



ASSESSING IN 2022 WHERE ARE WE GOING?

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safeground 
analytics

September 16, 2022

Challenges and Fear...



- **Order to Reappraise**
- **Finding a Contractor**
- **Software Change**
- **New Technology**
- **Decision Weary**



State of Vermont
Department of Taxes
133 State Street
Montpelier, VT 05633-1401

Agency of Administration

ORDER TO REAPPRAISE

Findings of Fact:

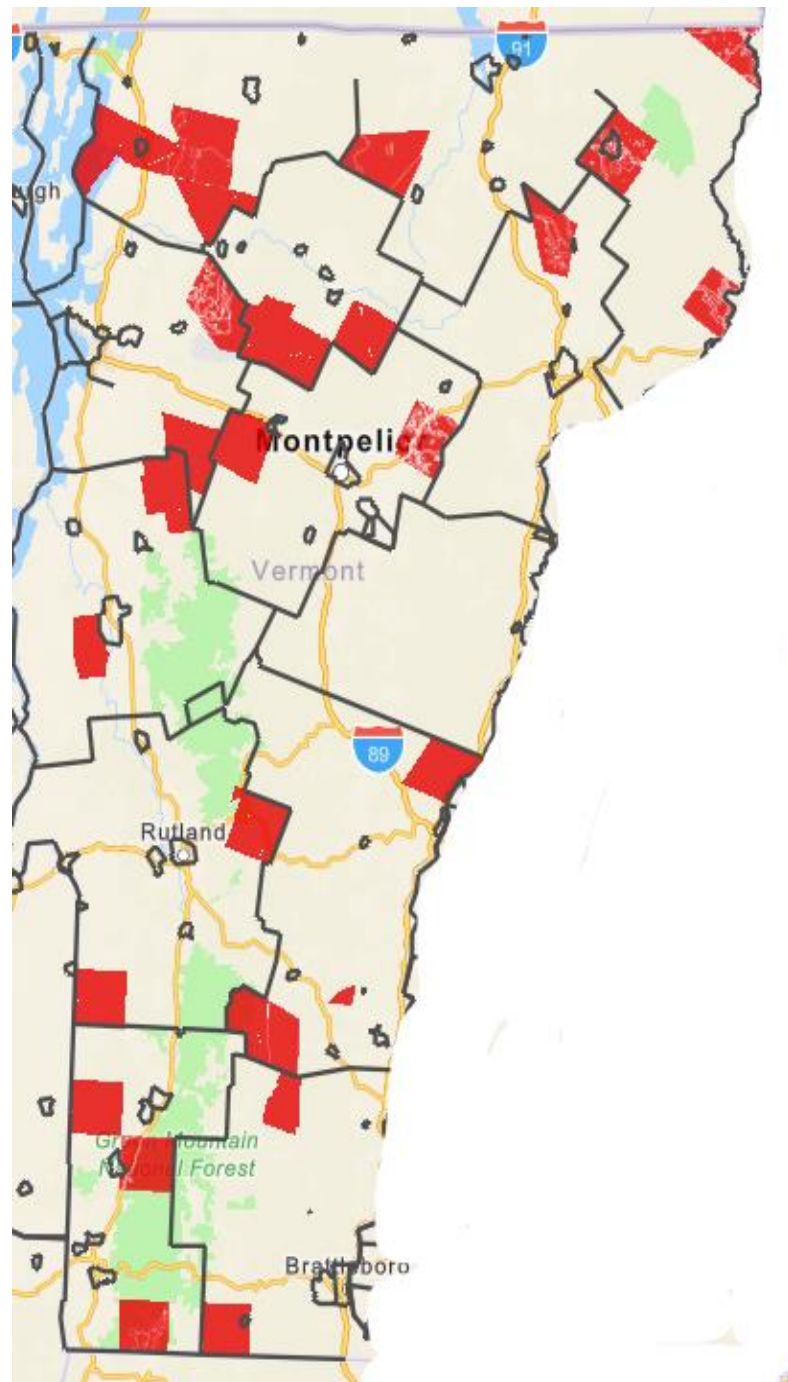
Pursuant to 32 V.S.A. §5406, the Director of Property Valuation and Review notified the Selectboard that the municipal CLA was 83.61% and COD was 14.97%.



CURRENT STATUS (1ST WAVE)

- 32 V.S.A. § 4041a(b) **requires** that a municipality maintain its education grand list at a common level of appraisal (CLA) that is **between or equal to 85% and 115% or a coefficient of dispersion (COD) that is at or below 20%.**
- **41** of the 262 **(16%)** Towns have a 2022 order to reappraise with a total of 49,037 accounts.
- 16 of the 41 Towns are scheduled for 2022-2025 and are presumably under contract
- 25 towns, therefore, need reappraisal services as soon as possible with a total of 29,882 accounts

UNDER ORDER TO
REAPPRAISE



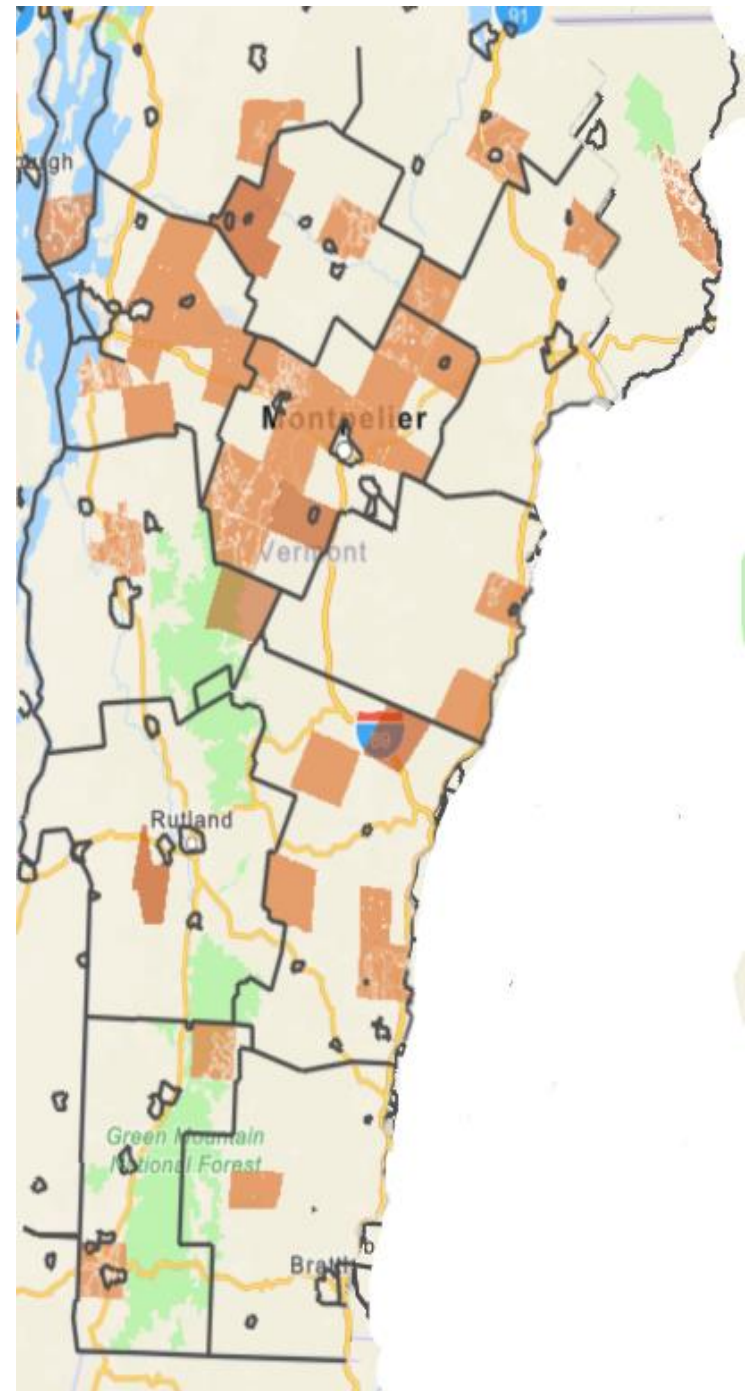
FUTURE PROBABLE REAPPRAISALS (2ND WAVE)

- **53** additional towns currently have **CLA'S above 85% and below 90%** and are at **probable risk** within one year, with current market trends*, of going below 85%.
- They have a total of 85,460 accounts.

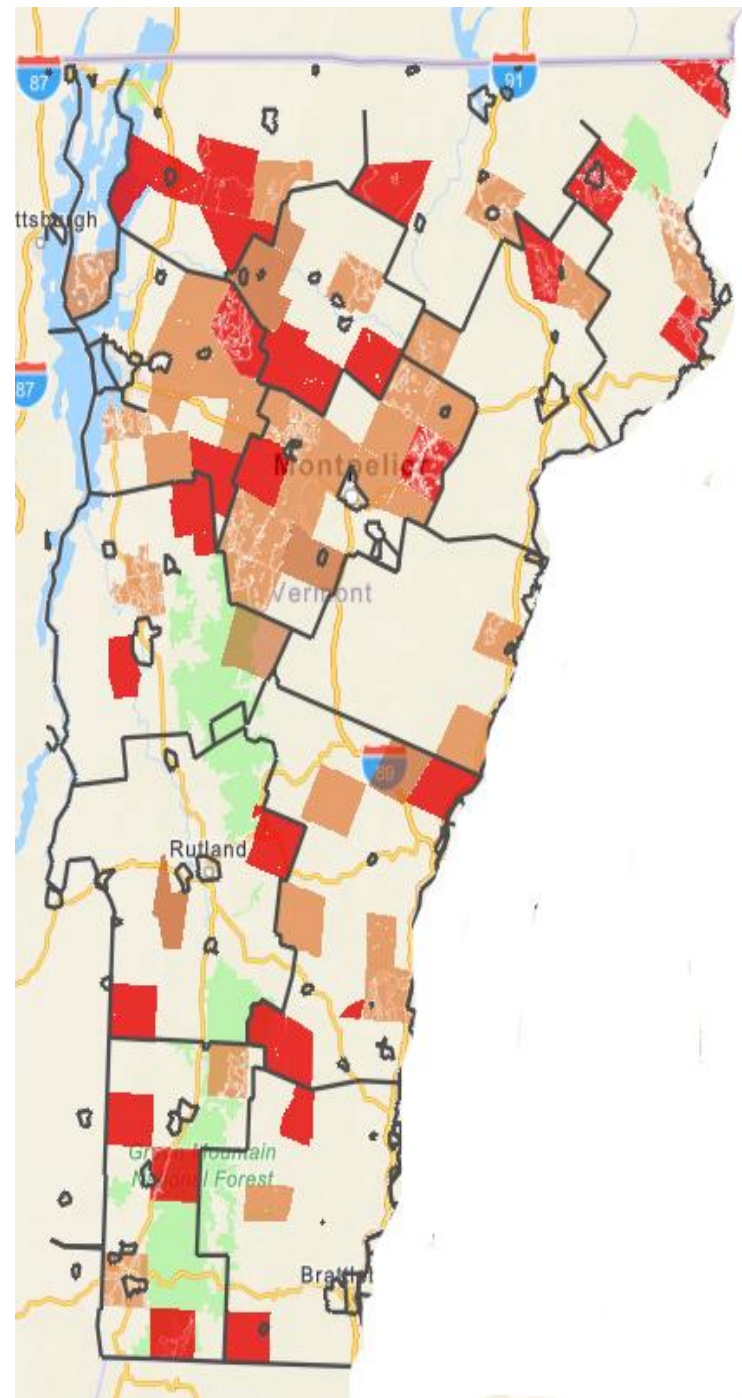
*10th most expensive State to live in [CNBC – July 2022]
20% Housing appreciation [CHFA – July 2022]



85%-90% CLA:
PROBABLE RISK



UNDER ORDER AND
UP TO 90% CLA



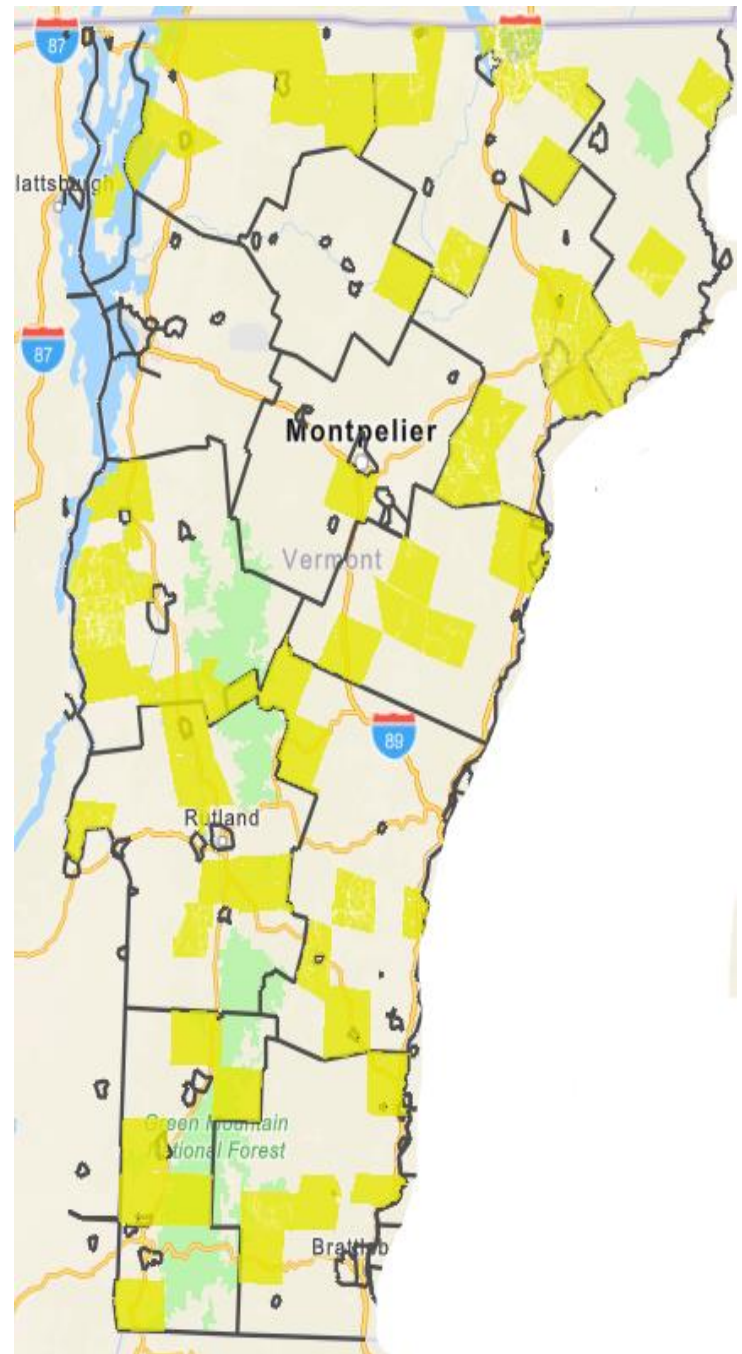
FUTURE POTENTIAL REAPPRAISALS (3RD WAVE)

- **112** additional towns currently have **CLA'S above 90% and below 100%** and are at **potential risk** within two years, with current market trends*, of going below 85%.
- They have a total of 130,861 accounts.

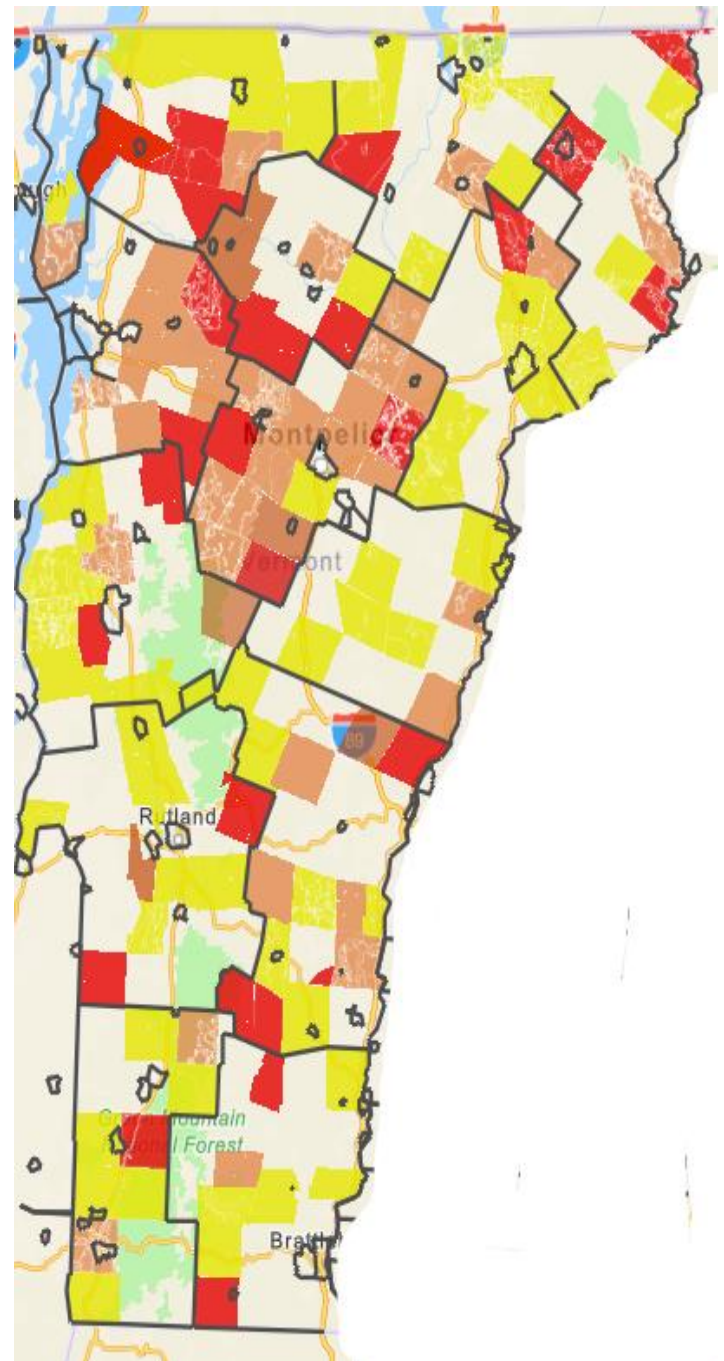
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90%-100% CLA:
POTENTIAL RISK



UNDER ORDER,
PROBABLE AND
POTENTIAL RISK



SUMMARY OF REAPPRAISAL PROBABILITY AND COST

	Number of Communities	Percentage of State	Number of Accounts	Cost Estimated at \$50	Cost Estimated at \$100
Immediate Need	41	16%	49,037	\$2,451,850	\$4,903,700
Probable Need	53	20%	85,460	\$4,273,000	\$8,546,000
Potential Need	112	43%	130,861	\$6,543,050	\$13,086,100
	206	79%	265,358	\$13,267,900	\$26,535,800

79% OF THE STATE MAY NEED TO BE REAPPRAISED IN THE NEXT THREE YEARS

IMPACT

- Limited number of state reappraisal companies to take on this magnitude of work
- Limited number of appraisers qualified to take on this magnitude of work
- Costs are significant, and will rise with demand
- Costs will be greatest per parcel on smaller communities who bid alone



POSSIBLE SOLUTION

- Allow delay of implementation and staggering reappraisal years by degree of CLA would ease the reappraisal pressure
- Allow statistical reappraisals, desktop review using newly contracted oblique and street level imagery
- Create Assessment Cycle – remove CLA Trigger
- Wait Until Market Collapses
- Reassess the entire State



POSSIBLE SOLUTION

- Cluster towns under single contracts would reduce cost and increase labor efficiency
- Sharing technology across municipalities and counties
- Intra-Corporate Collaborative Resource Sharing



STATE INVOLVEMENT

- Allowing delay of implementation and staggering reappraisal years by degree of CLA
- Advise the towns about the best clustering groupings based on degree of CLA
- Create Revaluation Cycle – remove trigger
- Contemplate Reassessments by Counties
- Conduct Reassessment Needs Assessment
- Expert Witness Assistance Funding
- Resource for reassessment guidance



STATE INVOLVEMENT

- State Contract for Oblique Imagery
- State Contract for Street Level Imaging
- State Contract for Real Time CAMA
Databases linked to State GIS
- Increase State Funding for
Reassessments
- Create criteria for model reassessment
program
 - Change physical requirements
 - Create mentor program
 - Involve municipalities with
statistical testing and standards

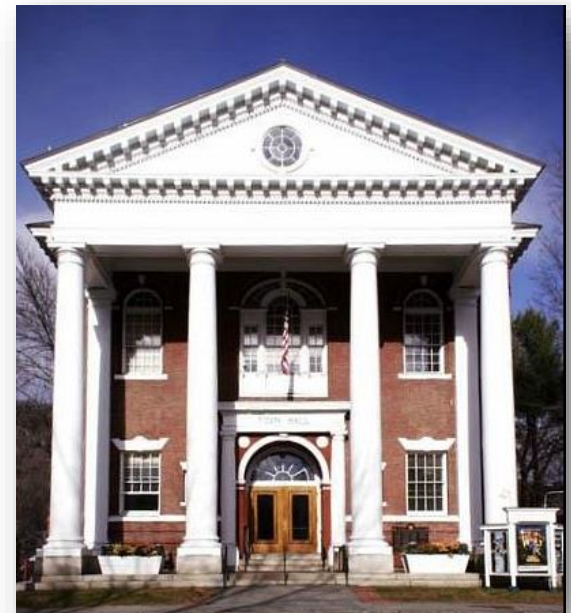


MUNICIPAL INVOLVEMENT

- BE WILLING TO
 - Reach out to neighboring towns and cities to explore clustering reassessment contracts
 - Hire multiple contractors
 - Explore using new technologies and business models
 - Imagery/Sketch Verification
 - Data Mailers
 - Desktop Review
 - Share contracts for Oblique and Street Level Imagery
 - Assist contractor with reassessment

MUNICIPAL INVOLVEMENT

- BE WILLING TO
 - Hire contractors who did not develop your CAMA software
 - Allow remote Access - VPN
 - Run your own statistics
 - Collaborate with PVR
 - Let go of home rule
 - Let go of we have always done it this way





PAST (1970-2010)

What did we do....

REASSESSMENT

PAST – (1970-1980)

- **The Pole**
- Tape Measure
- .05mm Pencil
- Hard Stock PRC
- **Solar Calculators**
- Protractor
- Clear Ruler
- HP12C
- Polaroid Pictures-Staples
- Marshall Swift Book
- **Full Inspections**
- **Drive By Review**
- **In Person Hearings**
- **The Rise of the Wizard**

PAST – (1980 – 2000)

- **Digital Measurement**
- **CAMA (Owner User)**
- Spreadsheets
- **Data Collection Tablet**
- Straight line to Curvilinear Sketch
- **Video Capture**
- **GIS**
- **SPSS**
- Marshall Swift Book/Software
- **Data Mailer/Inspections**
- Drive By Review
- In Person Hearings

REASSESSMENT

PAST – (2000 – 2010)

- Digital Measurement
- Tape Measure
- **CAMA (Open Use)**
- **Pictometry**
- **Sketch Detection**
- GIS/CAMA integration
- CAMA Comp Sales
- CAMA Income Approach
- **Data Mailer/Inspections 30% Entry**
- Drive By Review
- NCSS



PRESENT (2010-2022)

What are we doing...

REASSESSMENT

PAST/PRESENT – (2010-2022)

- Digital Measurement
- Tape Measure
- **Desktop Review**
- LIDAR/INFRARED
- **360 Street Images**
- MLS/COSTAR
- **Data Mailer Online**
- **Inspect Sales and Permits**
- **Sketch Detection**
- Drive By Review
- NCSS
- **Virtual Inspections**
- **Virtual Hearings**
- Scheduled Reassessments
- **Regionalization**



Types of Reassessment

Full Physical

- Full Inspection
- Full Measure
- Drive By Review
- Face to Face Hearings

Non Physical

- Inspect Sales
- Inspect Permits
- Data Mailer with Inspection Audits
- Sketch Detection
- Street Level Imagery
- Desk Top Review
- Virtual Hearings

REAPPRAISAL TECHNIQUES BY STATE

	Frequency of Reappraisal	Clustering	Inspections	Exterior	Measurements
CONNECTICUT	5 Years	Starting Regionalization 2024	Full Reappraisal, Reappraisal with Verification - Data Mailers, Sales, Permits	Physical View, Oblique, Street View Imagery within 3 years, Drive By View/Desktop Review	Physical and Sketch Detection
MASSACHUSETTS	Each Year	Jurisdiction Based	Data Mailers, Sales, Permits, Reasonable Attempt Interior Inspection after 10 years	Physical View, Oblique, Street View Imagery within 3 years, Drive By View	Physical and Sketch Detection
RHODE ISLAND	5 Years	Jurisdiction Based	Reasonable Attempt Interior Inspections after 9 years, Sales, Permits	Physical View, Oblique, Street View Imagery within 3 years, Drive By View	Physical and Sketch Detection
NEW YORK	Optional/Each Year	Jurisdiction and County Based	Drive By is considered an Inspection, Data Mailers, Sales, Permits	Physical View, Oblique, Street View Imagery within 3 years, Drive By View/Desktop Review	Physical and Sketch Detection
NEW HAMPSHIRE	5 Years	Jurisdiction	Juridictions chose either Full, Statistical, Partial, or Cyclical Reappraisal, Data Mailers, Sales, Permits	Physical View, Oblique, Street View Imagery within 3 years, Drive By View/Desktop Review	Physical and Sketch Detection

IAAO Standard on Mass Appraisal of Real Property

3.3.4 Maintaining Property Characteristics Data

Property characteristics data should be continually updated in response to changes brought about by new construction, new parcels, remodeling, demolition, and destruction.

A system should be developed for making periodic field inspections to identify properties and ensure that property characteristics data are complete and accurate.

Photographs taken at previous physical inspections can help identify changes.

3.3.5 Alternative to Periodic On-Site Inspections

Effective tool sets validate CAMA data and incorporate change detection software that compares building dimension data (footprints) in the CAMA system to georeferenced imagery or remote sensing data from sources (such as LiDAR [light detection and ranging]) and identify potential CAMA sketch discrepancies for further investigation.

IAAO Standard on Mass Appraisal of Real Property

- **Section 3.3.5 - Alternative to Periodic On-Site Inspections (Summarized)**
- **Jurisdictions may employ a set of digital image technology tools to replace a routine cyclical field inspection with a computer assisted office review. This tool set should include:**
 - *High-resolution street-view images that enables grade and physical condition to be verified, updated at least every 6 years*
 - *Orthophoto images updated every 2 years in rapid growth areas, or 6–10 years in slow growth areas).*
 - *Low level oblique images capable of being used for measurement verification updated every 2 years in rapid growth areas or, 6–10 years in slow growth areas*
 - *Effective tool sets validate CAMA data and incorporate change detection software.*
 - *Changes to interior characteristics may be monitored on a regular and cyclical basis (such as every 6 years).*
 - *This alternative should be used in conjunction with information obtained through the permitting process... observe changes in neighborhood condition...A physical review is recommended when significant construction changes are detected, a property is sold, or an area is affected by catastrophic damage.*

IAAO lacks specific conditions of “best practice”

Kansas enhances IAAO standards with some specific conditions of “best practice” What is missing is the measurement of each practice.

- **KANSAS Directive 7-042**
- Oblique Imagery maybe used except:
 - New Construction
 - Demolition
 - Sales Review
 - Obstructed Views
 - Valuation Appeal based upon property characteristic or condition
 - Review Neighborhood
 - Measurements off by more than 2 feet from physical measurements or 5%

***“You assessed my property using only a picture
from the sky?”***

Statement by Concerned Property Owner



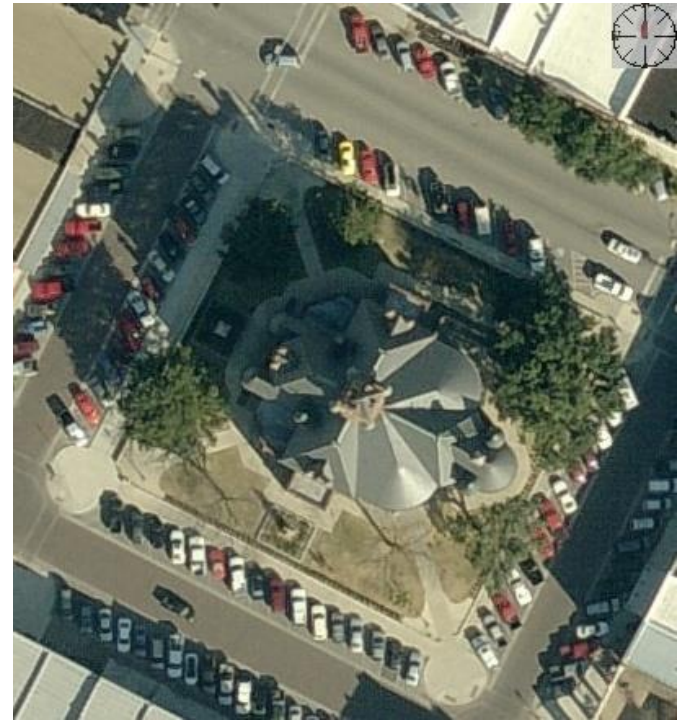
Inspections: Oblique vs. Orthogonal Imagery



Oblique View

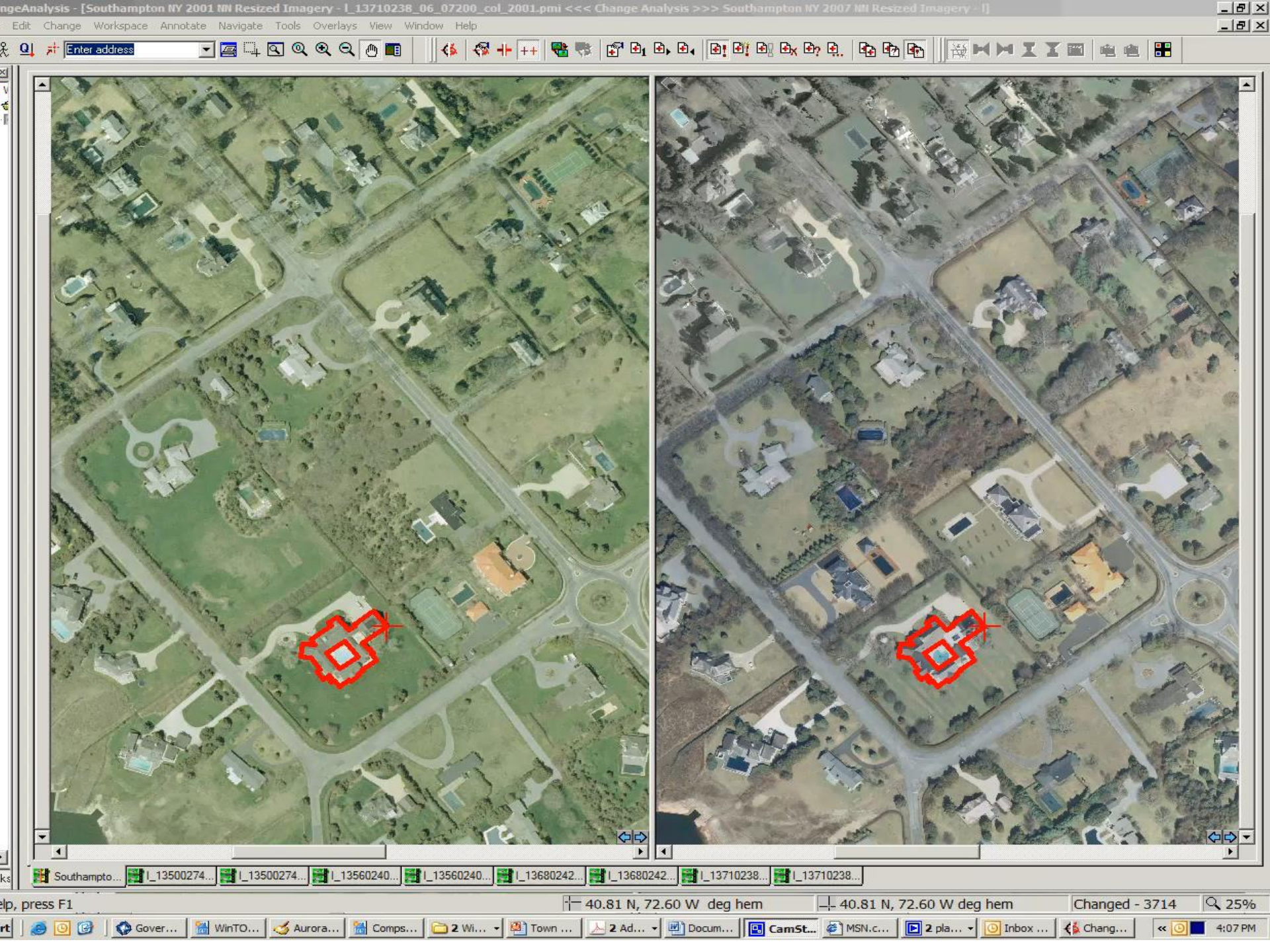


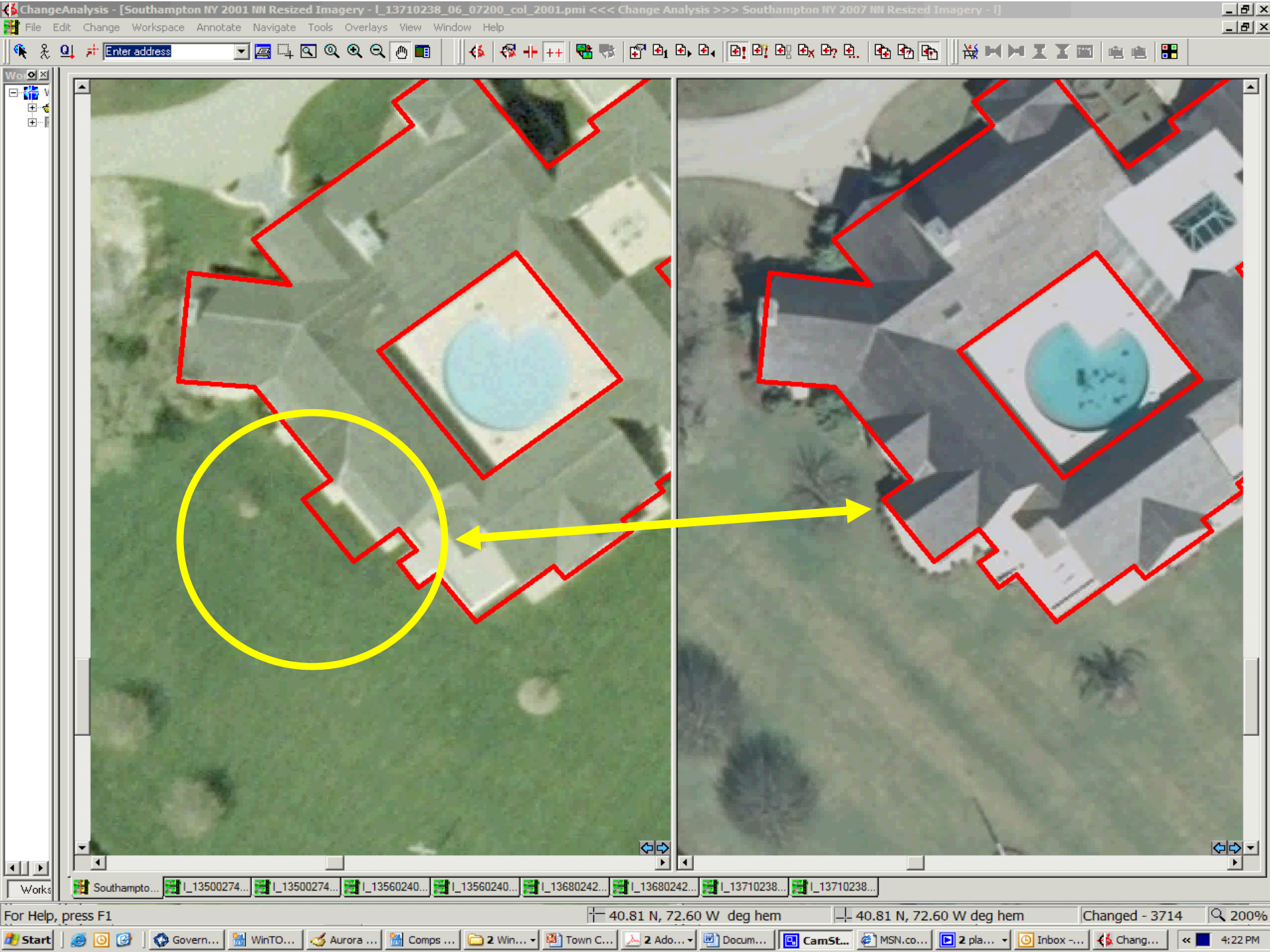
Orthogonal View

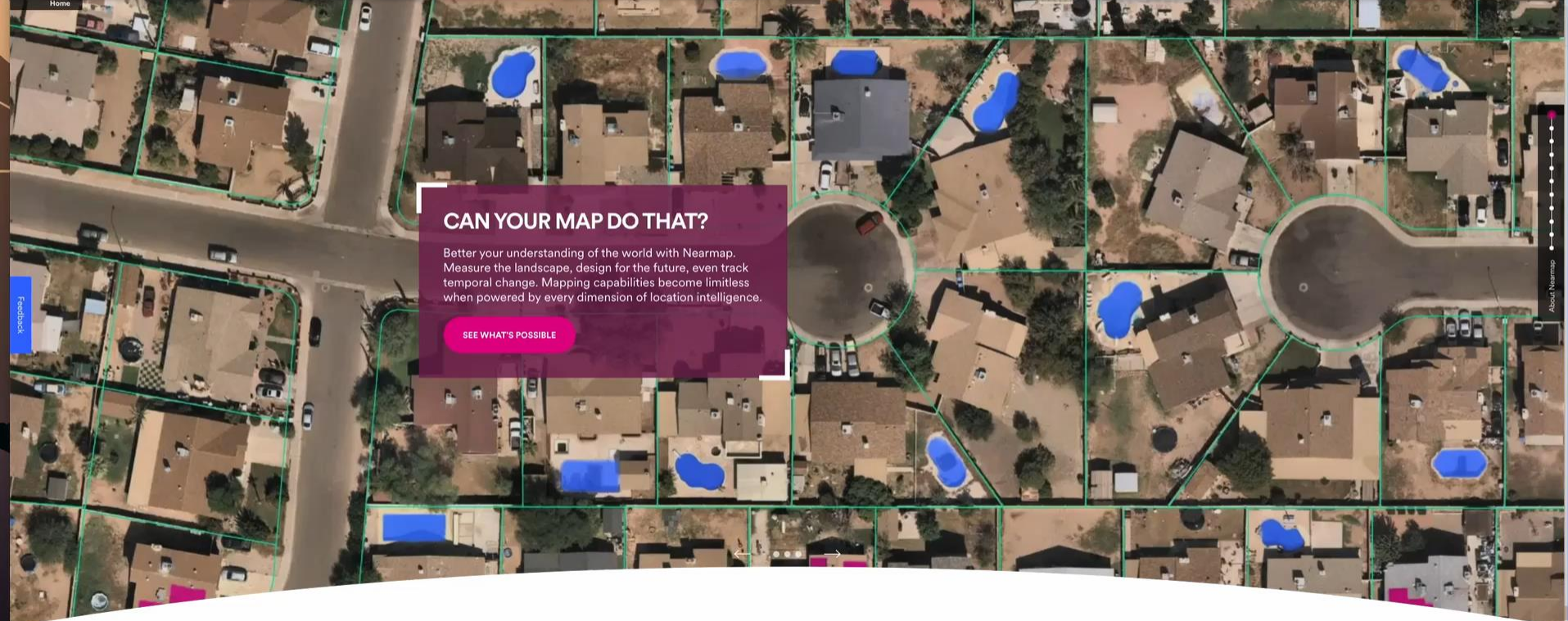




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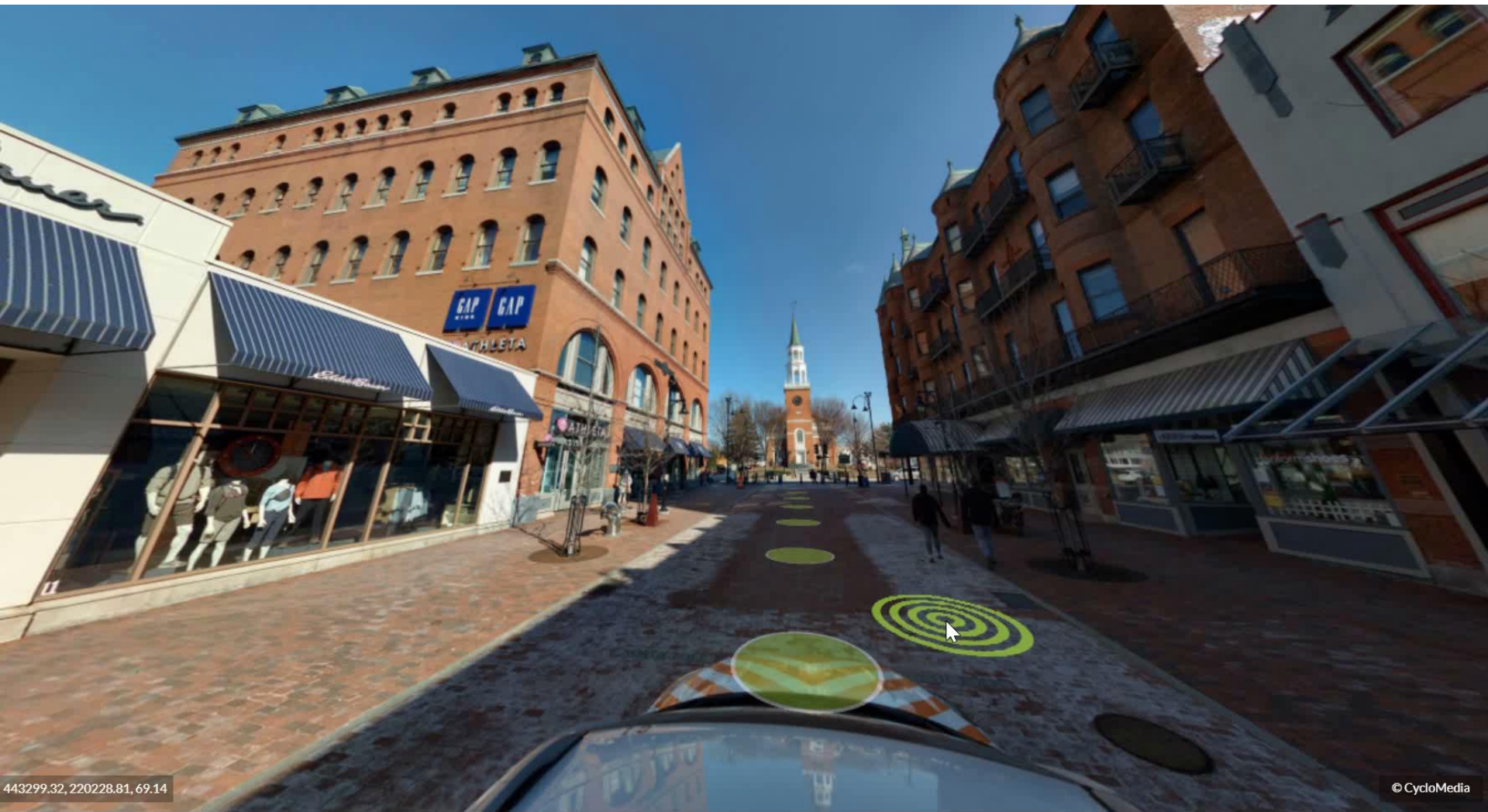
ACCESS TOTAL LOCATION INTELLIGENCE

Nearmap gives you every dimension of location intelligence in one central hub. Our geospatial mapping technology allows you to fully



Hi there! Welcome to Nearmap!
What would you like to do today?





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Qualitative Benefits of Imagery

- **Instantaneous Disaster Imagery**
 - Useful for damage assessment
- **Increase in Data Collection Detail**
 - Ability to be able to view all sides of buildings
 - Ability to see and judge views
 - Ability to measure
- **Enhance ability to delineate neighborhoods**
 - Use broader “birds eye” view to help decide where neighborhoods begin and end
- **Enhance ability to discern quality grading and condition**
 - Eradicates hedge “camouflage” of house
 - Viewing all angles of the house gives greater detail about components not seen from the road.

Qualitative Benefits of Imagery

- **Increases more accurate values**
 - Greater detail ensures proper selection of Comparable sales
- **Used by Planning and Zoning for Code Enforcement**
 - Identify properties that are non conforming
 - Identify properties that are violating building codes
- **Increase in property information for Police and Fire Departments**
 - Viewing of all property sides, showing ingress and egress
- **Enables collection of data to assist Environmental Conservation Enforcement**
 - Viewing of illegal clear cutting
 - Searching for non-source pollution

COMPARISON STUDY OF "DRIVE BY" VERSUS PICTOMETRY INSPECTIONS

Total Miles - Carbon Use -Auto Use Expense

Drive By Method

Vehicle	City Miles	Carbon Footprint	Federal Rate .585
2002 Ford Crown Victoria	12,000	15,445	\$7,020
2002 Ford Crown Victoria	12,000	15,445	\$7,020
2006 Ford Crown Victoria	5,000	6,178	\$2,925
2004 Ford Crown Victoria	8,000	12,356	\$4,680
2004 Ford Crown Victoria	8,000	12,356	\$4,680
2006 Ford Explorer	8,000	12,356	\$4,680
Total Miles - Carbon Use – Auto Use Expense	53,000	74,136	\$31,005
		lbs of CO ₂	

Pictometry Method

Vehicle	City Miles	Carbon Footprint	Federal Rate .585
2002 Ford Crown Victoria	3,000	4,634	\$1,755
2002 Ford Crown Victoria	3,000	4,634	\$1,755
2006 Ford Crown Victoria	1,250	1,853	\$731
2004 Ford Crown Victoria	2,000	3,707	\$1,170
2004 Ford Crown Victoria	2,000	3,707	\$1,170
2006 Ford Explorer	2,000	3,707	\$1,170
Total Miles - Carbon Use – Auto Use Expense	13,250	22,241	\$7,751
		lbs of CO ₂	
BENEFIT OF USING OBLIQUE IMAGERY INSTEAD OF "DRIVE BY" INSPECTIONS	Decline in AND Savings of Road Miles	Decline in AND Savings of Carbon Footprint	Decline in AND Savings of Auto Expense
	39,750	51,895	\$23,254
		lbs of CO ₂	

ESTIMATED INCREASE IN PRODUCTION AND REDUCED LABOR COSTS WITH PICTOMETRY

Per Diem Comparison

	Rate/Hour	Hours	Production	Cost	Cost/Parcel
Current Labor Costs	\$40.00	8	80	\$320	\$4.00
Estimated Labor Cost Via Pictometry	\$40.00	8	160	\$320	\$2.00

Annual Comparison with Six Year Plan Compliance

	Rate/Hour	Hours	Production	Cost	Cost/Parcel
Current Labor Costs	\$40.00	900	9,000	\$36,000	\$4.00
Estimated Labor Cost Via Pictometry	\$40.00	900	9,000	\$18,000	\$2.00
Net Benefit Per Annum				\$18,000	
TOTAL NET BENEFIT FOR PROJECT DURATION				\$54,000	50% Savings

Production doubles and staff costs are cut in half. Total Staff savings of $(\$18,000 \times 6) =$
\$108,000

Summary Findings on Oblique Imagery

- Produces 15 times return on Investment
- Greater than 89% accuracy on data collection
- Greater than 65% accuracy on condition, style, story height and quality
- Reduces data collection time 50%-60%
- **Reduces Carbon Footprint**
- Doubles Productivity while decreasing cost
- Helps in fiscal planning and bonding
- All Leading To Predictive Financial Analytics for Government Services

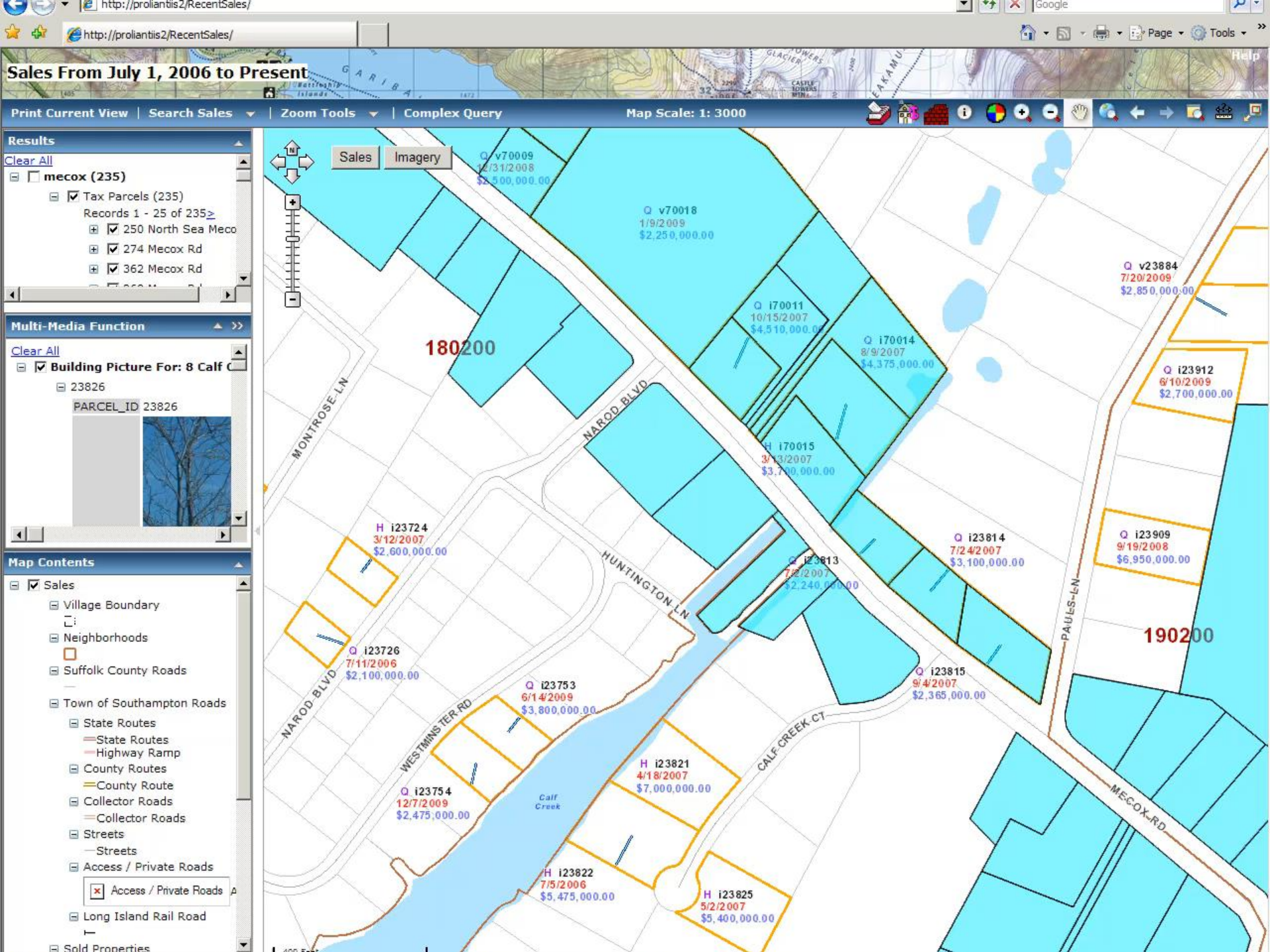


DIGITAL IMAGERY BEST PRACTICES

- To be fully effective digital imagery requires:
 - Seamless Integration of CAMA, GIS, Street Imaging, Oblique Imaging
 - Annual Collection of Imagery
 - GIS map layers identifying sales, influence factors land rates etc
- Digital imagery may be used in:
 - Demolition
 - Sales Review
 - Valuation Review
- Digital imagery may not be used in:
 - New Construction
 - Obstructed Views (Parts of Northeast Kingdom)
 - Valuation Appeals
 - Review Neighborhood
 - Measurements off by more than 2 feet from physical measurements or 5%

GIS

Comparable Search, GIS integration and Valuation Modeling





FUTURE (2022-2032)

Where are we going...



Future (2022-2023)

Using Today's Business Models
and Technology

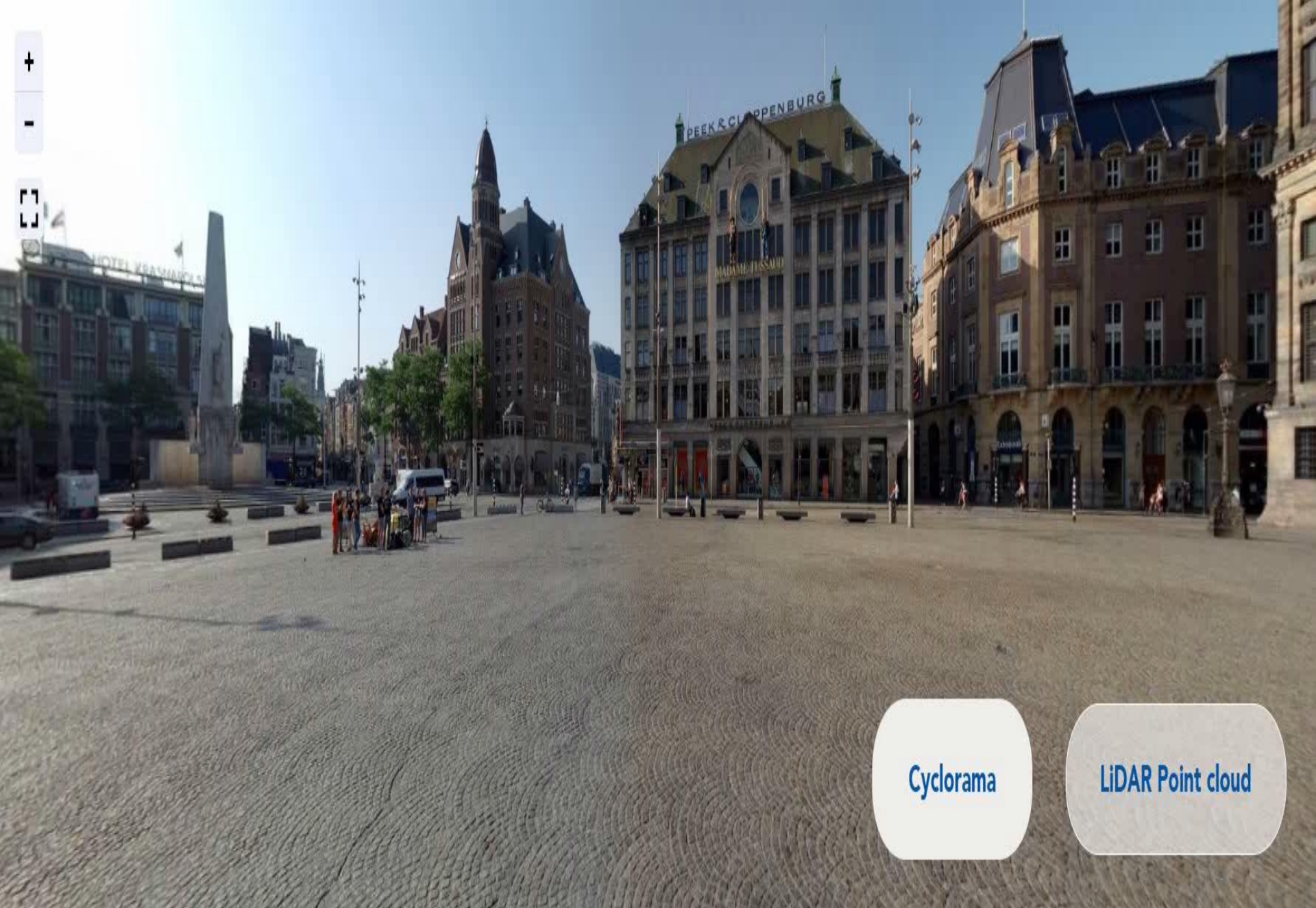
FUTURE TRENDS - SUMMARY

BUSINESS MODELS

- Collaborative Reassessments
 - Business Partners
 - Specialized Sub Contractors
- Assessor as Part of Reassessment Team
 - Data Collection – Permits/Sales
 - MLS Validation
 - Data Entry
- Decline of the Wizard
- Rise of Interactive AI
- Willingness to open databases, imaging, GIS
- Regionalization
- Annual Reassessments by AI

TECHNOLOGY

- 3D Lidar Walk Around/Drive Measurement
- POWER BI Integration
CAMA/GIS/IMAGES/COMP
SEARCH
- AI AND AVM
- COMP Search and Adjustment by Image Detection
- Sketch Verification
- Virtual Inspections
- Virtual Hearings



Cyclorama

LiDAR Point cloud



Similarities



Original

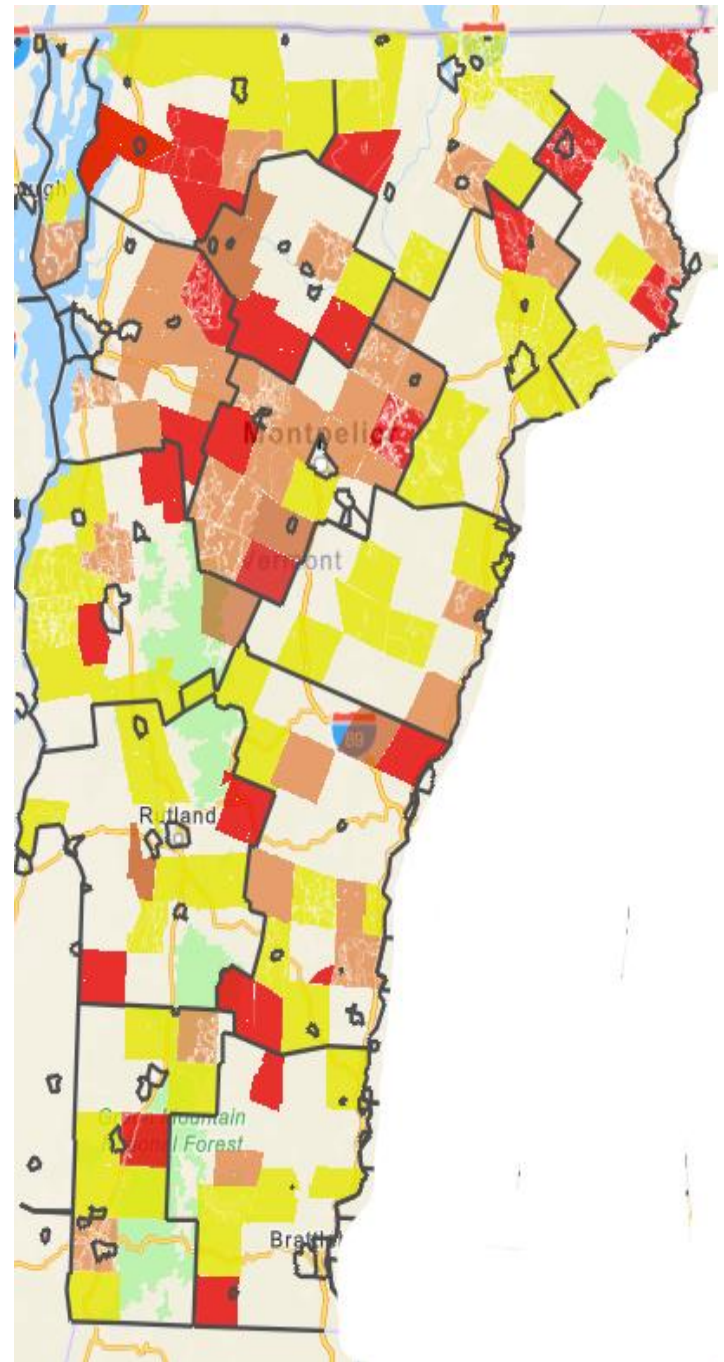


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SUMMARY

THE CHALLENGES AHEAD

UNDER ORDER,
PROBABLE AND
POTENTIAL RISK



STATE INVOLVEMENT

- Allowing delay of implementation and staggering reappraisal years by degree of CLA
- Advise the towns about the best clustering groupings based on degree of CLA
- Create Revaluation Cycle – remove trigger
- Contemplate Reassessments by Counties
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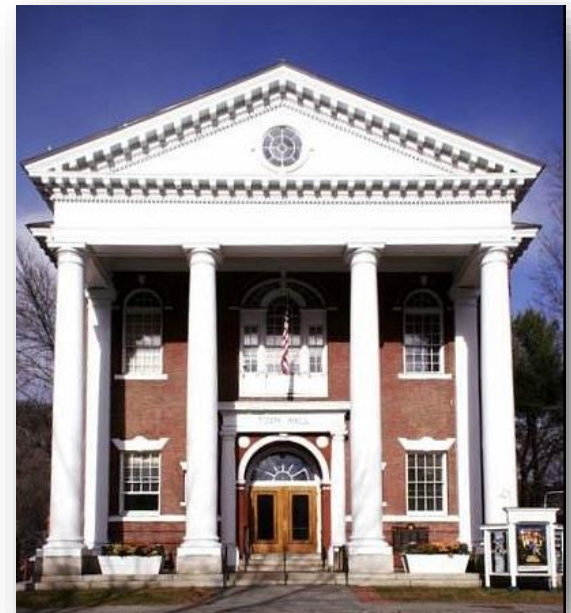


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ASSESSING IN 2022 WHERE ARE WE GOING?

TOP TE

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TOP TE

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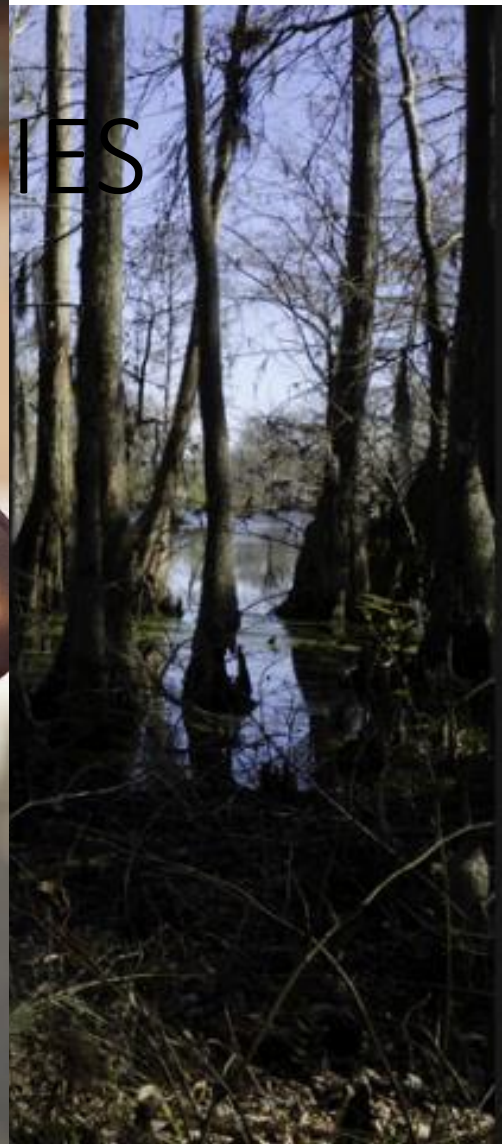
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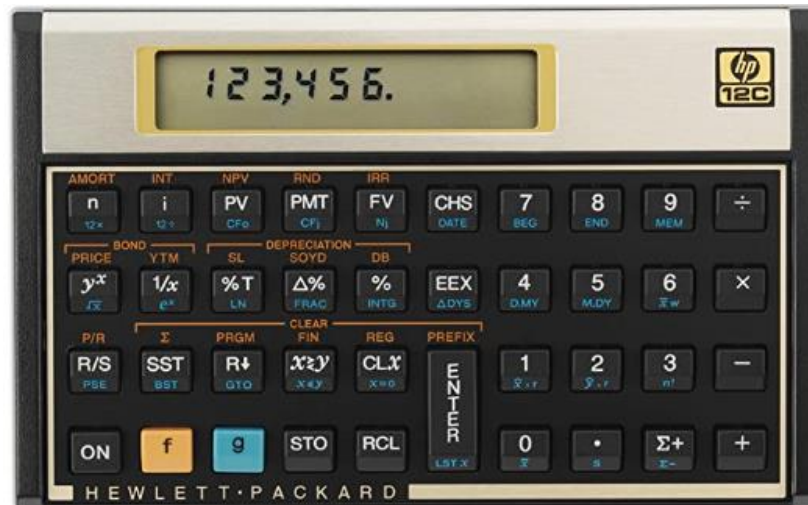


IES



LUNCH TIME ASSIGNMENT

Tell your favorite inspection story...





WHERE ARE WE GOING? THIS IS WHERE WE ARE GOING....

JOHN VALENTE
CEO AND SENIOR APPRAISAL CONSULTANT
(413)387-3428

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September 16, 2022