

Aerial and Imaging

#### Best Practices for Procurement of Municipal UAS Services

STORICE MENT

Presented to City of Boulder December 2018



#### Start Simple, Scale if ROI is Justified

Just because it can be done, doesn't mean it should.

(Valmont Butte, May 2018)



# "What's the least amount of useful data?"

Joe Castro, City of Boulder, August 2018



#### Data Accuracy is a Driving Consideration

Simply put, higher accuracy will result in higher costs to capture and process the data.

(Barker Dam, October 2018)

# Why?

- Specialized sensors and payloads may be needed.
- Larger data sets require more time for post-mission processing and analysis.
- Licensed surveyor may need to validate results.



# Focus on Objectives & Deliverables

Objectives drive the deliverable which, in turn, drive the UAS mission planning.

(Barker Dam, October 2018)

#### Key Questions

- How will the data be used?
- What story will the data tell?
- What benefit will the data provide?

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• Who else might utilize the data?



#### Integrate UAS into Existing Workflows

High value outcomes can be achieved with simple, low cost projects

(Valmont Butte, May 2018)

## Usefulness of Drones

- Above-Ground Asset Documentation
- Construction Progress Monitoring
- Land Use & Resource Management
- Stakeholder Collaboration
- Constituent Communications



#### Specify Type of UAS Service

Mission objectives determine what vehicle, camera, and sensors are needed.

(Barker Dam, October 2018)

# UAS (Drone) Missions

- Video and Photos
- High Resolution 2D Maps
- 2D & 3D Modeling of Structures
- Digital Terrain Models



#### Specify Type of Sensor Required by Mission

Specialized sensors are expensive & increase project costs. Be sure they're truly needed.

(Barker Dam, October 2018)

## UAS (Drone) Sensors

- Visual (video and photos)
- Thermal
- Multispectral
- Hyperspectral
- Lidar



## Account for Full UAS Project Lifecycle

Flying the UAS (drone) is just one of many steps required for successful execution of work orders.

(Barker Dam, October 2018)

## Drone Project Lifecycle

- Work Order Development
- Mission Planning
- Mission Execution
- Post Mission Data Processing
- Delivery and Review of Data Sets



#### Engage Other Potential Stakeholders

Others may have a keen interest in what you're doing – and with good reason.

(Barker Dam, October 2018)

#### Examples:

- Internal Departments
- Public & Emergency Officials
- Outside Agencies
- Property Owners
- General Public



#### Be Flexible and Adaptive

Several factors may lead to unwanted, but necessary, delays.

(Barker Reservoir, October 2018)

#### Sources of Delay

- Weather (wind, rain, overcast)
- Regulations (NOTAMs, Airspace authorization)
- Environment (structures, terrain, and RFI)

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#### Be Emphatic About Safety

While mishaps are rare, steps can be taken to prevent them and minimize any consequences.

(Barker Dam, October 2018)

#### Select Vendor Who...

- Undertakes a methodical, professional approach to mission planning and execution.
- Readily interjects safety and risk mitigation into discussions
- Utilizes SOPs and checklists when conducting missions



#### Establish Minimum Vendor Requirements

Responsible, responsive bidders document their UAS operations. Don't hesitate to ask for it.

(Barker Dam, October 2018)

#### Screening Criteria

- Documented flight hours
- Equipment logs
- FAA certifications, waivers, & authorizations
- Prior experience fulfilling similar work



#### Be Wary of "Drone Cowboys"

Potential cost savings are far outweighed by increased risks of working with nonprofessionals.

(Barker Dam, October 2018)

#### Low-Cost Operators

- Transaction driven vs. solution oriented
- Pricing may be misleading or inaccurate
- May not have resources to fulfill compete project life cycle
- Risks may transfer to contracting agency or department



#### Proactively Communicate with Constituents

Some people are rightfully concerned about drones. Address their concerns head on to increase public acceptance.

(Valmont Butte, May 2018)

#### Educate & Inform

- Emphasize commitment to safety, privacy, and environmental protections
- Convey value, cost-savings, and impact of UAS operations



#### Keep Abreast of Latest UAS Developments

The UAS industry is fast-emerging and fastchanging. With big implications for municipalities.

Image Courtesy Paul Sableman www.flickr.com/photos/pasa/

#### Trends to Watch

• Regulatory (local, state, federal)

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- Safety advancements
- Technical evolutions
- Public acceptance



#### Municipal UAS (Drone) Resources

Other state, county, and municipal governments are tackling similar challenges in integrating UAS.

(Valmont Butte, May 2018)

#### Useful Websites

- <u>https://www.faa.gov/uas/public\_safety\_gov/</u>
- <u>https://www.ncdot.gov/divisions/aviation/uas/Pages/government-operators.aspx</u>
- <u>https://www.colorado.gov/pacific/dfpc/CoE</u>
- <u>https://www.fairfaxcounty.gov/uas</u>

DRONE VIDEO PARTNERS

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#### Best Practices for Procurement of Municipal UAS Services

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Thank you!

Jason Stuck 🛓

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