Gloucester County Emergency Response

Office of Emergency Management

UAS Aviation Division

INTRODUCTION

- Currently with the Gloucester County Office of Emergency Management
- Lead for Department UAS program
- Assist in critical infrastructure resilience initiative
- Involved in Emergency Services since 1992
- Over 20 years experience in Emergency Medical Services
- 10 years as Lieutenant of operations
- Currently hold a Remote Pilot Airman Certification with small Unmanned Aerial Systems (sUAS) rating
- Successfully applied for and received a certificate of authorization (COA) for sUAS operations

GLOUCESTER COUNTY DEMOGRAPHICS

- Square Miles – 329
- Population – 288,288 (2010 Census)
- Gloucester County calls for service 500,000
- Largest Municipality – Washington Twp.
  - Population 48,559 (2010 Census)
  - Calls for Service 80,000

JUNE 23, 2015

- 18:00 Hrs. Bow Echo / Possible Tornado touched down in East Greenwich Township NJ
  - Eight (8) other municipalities directly hit by the eye of the storm
- 21 of 24 municipalities are impacted by the storm winds (85-95 mph gust to 110)
  - Tree damage, power lines down, transforms exploding
- 190,000 residents without power. High temperatures followed the storm (90-97 degree days)
  - Power outage ranged from 1 – 10 days.
- Calls for service 1,664 on the night of the 23rd
- Gloucester County OEM declares a State of Emergency

ROAD
CLOSED

POST JUNE 2015

- Several steps taken to assure continuity of operations and continuity of government
- Power companies began taking steps to increase infrastructure resilience
- Gloucester County invested into bolstering the division of Emergency Management based on lessons learned
- Gloucester County sUAS program was born

GLOUCESTER COUNTY UAS PROGRAM

- Currently operate two DJI Phantom 4 platform
- Matrice 210 with flir and z30 2019\20
- Deployed on several incidents
- FAA COA 2016
- Part 107
- Explored numerous software platforms, Precision Hawk, Drone Deploy, Pix4D, and...

Drone2Map

WHY DRONE2MAP

- Ease of use
- Works flawlessly with other ESRI products
- ArcGis Online for ease of sharing outside organization
- Includes an ArcGis online account
- Pix4D engine

WORK FLOW

Collection

Drone2Map

Drone/UAS | **Software** ⟷ **Input** | **Processing** | **Output**

DJI GROUND STATION PRO

New Mission

PhotoMap

Virtual Fence

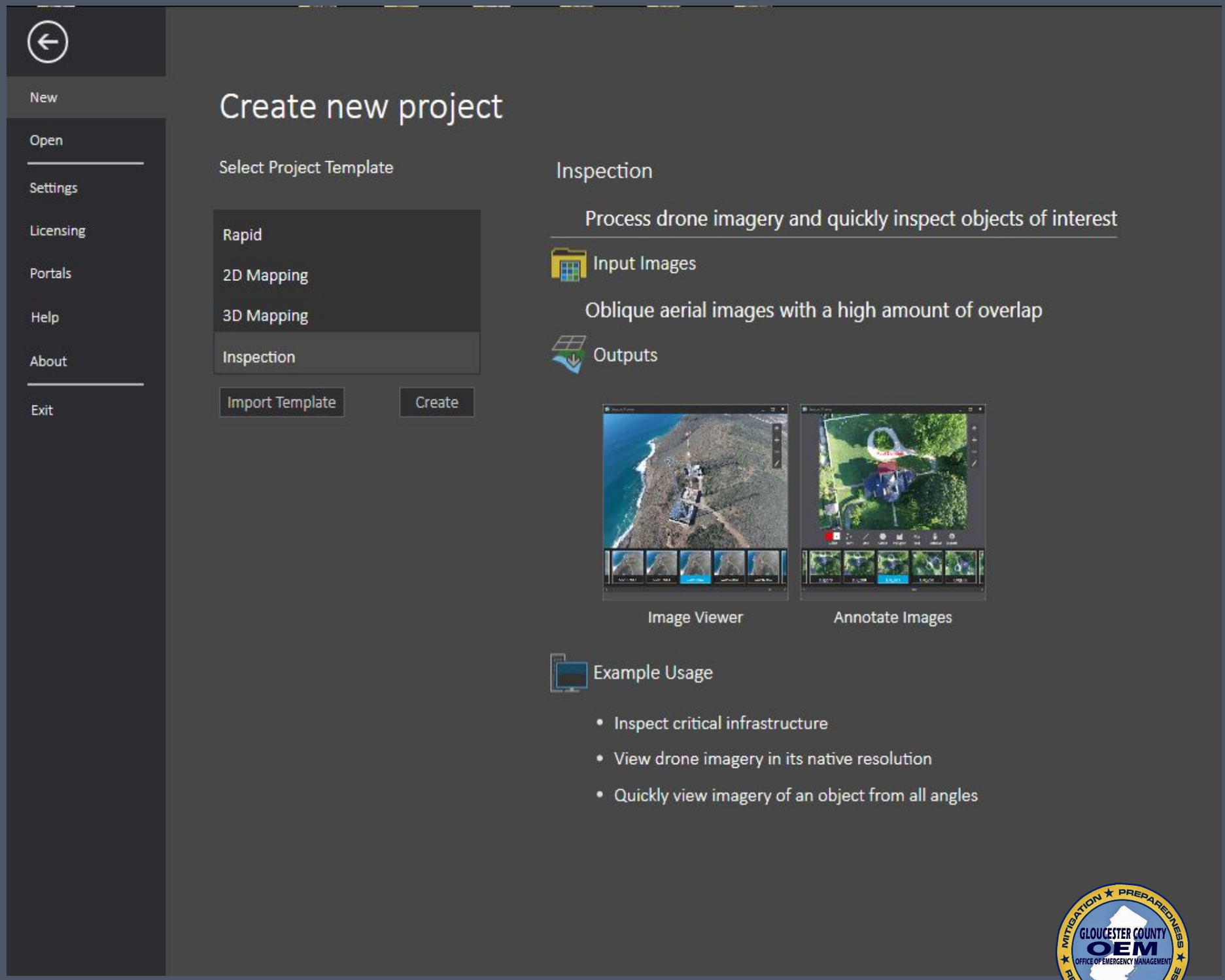
3DMap Area

3DMap POI

WayPoint Route

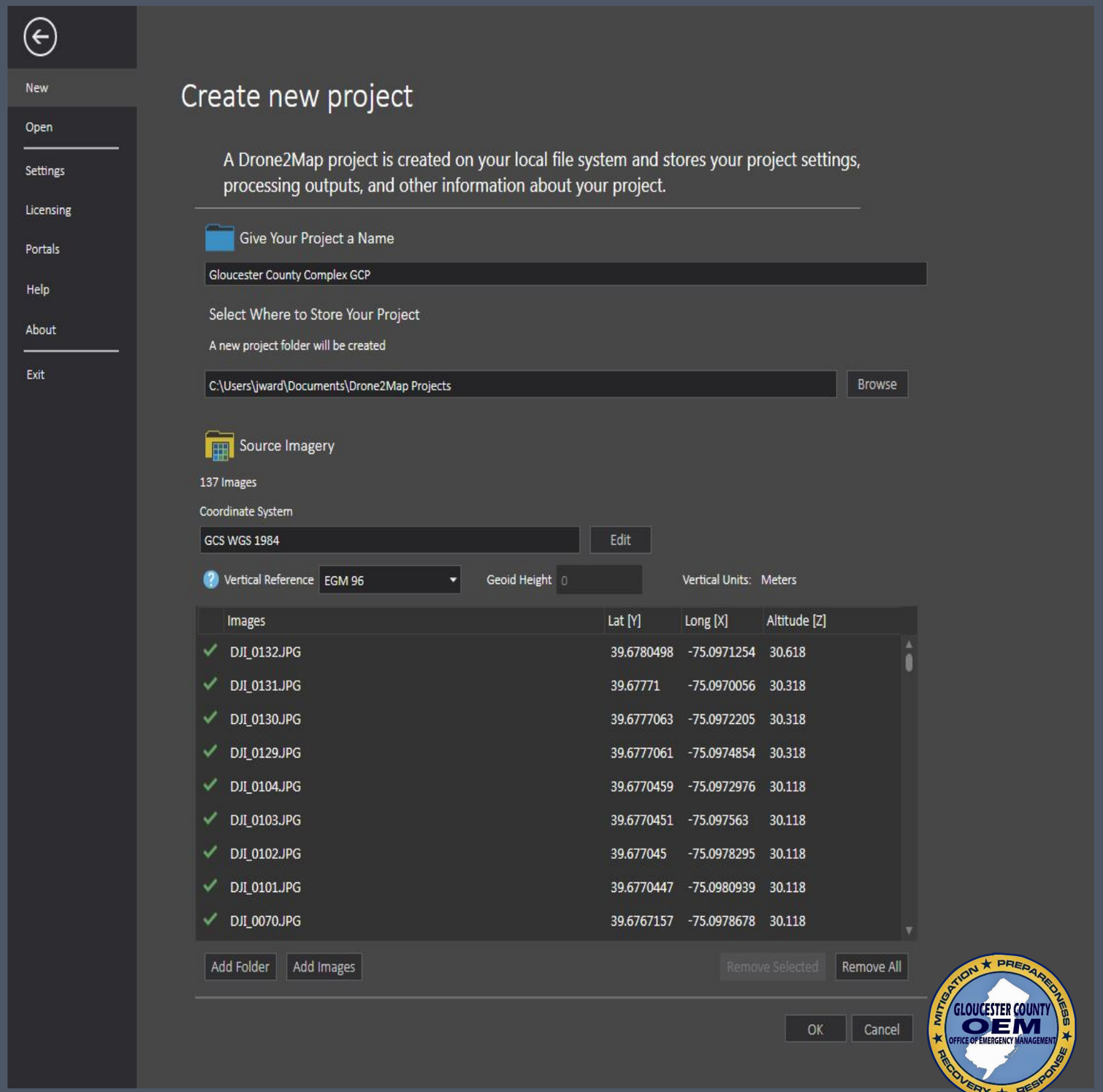
DRONE2MAP

- Three Essential Products
- 2D Mapping
- 3D Mapping
- Inspection



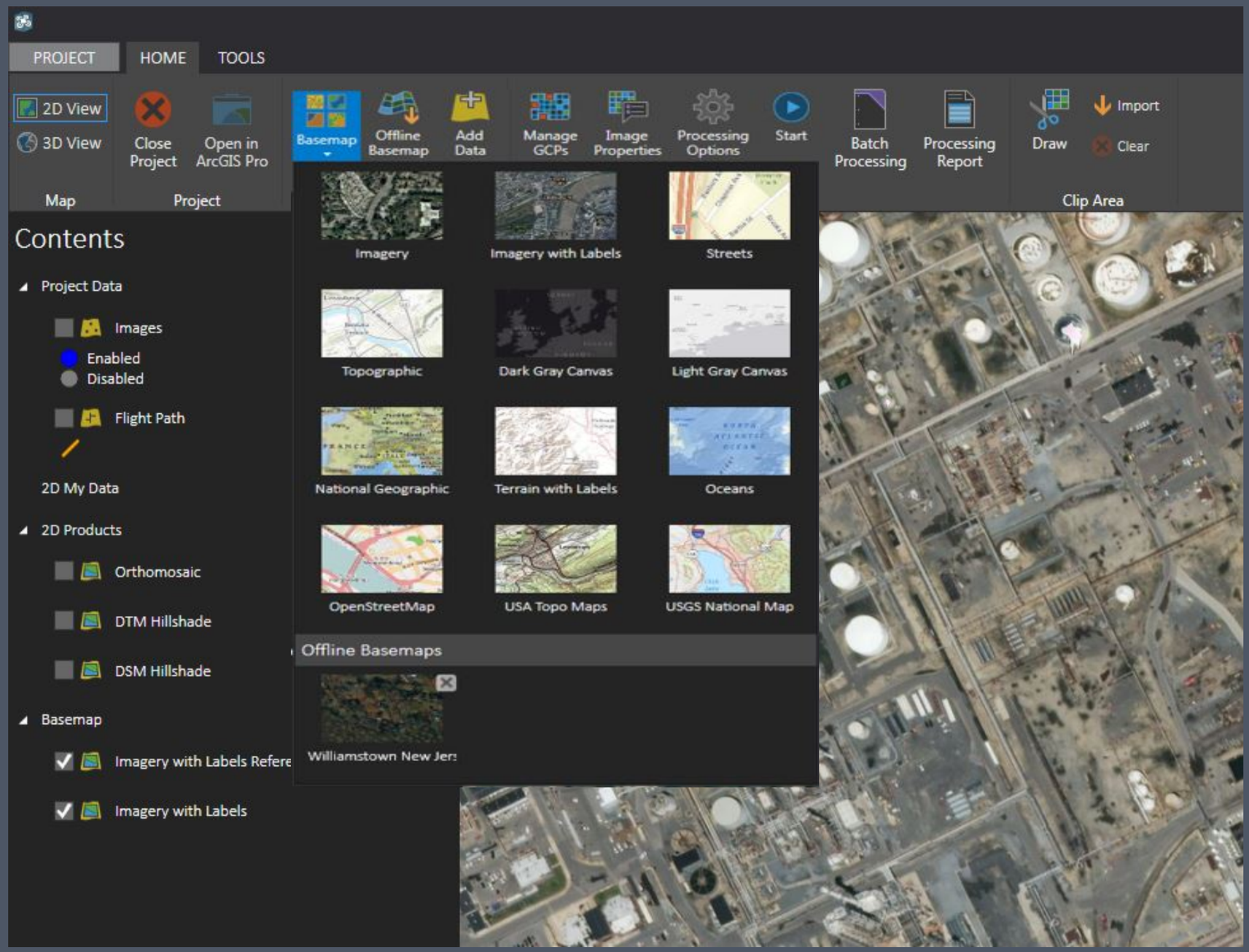
PROJECT CREATION

- Select Project
- Name Project
- Allow default coordinate system
- Choose project images



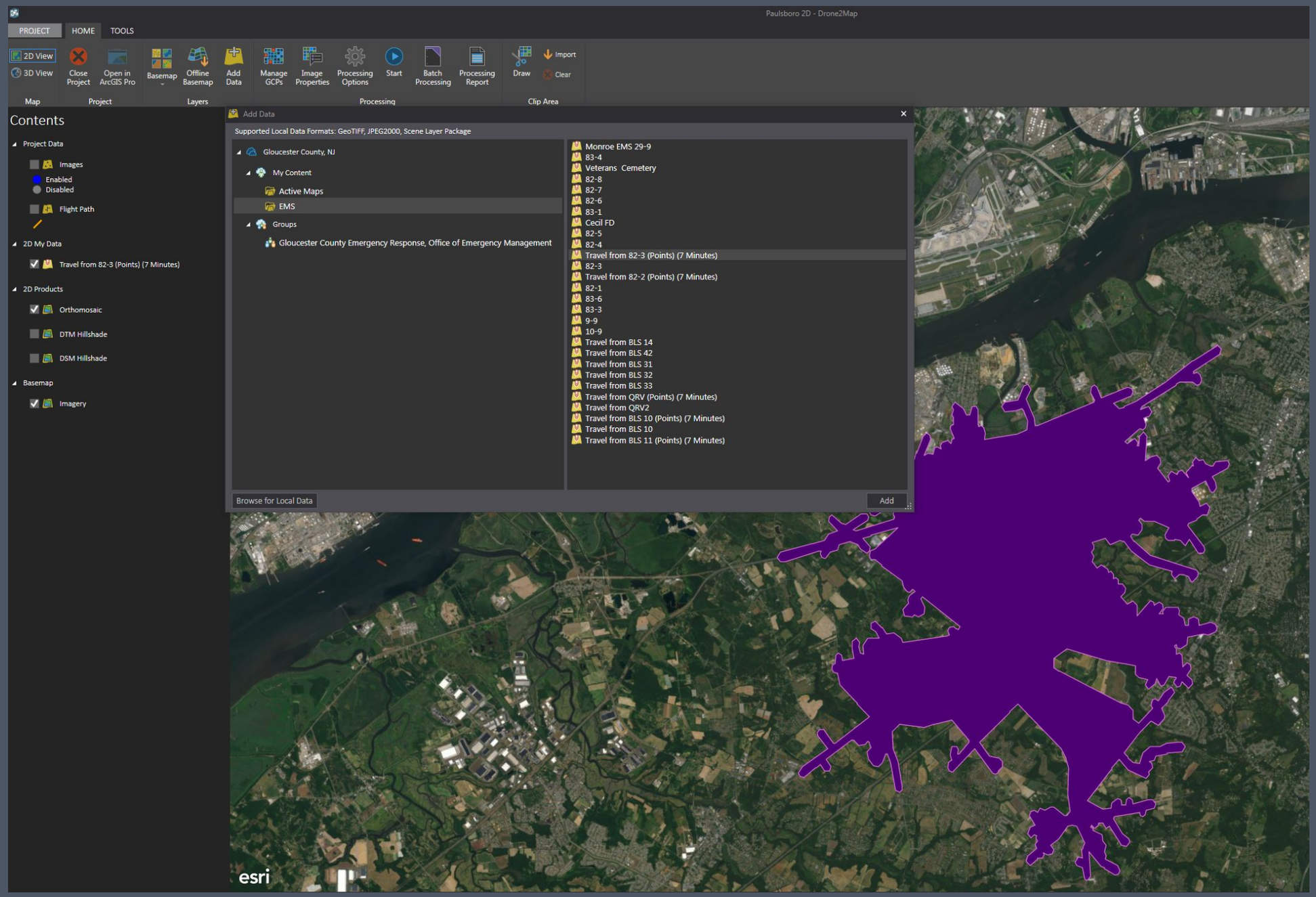
BASEMAP

- Choose from multiple base-maps
- Store offline base-maps



ADD DATA

- Use and add data from other maps
- Access other accounts in ArcGis Online, Pro & Portal



GROUND CONTROL POINTS

- Add GCP
- Gives better accuracy
- GCP with ARC Collector

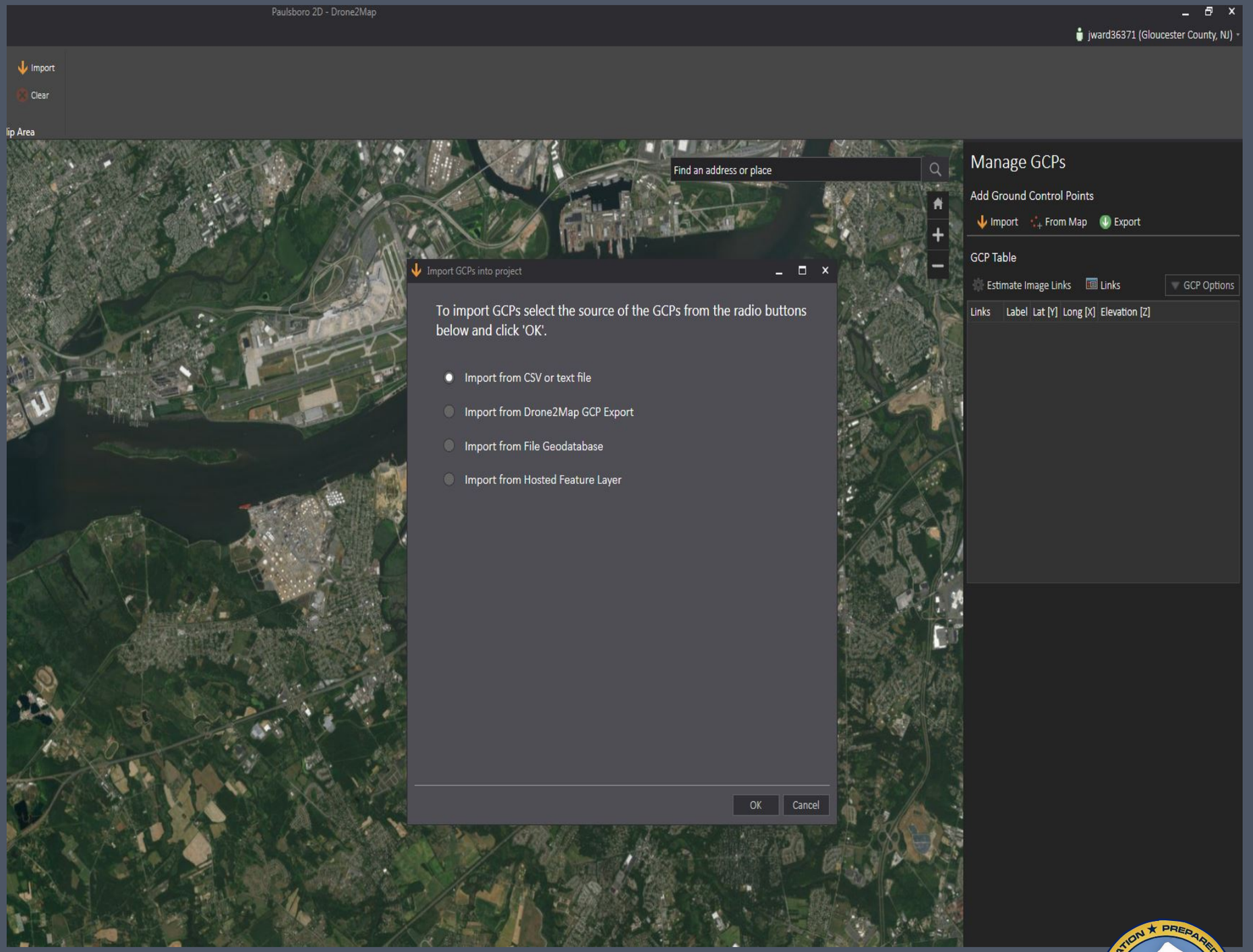
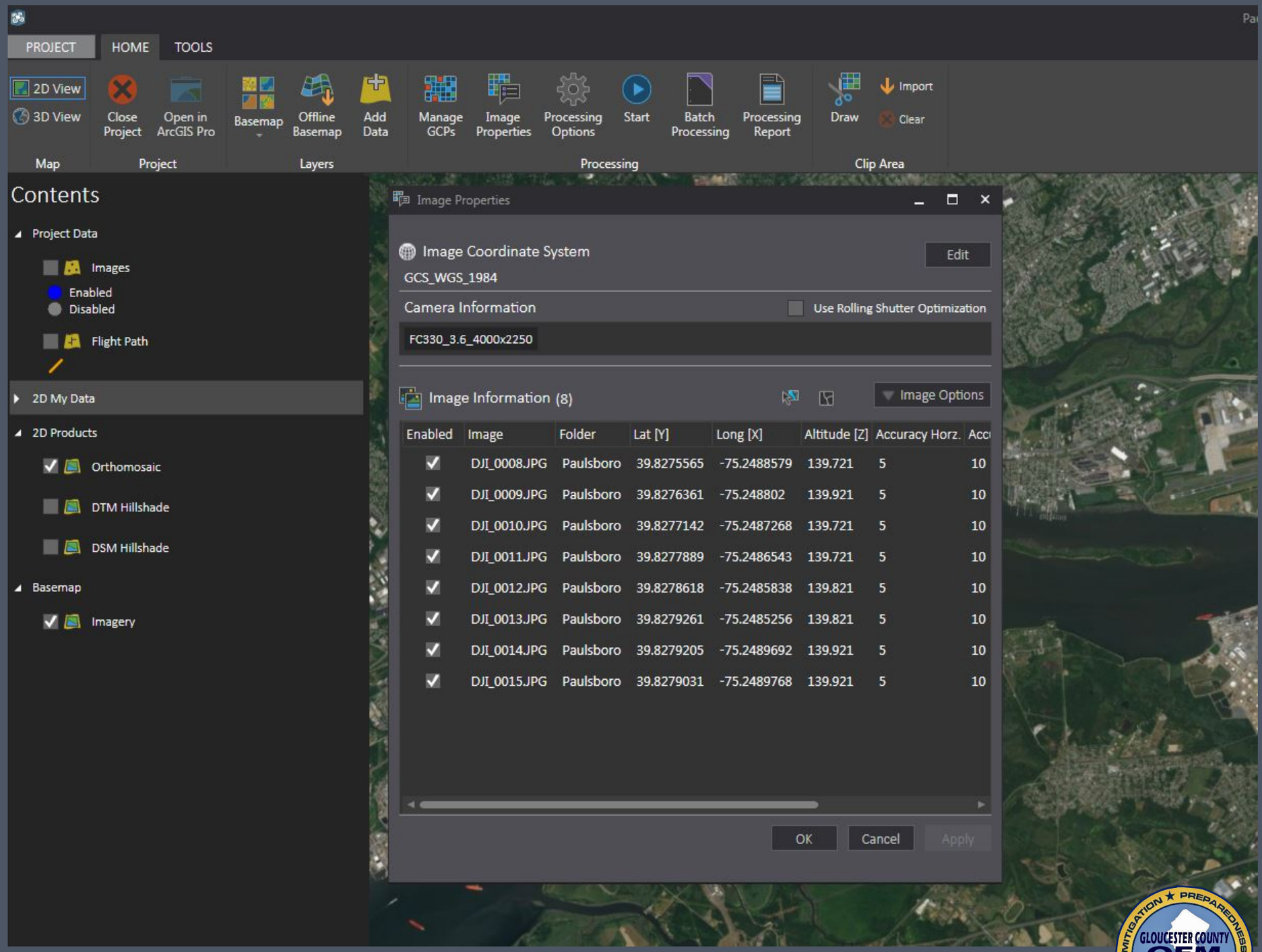


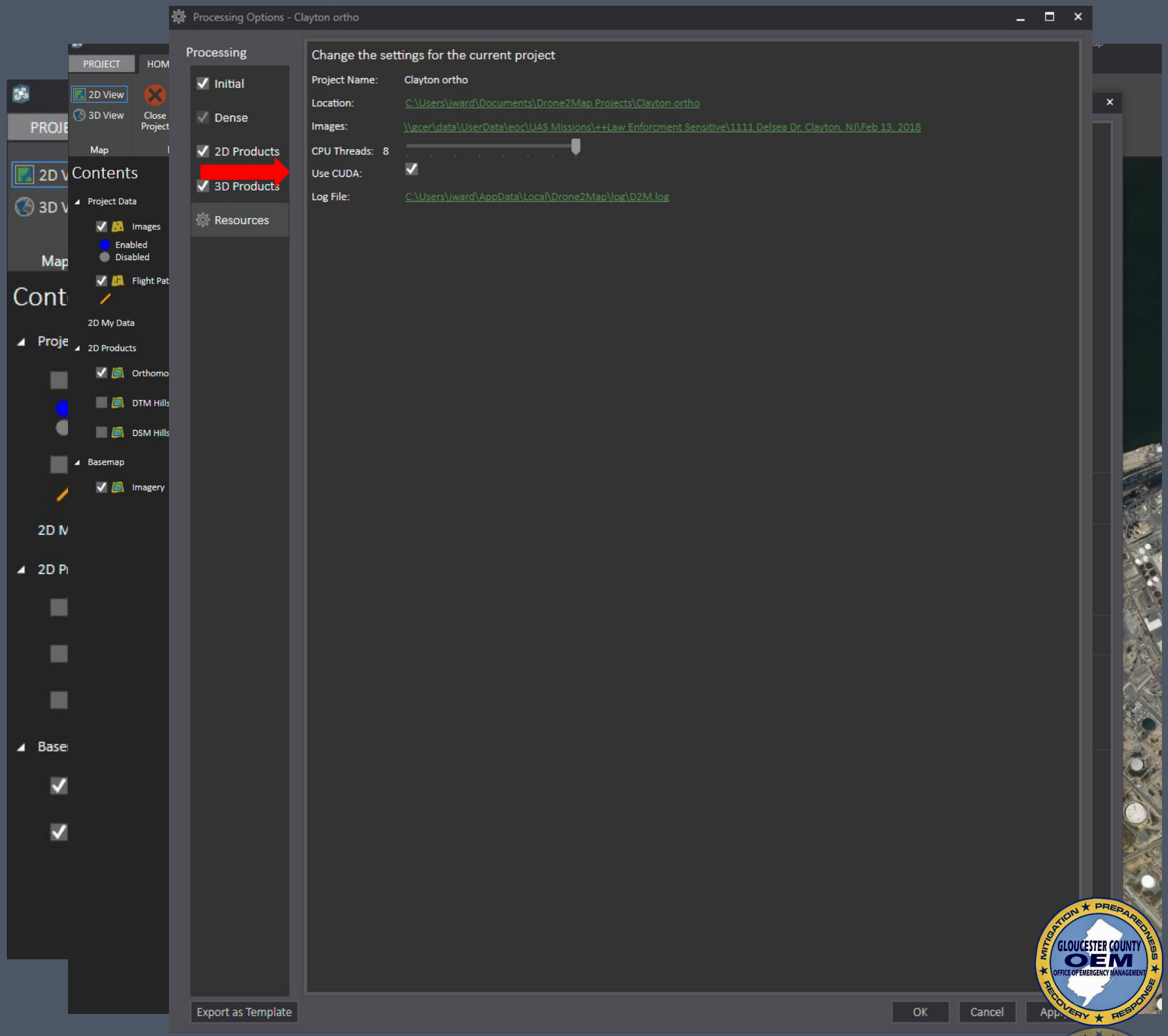
IMAGE PROPERTIES

- View image properties
- [x] [Y], and [Z] reference
- Edit coordinate system



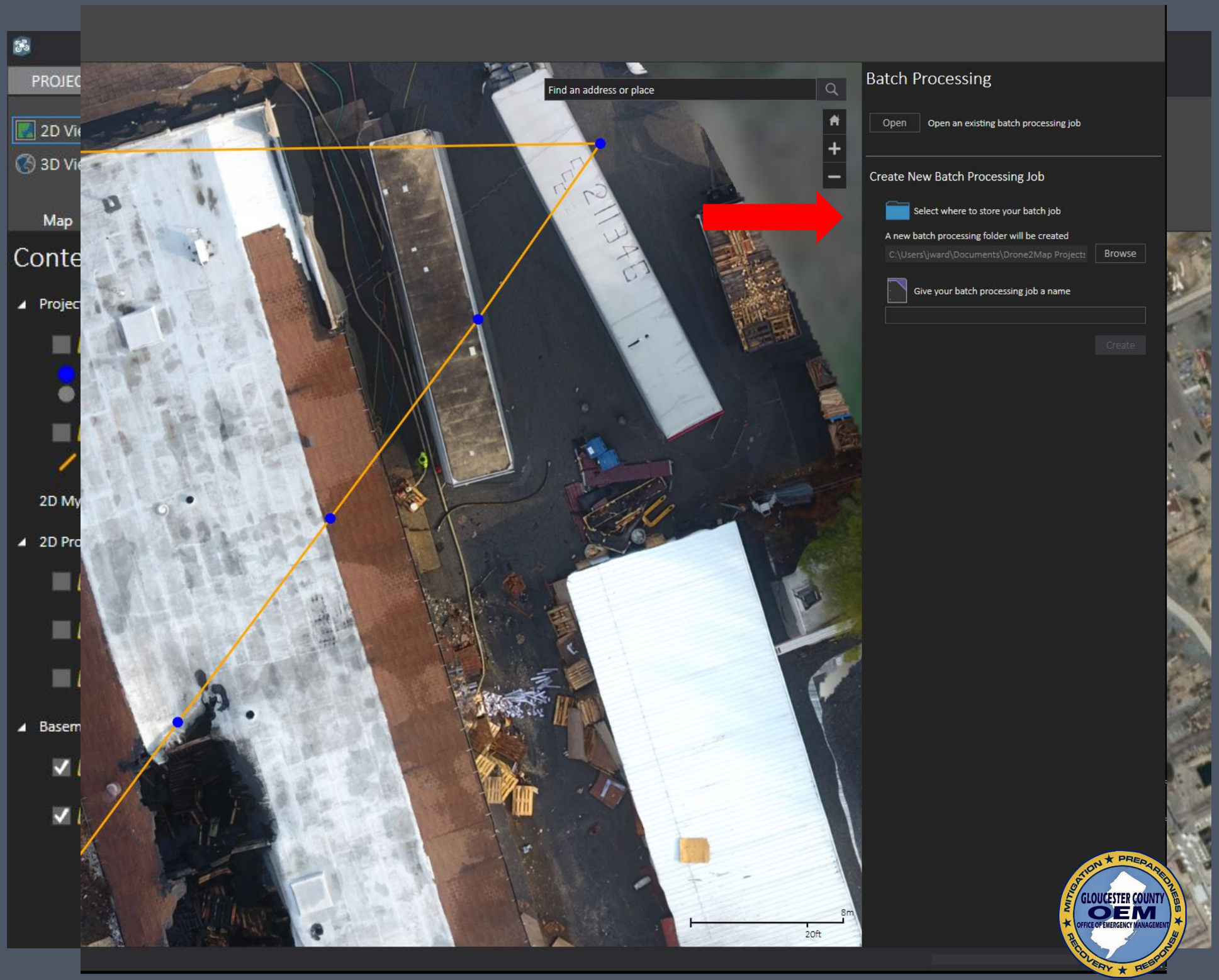
PROCESSING OPTIONS

- Multiple processing options
- Adjust size and resolution
- Adjust CPU Threads



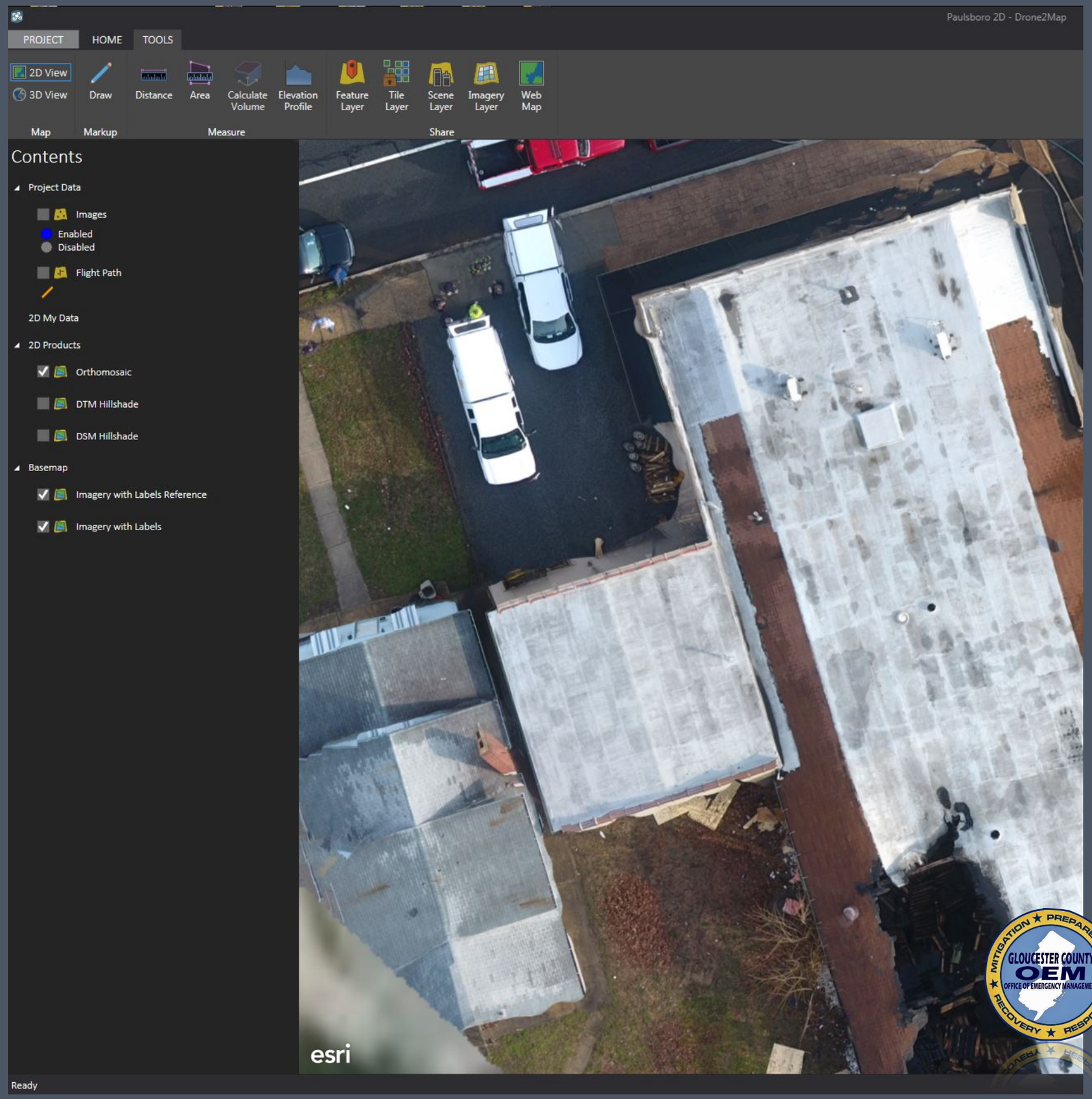
BATCH PROCESSING

- Produce back-to-back projects
- Run projects overnight



TOOLS TAB

- Measure distance, & area.
- Calculate volume and elevation profile.
- Web map export to other products/ArcGis Online/Arc Pro.



Mapping Products

ON-LINE MAPPING PRODUCTS

- Up to 3 years old for online maps
- Will not demonstrate real-time data
- Limited zoom levels

ORTHOMOSAIC

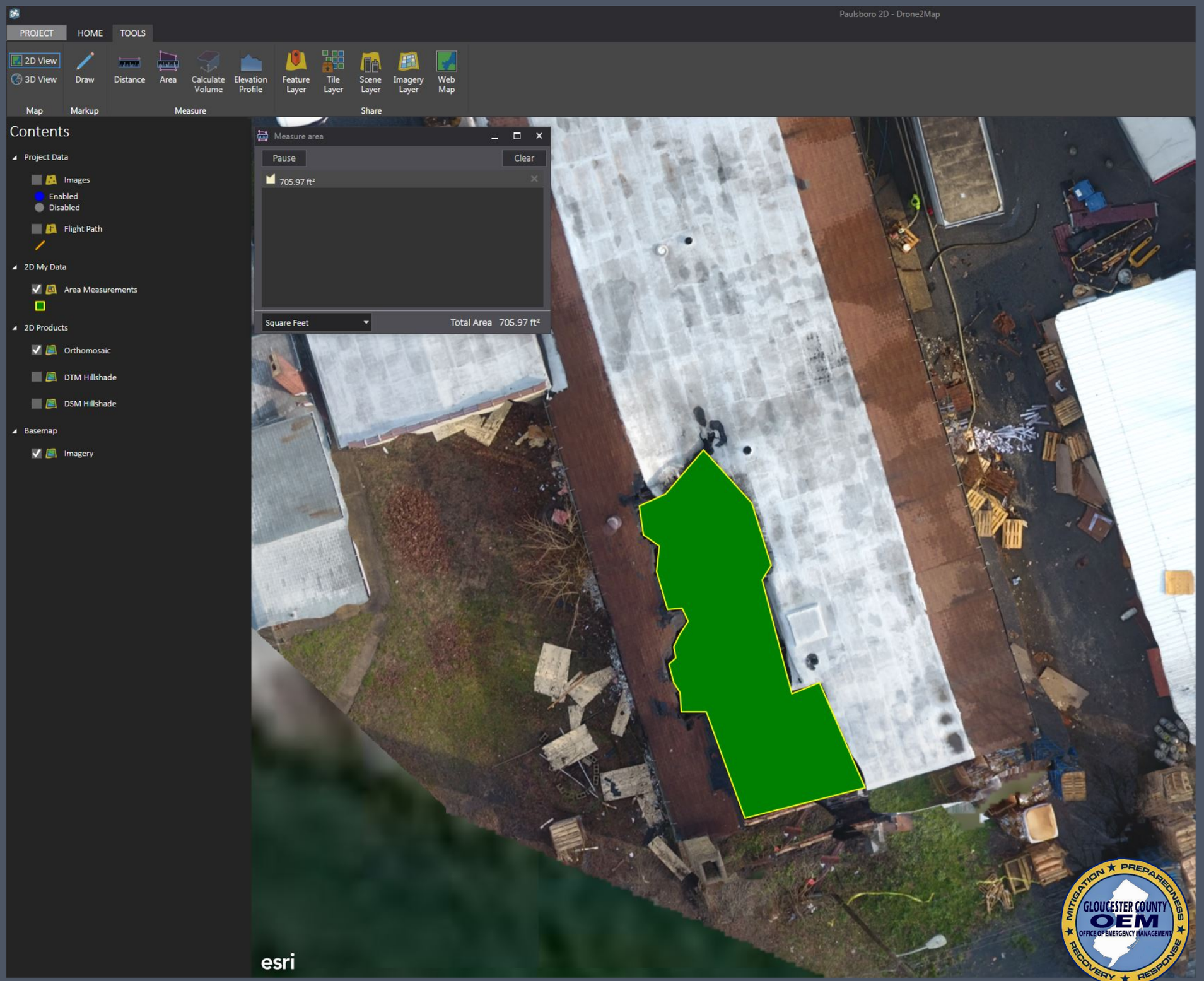
- Can be created in about an hour and as little as 5 or 10 minutes.
- Shows great detail
- Various zoom levels
- Real time situational awareness

ORTHOMOSAIC FEATURES

- DTM Hillshade
- DSM Hillshade
- Shows elevation difference

ORTHOMOSAIC FEATURES

- Calculates distance and areas
- Calculates volume and elevation with ArcGis Pro
- Use the swipe layer tool for image analysis



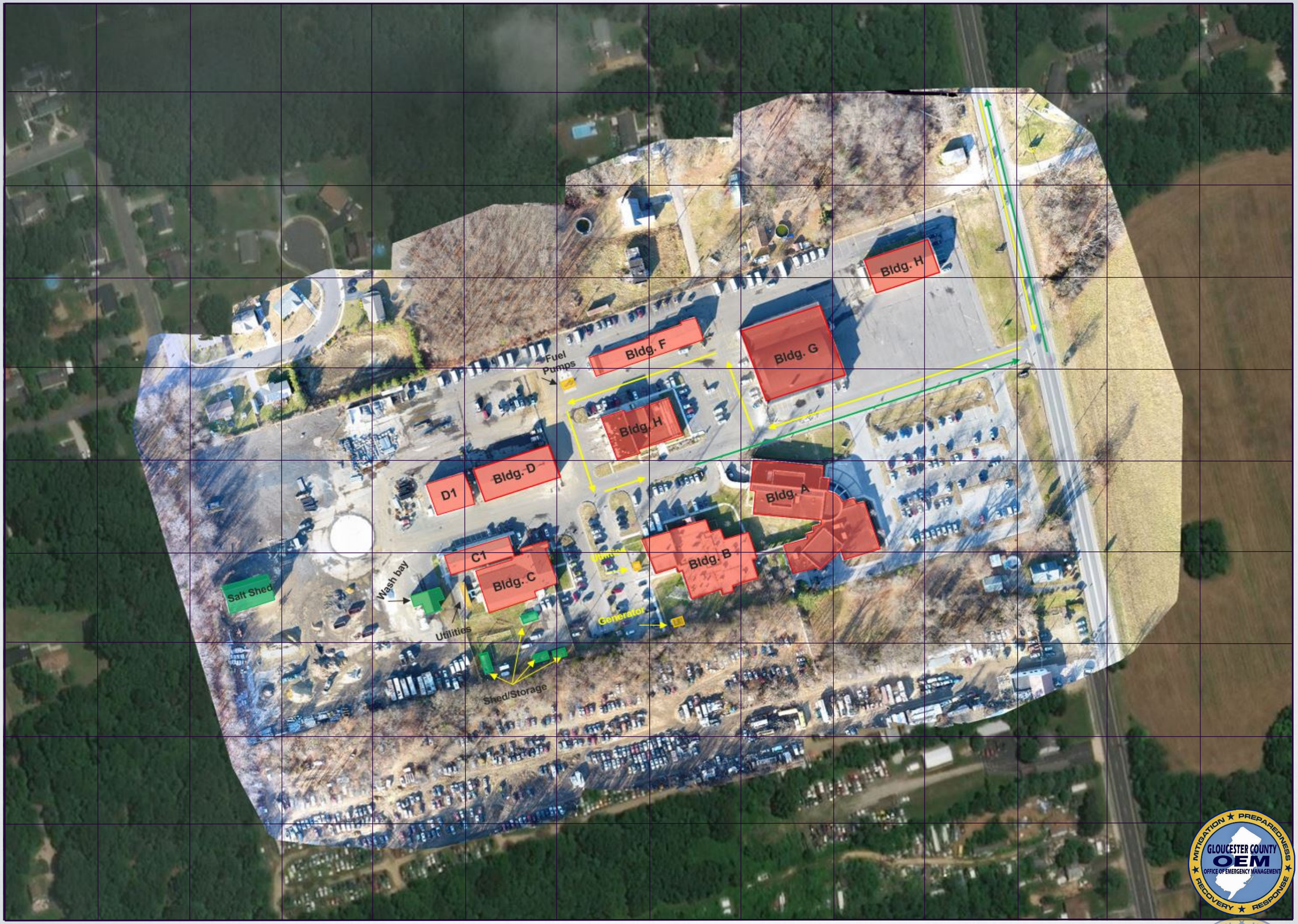
ORTHOMOSAIC EXAMPLE

PRE-PLAN EXAMPLE

Bldg. H
Bldg. F
Fuel Pumps
Bldg. G
Bldg. H
Bldg. D
D1
Bldg. A
C1
Bldg. C
Utilities
Bldg. B
Salt Shed
Wash bay
Utilities
Generator
Shed/Storage

A B C D E F G H I J K L M N

1 2 3 4 5 6 7 8 9 10



MITIGATION ★ PREPAREDNESS ★ RESPONSE ★ RECOVERY
GLOUCESTER COUNTY OEM
OFFICE OF EMERGENCY MANAGEMENT

REGULATION FAST FACTS

- FAA considers small Unmanned Aerial Systems (sUAS) to be aircraft. Up to 55lbs including payload
- All sUAS must be registered with the FAA (commercial or non-commercial).
- Must operate under part 107 for commercial operations, and/or, Certificate of Authorization (COA) for gov operations.
- Section 333
- Must maintain visual line of sight (approx 2500 feet).
- No higher than 400 feet AGL, or 400 feet above the highest level of a structure within a 400 foot radius.
- Requires waver for night operations, operations over crowds/ people Class B airspace, unless prior authorization through COA.

COA VS PART 107

- COA or Certificate of Authorization is authorization for specific public UAS activity. Examples: missing person, Hazmat Response, active shooter, barricaded persons etc.

- Part 107 is anything else outside of COA specifics. This includes reimbursement from outside treasuries

STARTING A DRONE PROGRAM

- Purpose or Solution
- Develop policies & procedures (aka SOG's)
- Training
- Cost or cost reimbursement for training
- Insurance
- Choosing the right platform!!!!!
- Maintenance and logs
- More training

OPERATING A DRONE PROGRAM

- Maintenance logs. Batteries, hardware changes, inspections, firmware upgrades etc.
- Aviation weather check (METAR/TAF)
- Temporary flight restrictions (TFR) check
- Review aeronautical chart or TAC
- Review airspace classification
- Make notifications to area airport(s) and REMCS
- Complete preflight ground check
- Complete preflight UAS check
- Post flight review and QA
- File monthly report to FAA

National Aviation Lawyer - Aviation Law Practice
Pilot Defense Attorney - Joseph Lamonaca, ATP, FAA Lead Safety Rep avlaw.us

TFR 7/4319: Football Game
Temple vs Buffalo
Kickoff at 19:30Z
TFR Effective 09/08 18:30Z - 09/08 23:30Z
SFC - 3000AGL
Will be live in 20 minutes

Magnetic disturbance of as much as 5° exists at sea level in this vicinity

SkyVector
Aeronautical Charts
Airports
Charts
Help
Fuel Prices
100LL Jet A
National Aviation Lawyer - Aviatio
Pilot Defense Attorney - Joseph Lamonaca, ATP, FAA L

Go
Flight Plan
18:11:52 Z
N39°52.12' W75°13.55'
Laye

World Hi | Enroute H-10 | Enroute H-12 | World Lo | World VFR | DC Area | Enroute L-34

BRANDYWINE (OQN)
AWOS-3 121.4
463 L 33 123.075 C
RP 9

Weather Station KPHL PHILADELPHIA (17m ago)

KPHL 081754Z 03013KT 10SM FEW020 BKN037 OVC065 19/16 A3010 RMK AO2 RAB09E35 SLP192 P0000 60025 T01940156 10206 20183 58002
TAF KPHL 081721Z 0818/0924 05011KT P6SM FEW015 OVC050
FM090300 04009KT P6SM OVC030
FM091000 06010KT 3SM RA OVC015
FM091800 08012KT 2SM +RA OVC010
FM092200 08013KT 3SM RA OVC010

National Aviation Lawyer - Aviation Law Practice
Pilot Defense Attorney - Joseph Lamonaca, ATP, FAA Lead Safety Rep avlaw.

NOTAM UAS Operating Area RDU_09/043
DEFINED AS 1.25NM RADIUS OF RDU156009.6 (9.6NM SE RDU)
SFC-850FT (SFC-400FT AGL) 1809051300-1812052300.

Close

COA: 2017-ESA-66-COA Date:____/____/____

Preflight Ground Check

Pilot: _____ Visual Observer: _____

- ☐ Weather (METAR/TAF) _____ KP____
- ☐ Location of flight: (Address) _____
- ☐ Location longitude/latitude: _____-_____-_____ by _____-_____-_____ Time: _____:_____
- ☐ Airspace Class: (circle one) Class G or Class B
- ☐ Crew Resource Management Roles & Responsibilities identified
- ☐ KPHL ATC or local airport contacted
  PHL TRACON 215-492-4123, Crosskeys Airport 609-629-3033, REMCS 1-800-544-4356
- ☐ NOTAM filed no less than 30 minutes prior to flight
  Contact flight services at 1-800-wxbrief or via wxbrief.com
- ☐ Skyvector reviewed (including TFR)
- ☐ Preflight Briefing Conducted
  This shall include area of operation, contingency plans, mission objectives, unique hazards and flight plan review.

PIC Initials: _____ VO Initials: _____ Other Crew Initials: _____

Mission Type
- ☐ *Public operations (COA)*
- ☐ *Civil operations (part 107]*

Flight Clearance

☐ YES ☐ NO

Post Flight Report

Flight Time: _____ *hours* _____ *minutes*

Total Flights: _____ Batteries Used: _____

Lost Link: yes/no Duration: _____ *minutes*

Lost Communications: yes/no Duration: _____ *minutes*
This includes lost communications between visual observer, ATC and aircraft

Additional Comments:
_____
_____
_____
_____
_____
_____

PIC Initials: _____

UAS Preflight Check List

- ☐ UAS battery fully charged
- ☐ Mobile device fully charged
- ☐ Propellers installed and secured
- ☐ Gimble lock removed
- ☐ Memory card inserted
- ☐ Hotspot established if applicable
- ☐ Turn on UAS (first)
- ☐ Turn controller (second)
- ☐ Launch App
- ☐ Confirmed ground station aircraft connection
- ☐ Calibrate compass
- ☐ Compass status clear
- ☐ Satellites Locked #_____
- ☐ Max Alt. AGL _____
- ☐ RTH AGL _____
- ☐ Format SD Card
- ☐ Check Home Point
- ☐ Battery Status
- ☐ Takeoff Hover for 30 To Check Stability (left/right, up/down, forward/backward maneuvers).

Date: _____/_____/_____

Time: _____:_____

PIC: 3948229_____

Assistants:

_____

_____

FAA Reg: _____

Location of flight:

_____

_____

*1 knot =1.15mph (abort operation if ≥ 19 knots sustained)

Comments:

_____

_____

_____

_____

Aviation Unit

Questions/Contact info

Joe ward
jward@co.gloucester.nj.us

Office phone number
856-307-7100

Ongoing Study

Community Impacts of Higher Density Development

Ongoing Study

Community Impacts of Higher Density Development

Study Goal

Improve our understanding of the local impacts and benefits of higher density residential development in communities throughout Greater Philadelphia.

Ongoing Study

Community Impacts of Higher Density Development

Study Goal

Improve our understanding of the local impacts and benefits of higher density residential development in communities throughout Greater Philadelphia.

HIGHER DENSITY

GARDEN | LOW-RISE | MID-RISE | HIGH-RISE

Ongoing Study

Community Impacts of Higher Density Development

Study Goal

Improve our understanding of the local impacts and benefits of higher density residential development in communities throughout Greater Philadelphia.

Issues Areas

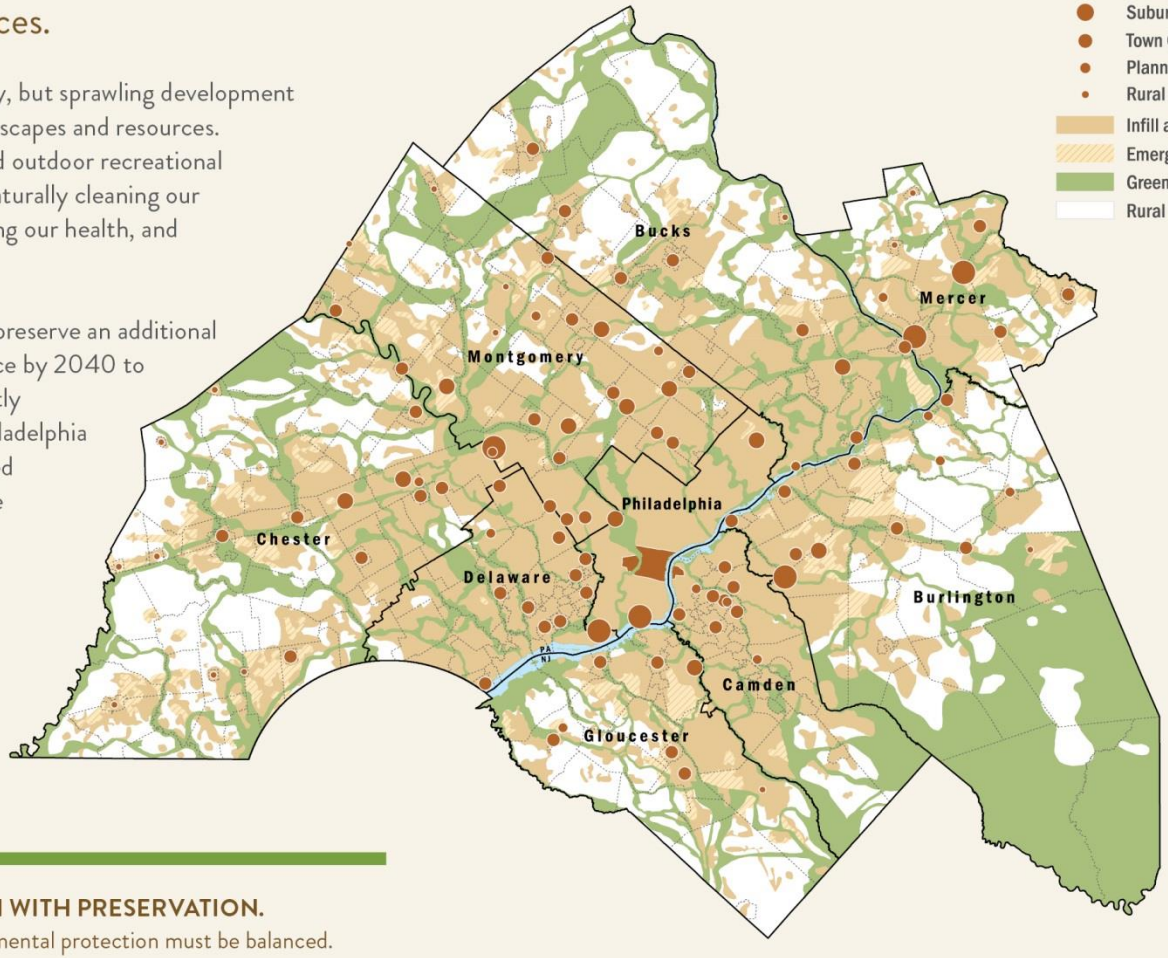
- **TRAVEL** Traffic; Parking; Safety
- **ECONOMIC** Infrastructure; Services; Property Values; Revenue
- **COMMUNITY** Safety; Community Character
- **ENVIRONMENTAL** Conservation; Efficiency

HOW CAN WE GROW RESPONSIBLY?

Manage growth and development while protecting our natural resources.

Our region is home to breathtaking beauty, but sprawling development patterns threaten our region's natural landscapes and resources. Our land is a source of local food, jobs, and outdoor recreational opportunities. It also saves us money by naturally cleaning our air and water, mitigating flooding, improving our health, and enhancing our quality of life.

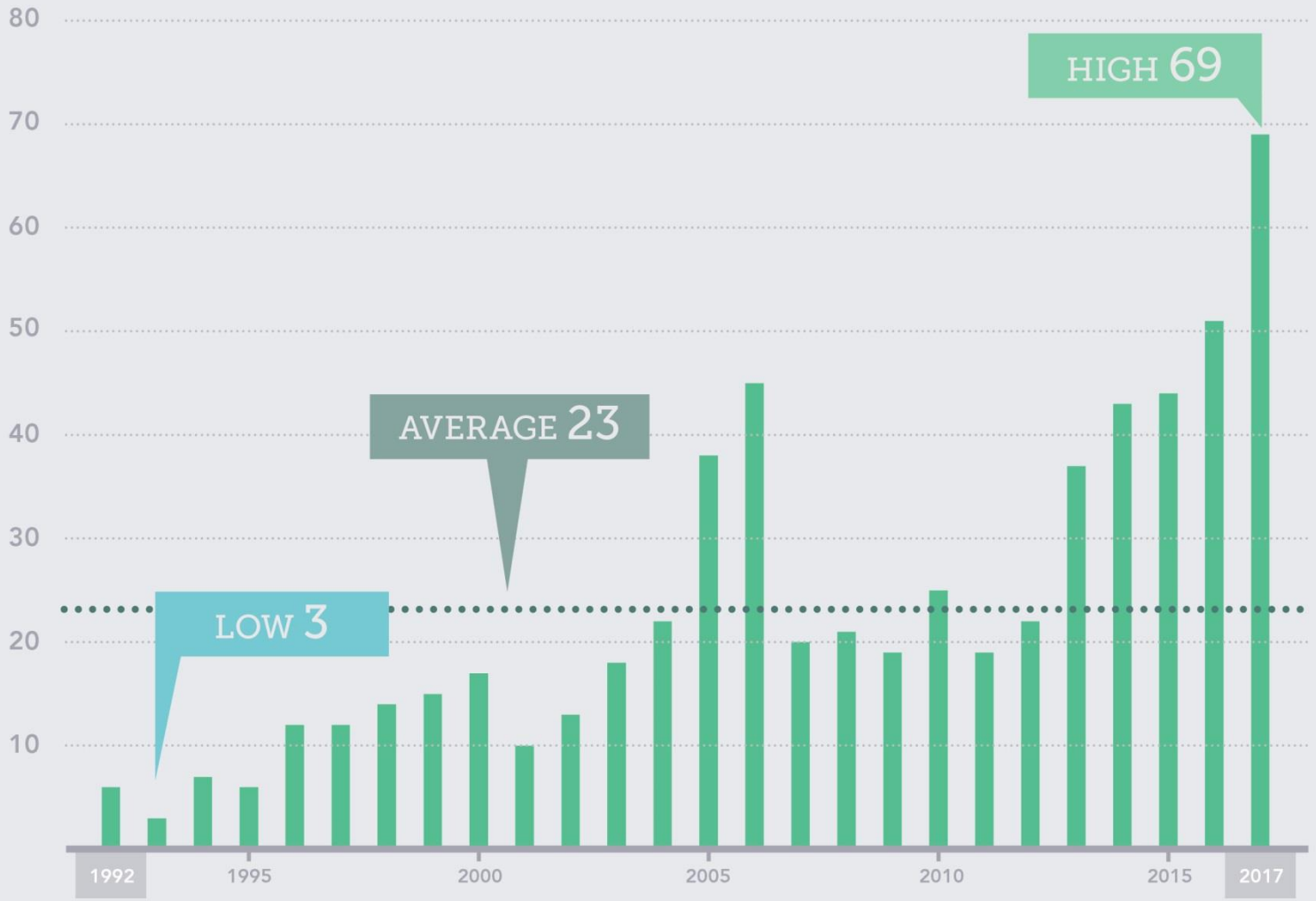
Connections 2040 outlines strategies to preserve an additional 450,000 acres of farmland and open space by 2040 to help reach a goal of one million permanently protected acres in our region. Greater Philadelphia has already made progress having preserved more than 75,000 acres over the past five years. The Plan's land use vision continues this progress.



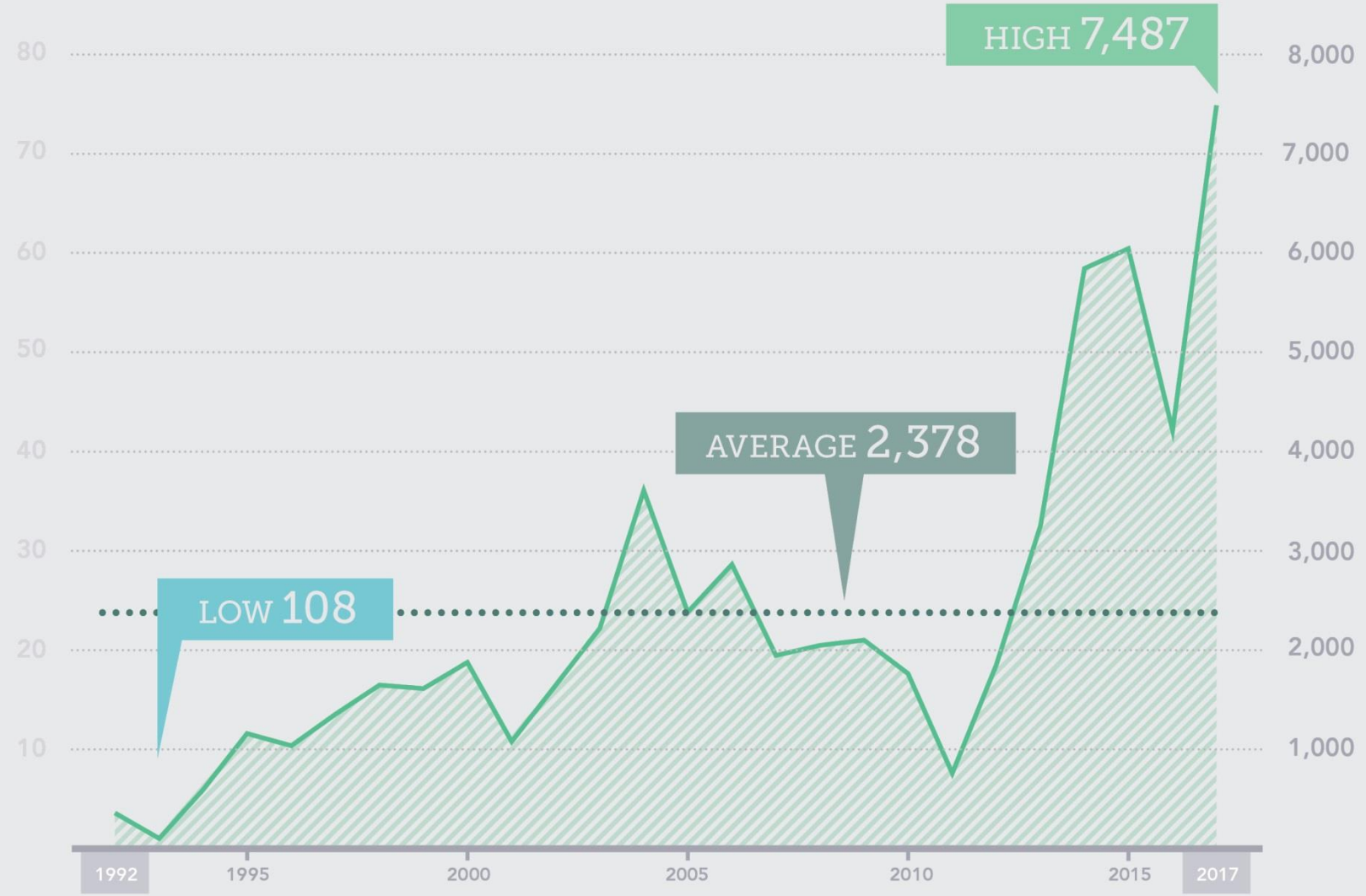
BALANCING GROWTH WITH PRESERVATION.
Development and environmental protection must be balanced. Growth should be encouraged where infrastructure already exists to limit the cost of new transportation facilities and reduce energy use and environmental impacts.

The Land Use Vision Map defines areas for open space preservation (Rural Resource Lands and Greenspace Network) as well as development (Centers, Infill and Redevelopment, and Emerging Growth).

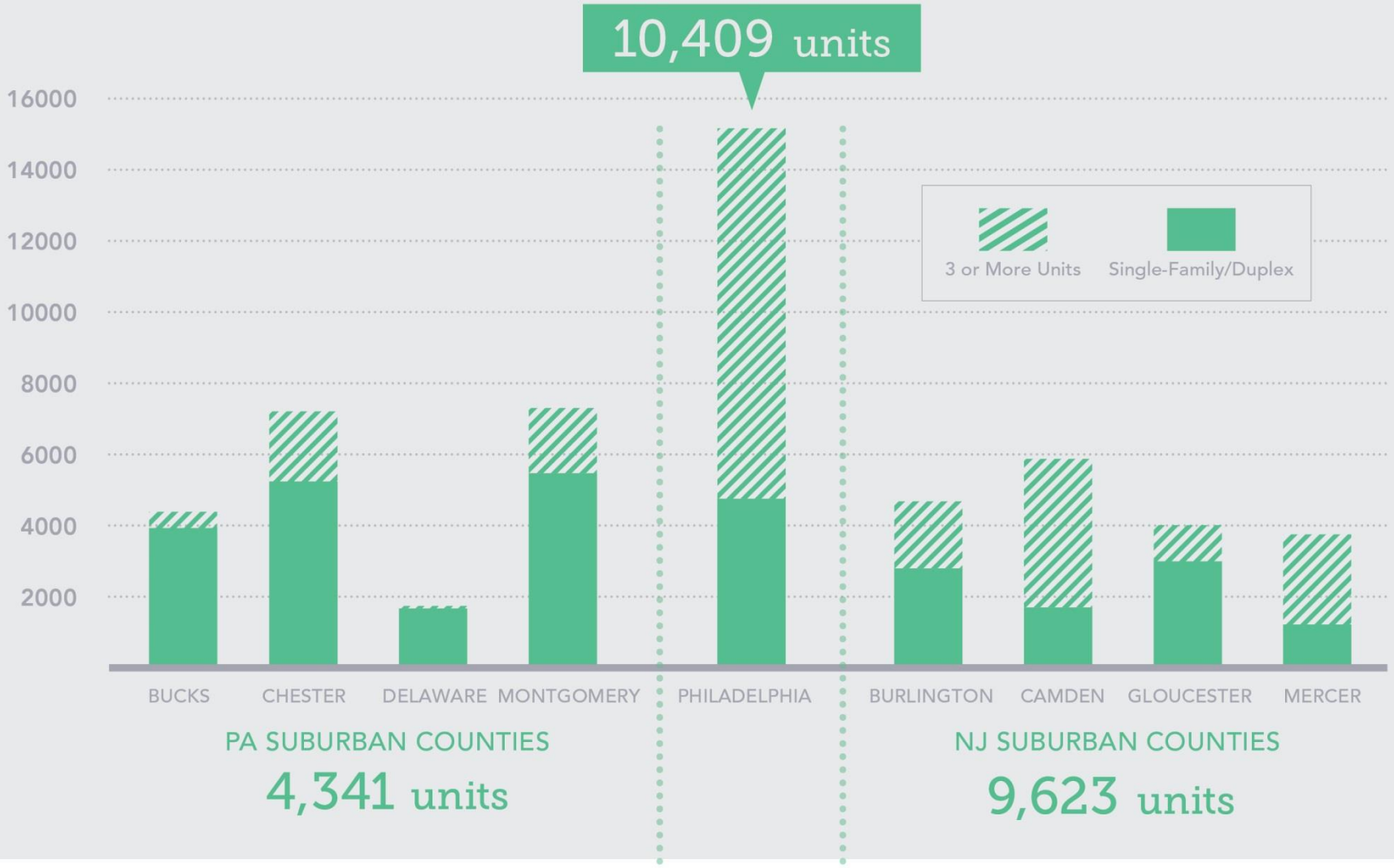
NEW MULTIFAMILY DEVELOPMENTS
COMPLETED EACH YEAR (1992-2017)



NEW MULTIFAMILY UNITS
COMPLETED EACH YEAR (1992-2017)



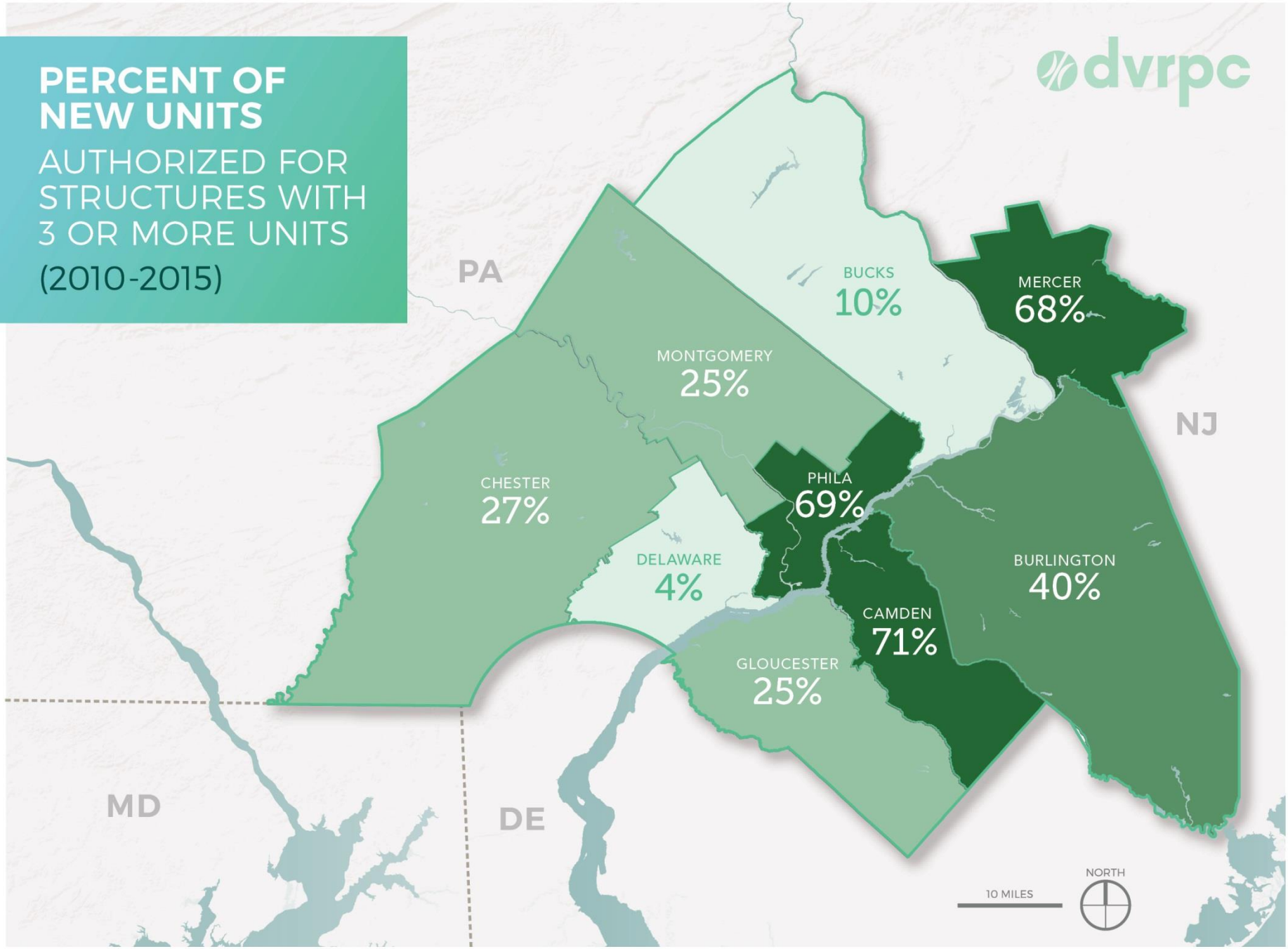
NEW RESIDENTIAL UNITS
AUTHORIZED BY CONSTRUCTION PERMITS (2010-2015)



PERCENT OF NEW UNITS

AUTHORIZED FOR STRUCTURES WITH 3 OR MORE UNITS

(2010-2015)



DATA SOURCES
HOW CAN WE MEASURE THE IMPACTS & BENEFITS OF DEVELOPMENT?

- Building Permits Survey
- CoStar Commercial Real Estate Database
- Traffic Counts
- Parking Utilization Counts
- Developer and Property Manager Interviews
- Demographic Multipliers and Summary Statistics

ESI ECONSULT SOLUTIONS INC.

COMMUNITY DATA ANALYTICS

What is a demographic multiplier?

An average ratio of demographic measures per occupied housing unit or per household.

Key Measures

- Average household size
- Number of school age children
- Vehicle availability

DATA SOURCES
HOW CAN WE MEASURE THE IMPACTS & BENEFITS OF DEVELOPMENT?

US Census Bureau
ACS Public Use Microdata Sample (PUMS)

- ACS raw data: untabulated records about individuals, households, and housing units
- 1-year, 3-year, and 5-year samples
- Geographic Areas: Region, Division, State, and Public Use Microdata Area (PUMA)

- **PUMS files allow us to conduct a custom analysis of the ACS across geography, time, and housing type**

PUMS "Mover Sample" for High Density Housing

- ✓ Living in a structure with five or more units
- ✓ Moved into unit within four years prior to the survey

- Includes all ACS respondents living in newly built units, as well as those who recently moved into older units

Resolves sample size issue with results comparable to a "recently built unit" sample

Housing

Please answer the following questions about the house, apartment, or mobile home at the address on the mailing label.

1 Which best describes this building?
Include all apartments, flats, etc., even if vacant.

- ☐ A mobile home
- ☐ A one-family house detached from any other house
- ☐ A one-family house attached to one or more houses
- ☐ A building with 2 apartments
- ☐ A building with 3 or 4 apartments
- ☐ A building with 5 to 9 apartments
- ☐ A building with 10 to 19 apartments
- ☑ A building with 20 to 49 apartments
- ☐ A building with 50 or more apartments
- ☐ Boat, RV, van, etc.

2 About when was this building first built?

- ☐ 2000 or later – *Specify year* [ ]
- ☑ 1990 to 1999
- ☐ 1980 to 1989
- ☐ 1970 to 1979
- ☐ 1960 to 1969
- ☐ 1950 to 1959
- ☐ 1940 to 1949
- ☐ 1939 or earlier

3 When did PERSON 1 (listed on page 2) move into this house, apartment, or mobile home?

Month	Year
07	2014

GEOGRAPHICAL UNITS

US Census Bureau

Public Use Microdata Areas (PUMAs)

- Nest within states and counties
- Contain at least 100,000 people
- Are geographically contiguous

GEOGRAPHICAL UNITS

US Census Bureau
Public Use Microdata Areas (PUMAs)

DVRPC Region
- 41 PUMAs

PA Suburbs
- 18 PUMAs

NJ Suburbs
- 10 PUMAs

Philadelphia City/County
- 11 PUMAs

DVRPC Planning Areas

Core Cities
- 13 PUMAs

Developed Communities
- 18 PUMAs

Growing Suburbs
- 10 PUMAs

Development of Demographic Multipliers for the DVRPC Region

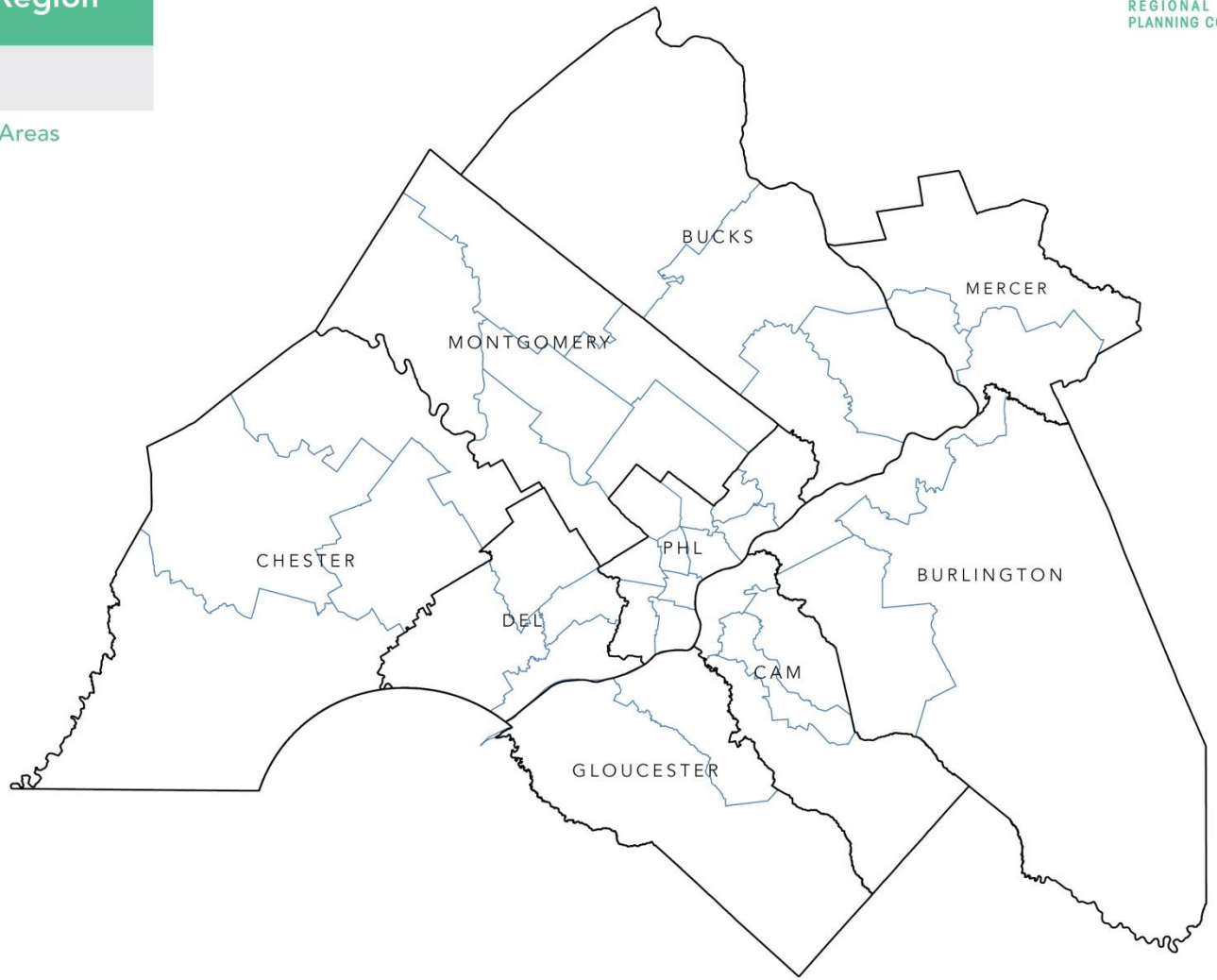
GEOGRAPHIC CONSIDERATIONS

PUMA Boundaries & DVRPC Planning Areas

Development of Demographic Multipliers for the DVRPC Region

GEOGRAPHIC CONSIDERATIONS

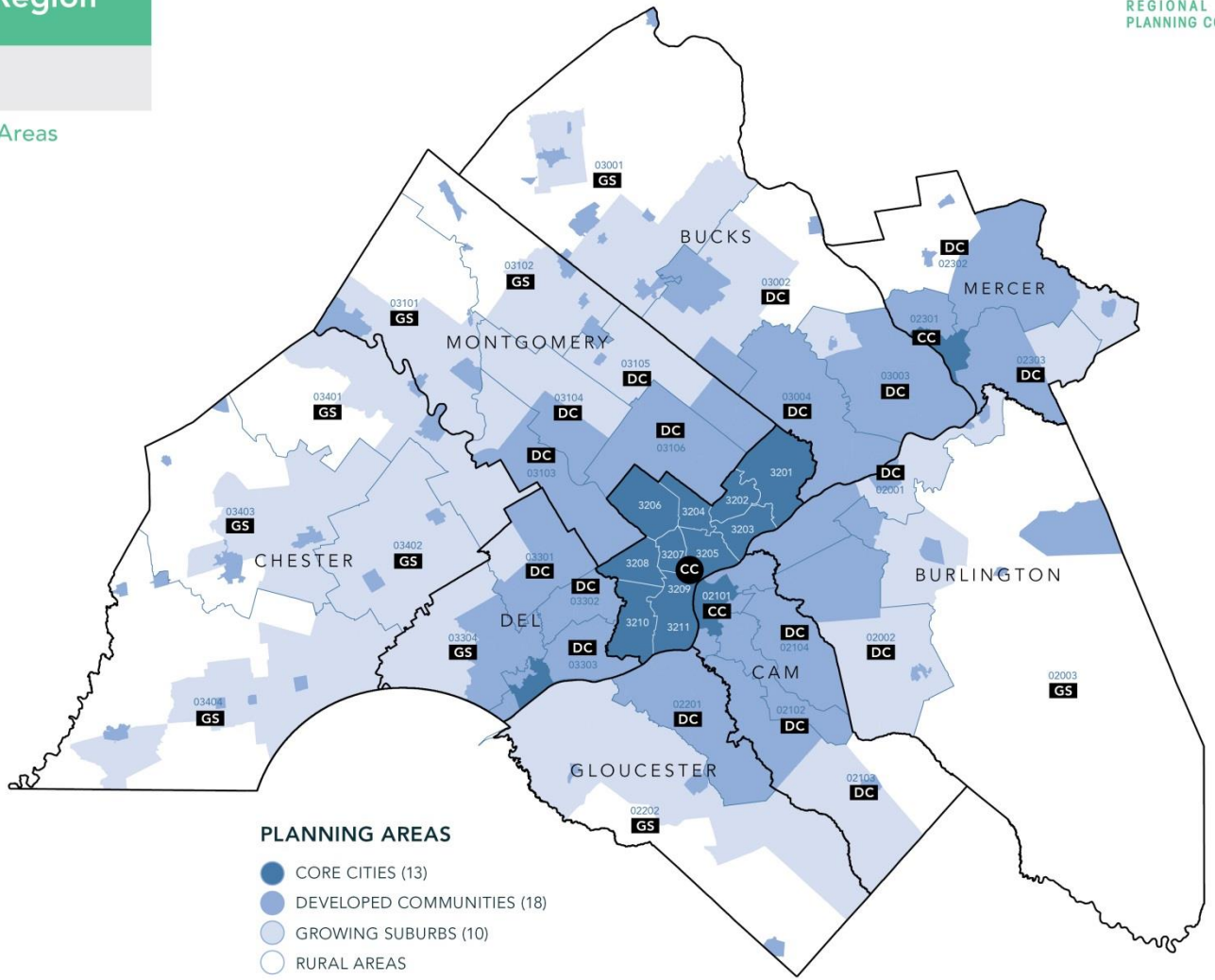
PUMA Boundaries & DVRPC Planning Areas

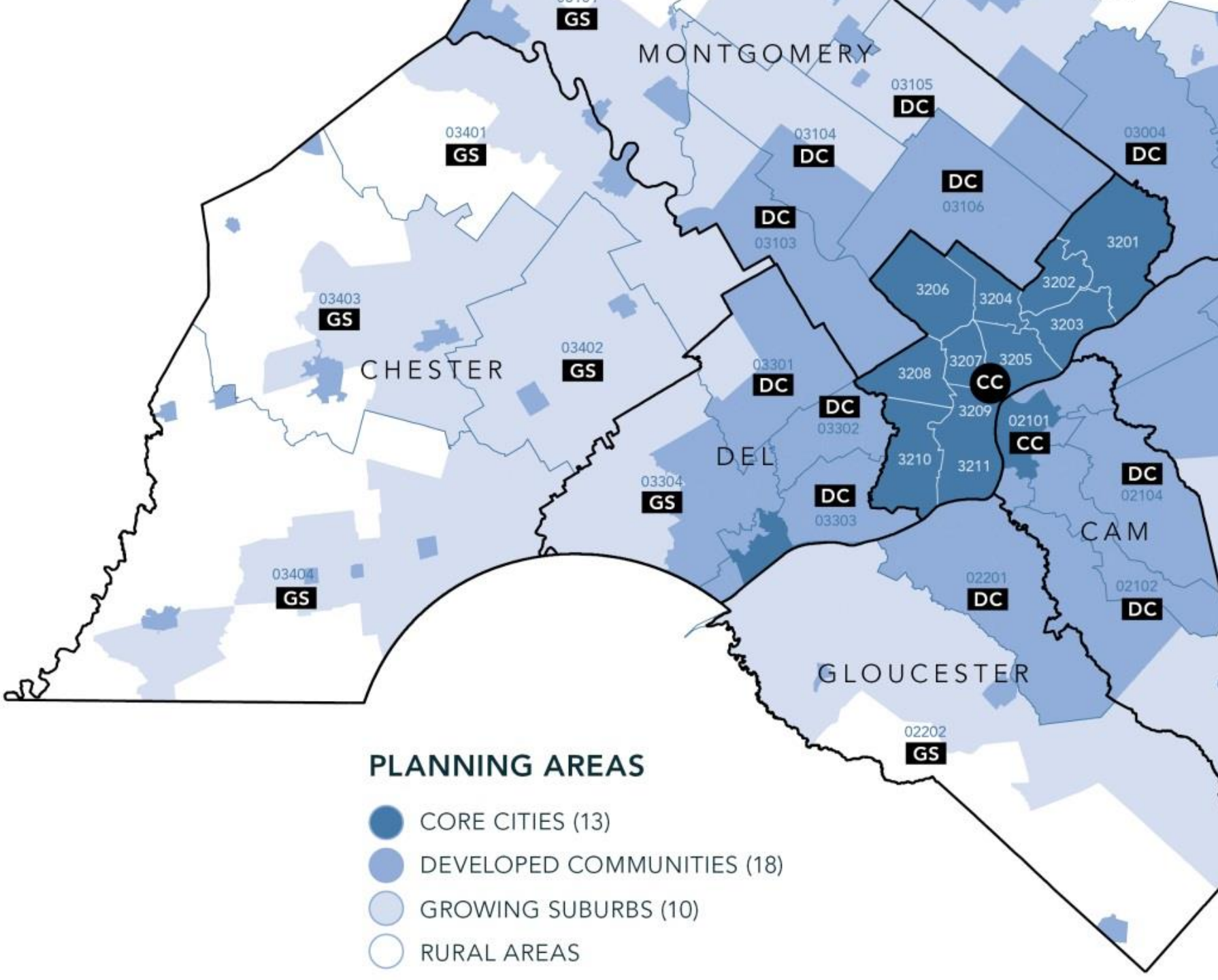


Development of Demographic Multipliers for the DVRPC Region

GEOGRAPHIC CONSIDERATIONS

PUMA Boundaries & DVRPC Planning Areas




MONTGOMERY
CHESTER
DEL
CAM
GLOUCESTER
03401 GS
03403 GS
03402 GS
03404 GS
03105 DC
03104 DC
03004 DC
DC 03106
DC 03103
03301 DC
DC 03302
03304 GS
DC 03303
3201
3202
3203
3204
3206
3207
3205
3208
CC
3209
02101 CC
3210
3211
DC 02104
02201 DC
02102 DC
02202 GS
PLANNING AREAS
CORE CITIES (13)
DEVELOPED COMMUNITIES (18)
GROWING SUBURBS (10)
RURAL AREAS

What is a demographic multiplier?

An average ratio of demographic measures per occupied housing unit or per household.

Key Measures

- Average household size
- Number of school age children
- Vehicle availability

MULTIFAMILY MULTIPLIERS
SCHOOL-AGED CHILDREN

	2012–2016 PUMS Data RECENT MOVERS, MULTIFAMILY, RENTER-OCCUPIED, 5+ UNIT STRUCTURE			
School Aged Children	All	1BR/Studio	2BR	3BR
The aggregate 9-county DVRPC region	0.16	0.03	0.32	0.88
Suburban Pennsylvania	0.16	0.04	0.28	1.07
Suburban New Jersey	0.23	0.04	0.43	0.99
Philadelphia County	0.10	0.02	0.25	0.54
Core Cities	0.12	0.02	0.30	0.74
Developed Communities	0.18	0.05	0.34	0.82
Growing Suburbs	0.17	0.03	0.28	1.27

Impact Analysis for Local Schools

- Collectively, apartments in recent dense developments in our region yield between 0.10 and 0.23 school-aged children per unit
- A “Growing Suburb” can estimate 1 student per 7 apartments
- Larger units with more bedrooms generate more students

MULTIFAMILY MULTIPLIERS VS. SINGLE FAMILY MULTIPLIERS
SCHOOL-AGED CHILDREN

	2012–2016 PUMS Data	
	RECENT MOVERS, MF RENTAL, 5+ UNITS	ALL SINGLE FAMILY
School Aged Children	All	All
The aggregate 9-county DVRPC region	0.16	0.62
Suburban Pennsylvania	0.16	0.61
Suburban New Jersey	0.23	0.68
Philadelphia County	0.10	0.60
Core Cities	0.12	0.64
Developed Communities	0.18	0.62
Growing Suburbs	0.17	0.61

What is a demographic multiplier?

An average ratio of demographic measures per occupied housing unit or per household.

Key Measures

- Average household size
- Number of school age children
- Vehicle availability

MULTIFAMILY MULTIPLIERS
VEHICLES PER HOUSEHOLD

	2012–2016 PUMS Data RECENT MOVERS, MULTIFAMILY, RENTER-OCCUPIED, 5+ UNIT STRUCTURE			
Vehicles per Unit	All	1BR/Studio	2BR	3BR
The aggregate 9-county DVRPC region	0.94	0.76	1.23	1.33
Suburban Pennsylvania	1.11	0.90	1.39	1.61
Suburban New Jersey	1.02	0.85	1.24	1.48
Philadelphia County	0.68	0.55	0.96	0.87
Core Cities	0.68	0.55	0.95	0.83
Developed Communities	1.10	0.90	1.34	1.72
Growing Suburbs	1.13	0.92	1.38	1.43

Impact Analysis for Local Travel

- Collectively, apartments in recent dense developments in our region yield between 0.68 and 1.13 vehicles per unit
- A “Developed Community” can estimate 11 cars per 10 apartments

MULTIFAMILY MULTIPLIERS OVER TIME
VEHICLES PER HOUSEHOLD

	2012–2016 PUMS	2007–2011 PUMS
	RECENT MOVERS, MULTIFAMILY, RENTER-OCCUPIED, 5+ UNIT STRUCTURE	
Vehicles per Unit	All	All
DVRPC region	0.94	0.92
Suburban Pennsylvania	1.11	1.12
Suburban New Jersey	1.02	0.99
Philadelphia County	0.68	0.61
Core Cities	0.68	0.64
Developed Communities	1.10	1.06
Growing Suburbs	1.13	1.14

Other summary statistics

Summarize other demographic measures across the recent mover sample.

Key Measures

- Age cohorts
- Educational attainment
- Means of commute
- Commuting time
- Median income
- Occupation
- Race/Ethnicity
- Household type

WHO LIVES IN MULTIFAMILY HOUSING?
AGE BRACKET SUMMARY STATISTICS COMPARISON

		Age Bracket	0–4	5–17	18–24	25–34	35–54	55–64	65+
2012–2016 PUMS	RECENT MOVERS, MULTIFAMILY, RENTER-OCCUPIED, 5+ UNIT STRUCTURE	DVRPC Region	6.9%	9.1%	12.6%	30.9%	21.2%	7.2%	12.2%
		NJ Suburbs	9.0%	12.1%	10.9%	26.1%	21.9%	8.2%	11.6%
		PA Suburbs	6.4%	9.1%	12.0%	28.9%	22.3%	6.3%	15.0%
		Philadelphia County	5.6%	6.3%	14.8%	37.9%	19.0%	7.6%	8.9%
		Core Cities	6.3%	7.5%	14.2%	35.5%	19.5%	8.1%	8.9%
		Developed Communities	7.4%	10.1%	9.9%	30.1%	22.2%	7.1%	13.2%
		Growing Suburbs	6.6%	9.5%	16.5%	23.8%	21.8%	5.9%	15.9%
2012–2016 ACS	TOTAL POPULATION	DVRPC Region	6.0%	16.4%	9.7%	13.8%	26.7%	13.0%	14.5%
		NJ Counties	5.7%	16.7%	9.5%	12.7%	27.8%	13.1%	14.4%
		New Jersey	5.9%	16.6%	8.9%	12.9%	28.0%	12.9%	14.7%
		PA Counties	6.1%	16.2%	9.8%	14.3%	26.3%	12.9%	14.5%
		Pennsylvania	5.6%	15.6%	9.6%	12.8%	25.9%	13.7%	16.7%
		Northeast Region	5.7%	15.7%	9.8%	13.4%	26.9%	13.3%	15.4%
		United States	6.2%	16.8%	9.8%	13.6%	26.3%	12.6%	14.5%

Impact Analysis for Community Character

- Young professionals make up a larger subset of renters in our region's dense housing developments than they do in the population at large

Other summary statistics

Summarize other demographic measures across the recent mover sample.

Key Measures

- Age cohorts
- Educational attainment
- Means of commute
- Commuting time
- Median income
- Occupation
- Race/Ethnicity
- Household type

WHO LIVES IN MULTIFAMILY HOUSING?
EDUCATIONAL ATTAINMENT SUMMARY STATISTICS COMPARISON

	Educational Attainment (Population 25+)	Less than high school graduate	High school graduate	Some college or Associate's degree	Bachelor's degree or higher
RECENT MOVERS, MULTIFAMILY, RENTER-OCCUPIED, 5+ UNIT STRUCTURE (2012–2016 PUMS)	DVRPC Region	9.6%	23.7%	21.8%	44.9%
	Suburban Pennsylvania	7.7%	23.8%	22.9%	45.5%
	Suburban New Jersey	12.9%	28.7%	27.6%	30.8%
	Philadelphia County	9.1%	19.2%	15.5%	56.2%
	Core Cities	10.5%	20.5%	17.1%	51.9%
	Developed Communities	8.7%	25.1%	25.4%	40.8%
	Growing Suburbs	10.1%	26.5%	21.4%	42.0%
TOTAL POPULATION (2012–2016 ACS)	DVRPC Region	10.5%	29.6%	23.7%	36.2%
	NJ Counties	9.9%	29.8%	26.0%	34.3%
	PA Counties	10.7%	29.5%	22.8%	37.0%
	New Jersey	11.9%	28.3%	45.2%	14.6%
	Pennsylvania	12.3%	32.4%	43.5%	11.8%
	Northeast Region	11.8%	28.4%	45.6%	14.2%
	United States	13.8%	30.0%	46.0%	10.2%

Impact Analysis for Community Character

- Renters in recently built dense housing are well-educated, even when compared against high regional rates of educational attainment

Thank you!

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Associate Manager,
Office of Smart Growth
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asvekla@dvrpc.org

Derek Lombardi
Planner,
Office of Smart Growth
(215) 238-2827
dlombardi@dvrpc.org

Esri User Conference
UC 2018
Highlights

Highlights

1. Expanded Living Atlas Content
2. Refined Solution Offerings
3. New Focused Products
4. Growing Integration with CAD
5. Additional Smart Mapping Techniques

- Product Road Maps/What's New
- Improved ArcGIS Online Experience and Capabilities

ArcGIS Is Advancing

Many New and Extensive Capabilities

Location Intelligence

GIS

Apps

Imagery

Mapping

Spatial Analysis

Visualization

Open

APIs

Real-Time

Big Data

Artificial Intelligence

Community Engagement

Content

3D

Data Management

Data Exploration

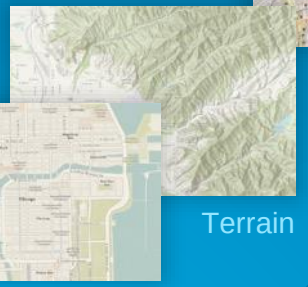
ArcGIS Living Atlas | World's Largest Digital Map Library

Basemaps

Nova

Watercolor

OpenStreetMap

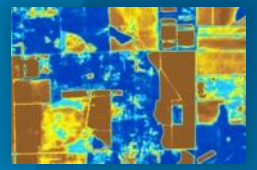


Terrain

Antique

Imagery

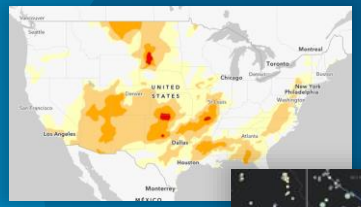
Sentinel-2



Wayback

GEOS-S & Radar

Real-Time Observations



Drought Monitor

Wildfire and Wind

Stream Gauges

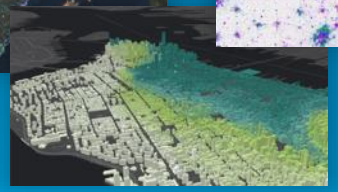
Red Cross

EPA

Demographics & Geoenrichment

Income

Population Change



Average Home Value

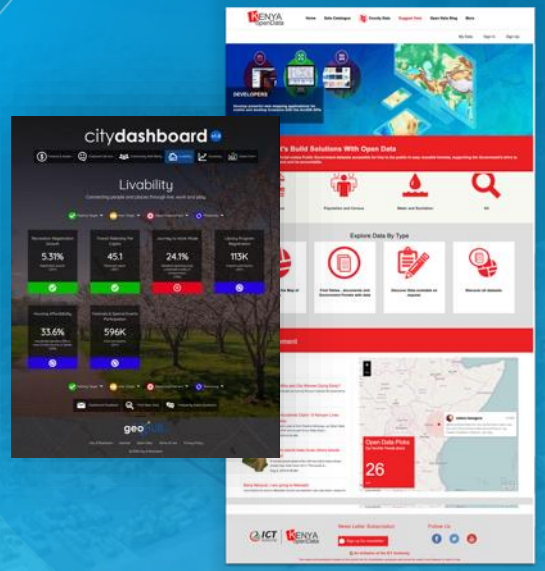
Curated and Authoritative Source

Demo

Solution Products | Directly Supporting Focused Workflows

Ready to Use

Hub
Community Engagement

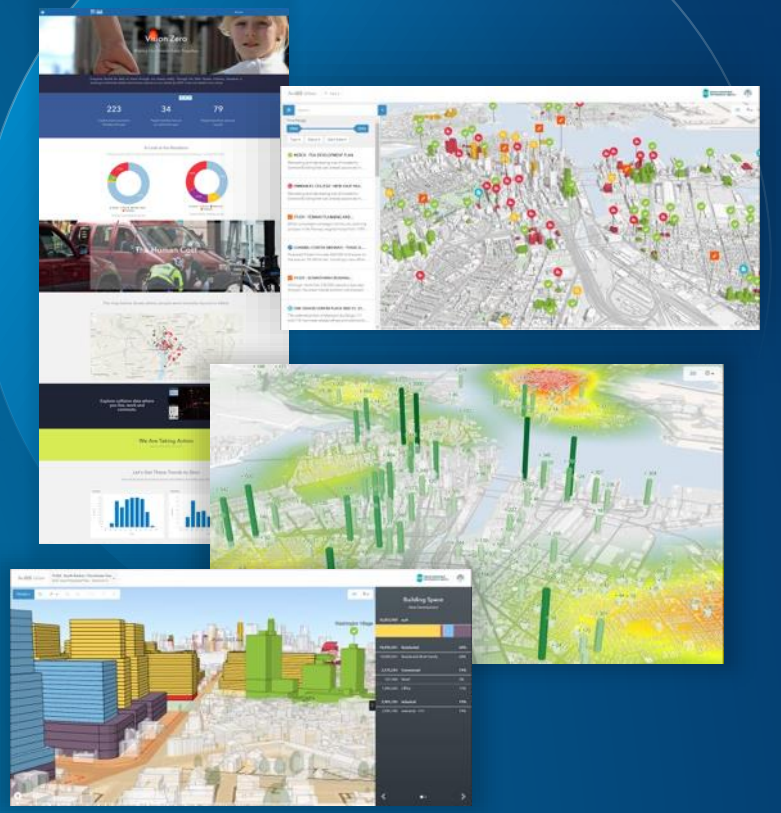


Indoors
New

Spaces, People & Assets

Urban
New

Planning & Development



Smart Solutions

Works With Your Enterprise GIS

ArcGIS Urban | Will Revolutionize City Planning and Design

New

Smart Cities

Immersive and Collaborative

Projects

Buildings
Infrastructure

Plans

Zoning
Land Use
Transportation

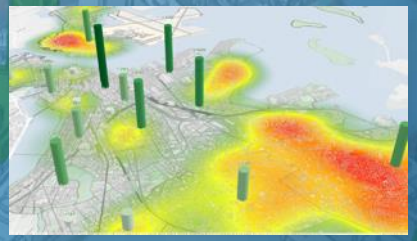
Indicators

Urban Performance
Suitability
Impact Evaluations

Digital Twin

Track and Evaluate Projects

Create Planning Scenarios



Report and Engage

Stakeholders

- Government
- Architects
- Developers
- Citizens

Transforming the Process of Urban Development . . .

ArcGIS Indoors | Assemble, Manage, and Share Indoor Information

New

Smart Buildings

Portfolio Management
Buildings
Infrastructure

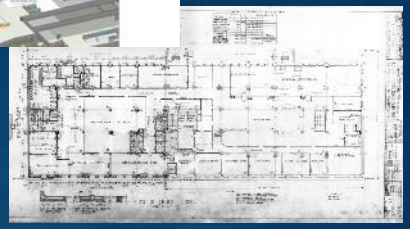
Operations
Safety & Security
Emergency Management
System of Record

Asset Management
BIM Integration
Real-Time Tracking
Problem Reporting

Wayfinding
Employee Routing
Public Kiosk

Dashboards

3D Maps


Floor Plans

Wayfinding

Stakeholders
- Business Owners
- Operators
- Employees
- Visitors

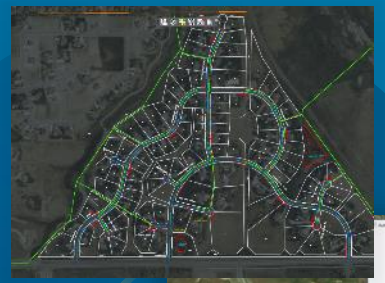
Complete Indoor Mapping and Location System

Autodesk and ArcGIS | Providing Direct Product Integration and Interoperability

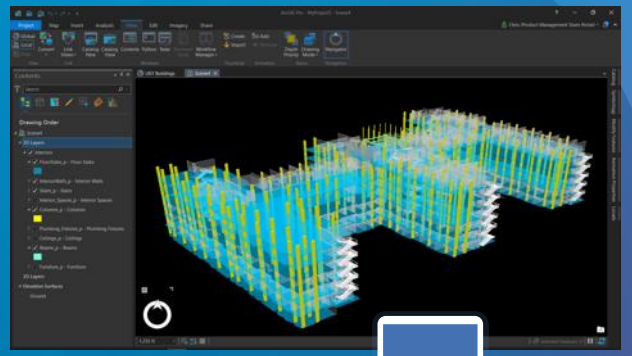
Design & Engineering

GIS

AutoCAD



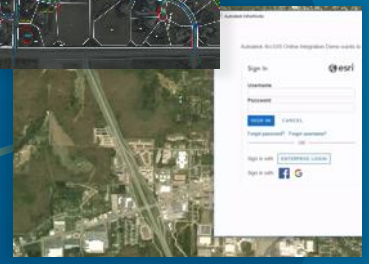
ArcGIS Pro



Revit

Direct Read

ArcGIS



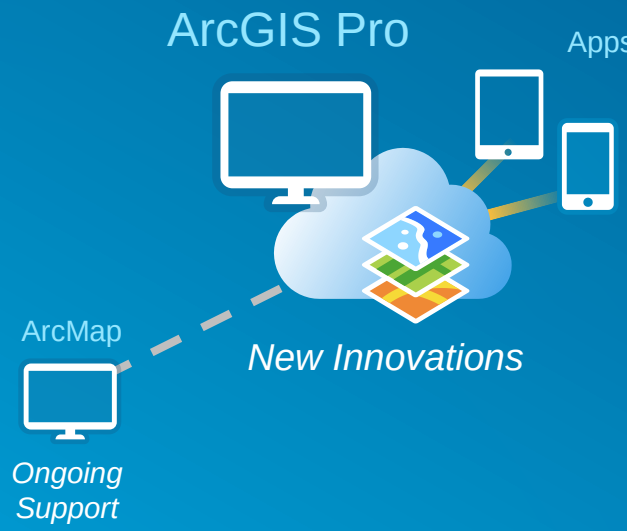
InfraWorks

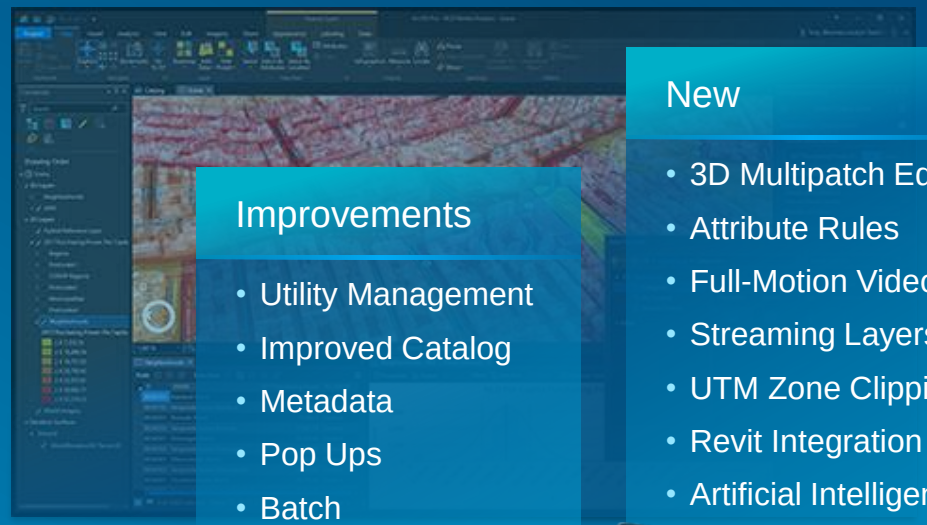
. . . Integrating Design and Planning Workflows

ArcGIS Product Components
An Integrated System
Pro
Enterprise
Online
Solutions
Continuously Advancing

ArcGIS Pro | Professional GIS

Pro 2.2





Improvements

- Utility Management
- Improved Catalog
- Metadata
- Pop Ups
- Batch Geoprocessing
- Pause Drawing

New

- 3D Multipatch Editing
- Attribute Rules
- Full-Motion Video
- Streaming Layers
- UTM Zone Clipping
- Revit Integration
- Artificial Intelligence

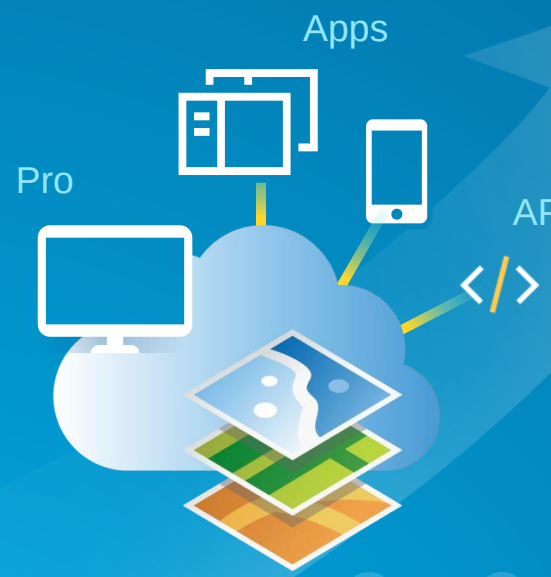
Coming

- Parcel Management
- Dimensions
- Reports
- Publish to Server
- Offset Printing
- 3D Interpolation
- Unstructured Data
- Voxels

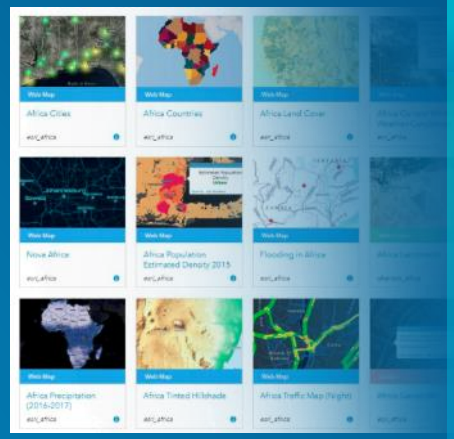
Advanced Mapping, Visualization, Editing, and Analysis

ArcGIS Pro – A Comprehensive Desktop GIS

ArcGIS Online | Complete Mapping and Location Intelligence Platform



Growing Rapidly



Content

New and Improved

- Easier Search
- Smart Mapping (2D/3D)
- Analytics
- Web Apps
- Galleries
- Authoritative Content
- External Cloud Access
- Administration
- FedRAMP Authorized

Coming

- Map Viewer Update
- Intelligent Search
- Imagery Management
- IoT Integration
- Cross-Organization Collaboration

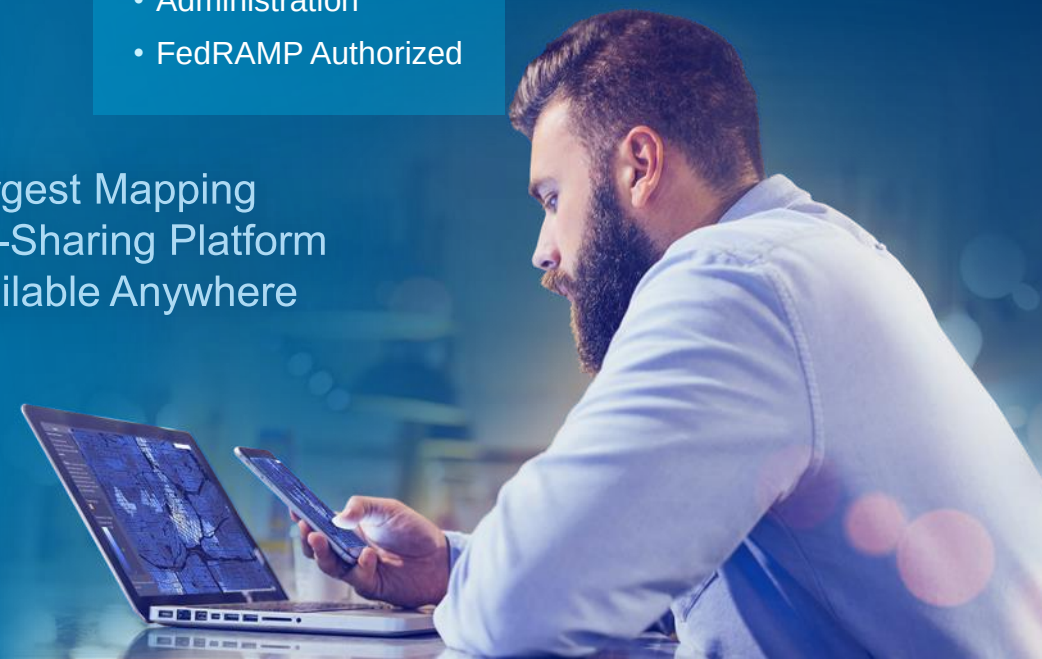
5.8+ M Users

1+ B/Day Maps

17+ M Items

59+ M Open Data Downloads

World's Largest Mapping and Data-Sharing Platform . . . Available Anywhere



Mapping, Analysis, and Field Mobility

City of Bridgeport

EDIT SETTINGS | INVITE MEMBERS | VIEW STATUS | VIEW SYSTEM HEALTH | MANAGE LICENSES

Members

Viewing: Current Members

Search for Name...

▲Name	Username	Available credits	Last login	Level	Role	Action
Artemis Vega	avega_citygis	100	Not yet	2	User	
Barry Nocks	bnocks_citygis	10	Not yet	1	Mayor/Council Memb	
Betty Bainbridge	bbain_citygis	10	Not yet	1	Mayor/Council Memb	
Carissa Schively	cschive_citygis	10	Not yet	1	Mayor/Council Memb	
Chris Kia	wikiadmin	200	Jun 6, 2018	2	Administrator	
Dan Oleary	olearydw_wiki_devext	10,000	Dec 3, 2017	2	Administrator	
Donna London	jlondon_citygis	*24,538*	Not yet	2	City Planner	
Elaina Pavlova	epavlov_citygis	100	May 25, 2018	2	Planning Intern	
Grady Hodges	ghodge_citygis	200	Not yet	2	GIS Analyst	
Jill curtis	jcurtis_citygis	*24,538*	Not yet	2	City Administrator	

Subscription Status

24,538 credits remaining

Expires: 1/30/19 RENEW

ID: 3508739093

Feature Data Store

Standard

Members per level:

1 6 of 50

2 21 of 50

City of Bridgeport

Edit

Overview | Members | Licenses | Status | Settings

City of Bridgeport

Edit settings

Subscription ID
3508739093

Feature Data Store
Standard

A

System health • View details
All systems operational

Created
May 17, 2013

Renewal date • Renew
Jan 30, 2019

Credits

B

View status

Total remaining credits
24,538.45

Last 30 days
22.72

Last 24 hours
1.77

Last 30 days — Storage — Analytics — Subscriber content

Members

Invite members | Manage members

Total members
27

C

Pending invites
2

Members per level

Level 1 — 6 / 50

Level 2 — 21 / 50

Licenses

D

Manage licenses

ArcGIS Pro

ArcGIS Pro Basic — 4 / 50

ArcGIS Pro Standard — 1 / 50

ArcGIS Pro Advanced — 3 / 50

Additional products

Drone2Map for ArcGIS — 3 / 50

AppStudio for ArcGIS — 3 / 50

+2 more apps

Overview | Members

City of Bridgeport

Subscription ID
3508739093

A

System health • View details
✓ All systems operational

Administrative contacts

B

View all

Dan Oleary

Chris Kia

Newest members

View all members

C

KG **Kelly Gerrow**
kgerrow@esri.com

KW **Kelly Wiki**
kgerrow@esri.com

Betty Bainbridge
betty_bain@cob.gov

Rena Kaufmann
rkaufmann@cob.gov

Open Data groups

View all

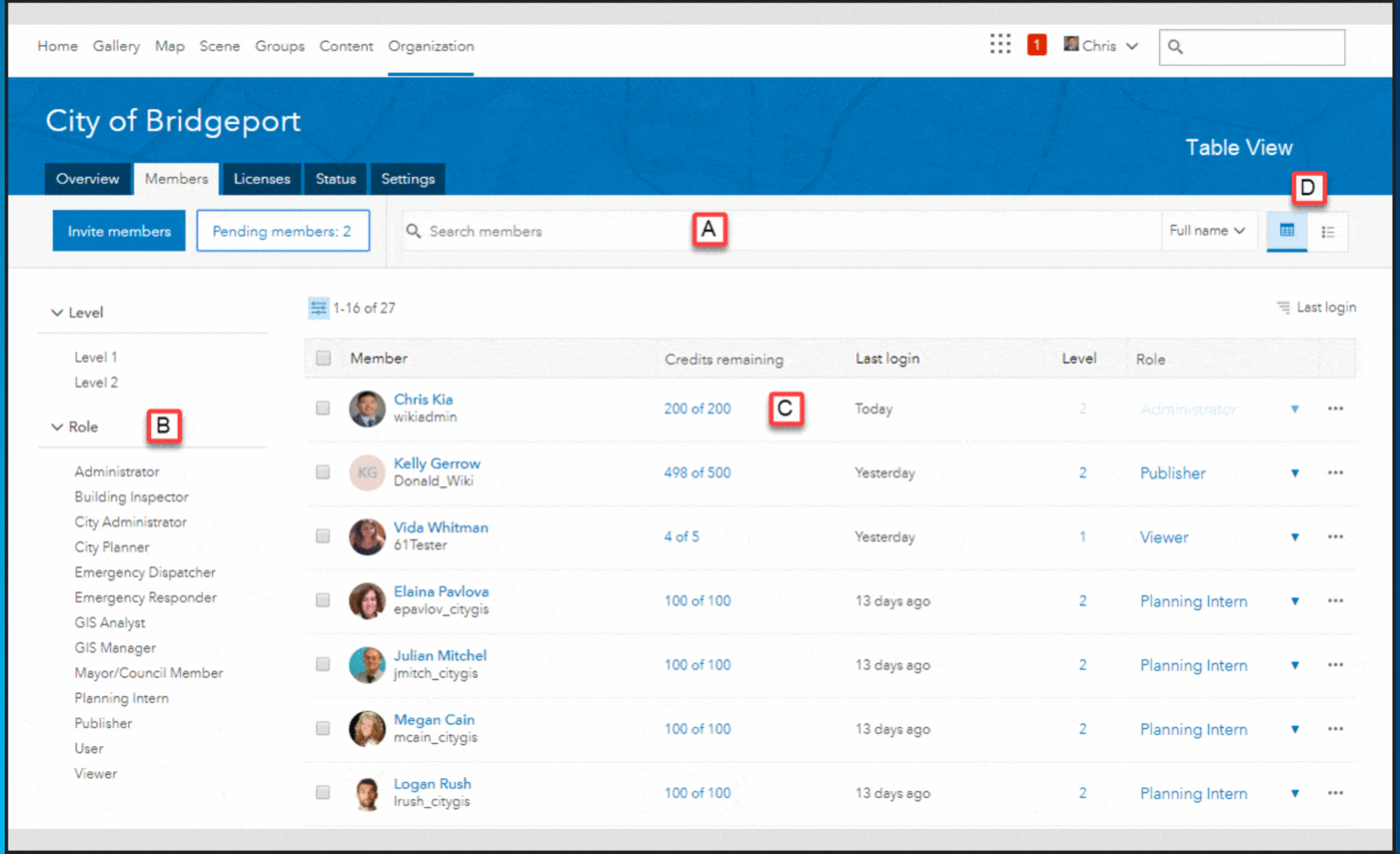
City Neighborhoods and Zoning Districts
Datasets with city neighborhoods and zoning districts
Contributors: 3 Items: 3

Health Data
Datasets with health information
Contributors: 2 Items: 1

Latest content

D

View all content


Home Gallery Map Scene Groups Content Organization
1
Chris
City of Bridgeport
Table View
Overview Members Licenses Status Settings
D
Invite members
Pending members: 2
Search members
A
Full name
Level
Level 1
Level 2
Role
B
Administrator
Building Inspector
City Administrator
City Planner
Emergency Dispatcher
Emergency Responder
GIS Analyst
GIS Manager
Mayor/Council Member
Planning Intern
Publisher
User
Viewer
1-16 of 27
Last login
Member
Credits remaining
Last login
Level
Role
Chris Kia
wikiadmin
200 of 200
C
Today
2
Administrator
Kelly Gerrow
Donald_Wiki
498 of 500
Yesterday
2
Publisher
Vida Whitman
61Tester
4 of 5
Yesterday
1
Viewer
Elaina Pavlova
epavlov_citygis
100 of 100
13 days ago
2
Planning Intern
Julian Mitchel
jmitch_citygis
100 of 100
13 days ago
2
Planning Intern
Megan Cain
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100 of 100
13 days ago
2
Planning Intern
Logan Rush
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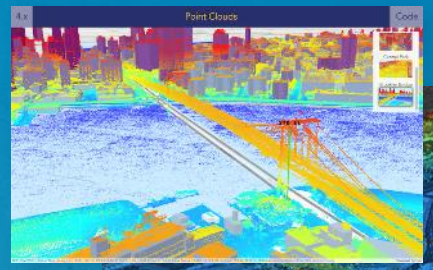
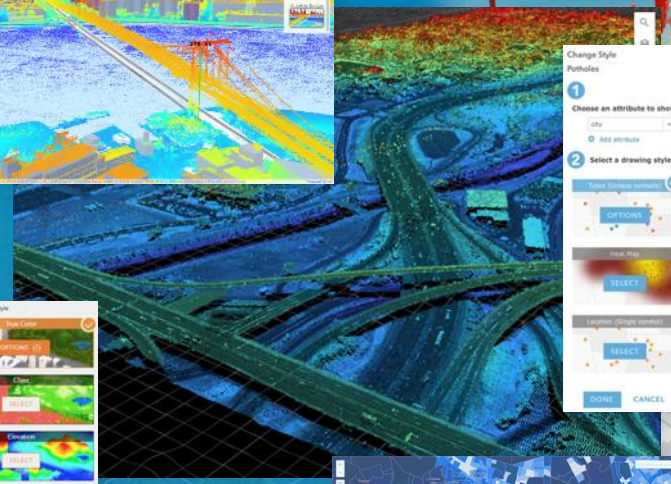
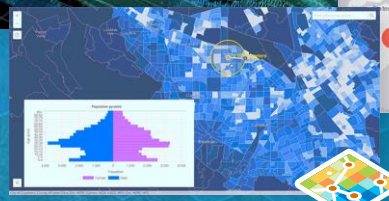
100 of 100
13 days ago
2
Planning Intern

Smart Mapping | Enabling Everyone to Make Amazing Maps



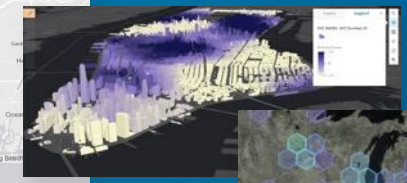


Smart 3D

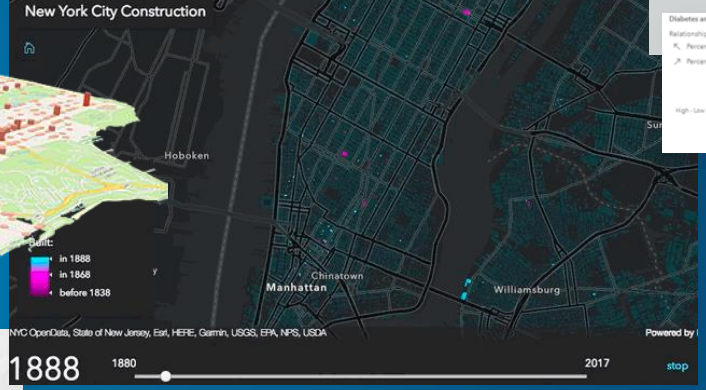


Vector Feature Tiles

Dynamic Clustering



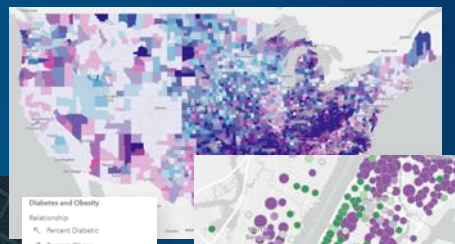
Thematic



Fast Performance WebGL

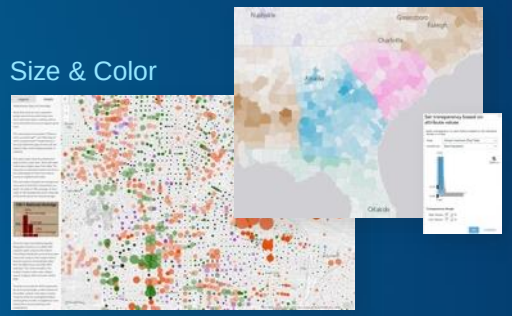
Firefly Style

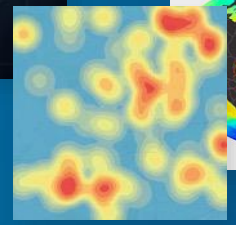
Relationship Map (Multivariant)



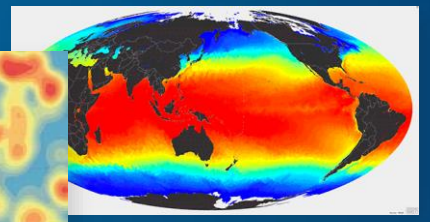
Graduated Symbols

Size & Color





Smart Heat Map

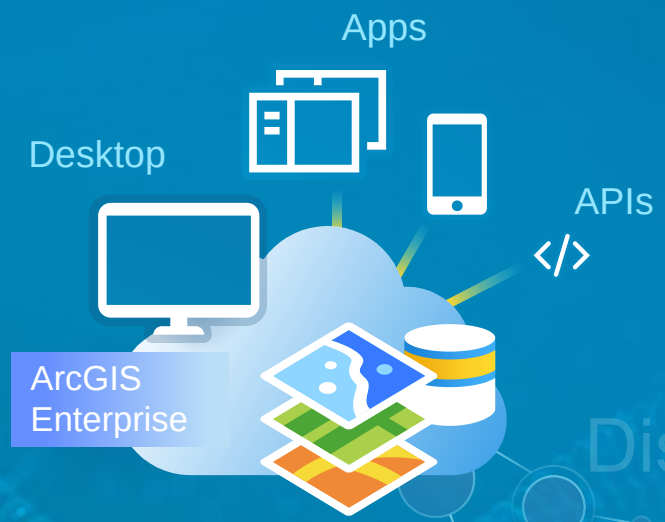


Time

Dynamic and Data-Driven Mapping

Demo

ArcGIS Enterprise | Comprehensive GIS for Your Organization



Distributed

Deployable On-Premises and in the Cloud

Sites

New and Improved

- User Experience
- Performance
- Resilience
- Big Data Analytics
- Distributed Collaboration
- Microsite Builder (Sites)
- ArcGIS Monitor

Level 1 Users
(Free in Enterprise)

Coming

- Containerization
- Intelligent Search
- Machine Learning & Predictive Analytics
- Hosted Python Notebooks

Integrated DevOps Tools

CHEF

aws

Deployment

Easier Install and Deployment

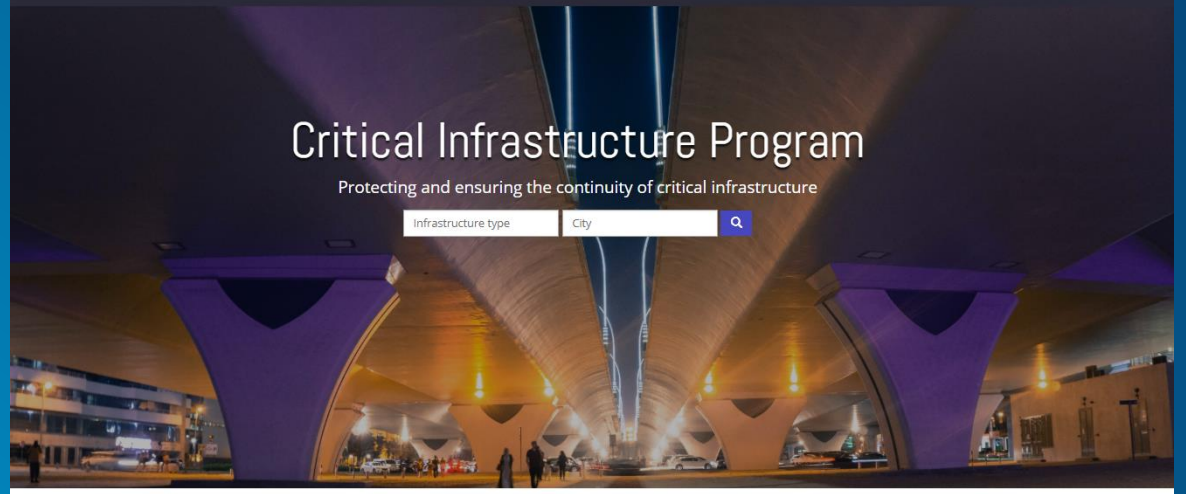
Enterprise Builder

PowerShell DSC

Azure

Machine Images

Enterprise Data Management, Analysis, and Mapping



Critical Infrastructure Program

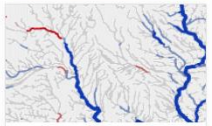
Protecting and ensuring the continuity of critical infrastructure

Infrastructure type | City

National Weather Service Wind Gust Forecast

Predicted wind gust for the next 72 hours across the Continental United States. ArcGIS Online

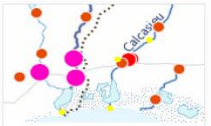
Explore



National Water Model (10 Day Anomaly Forecast)

Ten day river forecast from the National Water Model, with streamflow reported in 3 hour

Explore



Live Stream Gauges (Flooding)

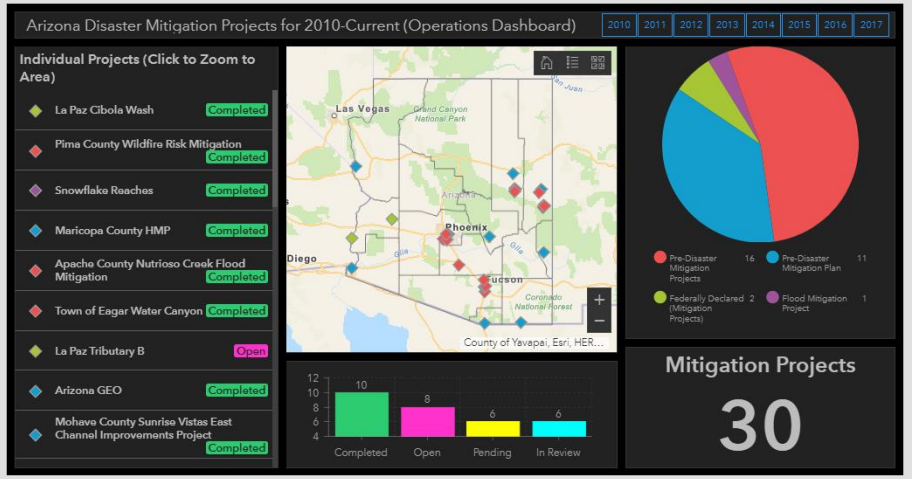
Real-time stream observations of flood status contributed by the GIS community.

Explore

Esri Hydro Reference Overlay

This layer provides a reference overlay highlighting water features for use with layers related to the

Explore



Need help?

criticalinfrastructure@pcip.com

Emergency Management Agency

Ensuring that families, communities, and key stakeholders are provided the tools they need to prepare for, mitigate against, respond to, and recover from the consequences of emergency and disaster events.

High Risk Census Tracts

222

Count of zones where citizens are most effected by disaster
Source: Very High Risk Census Tracts

Shelter locations

24

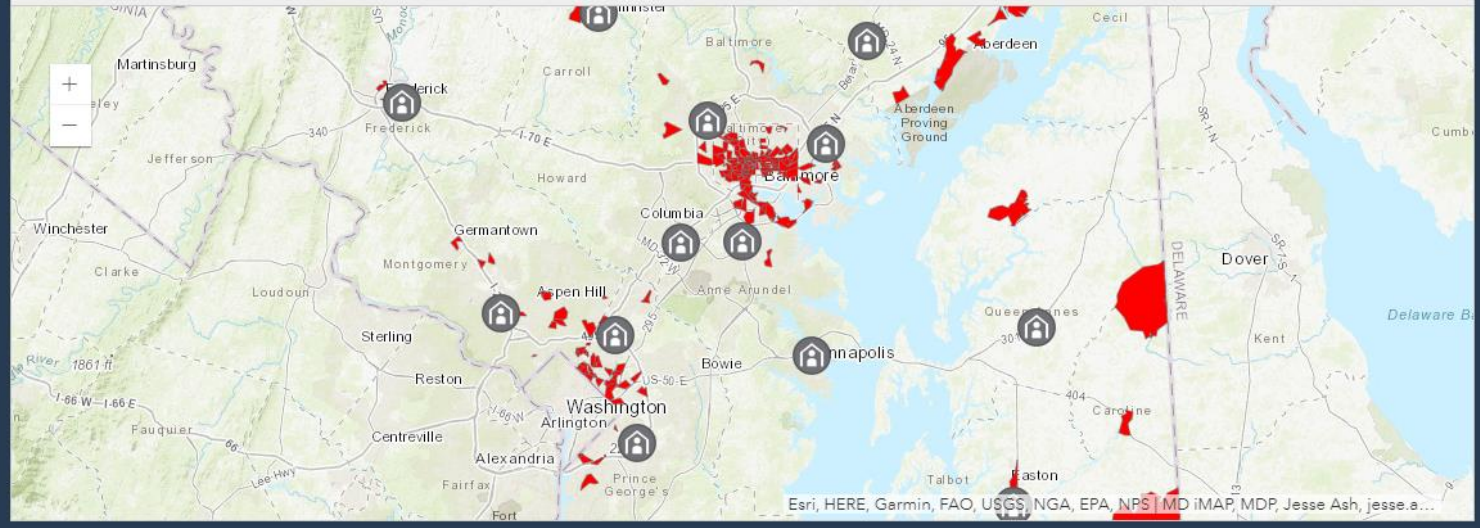
Available shelter locations
Source: State Police Barracks

Shelters in High Risk Census Tracts

0

Shelters easily accessible to high risk populations
Source: Shelters_in_HighRiskAreas

Shelter Locations near High Risk Census Tracts



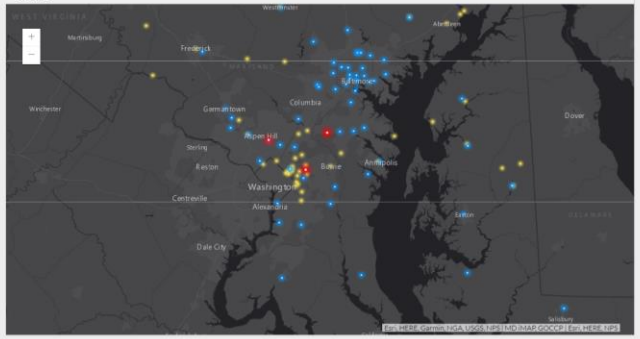
State Police

We are the thin blue line

High Priority Datasets

- Traffic Incidents
- Citations
- Drug Cases
- Gang Activity
- Missing Person
- Crime
- Pursuits
- Open Investigations

Stations



State Police Divisions

- Support Services Bureau — Explore
- Office of the Superintendent — Explore
- Criminal Investigation Bureau — Explore
- Field Operations Bureau — Explore

Special teams and task forces

- Emergency Management Agency — Explore
- Internal Training — Explore
- Crime Task Force — Explore

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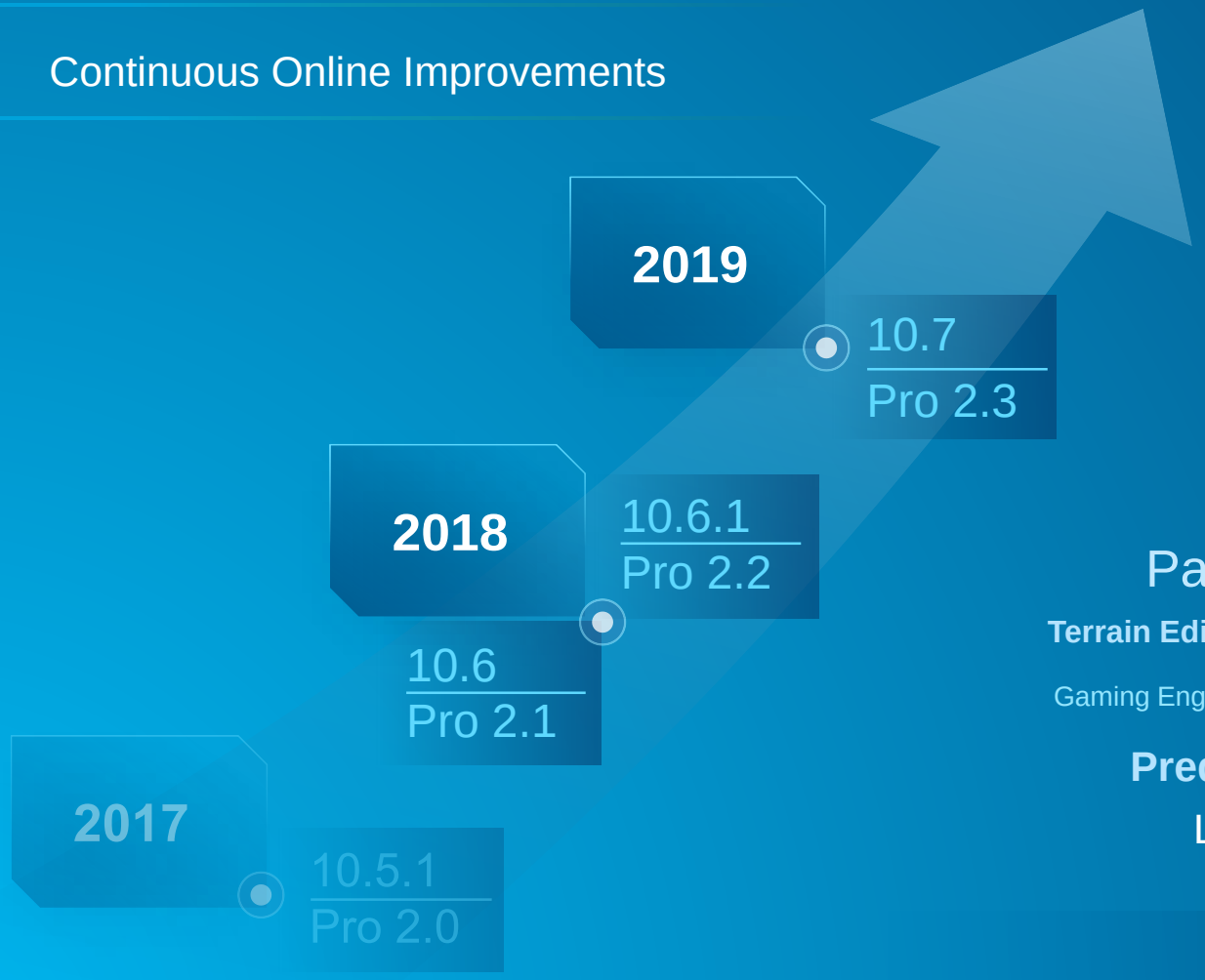
What's Next? — The Road Ahead

Incremental Software Releases

Continuous Online Improvements



Solution Products

AI Machine Learning

Augmented Reality

Industry Solutions

Urban 3D Effects Oriented Imagery

IoT **Situational Awareness**

Image Exploration SaaS

Big Data **Volumetric Data**

BIM Spatiotemporal Real-Time

Parcel Management Indoor Mapping

Terrain Editing Stakeholder Engagement Integrated Analytic Systems

Gaming Engine **Microservices** **Intuitive Mapping**

Predictive Analysis Dynamic Analysis

Location Tracking Containerization

. . . Continued Focus on Quality, Performance, and Innovation

Professional Development

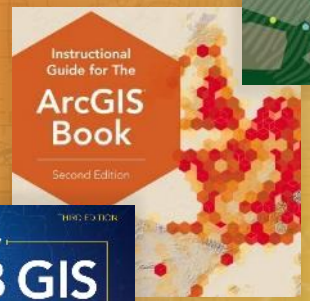
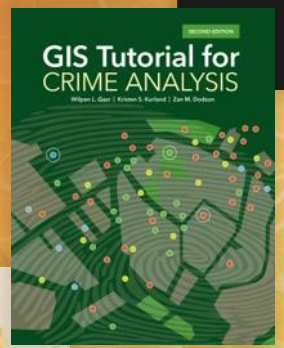
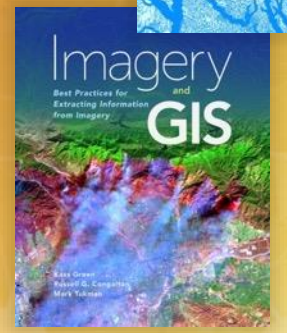
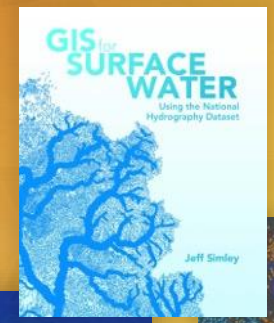
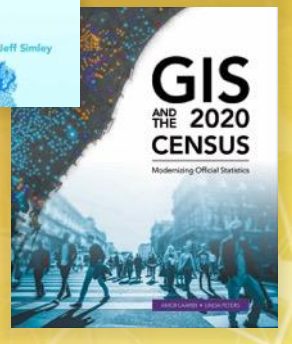
Lifelong Learning

Esri Press MOOCs

Young Professionals Network Personal Use License

GeoNet Community **Training** Blogs

Podcasts **Certification** *ArcNews & ArcUser*

Unlimited E-Learning

Learning Plans