



Drones in Minnesota

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Drone Statistics in the US

- 1.1 million drones are now registered with the FAA
 - 918,000 are used by hobbyists;
 - 194,000 are commercial drones.
- AASHTO March 2018 survey found:
 - 20 state departments of transportation are now using aerial drones in daily operations;
 - 15 additional states are researching ways to use drones;
 - 27 states are adding full-time staff to operate and maintain their drone fleet.

Regulation of Drones/UAS in MN

- Hobbyist/recreational drone use is governed by the FAA
 - See 14 CFR Part 101, Subpart E.
- Commercial drone use (also known as UAS or Unmanned Aircraft Systems) requires:
 - a commercial operator's license;
 - a Remote Pilot Certificate;
 - registration with the MnDOT Office of Aeronautics;
 - payment of an annual registration fee of \$100, proof of insurance, and proof of sales tax payment.
 - See 14 CFR Part 107 and Minnesota Statutes, Section 360.531.

How Does MnDOT Use Drones?

1. Bridge inspections.
2. Land survey work and 3D data mapping.
3. Site condition inspections.
4. Public relations (videos for new projects).
5. Other potential uses—structural inspections, disaster/emergency response, crash data collection, snow mapping, traffic congestion monitoring, etc.

Bridge Inspections



Bridge Inspections



Highways



Disaster Response



MnDOT's Drone Policy

- [Unmanned Aircraft System \(UAS\), Policy OP006](#)
- 23 state DOT's now have a drone policy
- Why have a policy?
 - Ensure compliance with FAA requirements and other laws
 - Identify roles and responsibilities
 - Ensure safety for staff, contractors, and the public
 - Ensure data quality
 - Track all agency usage and identify best practices

Policy Highlights

- MnDOT's UAS Policy (effective March 2018) requires:
 1. Aeronautics office approval of usage by employees or third parties hired by MnDOT;
 2. A safety and operations plan that outlines all aspects of the intended mission;
 3. Compliance with all FAA requirements;
 4. The drone to be licensed by the Aero Office;
 5. A completed and approved application; and
 6. Operators/pilots meet a set of training and certification requirements.

Benefits to State DOT's

- Safety Benefits
 - Keeps workers on the ground or away from hazards
 - Reduces need to detour traffic and set up work zones
- Fast
 - You can quickly collect data and take high resolution photographs, even in confined spaces like culverts
 - A 2017 NCDOT study showed that by using drones to complete an accident reconstruction investigation time spent was reduced from 111 minutes using traditional methods to 25 minutes with drones
- Save Money
 - The drones MnDOT uses cost about \$40,000 each—substantially less than heavy equipment that is used for similar purposes

What Drones Do We Currently Use?



Drones MnDOT Uses



Future Challenges

- Future widespread usage of drones for package delivery.
- Safety concerns.
- Privacy concerns.
- Complying with new USDOT/FAA regulations.
- Enforcement of state laws and regulations.



Questions?

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