Smart Streetlights

University of Maryland National Center for Smart Growth | April 2018

Description

Smart streetlights are networked LED systems that adjust based on time of day and motion and can report outages back to central operations. They can also be equipped with various sensors and transmitters to:

- Assist emergency response
- Measure temperature, weather conditions, air quality
- Monitor traffic
- Publicize parking availability
- Activate a camera at the sound of gunshots (ShotSpotter)
- Act as a cell tower or provide public Wi-Fi/charging station

EnGoPlanet Smart Solar Street Light: "illuminates streets, parks, parking lots, corporate and university campuses and creates appealing and modern visual environments that will not only promote renewable energy sources, but also lower installation, energy and maintenance bills."

Benefits

Since streetlights comprise nearly 40% of many cities' total energy costs, upgrading and connecting single streetlights to a network is considered the best smart city undertaking in terms of return on investment (cost savings of 60 - 80%). Other benefits include:

- Fewer traffic accidents due to better-lit roads
- Reduced crime
- Improved emergency response
- Bulb outages identified in real-time and replaced

Use Cases

- San Diego, CA - Current (General Electric): http://www.govtech.com/fs/San-Diego-to-Cover-Half-the-City-with-Intelligent-Streetlights.html
- Illinois' statewide smart street light program: https://www2.illinois.gov/IISNews/15233-DoIT_Smart_Street_Lighting_Vendors_Release.pdf
- Pittsburgh's Request for Information to replace its 40,000 city-owned and operated streetlights: https://datasmart.ash.harvard.edu/news/article/smart-city-procurement-as-open-data-in-pittsburgh-1215
- Columbus, OH - winner of 2016 USDOT's Smart City Challenge: https://www.citylab.com/transportation/2016/06/columbus-smart-cities-challenge/488429/

Financing / Costs

Costs vary based on the desired sensor capabilities, but it's important to note that streetlights are not often owned by the jurisdiction. In LA, literature cited $100 per basic solar streetlight and $1,000 per streetlight for 4G and cell reception.

Vendors*

- Cisco
- GE
- Sensity
- Echelon
- Philips
- Telensa PLANet
- Verizon
- Alphabet (Google)
- Wi-Fiber
- Silver Spring Networks

** List does not imply endorsement or ranking.*

Smart & Connected Communities

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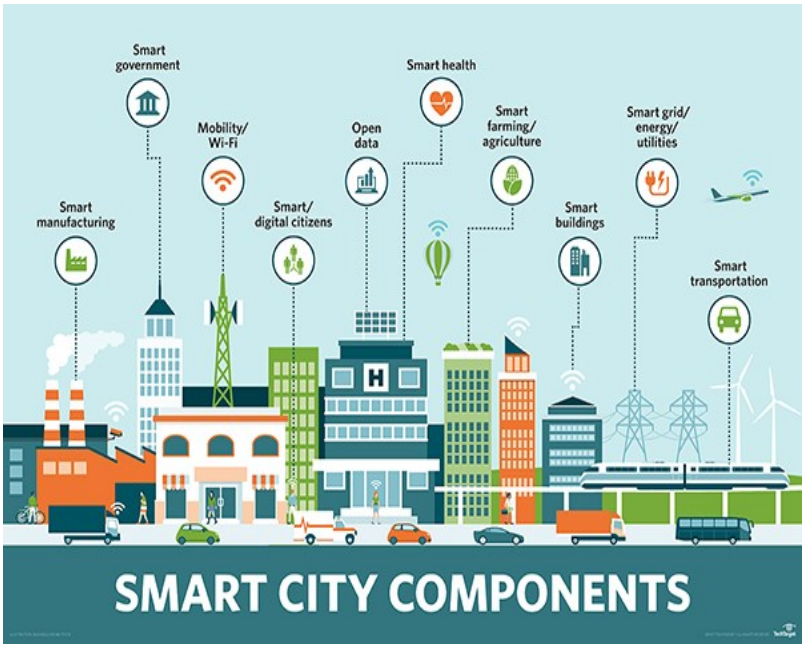
Description

A smart city is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently (ComputerWorld). Goals of a smart city:

- Reduce costs while improving quality & delivery of urban services
- Allow real-time response to changing conditions
- Improving connectivity and opportunity for all residents
- Increase communication between citizens and government



Areas of Investment

- Transportation
- Healthcare
- Public Safety
- e-Government / Open Government
- Education
- Energy
- Water / Waste Management
- Wireless

Challenges

- Privacy / mass surveillance
- Security
- Data governance (ownership / sharing)
- Digital divide
- Collaboration among different stakeholders
- Aging city infrastructure
- Expense and expertise required for digital infrastructure planning, maintenance, and operations

Pilot Programs

Larger-scale projects (population > 300,000):

- Kansas City, MO
- LinkNYC
- Pittsburgh, PA & Carnegie Mellon University
- Columbus, OH
- Chicago, IL

Smaller-scale projects (population < 210,000):

- South Bend, IN - University of Notre Dame
- Branson, MO
- Aurora, IL

Resources

- Smart Cities Council: https://smartcitiescouncil.com
- Songdo Int'l Business District: http://songdoibd.com/
- Bristol, UK's 5G: https://www.bristolpost.co.uk/news/bristol-news/bristol-trial-superfast-5g-networks-1322290
- KCMO: http://kcmo.gov/smartcity/
- NSF S&CC: https://www.nsf.gov/cise/scc/