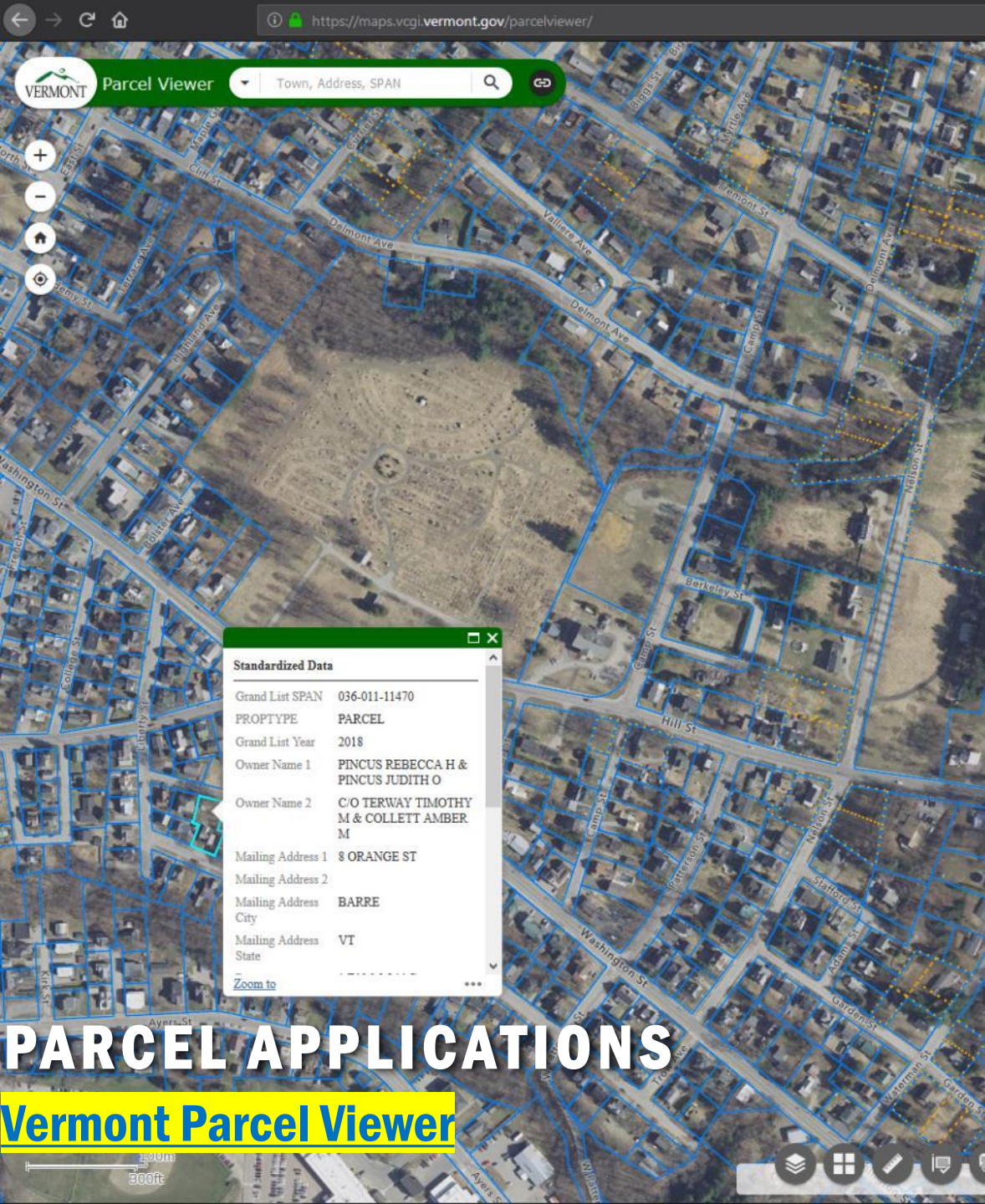


PAN	CAT	ACRES	OWNER1	OWNER2	PARCE	DESCPROP	LOCAPROP	REAL_F	HSTED
00310411	Residential-1	5.5	STATE OF VERMONT		CP111-	LAND & HOUSE			26600
00312252	Miscellaneous	0	STATE OF VERMONT		CP111-X	LOT & HOUSE			116700
400720337	Commercial	1	STATE OF VERMONT		AGENCY OF TRANSP	MN0188	1.0 AC	1.0 AC	62000
400720543	Residential-1	0.12	STATE OF VERMONT		AGENCY OF TRANSP	CMN019	0.13 AC & DWL	0.13 AC & DWL	66300
000910859	Miscellaneous	66.79	VERMONT STATE		FISH & GAME	06-0955	VL-66.79	TH 9	89200
000910860	Miscellaneous	43.89	VERMONT STATE		FISH & GAME	06-0956	VL-43.85AC	TH 9	62900
000910861	Miscellaneous	11.48	VERMONT STATE		FISH & GAME	06-0957	VL-11.48AC	TH 9	18800
000910862	Miscellaneous	33.14	VERMONT STATE		DEPT OF PARKS & RE	(01-0939	STATE CAMP PARK	TH 3	534300
000910864	Miscellaneous	2627	VERMONT STATE		FISH & GAME	07-0842	VL-2627AC	TH 26	2317700
000910896	Miscellaneous	81.83	VERMONT STATE		DEPT OF PARKS & RE	(01-0930.1	SILVER LAKE	TOWN CENTER	120640
000910898	Miscellaneous	0.11	VERMONT STATE		DEPARTMENT OF PAI	(01-0930.2	SILVER LAKE DAM	TH 3	2200
000910900	Miscellaneous	388.55	VERMONT STATE		FISH & GAME	07-0941	Exempt State	TH 26	431800
201311501	Miscellaneous	0.47	STATE OF VERMONT		ENVIRONMENTAL CC	20306007	CRYSTAL LAKE DAM SITE		32700
201311511	Miscellaneous	660	STATE OF VERMONT		AGENCY OF NATURAL	-9E+07	WILLOUGHBY SF - A-X-932		581700
201311512	Miscellaneous	0.83	STATE OF VERMONT		FISH AND WILDLIFE D	-9E+07	MAY POND ACCESS PUBLIC ACCESS		32600
201311513	Miscellaneous	1.03	STATE OF VERMONT		FISH AND WILDLIFE D	-7E+07	BAKER POND ACCESS-EAST ALBANY I		21000
201311514	Miscellaneous	107.85	STATE OF VERMONT		FISH AND WILDLIFE D	-1.2E+08	PILOT - BARTON RIVER STREAMBA		83400
201311515	Miscellaneous	27.9	STATE OF VERMONT		FISH AND WILDLIFE D	-9003003	X-941	X-941	36000
201311517	Miscellaneous	71.2	STATE OF VERMONT		FISH AND WILDLIFE D	-1.9E+07	76.18 AC (PILOT FW-X-943		29600
201311518	Miscellaneous	0	STATE OF VERMONT		AGENCY OF TRANSP	08160106	RADIO STATION PELX-945		51100
201311519	Miscellaneous	0	STATE OF VERMONT		AGENCY OF TRANSP	08160106	FREIGHT HOUSE PELX-944		141500
201311520	Miscellaneous	4.3	STATE OF VERMONT		AGENCY OF TRANSP	-8.2E+07	VTRANS BLDGS	VTRANS BLDG	511800
201311860	Miscellaneous	0.51	STATE OF VERMONT		DEPT OF FOREST PAR	-1.2E+08	.51 acres - improved boating acces		176700
801410234	Miscellaneous	14.5	STATE OF VERMONT		FOREST PARKS & REC	-4.002	14.5 ACRES		19400
801410235	Woodland	828	STATE OF VERMONT		FOREST PARKS & REC	-15	828 ACRES	TNC/KARBARR	927900



What are parcel data?

Parcel data serve as a map index of property ownership. They consists of property ownership information (Grand List) joined with mapped property boundaries.

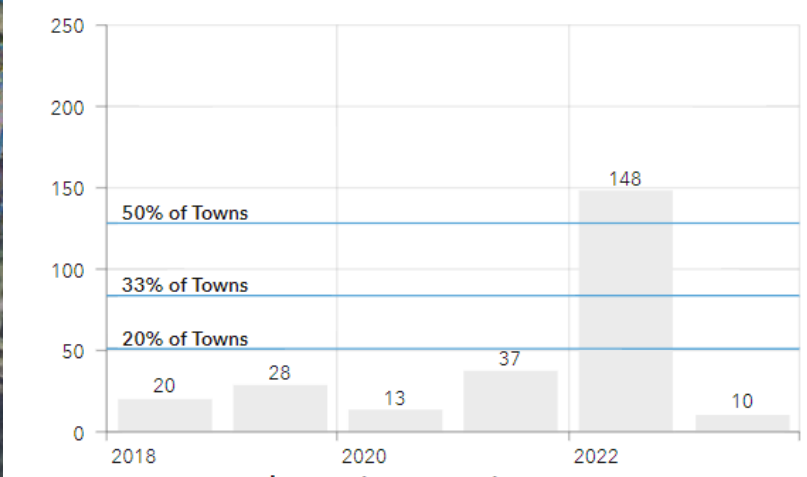


PARCEL APPLICATIONS

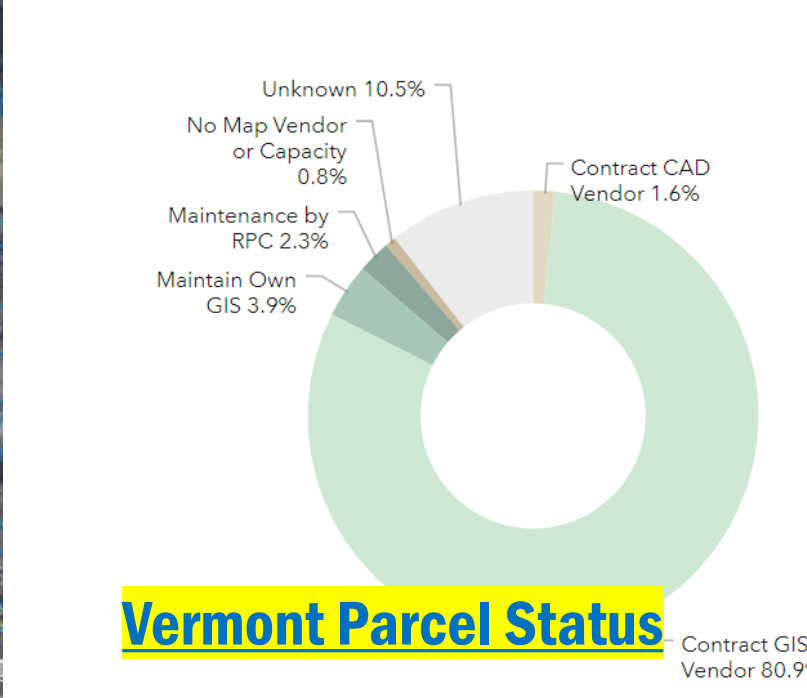
Vermont Parcel Viewer

Vermont Parcel Program Town Mapping Status

Most Recent Published Town GIS Updates by Year



Current Town Parcel Mapping Capacity



Vermont Parcel Status

Active Parcels | Most Recent Publish

338,435

Inactive Parcels | Most Recent Publish

39,902

Unmatched Active Parcels | Most Recent Publish

7,947

2.3% of Active Parcels

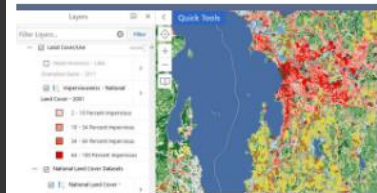
Does not include parcels marked exempt from GIS Std.

Contract GIS Vendor 80.9%

Use of Parcel Data/Tools

[Vermont Municipalities Reference Map - 8.5"x11"](#)

[Vermont Municipalities Reference Map with Hillshade - 8.5"x11"](#)



Vermont Interactive Map Viewer

Use the Vermont Interactive Map Viewer to create maps in your browser.

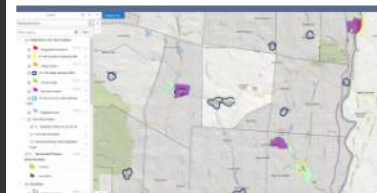
LAUNCH MAP VIEWER



ANR Atlas

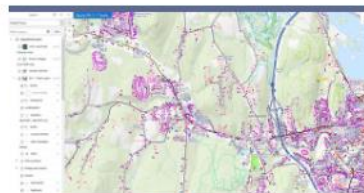
Use the Agency of Natural Resources' Atlas to create maps in your browser, with emphasis on pre-loaded layers overseen by ANR.

LAUNCH MAP VIEWER



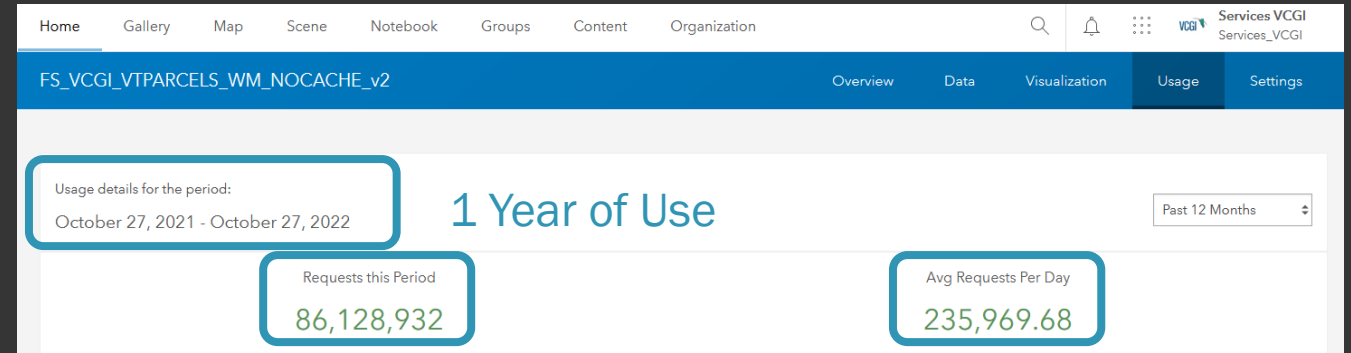
Planning Atlas

Use the Department of Housing and Community



e-9-1-1 Viewer

Use the Enhanced 9-1-1 Board's Viewer to create

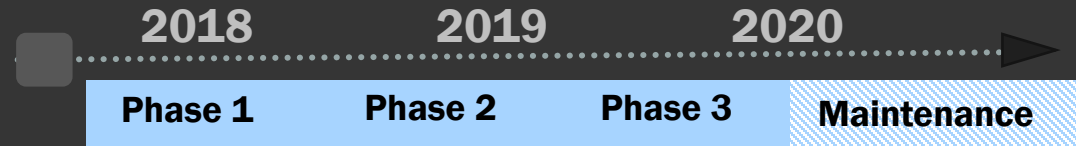


Over 86 million server requests for parcel data last year.



<https://vsgi.vermont.gov/maps>

PROGRAM STATUS



Project: Early 2018 – December 2019

Fed/State Funded, One-Time

Program: January 1, 2020 – Present

Ongoing Voluntary Participation

vcgi.vermont.gov/data-and-programs/parcel-program

Latest Publish:

338,435

Active Parcels

39,902

Inactive Parcels

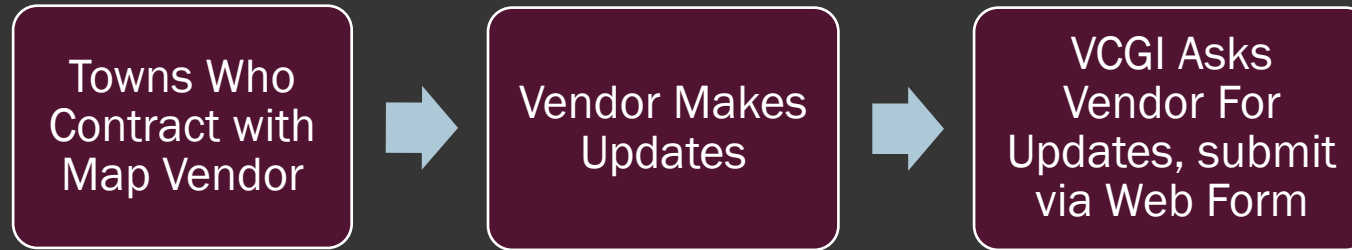
7,947

Unmatched Parcels

“Shared Responsibility Model”: How the Program Works

Type 1

217 Towns (85%)



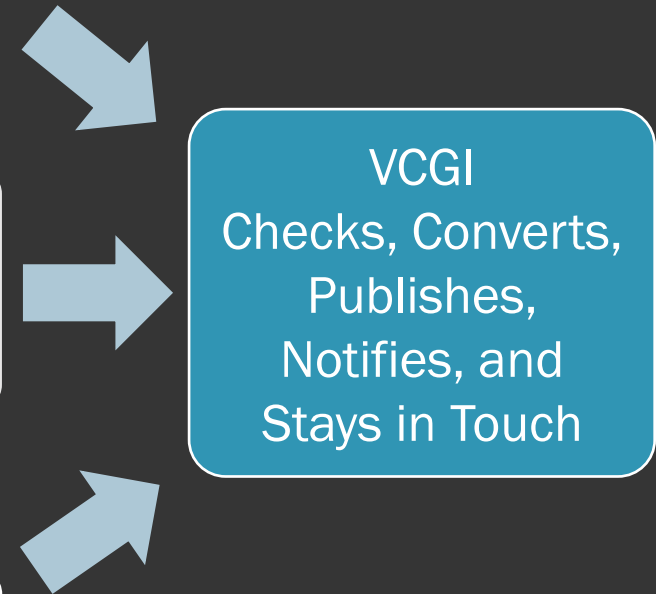
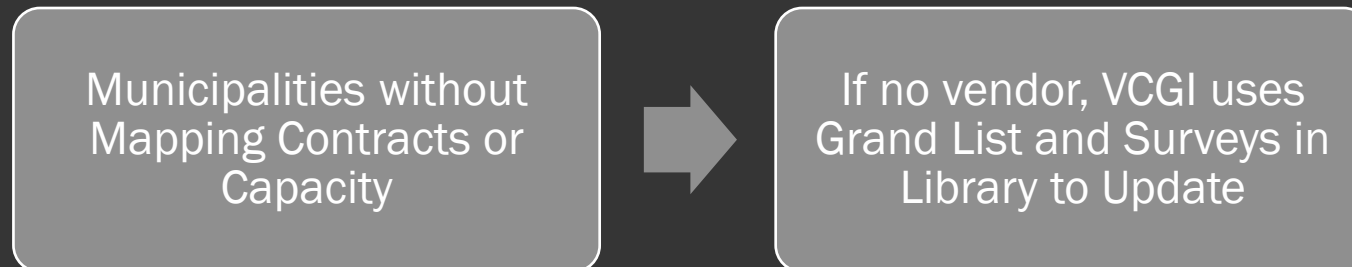
Type 2

10 Towns (4%)



Type 3

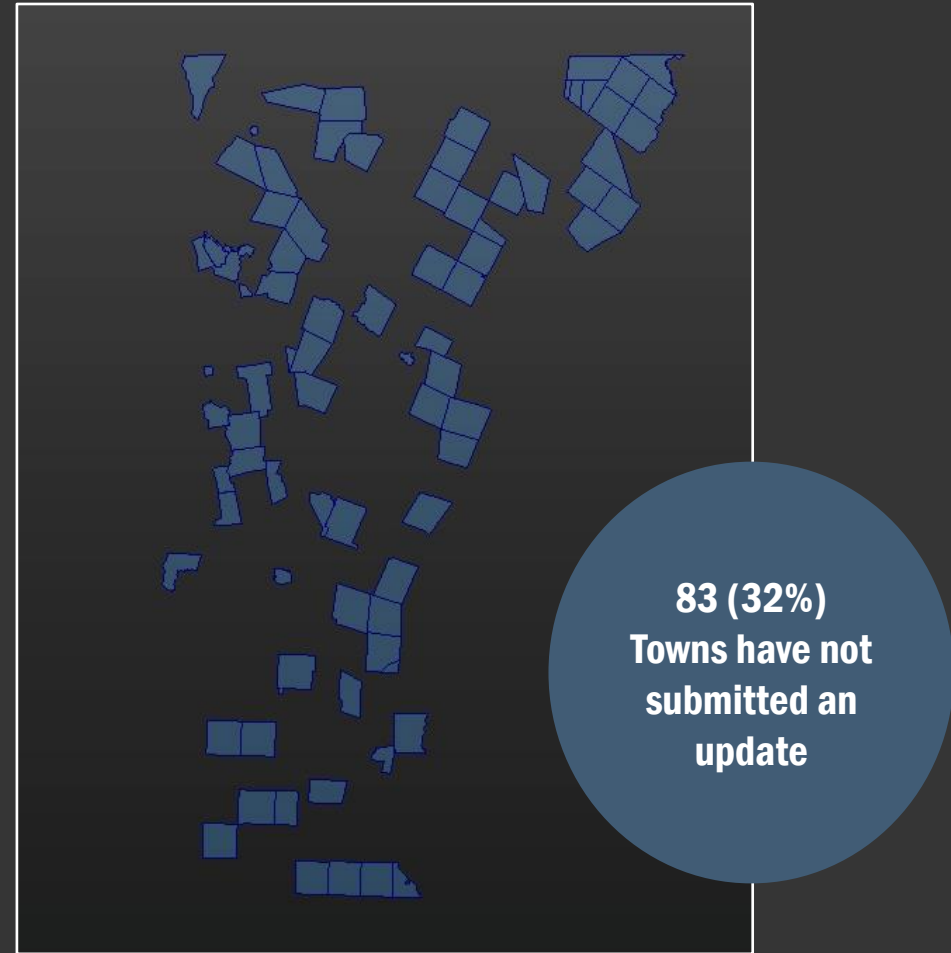
29 Towns (11%)



“Shared Responsibility Model”: How the Program Works

89% of municipalities are maintaining data themselves or with a vendor.

68% have submitted data to the program.



Data Quality Challenges

State statute defines a parcel as "all contiguous land in the same ownership, together with all improvements thereon"

(32 V.S.A. § 4152(a)(3)).



Some towns map 'Inactive' Parcels, others do not.

Data Quality Challenges

- Multipolygons
- Unmatched Parcels
- Gaps and Overlaps
- Multi-SPAN Parcels
- Unlanded Structures and Grand List
- General inconsistency in local practices
- No access to CAMA data



Outreach and Collaboration

- Pandemic hit right when we were gearing up to start the program.
- We're working on presentations, conferences, informational sessions – collaboration and networking with partners and users
- Parcel-related tools and their use are expanding. Feedback and questions from municipalities and the public help to identify errors and accommodate biggest needs.

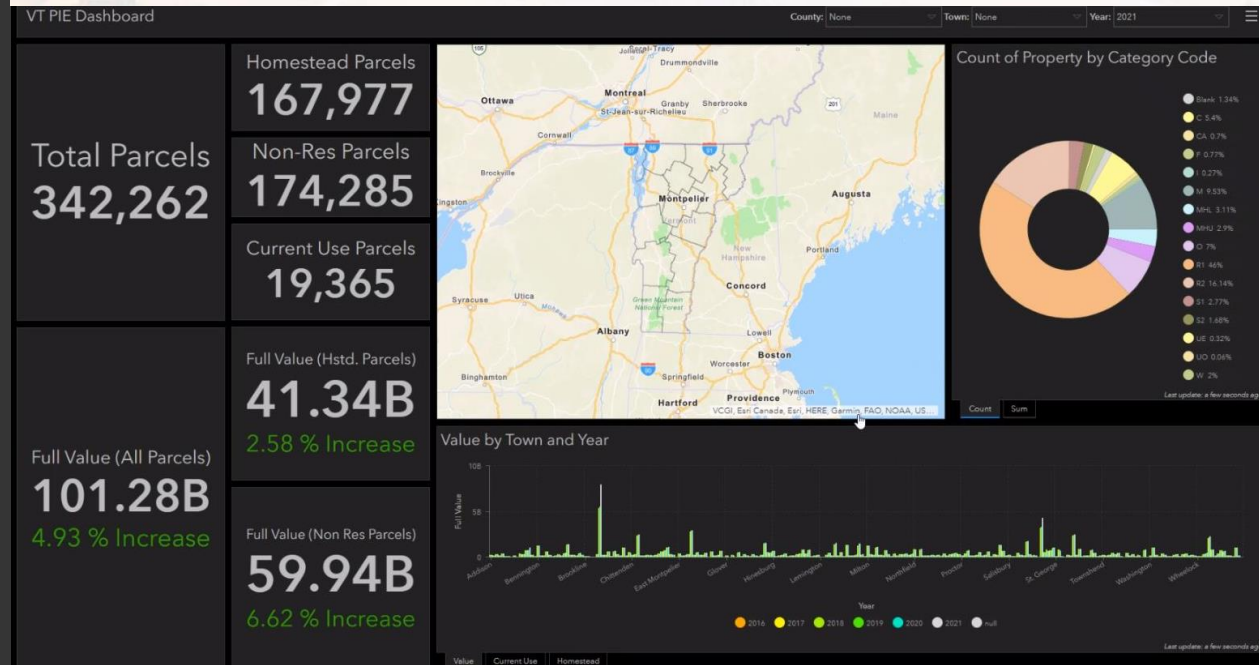
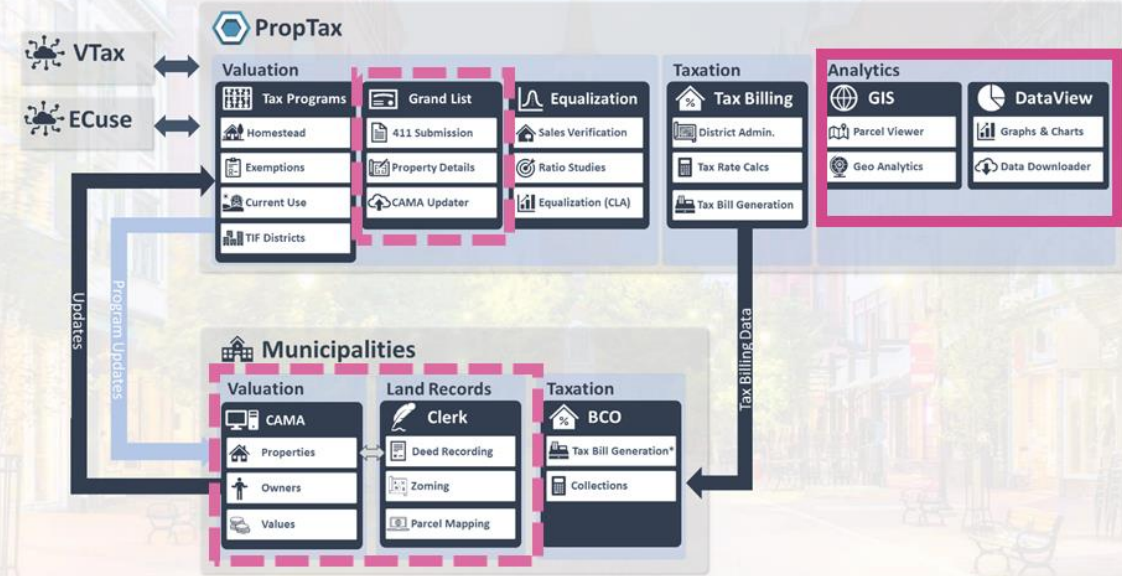


New Uses of Parcel Data/Tools

Advancements in technology and improvements to data quality and access are creating significant opportunities for operations across all sectors and levels of government.

[VT Property Information Exchange](#)

FUTURE STATE VALUATION & TAXATION



Learn More: [2022 Year in Review](#) & [Parcel Program Details](#)

