Jackson Energy Authority
One thing you can count on.

Drones in the Utility Space

Robert Mullins, Jackson Energy Authority
Vance McCage, Extreme Technologies
UTA Conference 2017

electricity_gas_water_wastewater_telecommunications

ELECTRIC SYSTEM

SOURCE OF SUPPLY

- TVA transmission hub for West TN
- Two TVA grid connections tied together with 161 kV loop around the city of Jackson
- Served by 500 kV line and four 161 kV lines with multiple sources of feed

SYSTEM CAPACITIES

- Installed substation capacity of 680 MW
- System peak – 381 MW (August 2007)
- Industrial load – 60+% of system load
- 46kV sub-transmission system

SYSTEM RELIABILITY

- APPA RP3 Diamond Award – 2006, 2008, 2010, 2012, 2014 & 2017

INTRODUCTION

- Drones...everybody wants one
- Initial Considerations
- Contractors
- Contract Considerations
- Utility Data Use
- Mapping System

OOPS!!

INITIAL CONSIDERATIONS

What type of drone work do you envision?

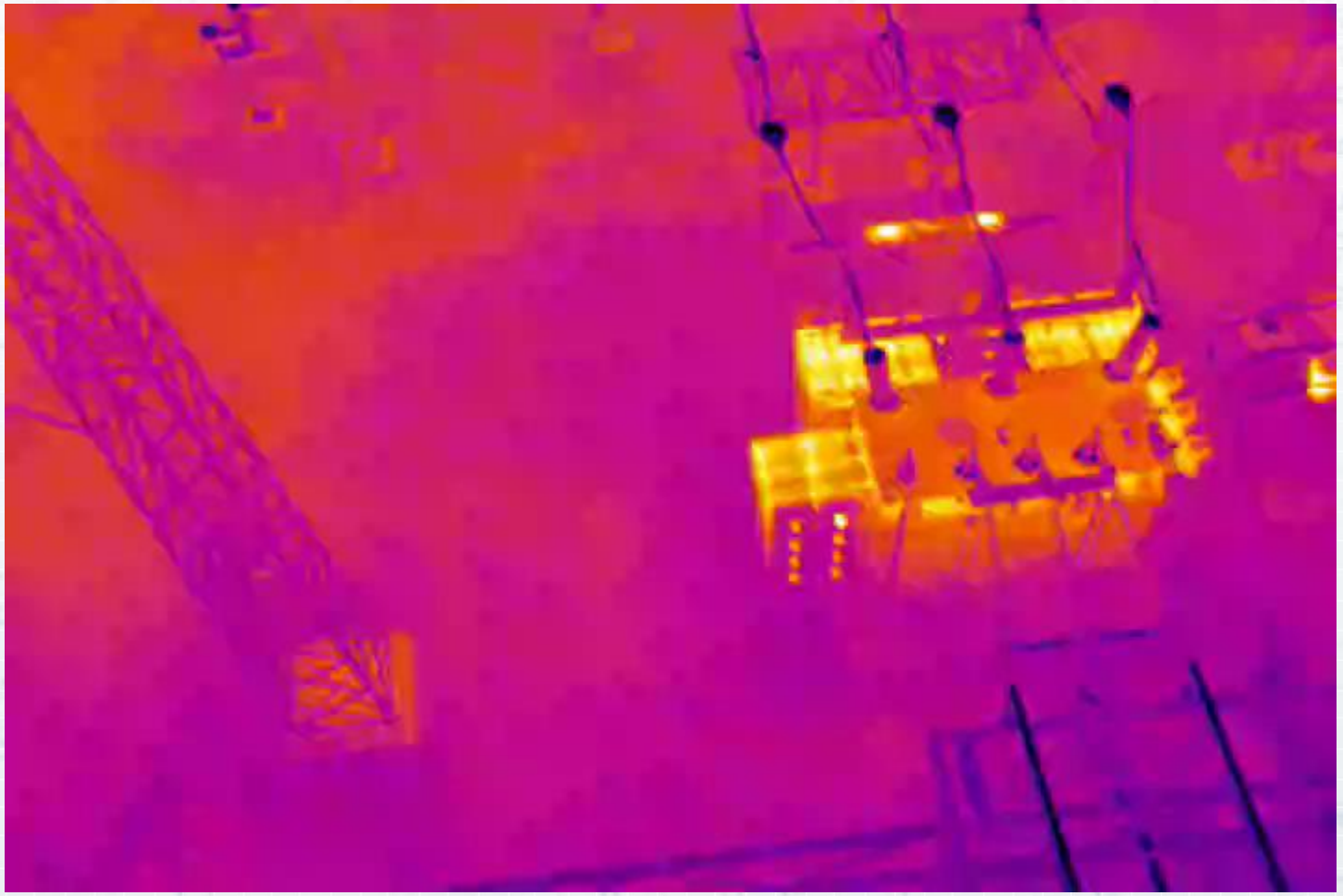
- ROW Inspection
- Facility Assessment
- Video/GPS/Photos
- Thermal Imaging
- LIDAR
- Storm Assessment
- Radio Tower
- Water Tank

ROW INSPECTION

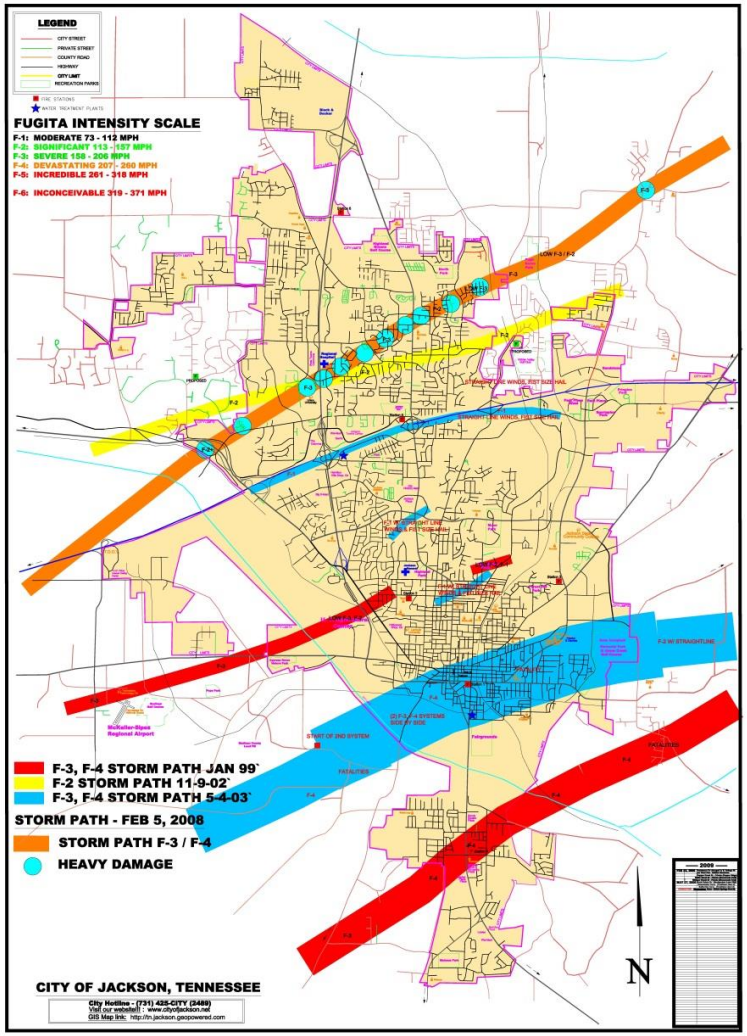
CONTRACTORS

- Safety
- Over critical assets
- Near power space
- Multiple Hazards
- Electric Knowledge
- Licensing Requirements
- Relationships

CONTRACTORS



JACKSON STORM HISTORY



CONTRACT CONSIDERATIONS

- Safety
- Insurance
- Routes/Locations/Timing
- Type of Imagery
- Angle of Imagery
- Meet with IT/GIS prior
- Test flight/download
- Examples of other jobs

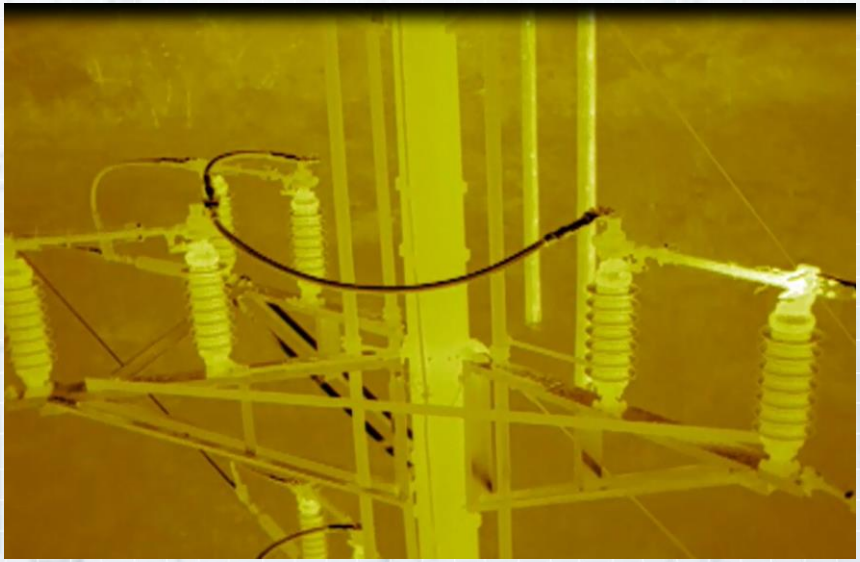
UTILITY DATA USE

- Format of data
- Location/geospatial Information
- Data Post Processing
- GIS Storage
- Pertinent Information
- Board Worthy?

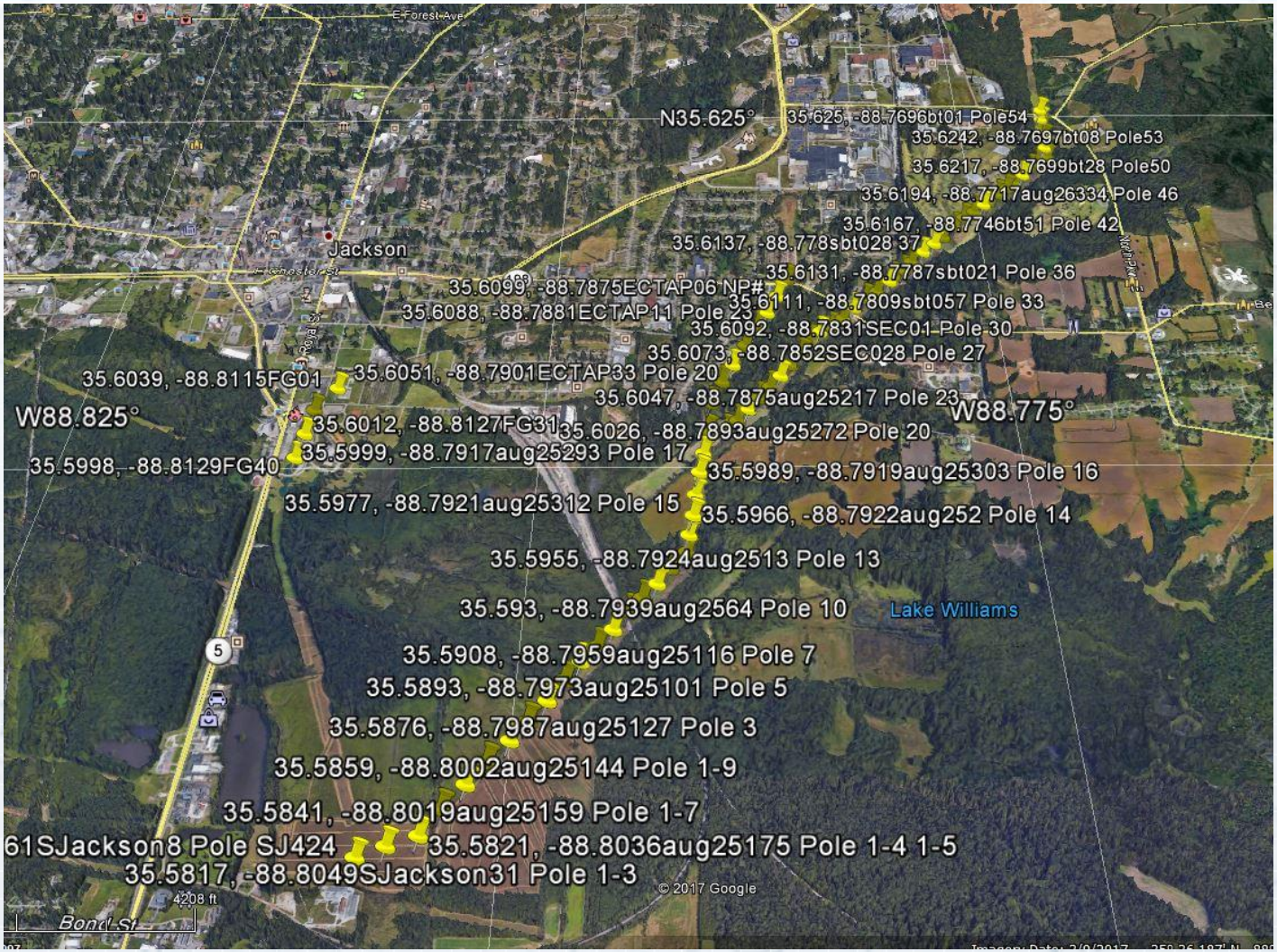
UTILITY DATA USE

MAPPING USE

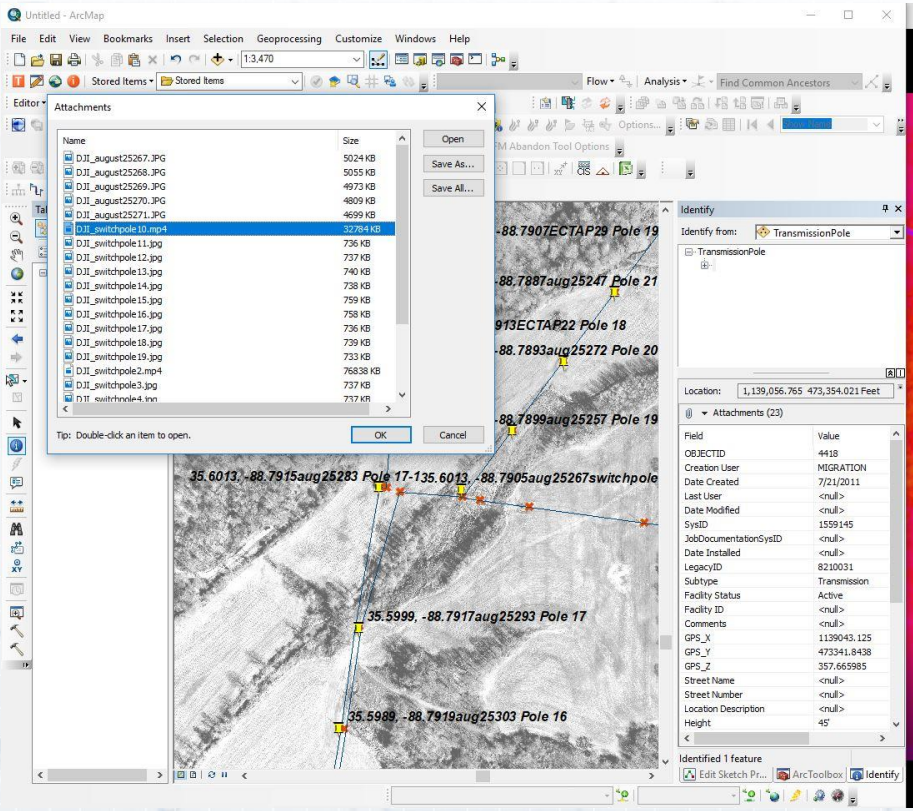
- Generic Data (.kmz, .kml, .jpeg)
- Cost of post-processing
- Track Improvements
- Track Cycle
- Pertinent Information

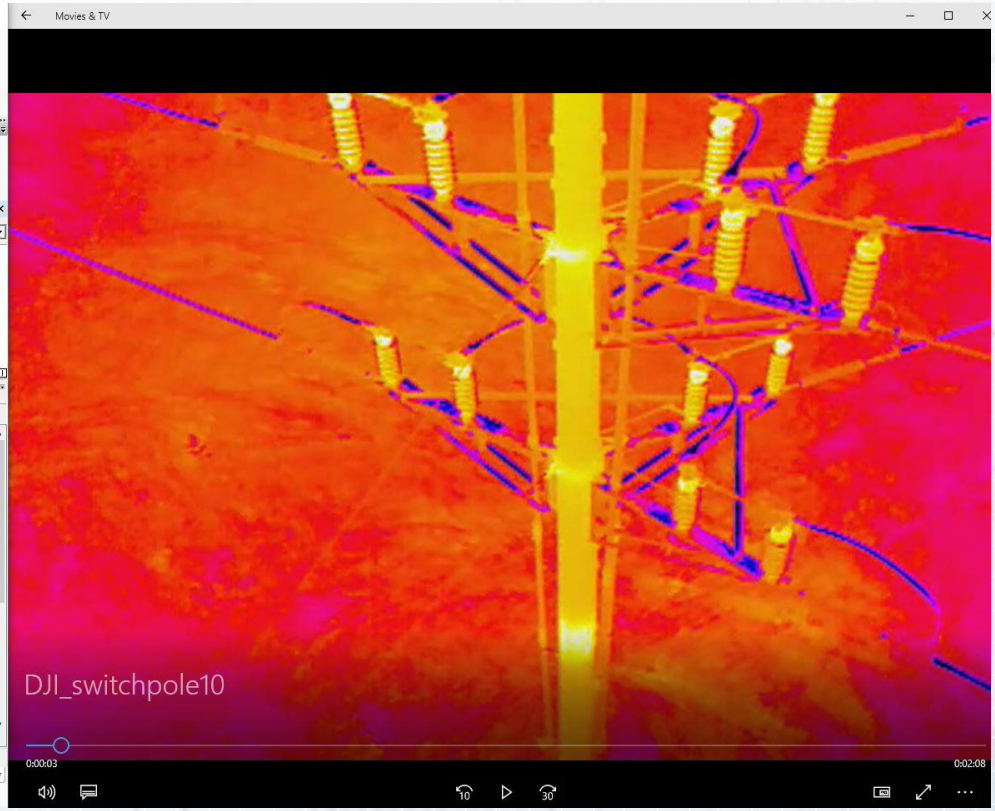


INSPECTION ROUTE

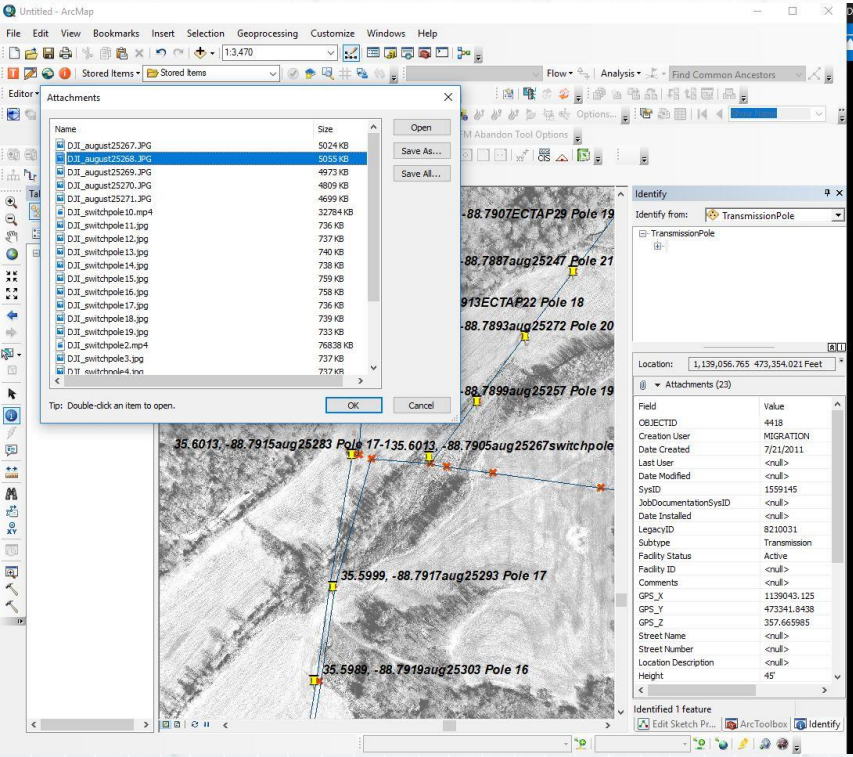


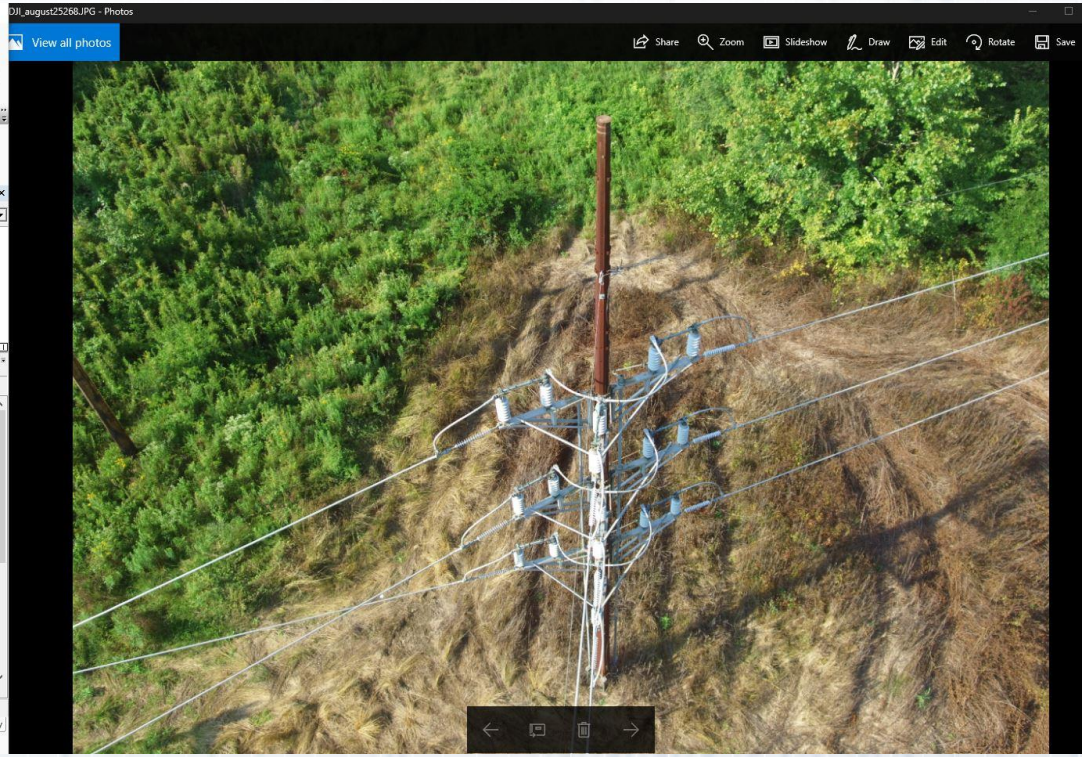
MAPPING SYSTEM





MAPPING SYSTEM





Jackson Energy Authority
One thing you can count on.

- ONE POINT OF CONTACT
- SERVICE AVAILABILITY
- 24-HOUR MONITORING


EXTREME TECHNOLOGIES
DRONE SERVICES

UAV SERVICES

3D-MAPPING
THERMAL IMAGING
LIDAR
CORONA TESTING
STRUCTURE INSPECTION
VIDEO
VEGETATION MANAGEMENT
DISASTER MANAGEMENT
SEARCH & RESCUE
SAFETY INSPECTIONS

DRONES FOR TRANSMISSION INFRASTRUCTURE INSPECTION AND MAPPING EFFICIENCY

“ When most industry professionals think about Drones, they envision a small Toy like Object with multiple Blades hovering around their infrastructure, recklessly maneuvering For the pilots enjoyment, or worst for nefarious reasons. Often the thought immediately Conjured up is of damaged electrical Transmission lines or poles, substations or worse. Instead they should envision cost savings, improved understanding of asset health, and Increased safety and compliance.

The rules for operating an unmanned aircraft depend on why you want to fly.

	Fly for Fun	Fly for Work
Pilot Requirements	No pilot requirements	Must have Remote Pilot Airman Certificate Must be 16 years old Must pass TSA vetting
Aircraft Requirements	Unless exclusively operated in compliance with Section 336 of Public Law 112-95 (*Special Rule for Model Aircraft*), the aircraft must be registered if over 0.55 lbs.	Must be less than 55 lbs. Must be registered if over 0.55 lbs. (online) Must undergo pre-flight check to ensure UAS is in condition for safe operation
Location Requirements	5 miles from airports without prior notification to airport and air traffic control	Class G airspace*
Operating Rules	Must ALWAYS yield right of way to manned aircraft Must keep the aircraft in sight (visual line-of-sight) UAS must be under 55 lbs.	Must keep the aircraft in sight (visual line-of-sight)* Must fly under 400 feet*

Waivers to Certain Small UAS Operating Rules

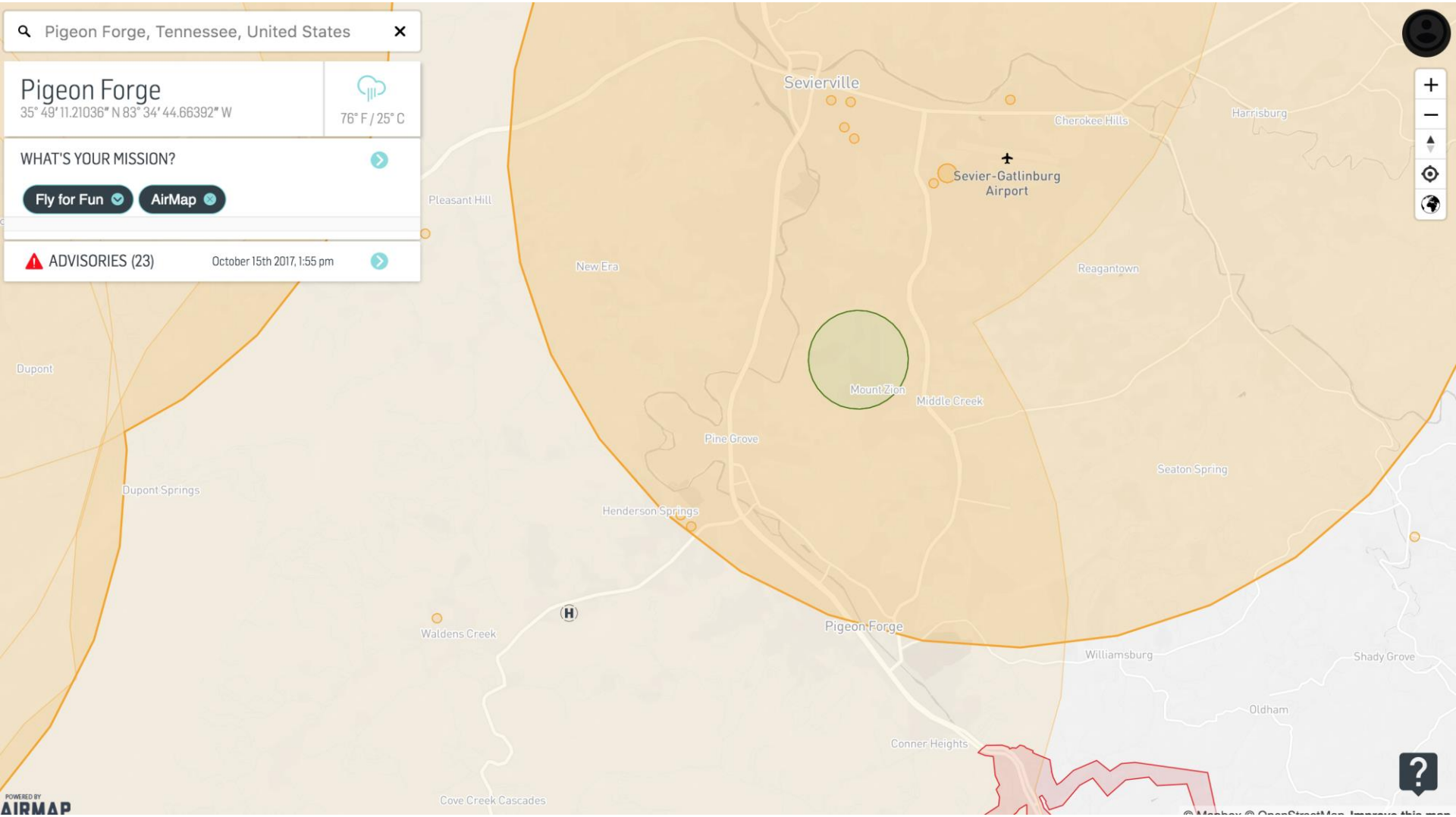
The small UAS rule (14 CFR part 107) includes the option to apply for a certificate of waiver, which allows for a small UAS operation to deviate from certain operating rules if the FAA finds that the proposed operation can be performed safely.

- Waivable sections of part 107
- Operation from a moving vehicle or aircraft (§ 107.25)*
- Daylight operation (§ 107.29)
- Visual line of sight aircraft operation (§ 107.31)*
- Visual observer (§ 107.33)
- Operation of multiple small unmanned aircraft systems (§ 107.35)
- Yielding the right of way (§ 107.37(a))
- Operation over people (§ 107.39)
- Operation in certain airspace (§ 107.41)
- Operating limitations for small unmanned aircraft (§ 107.51)

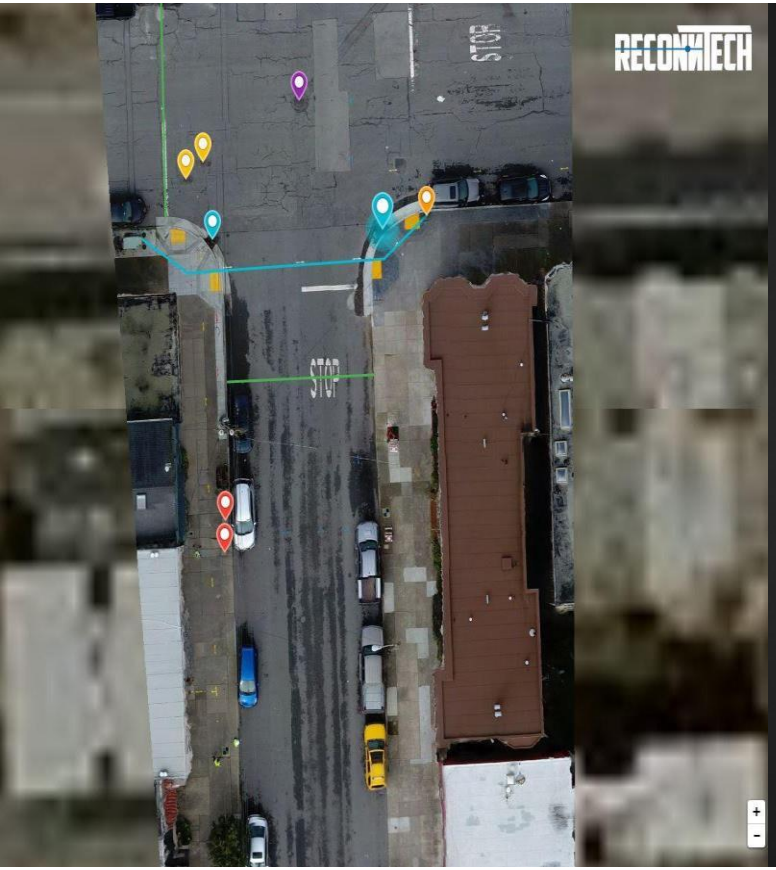
*No waiver of this provision will be issued to allow the carriage of property of another by aircraft for compensation or hire.

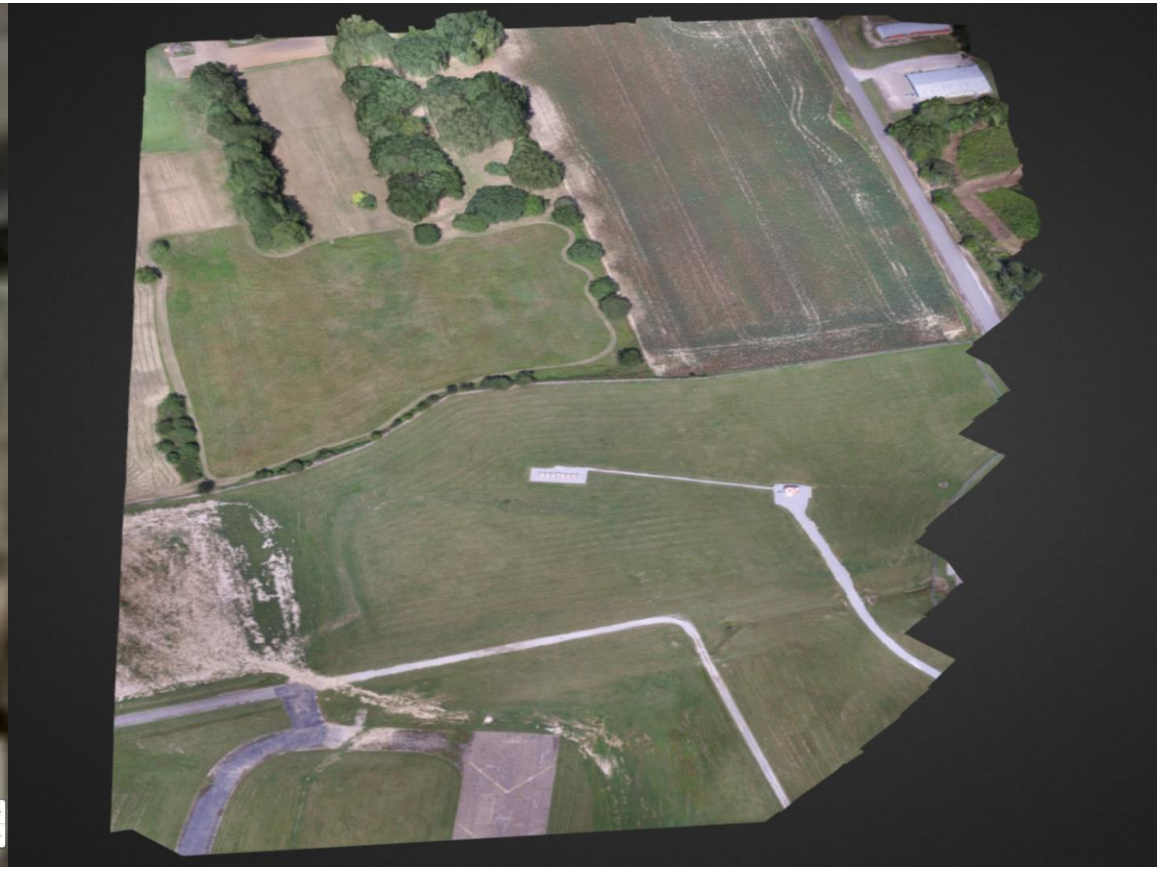
Applicants should submit their waiver requests to the FAA as early as possible. Processing time depends on the complexity of the request; however the agency strives to respond within 90 days.

Certificates of waiver may include specific special provisions designed to ensure that the small UAS operation provides an equivalent level of safety as part 107.

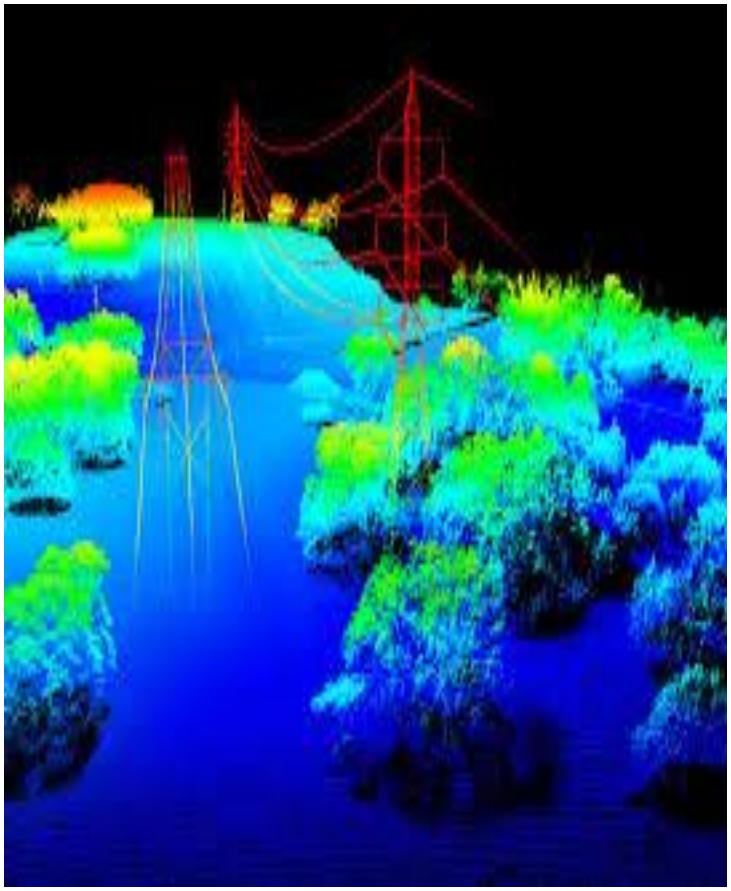

Pigeon Forge, Tennessee, United States
Pigeon Forge
35° 49' 11.21036" N 83° 34' 44.66392" W
76° F / 25° C
WHAT'S YOUR MISSION?
Fly for Fun
AirMap
ADVISORIES (23)
October 15th 2017, 1:55 pm
Sevierville
Cherokee Hills
Harrisburg
Sevier-Gatlinburg Airport
Pleasant Hill
New Era
Reagantown
Dupont
Mount Zion
Middle Creek
Pine Grove
Seaton Spring
Dupont Springs
Henderson Springs
Waldens Creek
Pigeon Forge
Williamsburg
Shady Grove
Oldham
Conner Heights
Cove Creek Cascades
POWERED BY AIRMAP

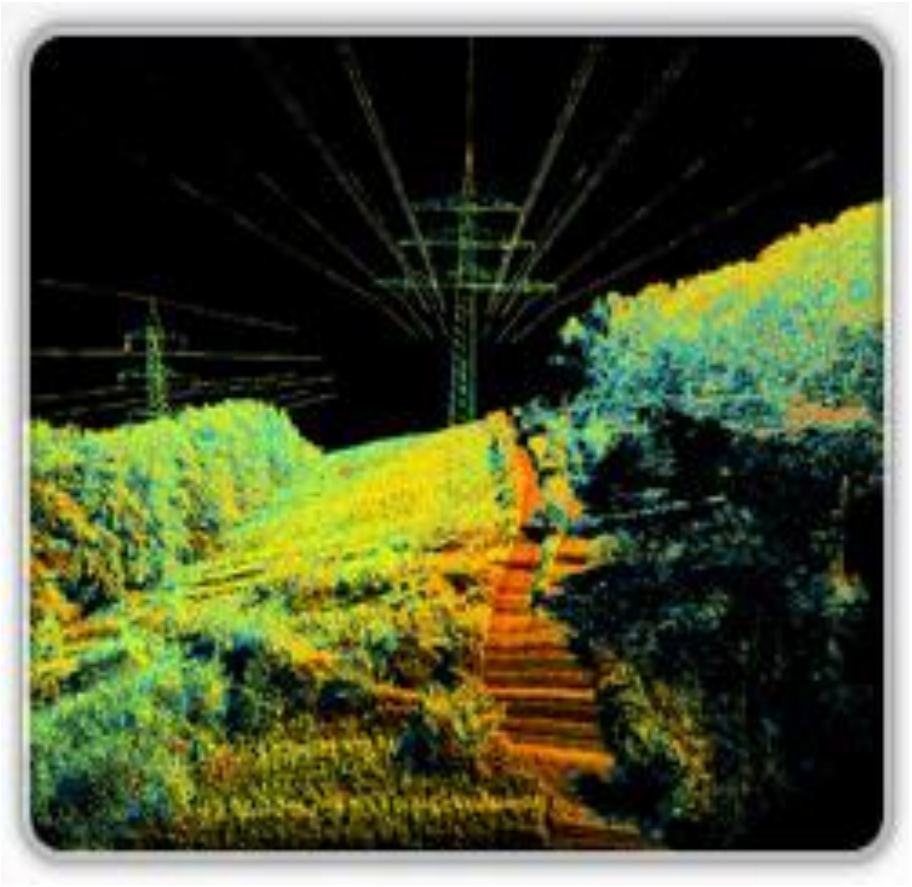
Mapping





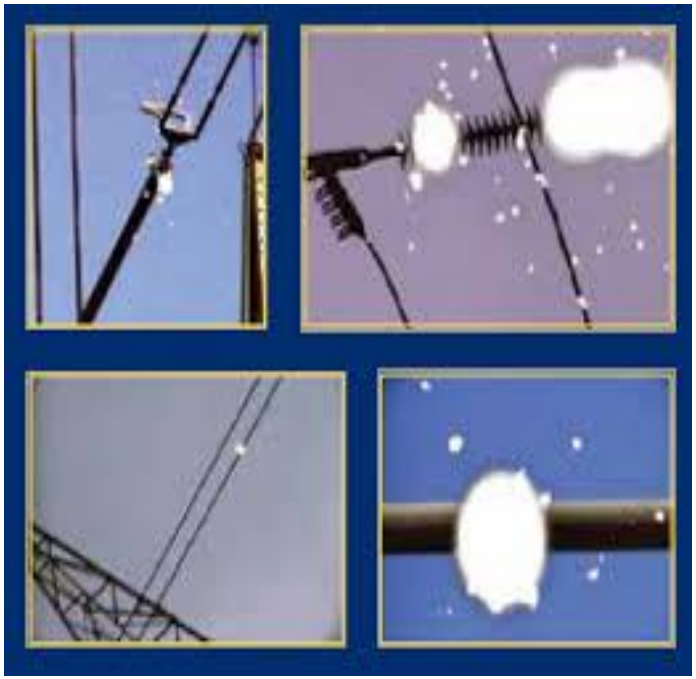
LIDAR





Corona Discharge Testing

Medium and High Voltage



DayCor ROMpact

INSPECTIONS

THERMAL IMAGING

FLIR®

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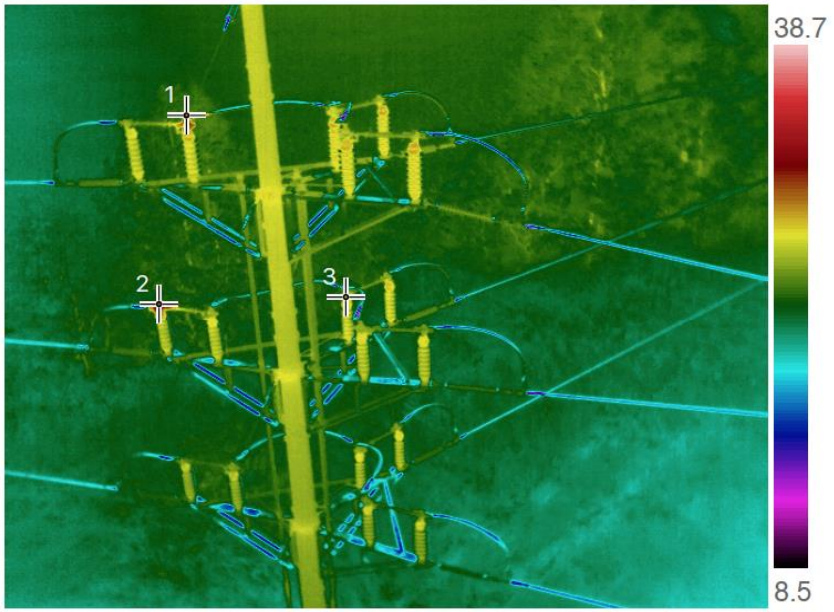

FLIR®

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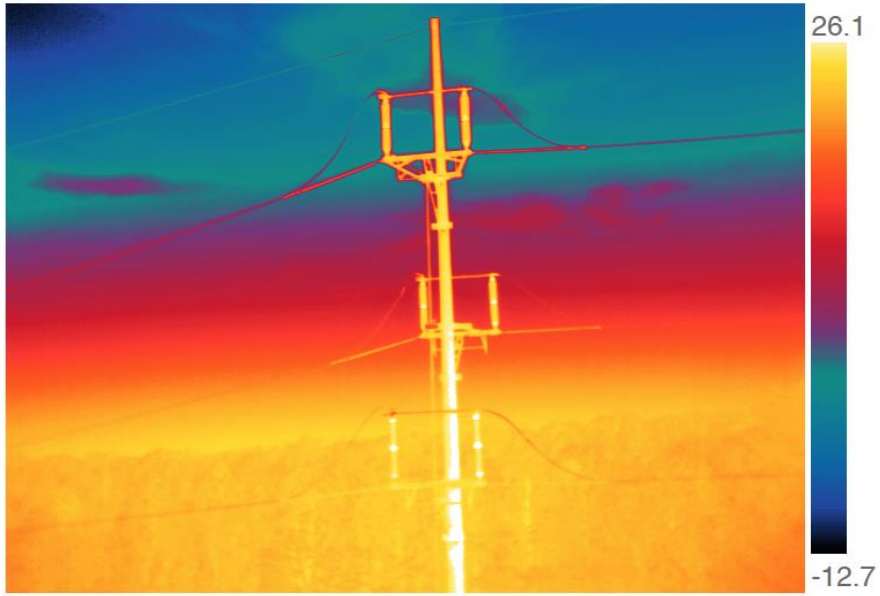

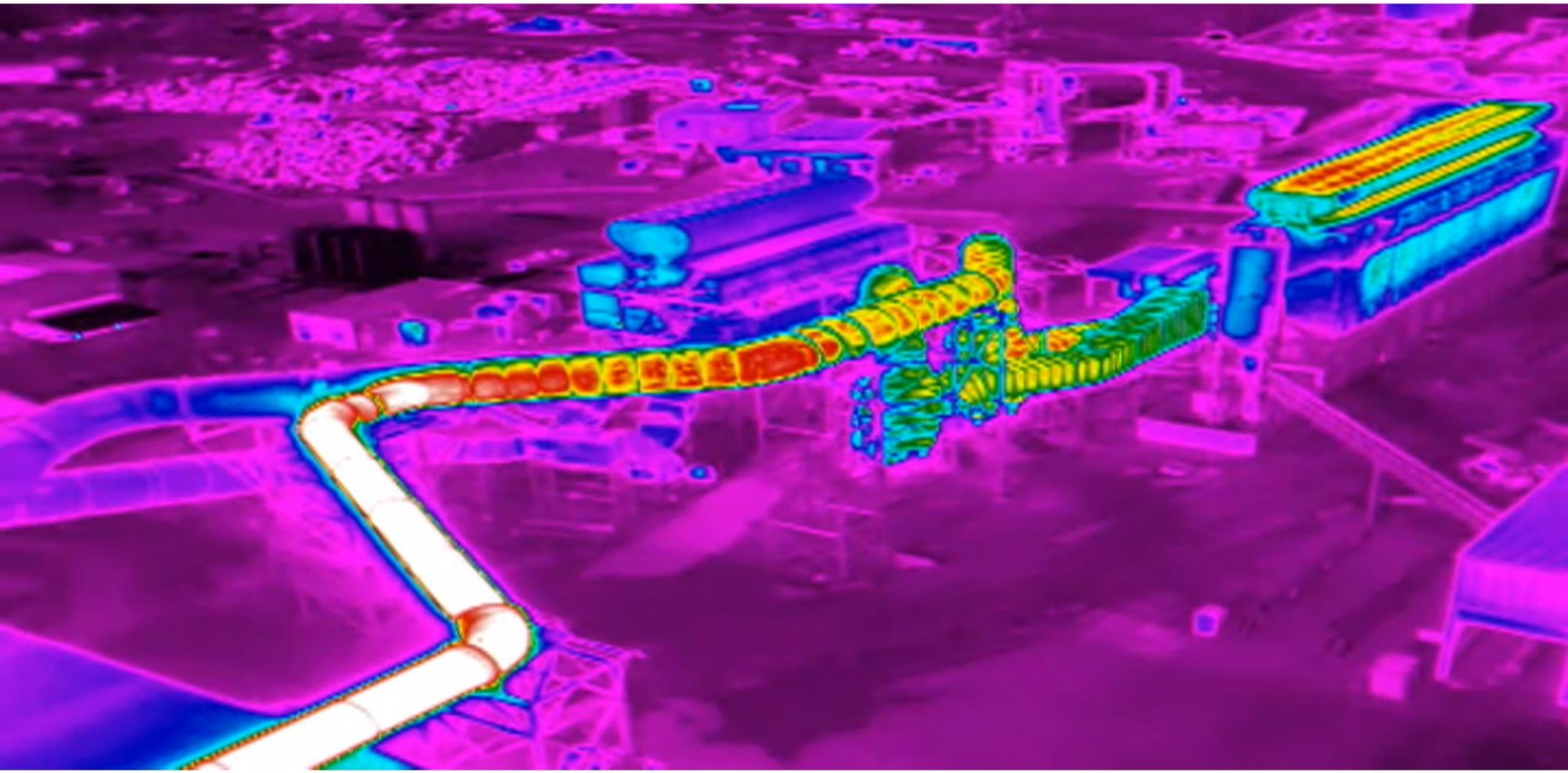
Outdoor
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POST PROCESSING SOFTWARE

DRONE DEPLOY
PIX4D
AUTODESK RECAP 360 PRO
CIVIL 3-D
ESRI
DRONE2MAP

QUESTIONS?