

The background of the entire page is an aerial photograph of a city, likely New York City, showing a dense urban landscape with numerous skyscrapers and buildings. In the center, a large green park (Central Park) is visible. Overlaid on the city is a blue, semi-transparent network of glowing lines and nodes, resembling a digital or data network, which connects various points across the city's layout.

# OPENING THE DOOR TO THE **SMART CITY**

key priorities and proven best practices from major cities worldwide



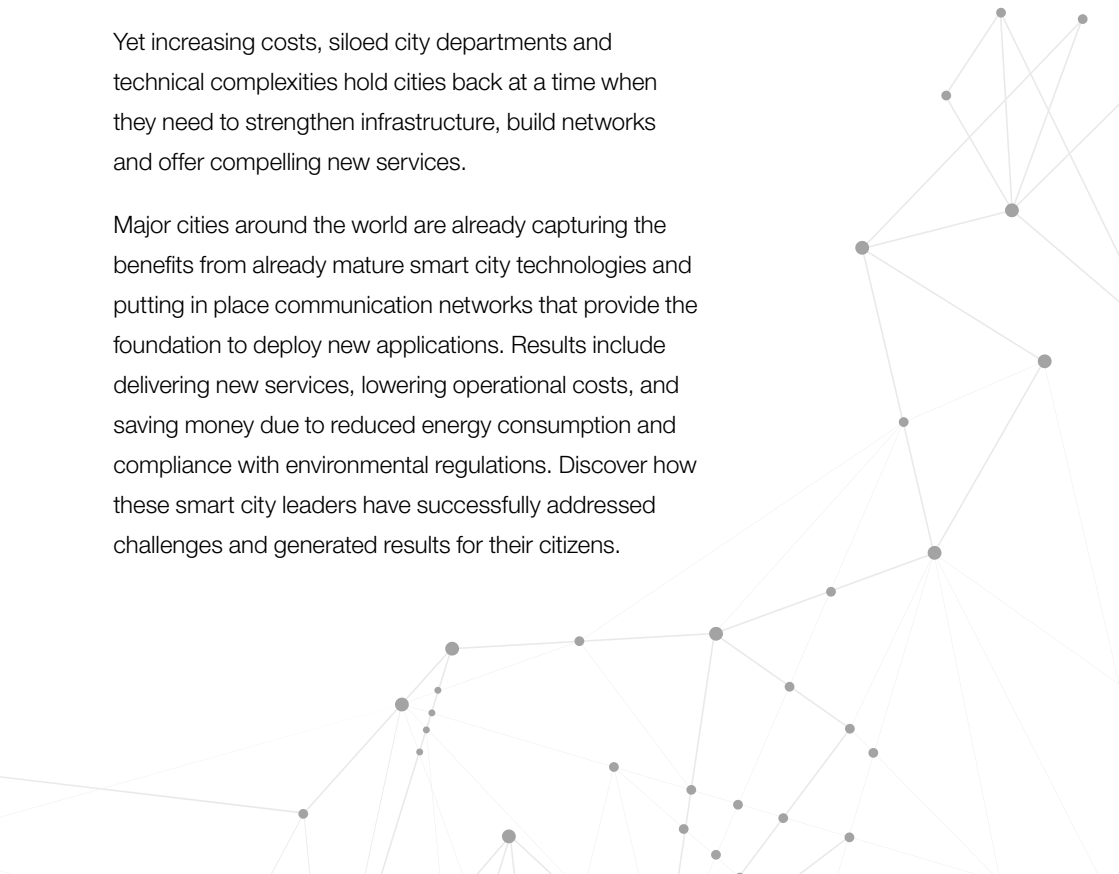
By 2030, 60 percent of the world's population will live in cities. As these cities get even larger and more complex, they have an opportunity to leverage new "smart" technologies to make their cities more efficient and sustainable, and offer citizens a better quality of life.

City leaders face increasing pressure to achieve sustainable growth and build lasting regional advantages. Cities need a competitive edge to attract and retain economic investment and skilled workers, and to meet citizen expectations for city services that provide convenience, health and safety. To comply with emerging environmental and regulatory mandates, cities must also adapt and streamline existing processes.

Yet increasing costs, siloed city departments and technical complexities hold cities back at a time when they need to strengthen infrastructure, build networks and offer compelling new services.

Major cities around the world are already capturing the benefits from already mature smart city technologies and putting in place communication networks that provide the foundation to deploy new applications. Results include delivering new services, lowering operational costs, and saving money due to reduced energy consumption and compliance with environmental regulations. Discover how these smart city leaders have successfully addressed challenges and generated results for their citizens.

The smart city provides the promise of a modernized infrastructure to support a changing 21<sup>st</sup> century society. But how should city leadership take action and make decisions to open the door to the smart city?





## COPENHAGEN

### Smart City Spotlight



A global leader in smart city services and recognized as the world's most sustainable city, Copenhagen aims to become a carbon neutral capital by 2025.

The approach:

- » **20,000 NETWORKED LED STREET LIGHTS** – targeting 50 percent reduction in energy use, cutting CO<sub>2</sub> emissions and lowering costs
- » **ENVIRONMENTAL SENSORS** – improving efficiencies and public safety for pedestrians and bicyclists with automated controls for adaptive lighting
- » **STANDARDS-BASED IPv6 NETWORK** – increasing ROI with multiple applications (e.g., smart street lights and traffic control) on the same network



## PRIORITY | BUILD A SAFE AND SECURE CITY

### BEST PRACTICES TO GET THERE

#### Ensure fast community results

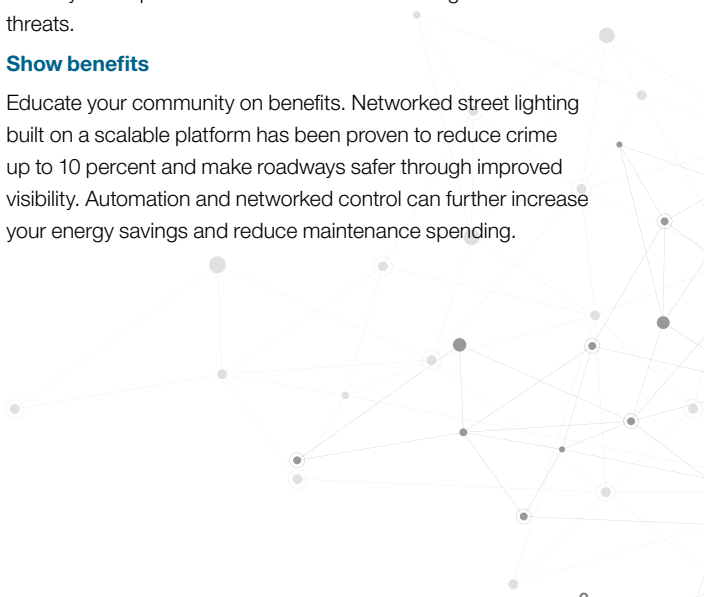
Start with a low-risk and high return project, such as networked LED street lighting, to quickly demonstrate public safety and operational benefits. Your community will instantly see the difference with better and more reliable street lighting, and you get immediate ROI with lower energy usage and drastically reduced maintenance costs.

#### Insist on proven, built-in security

Choose a communication network with proven processes and technology, effectively deployed in large-scale production environments. Make certain the network includes built-in security and a proven track record of resilience against hostile threats.

#### Show benefits

Educate your community on benefits. Networked street lighting built on a scalable platform has been proven to reduce crime up to 10 percent and make roadways safer through improved visibility. Automation and networked control can further increase your energy savings and reduce maintenance spending.





## BRISTOL, UK

# PRIORITY | CATALYZE INNOVATION AND ECONOMIC DEVELOPMENT

### BEST PRACTICES TO GET THERE

#### Break down city silos

City departments responsible for services such as lighting, traffic or transportation are often siloed with no mechanism for cross-department collaboration. Creating a shared network infrastructure enables these groups to leverage resources to increase efficiency, reduce cost and provide better services.

#### Demonstrate benefits

Connect existing city assets such as street lights, distributed sensors and other critical infrastructure to rapidly demonstrate the economic and energy benefits of intelligent street lighting. Once this is achieved, the existing network can be extended to other city services.

#### Empower local businesses

Create an environment that promotes and enables innovation so local businesses can become leaders in smart city technology, improve city services, build a green economy and create jobs.

## Smart City Spotlight



Bristol is building a platform for the development of smart city applications that will promote innovation and deliver a better quality of life. It is partnering with Bristol University to promote Bristol Is Open (BIO) — an effort to deploy and trial a citywide smart city network. BIO is encouraging local entrepreneurs to connect new sensors and devices to a common network, and to prepare for commercialization globally. The approach:

- » **MULTI-APPLICATION IPv6-BASED NETWORK** – leveraging the same Itron network canopy for applications such as parking meters, traffic light and congestion sensors, safety cameras, air quality sensors, weather sensors, public transportation sensors, remote personal healthcare monitors, and acoustic detection
- » **ENVIRONMENTAL SENSORS** – gathering and accessing data from sensors across the city can enable the development of Internet of Everything productivity services for citizens
- » **CATALYZING INNOVATION** – enabling entrepreneurs and academic institutions to leverage sensor data and insights to prototype new smart city applications and services





## SINGAPORE

### Smart City Spotlight



Mandated to fully deregulate its electricity retail market by 2015, Singapore plans to meet smart city modernization goals while lowering costs. The approach:

- » **ADVANCED METERING INFRASTRUCTURE (AMI)** – delivering more choices and lower energy costs through an open and competitive electricity retail market
- » **IPv6-BASED NETWORK CANOPY** – lowering risk with a standards-based infrastructure to support energy services as well as additional smart city applications that delivers 99.5 percent reliability
- » **COMPREHENSIVE SECURITY** – ensuring trust and safety with multi-layer protection and continuous security monitoring



## PRIORITY | GAIN OPERATIONAL EFFICIENCIES

### BEST PRACTICES TO GET THERE

#### Establish cost and performance parameters

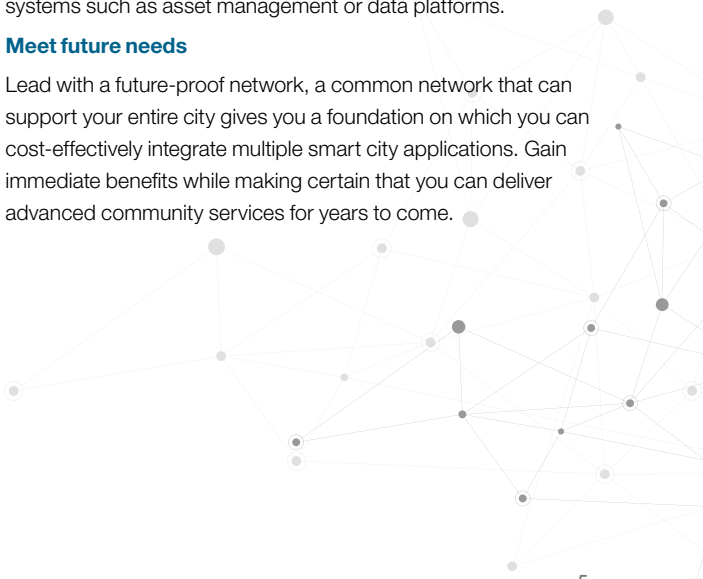
Define business and operational terms with service-level agreements (SLAs) to target measurable results, protect your city's essential operations and secure set pricing. SLA-based total cost of ownership assurances help you achieve performance objectives that are within your operating budget.

#### Control costs through greater choice

Keep your options open with the ability to pick third-party devices and applications that run on a smart city platform. Get more control and cost leverage with a 'standards-based' network and solutions that ensure that everything interoperates and works seamlessly together, and can connect to city systems such as asset management or data platforms.

#### Meet future needs

Lead with a future-proof network, a common network that can support your entire city gives you a foundation on which you can cost-effectively integrate multiple smart city applications. Gain immediate benefits while making certain that you can deliver advanced community services for years to come.





## PARIS

# PRIORITY | IMPROVE MULTIPLE CITY SERVICES

### BEST PRACTICES TO GET THERE

#### Achieve immediate cost savings

Pick a near-term project proven to deliver immediate cost savings. With networked LED street lighting, major cities around the world have lowered energy bills, saving up to 70 percent on energy costs in the new deployments.

#### Extend your network

Take operational advantage of your city's network by adding new applications and city services. Fund initiatives that clearly show how program benefits address city needs.

#### Reduce risk

Pick a platform that's been proven at scale. Use Network-as-a-Service (NaaS) deployment to network devices and applications, lowering capital expense, creating predictable operating costs, and allowing multiple departments to easily leverage the same network through a predictable yearly fee.

## Smart City Spotlight



A hub for smart city innovation, Paris has committed to reduce public lighting energy consumption by 30 percent over the next 10 years while ensuring quality lighting for residents.

The approach:

- » **20,000 NETWORKED LED STREET LIGHTS INTEGRATED SMART STREET LIGHTING AND TRAFFIC SIGNAL CONTROL** – deploying a citywide canopy network connecting cabinet-based controllers for more than 200,000 street and traffic lights across the city
- » **IPv6-BASED MULTI-APPLICATION NETWORK** – creating a platform for future services such as traffic management, environmental sensors, smart parking, electric vehicle charging, electricity metering, and water conservation
- » **PROJECT PILOT** – quickly demonstrating improved lighting efficiencies by starting with a tightly scoped city initiative







## MIAMI

# PRIORITY | CREATE A GREENER AND MORE EFFICIENT CITY

### BEST PRACTICES TO GET THERE

#### Reduce energy consumption

Smart energy projects such as LED street lighting can lower your city's energy consumption to meet environmental regulations and initiatives. Automated dimming and reduced runtime through network control drive additional energy savings. Residential and commercial demand response improve the stability and reliability of the energy distribution grid.

#### Ensure regulatory compliance

Use smart city projects to increase energy efficiencies and meet requirements for reduced CO<sub>2</sub> emissions and other regulatory mandates.

#### Lower maintenance needs

By automating management and delivering more precise outage information, networked street lighting can increase operational savings by reducing the need for mobile crews.

### Smart City Spotlight



Florida Power and Light is deploying North America's largest networked street lighting program to connect and control more than 500,000 street lights. The approach:

- » **20,000 NETWORKED LED STREET LIGHTS IPv6-BASED MULTI-APPLICATION NETWORK** – leveraging the same network for multiple applications, including advanced metering, distribution automation and smart street lights
- » **ITRON'S SLV MANAGEMENT SOFTWARE** – controlling and managing street lights with adaptive lighting approaches that adjust light levels based on motion or presence levels
- » **EFFICIENT OPERATIONS** – reducing call center load, enabling faster outage response and restoration, better asset management and network performance







GLASGOW

## Smart City Spotlight



Glasgow is integrating multiple city services on a common platform, and gathering new data to help empower its citizens to improve the city. Objectives include reducing energy costs, increasing road safety and promoting cycling to help drive health benefits. The approach:

- » **OPEN DATA PLATFORM** – bringing together a growing collection of data streams from more than 60 different organizations into a central data warehouse. Itron is streaming lighting, traffic, noise and air quality data to the city's Open Data platform. Developers can use this data to build new solutions to address city challenges
- » **ADAPTIVE LIGHTING** – while monitoring vehicle, bicycle and pedestrian traffic, the street lights are programmed to automatically brighten and dim depending on ambient light levels as well as how many people are in a given area
- » **STANDARDS-BASED IPv6 NETWORK** – increasing ROI with multiple applications including smart street lights and traffic control on the same network



## PRIORITY | LEVERAGE DATA TO IMPROVE CITY SERVICES

### BEST PRACTICES TO GET THERE

#### Promote open data

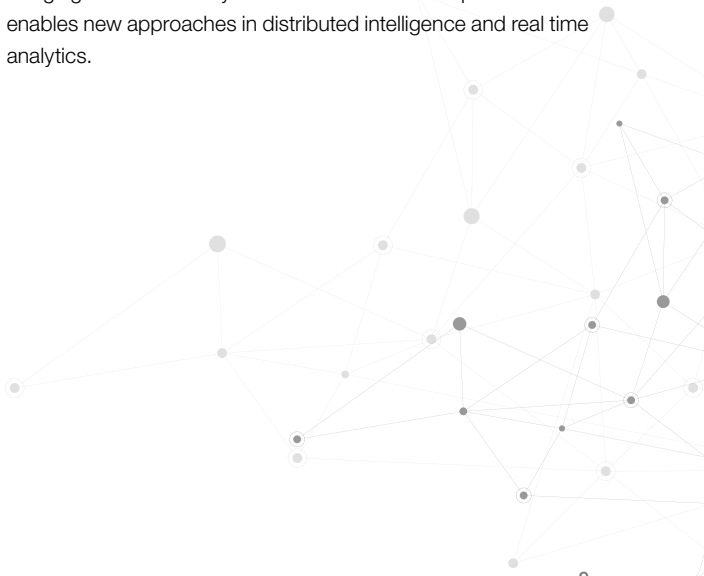
Social media connects city leaders to its citizens more than ever. Many cities are looking to share data sets from across the city with individuals, businesses and research facilities to help improve quality of life and foster innovation.

#### Encourage developers

It is hard to predict what the 'killer apps' of the smart city will be. Cities' success will require building an ecosystem of developers leveraging open standards and nurturing their ability to innovate.

#### Use one network canopy for several applications

Bringing data from many devices onto a common platform enables new approaches in distributed intelligence and real time analytics.





## CHICAGOLAND

# PRIORITY | IMPROVE RELIABILITY AND EFFICIENCY

### BEST PRACTICES TO GET THERE

#### Start with a pilot

Conduct due diligence to research and select a smart grid/smart city technology partner. Set specific benchmarks and overall pilot goals to ensure technology will meet your needs.

#### Leverage a single network for multiple grid services

Think beyond your current needs and build a network that can integrate future services on a single network. Look for a standards-based architecture with high-level security features.

#### Communicate success

Publicize concrete statistics that demonstrate the success of your project along the way, such as operational savings, reduced energy needs and improved customer satisfaction.

### Smart City Spotlight



When ComEd was mandated to improve overall system reliability, it decided to deploy a common network for multiple smart grid and smart city services, enabling the utility to partner with cities to deliver new and improved services. The approach:

- » **ADVANCED METERING INFRASTRUCTURE (AMI)**  
– delivering more choices and lower energy costs through an open and competitive electricity retail market
- » **DISTRIBUTION AUTOMATION (DA)**  
– improving outage management through better targeting of restoration crews to fault locations, faster power restoration through the automatic detection of faults and rerouting of power around the faults. Outage avoidance saved customers an estimated \$175 million from 2012 to 2014
- » **SMART STREET LIGHT PILOT** – extending the network to install 800 smart street lights in small region of the Chicago area. ComEd expects 65 percent cost reduction for operations, maintenance and energy





# ONE NETWORK. MULTIPLE SMART CITY APPLICATIONS.

## GUIDANCE FOR YOUR APPROACH

### **Enabling your community and sustaining regional advantage**

A smart city can help you create a higher quality of life for your citizens, improve business services, and draw more professional talent to your community. You can generate more local tax revenue and make your city more competitive, while keeping it environmentally sustainable.

With a future-proof network able to support multiple smart city applications, you can do more with less. You gain operational efficiencies with the ability to grow quickly as needed. A common network – delivered through adherence to industry-proven open standards – lets you seamlessly integrate smart city services, improve return on your capital investment and give your community rapid and visible success.

Smart city technologies have the power to solve many high impact problems facing your community. By focusing on the best practices outlined in this eBook, you'll be able to deliver visible, quantitative results fast and make your city a better place to live and work long into the future.

Leading cities are working together with Itron Networks to better manage city resources, improve operational efficiencies, deliver new services and strengthen community relationships.

These smart city pioneers have found that a fully modernized LED street light system offers a compelling starting point for their initiatives. Learn how you can benefit from Itron's experience, gaining fast results and building a path for tomorrow's smart city.





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