Smart Cities
Smart Cities Indicator Survey Highlights
2017
Johnson Controls recently conducted its first smart city survey to track key drivers, organizational barriers, technology trends, and the status of smart city solution implementations around the world. The survey queried over 150 city leaders in twelve countries. Survey findings show that cities are increasingly looking to implement solutions that will drive growth, while providing safe, sustainable and resilient environments for their citizens.

In order to manage the growing number of smart city initiatives, many cities have established a Smart City Program Office. 49% or our survey respondents indicated that a Smart City Program Office is shaping its smart city initiatives. This will serve them well as they continue to ramp up their activity, since many cities are early in the process. Almost 70% of global respondents have yet to publish or implement a smart city strategy or program.

Smart city investments are being driven by a number of factors. Globally, the biggest factors are economic development, environmental issues, and sustainability. In the United States and Canada, public safety and communications infrastructure jump out as key drivers. As city leaders look to implement smart city solutions, they also face a number of barriers. Globally, the biggest barrier to smart city investment is lack of funding. Although lack of funding is also a barrier in the United States and Canada, security concerns jumped out as the biggest barrier to investment.

When city leaders look at the technology solutions available to them, they are confronted with a wide range of options and they start in different places depending on their city’s most critical needs. Our survey indicates that there are many pilots and implementations underway in a large number of technology areas. To date, LED street lighting, city data platforms, and smart public safety top the list as the most implemented or piloted solutions globally. In the United States and Canada, smart parking and smart, connected street lighting come out on top as the most implemented and piloted solutions. Other solutions, such as electric vehicle charging and autonomous vehicle trials, are seeing slower adoption rates. This will shift as those technologies become more prevalent in cities.

As we look forward, there are many current technology trends that are going to impact investment in smart city initiatives. Globally, data analytics, machine learning, the Internet of Things, and cybersecurity are the top technology trends expected to impact smart city implementations over the next 5 years. Cities can leverage these trends and the changes they are bringing to our world in order to provide better services to their citizens and to enhance their quality of life.
The first annual global Smart Cities Survey queried over 150 city leaders in twelve countries, including the United States, Canada, Mexico, Colombia, Brazil, Argentina, France, Germany, Poland, China, India, and Singapore.
The survey respondents represented a range of medium to large cities. 44% of respondents represented a city with a population greater than five million, 39% represented a city with a population of one million to five million, and 17% represented a city with a population of 500,000 to one million.
Survey respondents represented a variety of departments within their cities. 28% came from public works, 26% from facilities operations / engineering, and 24% from environment and sustainability.
Smart city initiatives are largely being driven by smart city program offices and city departments, with 49% of respondents indicating that the smart city program office is shaping smart city initiatives and 37% indicating they are being driven by a city department.
What is the current status of the smart city strategy or program in your city?

Most cities have a smart city strategy underway, but they are early in the process. 41% of cities have a strategy plan in preparation and 24% have a published strategy. Only 10% of cities globally indicated that they do not have a smart city initiative.

Cities in the US and Canada are further along with 22% already implementing a smart city strategic program, compared to 7% globally.
In the US and Canada, communications infrastructure and public safety are much more significant factors, with 67% indicating that communications infrastructure is an extremely important driver and 65% indicating public safety is extremely important.

Economic development is the most significant factor driving smart city investments globally, with 53% of respondents indicating it is extremely important. Other important factors include environmental issues, sustainability, population growth, and public safety.
What is the top barrier to pursuing smart city projects in your city?

Security concerns jump out as the top barrier for cities in the US and Canada (27% rated it as the top barrier compared to 11% globally). Risk aversion, availability of funding and lack of standards are other key barriers.
The top financial barrier to pursuing smart city projects is competition from other capital investments according to 29% of global respondents. Other key financial barriers include lack of appropriate financing options (28%) and insufficient internal capital budget (23%).
How is your city paying for smart city projects?

State / federal government funded 57%
Public-private partnership 43%
City funded 35%
Private sector funded 34%
Utility funded 21%
User funded 10%

State / federal funding is the most popular method for financing smart city projects according to 57% of global respondents. Other important funding mechanisms include private / public partnerships (34%) and city budgets (21%).

In the US and Canada, Public-private partnerships are more popular with 43% indicating they are a source of funding for smart city projects.
Data analytics and machine learning is the top technology trend expected to impact smart city implementations over the next 5 years. 44% of respondents said data analytics and machine learning will have an extremely significant impact. Other important technology trends include IoT, cybersecurity, and data visualization.

In the US and Canada, systems interoperability standards are expected to have a bigger impact on the implementation of smart city implementations over the next five years, with 29% rating it as extremely important compared to 13% globally.
To what extent have the following smart technology solutions been implemented in your city or state?

Globally, LED street lighting and city data platforms have the most traction in terms of smart city solutions. 82% of global respondents indicated they have implemented or piloted LED street lighting, while 80% have implemented or piloted city data platforms.
Other smart city technologies are seeing lower adoption rates. Electric vehicle charging and autonomous vehicle trials have been implemented or piloted by less than 40% of global respondents.

To what extent have the following smart technology solutions been implemented in your city or state?

**Global Results**

- Commercial building energy monitoring/reporting
- Smart water meters
- Smart waste collection
- Telehealth/social care
- Building energy management/analytics for public buildings
- Smart parking
- Integrated transit payment/citycard
- Traffic/transit information portal
- District energy systems
- Electric vehicle charging
- Autonomous vehicle trials

![Bar chart showing implementation and piloting percentages for various smart technology solutions.](chart.png)
Overall, the US and Canada are further along in the implementation of smart city solutions compared to other countries. Smart parking and smart, connected street lighting are the most implemented and piloted solutions in the US and Canada.

To what extent have the following smart technology solutions been implemented in your city or state?

**US / Canada Results**

- Smart parking
- Connected / smart street lighting
- Air quality monitoring
- City data platform
- Broadband infrastructure
- Smart electricity meters
- Commercial building energy monitoring/reporting
- LED street lighting
- Integrated transit payment/citycard
- Smart water meters
- Smart public safety
- Intelligent traffic management
- Smart waste collection
- City operations center

*Graph showing the extent of implementation and piloting for these solutions.*