

# See How These Urban Cities Are Investing In Smart And Green Infrastructure



**Jennifer Kite-Powell** Contributor ⓘ  
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Downtown Boise skyline, February 2018. CITY OF BOISE

Cities around the world are looking to technology to make their cities smarter and more sustainable. From smart grids, urban wind power, geothermal energy and

smart lights, the modern city is becoming greener, more connected and aware of the importance of sustainable infrastructure for growth.

Singapore wants to be the [world's greenest city](#) and has focused on smart lighting, pneumatic waste collection and sensors to monitor elderly people who have fallen down. London was named the top European smart city by the IESE Centre for Globalization and Strategy, and, Kansas City, Missouri's [smart-city initiative](#) which installed computer-equipped sensors on streetlights along a 2.2-mile light-rail line in March 2016. The modern urban city is getting smarter and greener.

"Half of the global population lives in cities, and more than one million people are moving to cities worldwide each week. In many places this is an essential component of rising prosperity, as urban areas are more likely to provide access to clean water, technology, employment, and education," said Duncan Tait, Corporate Executive Officer, SEVP, and Head of Americas and EMEIA, Fujitsu. "It also provides challenges in terms of housing, food systems, and pollution. As the urban population grows, [future cities will harness digital technology](#) to provide more efficient services to address these challenges."

In 2017, London Mayor, Sadiq Khan announced he wanted the city to become the world's leading [smart city](#) and reached out to the [tech community](#) for solutions and strategies to improve London's public services and address social and environmental challenges.

## **London, England**

In January 2017, the [City of London](#) recently announced it will launch a smart city lighting strategy through the City of London Corporation. This strategy also covers remotely operated lighting that will complement the look of historic buildings, improve energy usage and help tackle light pollution in the "[Square Mile](#)."

The lighting strategy, which is open to comments by the public in London, will use different types of technology to install a variety of lighting and light colors in

urban spaces during different times of the night to balance darkness with street and commercial lighting. This strategy is a compliment to the upgrades underway in the City's lighting to energy-saving and cost-efficient LED.

**Studies** have shown that artificial lighting at night is contributing to a global increase in light pollution. This leads to less starlight in the night sky, disrupted ecosystems, a reduction in biodiverse populations and can impact on **human health and sleep rhythms**.



A view of the city of London at night from the top of the BT tower. The square mile and Canary Wharf can be seen. (Photo by In Pictures Ltd./Corbis via Getty Images)

In 2013, the City of Paris passed a law requiring that the illumination of the fronts of buildings must be turned off by 1 am to conserve energy.

Surveys of the Square Mile show that some streets are excessively lit compared to how many people actually use them and that current street lighting adds little value because nearby commercial lighting already covers the area.

“ As an innovative and particularly dense corner of London, it is vital that we are intelligent, ambitious and open when considering new infrastructure,” said Chris Hayward  , Chairman, City of London Corporation Planning and Transportation Committee. “As the City’s occupiers become more diversified with 99% of City firms now SMEs and eight percent from the technology, media and telecommunications industry, the City’s streets are also evolving and the night activity offer is expanding.”

"The lighting strategy will support the night time economy with safer, more sustainable and inviting streets," said Hayward. "This is a significant opportunity for the City to act as an example for the rest of London and the UK."

Hayward says the strategy will also consider the critical role that lighting has on crime prevention and reinforcing road safety as well as address the needs of nocturnal animals in gardens and areas along the riverside.

The new remote control management system means the City can change time and level of lighting remotely which will enable ‘smart’ maintenance.

"For instance usually if a lantern is broken we would physically have to attend each lantern to check on it. With the new system we will automatically be notified about the location electronically and condition of repair needs," said Hayward.

The City's smart lighting infrastructure doesn't currently include any sensors, but Hayward says this will be considered down the road and that the sensors would support remote management if a building’s lights are already lighting the street in front of it.

"By example, we could take judgment to dim the surrounding street lighting and vice versa...if an issue with a building’s lighting were to occur, we would be capable of adapting the level of street lighting to help provide a safe environment," added Hayward.

The City of London Corporation says the savings in energy and maintenance costs will eventually amount to more than £500k annually.

## Boise, Idaho



The 20-Mile South Farm is a 4,225 zero-net-energy farm created by the City of Boise. CITY OF BOISE

From smart lighting in London to geothermal and zero-net-energy in the City of Boise in Idaho, this small to mid-sized emerging city in the northwest has been focused on making Boise a livable city for the past decade.

The City of Boise had a population of more than 220,000 people in 2016 covering around 82 square miles. The city has also had **tremendous growth** over the past decade and has been popping up on "Best of" lists around the country, including coming at number 1 on **America's Fastest Growing Cities 2018** which reported that it had the highest growth rate of any US metro area at 3.08% in 2017.

Despite its low profile as US states go, Boise, like London, has set an ambitious goal to become the most livable city in the country.

In 2015, the city set out to establish city building energy reduction goals. Through that process, they set a baseline for the future with two primary goals; that new

city buildings would be zero-net energy by 2030 and existing city buildings would have a 50 percent energy reduction by that same year.

To reach these two goals the city built and operates the 20 Mile South Farm, a 4,225-acre zero net energy farm which serves several purposes for the city. It's also the first commercial zero-net energy building in the state of Idaho according to Haley Falconer, Environmental Division Manager, City of Boise Public Works.

Falconer was also appointed the city's first sustainability coordinator in 2015.

"This farm overall is really one of the greatest sustainability features we have," said Haley. "Energy reduction and efficiency have been priorities of Boise for a long time. Before the city went out to the community to have a broader energy discussion and goal setting, it was important to demonstrate leadership from within. To walk the walk if you will find within city operations so that we could then take that experience to the broader community."



The 20 Mile South Farm is a zero-net energy initiative that's part of the City of Boise's 2030 sustainability and renewable energy goals. CITY OF BOISE

The farm takes all the biosolids from the wastewater treatment facilities in the city. The biosolids are then used as fertilizer to grow forage crops. This is part of the City's water renewal agenda

"The this zero net energy farm was a big win for the city's goals because it demonstrated that this was doable and gave us a pilot to learn from," said Falconer. "Already, the building has been net-positive and produced more energy than it uses (30,000-kilowatt hours). The building is monitored in all different ways, from sections of the building to mechanical and lighting and plug loads so that we can slice and dice the data so that by the time we're ready to consider the next zero-net energy building, we'll have a roadmap on what works well. In essence, this building was setting the stage for us to reach our first goal."

According to Falconer, to reach the energy reduction goal, the city went about reducing energy use in a number of ways including updating equipment primarily efficiency in HVAC, changing out light fixtures, implementing energy efficient best practices and working with local utility companies for incentives.



The Union Block Building in downtown Boise, Idaho uses geothermal energy. CITY OF BOISE

Boise uses geothermal energy to heat more than six million square feet of downtown building space, about 90 buildings and is the largest-direct-use system in the United States. Buildings include Boise High School, Downtown YMCA, Boise State University, the Main Library, Fort Boise Community Center and Boise City Hall. All of those buildings get 86 percent of their energy from geothermal.

The carbon reduction offset by using geothermal energy in Boise is equivalent to planting 275,000 trees annually.

"The Main Library has seen a 45% reduction in energy use since 2010, which puts it close to its 2030 target goals," adds Falconer. "We have also seen Boise City Hall West reduced energy by 38 percent since 2010 which puts it close to attaining the 2030 reduction goals 10 years ahead of schedule," adds Falconer.

As part of the City's energy 2030 reduction goal, they also rolled out renewable energy initiatives including using solar energy in commercial and public buildings including the Boise Airport, the 20 Mile South Farm and City Hall West.

Falconer says this also applies to electric vehicles. The city has six electric vehicles and plug-in hybrids since 2016. By 2017, the city reduced annual tailpipe pollutants by 622 pounds and saved the city an estimated \$2,400 in annual fuel costs. Citywide, Boise has 43 electric vehicle charging stations in 22 different locations.

“Sustainability for us is all about the triple bottom line – community, economy and environment,” said Boise Mayor David Bieter . “Being green is important, but only if those changes can become part of the very fabric of who we are as a community, how our local businesses prosper and grow, and how we protect those key elements that make Boise such a special place to call home.”

“We are at a crossroads: we have the choice to take action now and use technology to take us on a path to prosperity, or otherwise face the consequences,” said Tait. “In every major challenge that we face – whether that be an aging population, sustainability or urbanization – we need to take a coordinated and considered approach to the role of technology.”

Tait adds that with so much of the global population now living in urban areas, the concept of smart cities will be even more vital to civic planning.

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*This article was updated to reflect Boise as the fastest growing US metro area in 2018*

*Jennifer Kite-Powell is a writer who looks at the intersection of technology and science with art & culture, health, environment and industry. You can follow her on Twitter @jennalee.*