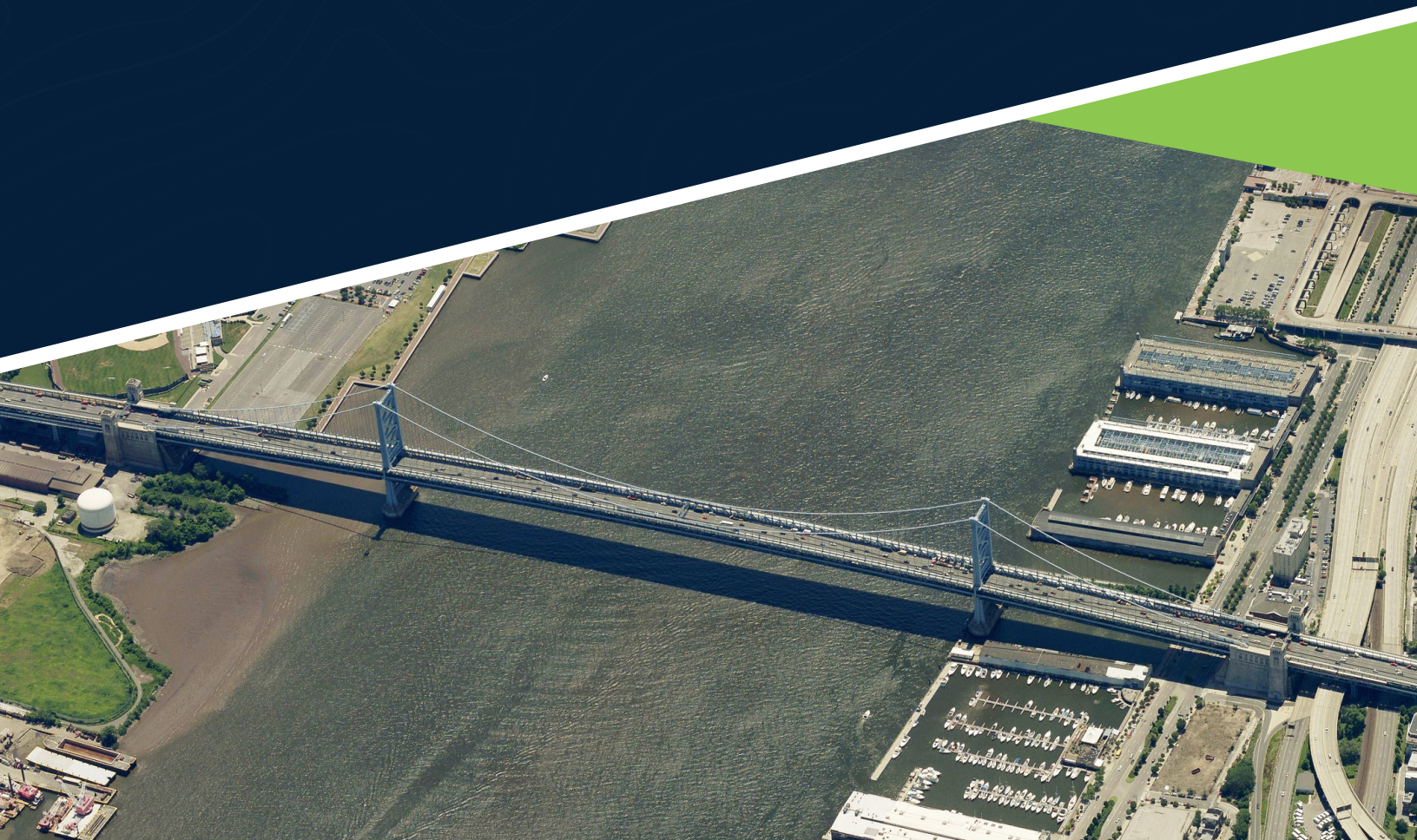# eagleview

Aerial Imagery
Buyer's Guide and Checklist

FOR GOVERNMENT AGENCIES

COMPANY

EagleView Technologies

CONTACT

10800 NE 8th Street
Suite 300
Bellevue, WA 98004
customersupport@eagleview.com

Executive Summary

State and local governments can leverage aerial imagery solutions for a variety of critical roles, including property tax assessment, GIS data management and mapping, directing emergency responders, managing and maintaining infrastructure, and helping public safety and emergency management teams plan for, respond to, and recover from disasters.

There are several key details to be aware of when considering how aerial imagery can help you achieve your goals.

- *What types of imagery are available, and what purpose does each type best serve?*
- *What specific problems will they help your government agency solve?*
- *How do they integrate with your existing processes and systems?*

This buyer's guide will help you understand the various imagery options available, determine how each of them relates to your government agency's particular goals, and identify which features and specifications to look for in an aerial imagery solution.

Introduction to Aerial Imagery Technology

Image Capture Methods

Government teams traditionally access imagery from the following sources, each with its own unique advantages and potential limitations.

Fixed-Wing Aerial

Fixed-wing aerial imagery is typically captured at an altitude under 10,000 feet with resolutions of 6-inch or better ground sample distance (GSD) depending on camera equipment quality.

Currently, the highest resolution available (established by EagleView) is as fine as 0.75-inch GSD per pixel, providing 16 times more information than 3-inch GSD imagery.

Depending on the imagery provider, aerial imagery can include orthogonal (top-down) and oblique (side-angled) views.

Satellite Imagery

Earth observation satellites use remote sensing technologies to monitor and assess changes in Earth's physical, biological, and chemical compositions. Satellite imagery can be used for mapping, as well as to track weather, pollution, deforestation, vegetation, climate change, and land use.

- Satellite imagery generally covers a wide area and can be useful for getting a broad view of your county or municipality, often available for free.

- Imagery is captured at extremely high altitudes (2.6M feet or more) and provides top-down property views at lower resolution compared to aerial imaging services.

- Satellite imagery requires a clear line of sight. Obstacles like clouds and treetops can block visual access.

- Available satellite maps may be outdated and fail to reflect recent changes or damage.

- Satellite imagery is often stitched together in ways that undermine the accuracy of the images—both for location data and ability to measure distances or structures.

- Satellite imagery is often a great alternative for governments requiring top down (ortho-only) captures.

Drones

Unmanned Aerial Vehicles (UAVs), more commonly known as drones, are generally operated by remote control with varying degrees of autonomy—from manually operated to completely autonomous.

- Drones typically offer greater measurement and damage visualization capabilities than lower-resolution satellite imagery.

- Fully autonomous drones can create a facet-by-facet flight plan for consistent, comprehensive image capture.

- Drones provide convenient and immediate capture, but due to their limited range, they require someone to be on-site to deploy and operate.

- Training and Remote Pilot Certificate from the FAA may be needed. Please check with each drone solution provider for more details about piloting options and licensing requirements.

- Consider features like facet-context image viewing, adjuster workflow, machine learning, and obstacle avoidance when comparing drone solution options.
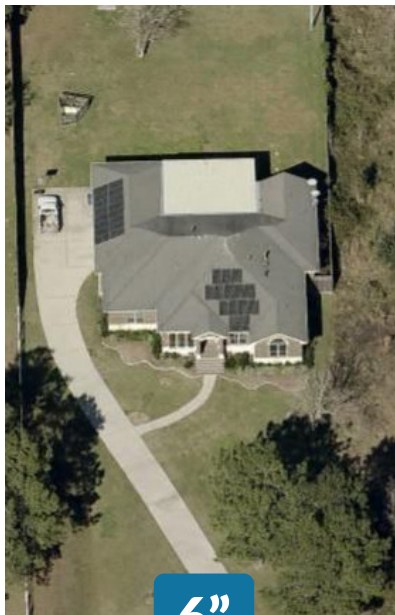
Aerial Image Resolution and Perspectives

While satellite and drones are options for capturing aerial imagery, the rest of this guide will focus on imagery captured by fixed-wing aircraft.
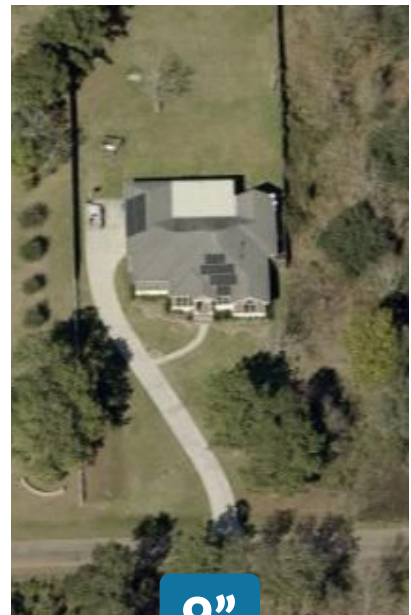
Understanding how aerial image resolution is measured, as well as the types of image perspectives available, will help you choose the best solution for your specific needs.

< 3"   **6"**   **9"**

Ground Sample Distance (GSD)

GSD is the distance between pixel centers measured on the ground and indicates image resolution limitation. For example, an image with a one-inch GSD means that each pixel represents a one-inch by one-inch space on the ground.

- Property Level (3-inch or better GSD) offers the highest resolution aerial imagery with the most clarity and detail.

- Neighborhood Level (6-inch or better GSD) offers an affordable way to get imagery for your entire county.

Capture Altitude

The atmosphere is full of material that can affect imagery (e.g., debris, dirt, dust, moisture, etc.). As a result, the altitude at which imagery is captured will have a direct impact on the quality.

Consider a scenario in which two aerial imagery providers promise to deliver imagery with a 6-inch GSD. While their offers may seem identical, the first provider captures the imagery at 6k feet while the second captures imagery at 12k feet. Though they will have the same GSD, it's likely that the imagery captured at 6k feet will be higher quality than the imagery captured at 12k feet.

PRO TIP

Ask potential providers the altitude at which their imagery is captured!

Image Perspectives: Orthogonal vs Oblique

Orthogonal
(Top-Down)

Orthogonal (ortho) views project at a right angle to the data plane and combine the visual attributes of an aerial photograph with the spatial accuracy and reliability of a planimetric map.

Because images are captured looking straight down, orthogonal imagery offers no perspective on object height and other features.

Ortho is commonly used in GIS as a "map accurate" background image. Because it's been adjusted for topographic relief, lens distortion, and camera tilt, ortho is considered an accurate representation with uniform scale of the Earth's surface and can be used to measure true distances.

Oblique
(Side-Angled)

Oblique imagery is taken at a 40-to-50-degree angle from low flying aircraft equipped with a camera system that rapidly captures images from all perspectives, offering a clear view from all cardinal directions. These perspectives can then be served together to create a large-scale, holistic world view.

This enables government teams to utilize 'ground-truthing' to remotely verify assets in the field (such as signs and traffic lights), and avoid misidentifying structural, situational, and topographical details.

Is Aerial Imagery Right for You?

Imagery Applications for Every Department

Assessment

Assessment departments are charged with delivering a timely, equitable tax roll while keeping their teams safe and productive. Time-intensive field visits can limit efficiency, add cost, and potentially place assessors at risk.

Aerial imagery helps counties efficiently calculate the value of parcels and stay on top of improvements and new construction. Depending on the platform, aerial imagery may support a fully remote assessment workflow.

- Leverage high-resolution property views and change detection solutions to identify additional taxable value.

- View your county and detect changes far more quickly than with traditional site visits.

- Decrease costs from vehicle wear and tear, fuel, and staffing needed for field visits.

- Use oblique imagery to see all sides of a structure, providing important context and detail
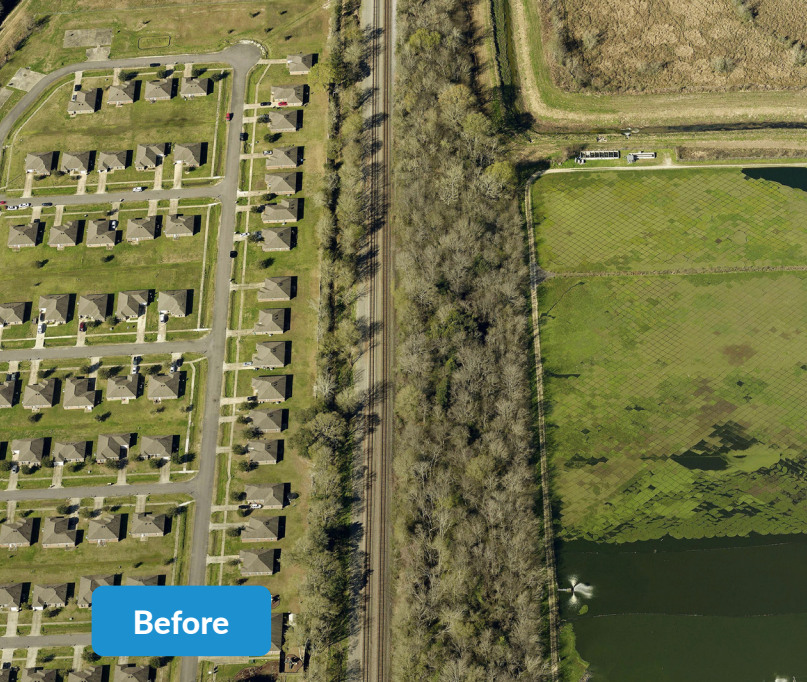
ON-DEMAND WEBINAR

Listen to a panel of county assessors discuss their remote assessment workflows, and how aerial imagery plays a key role.
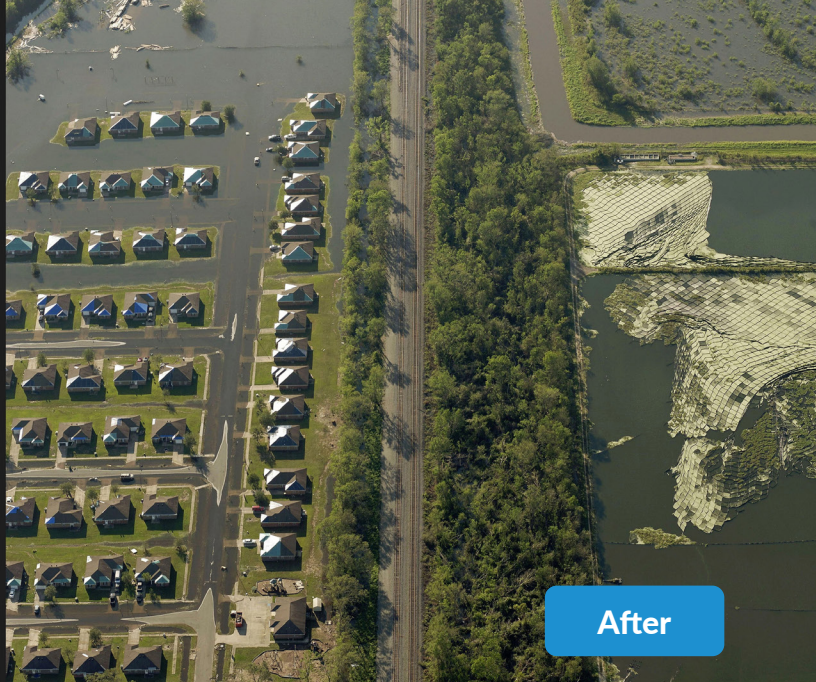
www.view.eagleview.com/ assessor-roundtable-video/p/1

Before

After

Public Safety/911

Public safety teams must respond to situations at all hours and in all conditions. Access to accurate and timely location information is crucial to their success.

Oblique aerial imagery saves critical time during emergencies, providing dispatchers, public safety teams, and law enforcement with the intelligence they need to:

- Communicate essential details to emergency personnel.

- Quickly pinpoint a 911 caller's location and understand the situation on the ground.

- Conduct site reviews when planning for SWAT raids, serving warrants, and identifying surveillance and staging areas.

- Use oblique imagery to provide more context to a vertical surface view that would otherwise be obscured by an orthogonal view (e.g., location of windows, doors, and fire hydrants).

Disaster Preparedness/ Emergency Planning

Pre- and post-event imagery is critical to helping public safety, emergency management, GIS, and other government agencies plan, prepare, and respond to catastrophic events (see above).

- View both recent and historical imagery to identify risks for flooding, inclement weather incidents, wildfires, and other potential hazards.

- Use oblique imagery to add additional context to county GIS maps and better understand the potential impact of flooding.

- Quickly assess damage in the immediate aftermath of a disaster and share aerial image data when applying for recovery assistance from state and federal aid programs.

Geographic Information Systems (GIS)

High-resolution aerial imagery helps GIS teams visualize geospatial data, which helps the agencies they serve:

- Get actionable intelligence, set priorities, make better decisions, and efficiently deploy assets.

- Identify geographical context, patterns, and issues.

- Monitor geographical and structural changes.

Public Works

Oblique aerial imagery reveals greater detail of structures, and provides a more complete understanding of assets without a physical inspection, helping public works teams:

- Remotely measure roads, bridges, and other key infrastructure.

- Preplan infrastructure projects and inspect field assets.

- Track, verify, and report on the status of key infrastructure components.

- Visualize environmental conditions for public assets.

Facilitating Cross-Departmental Collaboration

The value of high-resolution aerial imagery spans across many government agencies, facilitating collaboration, cost-sharing, and greater overall efficiency.

The same image portfolio that helps the public safety team pinpoint a 911-caller's location can also help the Assessor's office detect property changes and provide an accurate valuation, as well as enable GIS and public works teams to maintain timely and reliable data about community infrastructure and assets.

Beyond some of the more well-known use cases, government agencies have reported using aerial imagery to facilitate remote permit inspections, economic development and planning, and site planning for community events like farmers' markets and festivals.

Public-Facing Imagery

In addition to using aerial imagery to streamline internal workflows, many government agencies benefit from using their image portfolio in public-facing applications, including searchable tax assessment portals. These secure interfaces typically allow homeowners to search by parcel ID, as well as use a secure PIN to view important information about their property and its assessed value.

The ability to leverage aerial imagery portfolios to build trust and transparency within communities is a key benefit of having high-quality, timely imagery.

In one innovative use case, an emergency management department set up a community portal in the wake of extensive wildfires. When homeowners had to evacuate their homes, the local fire chief worked with his team to make post-disaster imagery available to residents so they could quickly and safely assess the damage to their properties before returning to the area.

Software Applications and Integrations

Government teams need to do more with less, finding the right balance between adopting new technology to keep up with the changing world, and getting the most value possible out of their existing technology platforms.

Rather than require expensive upgrades or changes in processes in order to function efficiently, aerial imagery solutions should integrate with the platforms you already have and enhance the workflows you're already using.

Without these seamless integrations, government teams may be forced to switch back and forth between solutions, manually copying and pasting information and exporting data.

PRO TIP

When considering an aerial imagery provider, ask for a trial of their software! The quality of your provider's software will drive your experience with the imagery, so use a trial to determine whether the interface and workflow will meet your needs. For example, can you seamlessly pan through oblique imagery in the software? If not, your user experience will be negatively impacted, and you may not get the cross-departmental adoption you need to demonstrate a strong ROI.

Assessment Teams

Having access to aerial imagery directly within your Assessment/Computer Assisted Mass Appraisal (CAMA) platform, and integrated within your assessment workflow, means that you can:

- Inspect properties remotely.

- Measure structures (e.g., addition to a home or a new structure on the property) to give an accurate property valuation.

- Use automated tools to detect changes to a property from year to year.

Public Safety/911 Teams

With native public safety/Computer-Aided Dispatch (CAD) integrations, a 911-caller's location is pinpointed on a map which is georeferenced to aerial imagery, all within your dispatch software platform (no need to switch screens). This helps dispatchers:

- Locate callers and identify the best routes to reach them.

- Communicate the location and context to the response team, including sending location details to the response vehicle so they can review it while en route.

GIS Teams

Having aerial imagery accessible within GIS software platforms and map viewers like ESRI allows analysts to:

- Use the GIS data layers they've built, and accurately superimpose over an aerial image.

- Measure and analyze infrastructure using aerial imagery.

- View components that might not be visible on a 2D map, like building height, vegetation, and environmental conditions.

Part 3:

What to Look For in an Aerial Imagery Solution

Once you've chosen to move forward with aerial imagery, how do you determine the right options when considering pricing, image quality and delivery, system integrations, and vendor support?

Let's start with why image quality and vendor relationship are two critical factors when choosing an aerial imagery solution. We'll then offer a list of questions you can ask an aerial imagery provider before making a final decision.

Quality Imagery and Accuracy

For assessment and GIS teams, high-quality imagery eliminates the need to see a location in person. If the image quality is insufficient, the government employee attempting to complete a task remotely will have to go out into the field to make a confident decision—reducing efficiency and return on imagery investment.

The higher the image quality, the easier it is to make a more accurate measurement, identify an object's precise location, and determine a property's condition. In other words, the higher the quality, the greater the accuracy, and the better the decision.

For public safety teams, high-quality imagery can literally save lives. Two examples:

- A structural fire created thick black smoke that completely blocked visibility on one side. Hidden in that smoke were two fuel tanks. Using EagleView's high-quality imagery, the fire department could see these hazards and mitigate the risk they posed.

- When planning and executing a SWAT operation, law enforcement can use high-quality imagery to more easily see doors, entrances, and hazards on a property.

Training, Setup, and Support

Aerial imagery is only as useful as the training and ongoing support that you receive. To ensure that your government agency gets the most value possible, look for providers that offer:

- An experienced, local sales team.

- A consultative technical support staff to provide onboarding, continuing education, and training.

- Online training, resources, product content, and release notes.

- Easy options for connecting directly with live support.

14
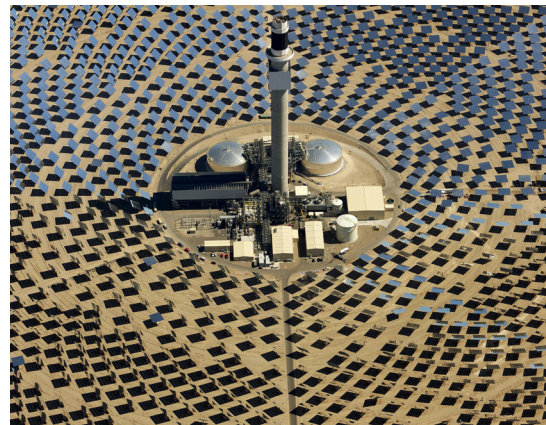
14 Questions to Ask Your Aerial Imagery Provider

Pricing

1. Does pricing change based on user/login or usage volume, or do you offer a fixed price for unlimited use?

2. Are there additional costs for integrating with existing tools, making the imagery available in public-facing applications, or sharing with cities and towns within the county or at the state-level?

Imagery Types, Quality, and Accuracy

3. How are image capture dates and flight plans determined? Can my county control when and how frequently our imagery is updated?

4. Can you deliver both orthogonal and oblique imagery?

5. What levels of Ground Sample Distance (GSD) are available?

6. Can you deliver oblique images that retain accurate measurement capabilities?

7. Is your imagery free of distortions and unnatural color variations?

8. At what altitude are you capturing imagery?

Image Delivery

9. How quickly will the imagery be delivered?

10. Is imagery delivered via physical hard drive for both ortho and oblique imagery, and without GSD/resolution restrictions?

Integrations

11. What oblique imagery integrations/API solutions are available?

12. Are there any limitations that would restrict full access and usage of the imagery?

Support

13. Do you offer access to training resources and a local, in-person support/sales team?

14. Is a trial of your oblique viewing software available?

LEARN MORE

To learn more about how EagleView's aerial imagery solutions can help you provide the highest possible level of service to your community, visit **www.eagleview.com/government.**

eagleview