How can drones contribute to a smart city? Overview of their use and their legality in Canada

As drones and the related technologies become more sophisticated, new use cases continue to emerge. This is particularly true in connected ecosystems, where engaging drones can supercharge information sharing. Weaving drones into the fabric of smart cities is top of mind for smart city planners looking to increase connectivity between citizens and services.

The knowledge and the ingenuity of those creating drone technologies, however, continue to outpace the laws applicable to drone use. Thanks to the combined efforts of Transport Canada and the drone industry, drone laws are developing relatively quickly. When reviewing the currently legal framework for drones in the smart cities context, the key questions become: how can drones contribute to a smart city and are these contributions currently permitted under Canadian laws?

What is a smart city?

Smart cities are communities embracing technology to connect people and services. Within a smart city, wireless technology and sensors collect and share data to increase productivity, sustainability, efficiency and growth. Using the technological infrastructure of a smart city, city operations are streamlined and city planners can improve their understanding of how communities and citizens work together.

Canada’s current drone laws

Canada continues to advance the regulations applicable to drone operations to widen the scope and possibilities for drone use. In 2019, Canada revised the visual line-of-sight (or VLOS) regulations for small drones in Part IX of the Canadian Aviation Regulations (the CARs) to safely expand drone operations in Canada and provide greater certainty for investment in this developing industry. A blog post about these advances can be found here. Transport Canada must pre-approve and authorize any operations that fall outside Part IX of the CARs.

How can drones be integrated into smart cities?

While the opportunities for drones to assist cities modernizing to become smart (or smarter) cities, or the building of smart cities from the ground up are limitless, the following are a few key potential uses:

1. Safety and security

Information sharing is key to protecting citizens from the mundane (like traffic congestion) to the extreme (like natural disaster response). Quick to be deployed, drones can assist in traffic management, car parking, crowd monitoring and
control, weather assessments, security and emergency response. Drones can offer much richer and more useful data to city planners and municipal governments over stationary sensors. This more flexible, cost-effective and timely gathering of information will result in efficiencies for citizens and the deployment of municipal and other government services.

Law enforcement agencies in Canada (for example, the RCMP) are using drones in the fulfillment of their mandates. Further, drones are being used to monitor high occupancy vehicle traffic on some highways in Ontario. However, privacy and data protection concerns are one of the key barriers to integration of drones into cities because of the unprecedented volume and the nature of the data they can collect using cameras and sensors. No Canadian court has yet commented on the extent to which privacy rights will interact with legitimate uses of drones, either when drones are used by commercial actors or by governments.

For a summary of the business impacts to Canada’s new privacy laws, check out this blog post.

2. Delivery

Drones in smart cities can fulfill the pressing need for fast and efficient delivery. With e-commerce reaching record highs as a result of the COVID-19 pandemic, the cost and time efficient delivery of products is increasingly important for retailers and consumers. Beyond consumer goods, drones can swiftly transport medical deliveries. In addition to the expedient delivery of goods, drones can communicate precise GPS location information for package tracking, as well as reducing traffic congestion in urban areas and gas emissions.

Regulations allowing beyond visual line of sight (BVLOS) operations (a prerequisite for delivery by drone) do not yet exist in Canada. Currently, operators can only conduct BVLOS flights with the express, advanced authorization of Transport Canada and NAV CANADA. In order to allow drones to safely integrate into an urban environment, autonomous BVLOS operations will need to be enabled and permitted. While Transport Canada released a Notice of Proposed Amendment to the CARs in April 2020 outlining its intended framework for low risk BVLOS operations (expected to come into force in late 2022), regulations to allow for large-scale delivery by drone are several years away. Regulations for passenger transportation by drone are further away still.

3. Infrastructure and planning

From monitoring development of new buildings to inspecting aging infrastructure, drones can be easily launched to gather information in locations where traditional methods are difficult or dangerous. Real-time data on construction sites and development projects forwards cost-efficiency objectives shared by both the private and public sectors. Additionally, drones will facilitate the move toward a 5G network by assisting in network building and detecting dead spots. In turn, a 5G network will enable thousands of drones to operate simultaneously, offer faster connection speeds and allow drones to fly over greater distances uninterrupted by network changes.

Using drones for planning, construction and inspection is legal in Canada under the current regulatory framework, as they can occur within the line of sight of the pilot licensed to perform these operations and with a drone outfitted with the necessary safety equipment. In addition to complying with the CARs, it is likely that municipal permits and other precautions will likely be required for these operations. Many Canadian companies are already conducting infrastructure inspections today (for example, Industrial Skyworks).

Conclusion

Drones will play a vital role in modernizing cities and in the emergence of smart cities. From traffic monitoring to package delivery and emergency response, drones are a cost-effective, responsive and flexible tools for cities and municipalities to connect their citizens, respond to emergencies and to take advantage of opportunities. The next
Regulatory steps taken in Canada to regulate BVLOS operations will be a significant step forward in unlocking the commercial viability of drones in smart cities.

For more information about regulatory developments impacting the drone industry in Canada, reach out to Kathryn McCulloch or another member of our Dentons’ Aviation team.

For more information about smart cities in Canada, please visit our webpage here, or reach out to any of our Canadian Smart Cities Think Tank members.

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