

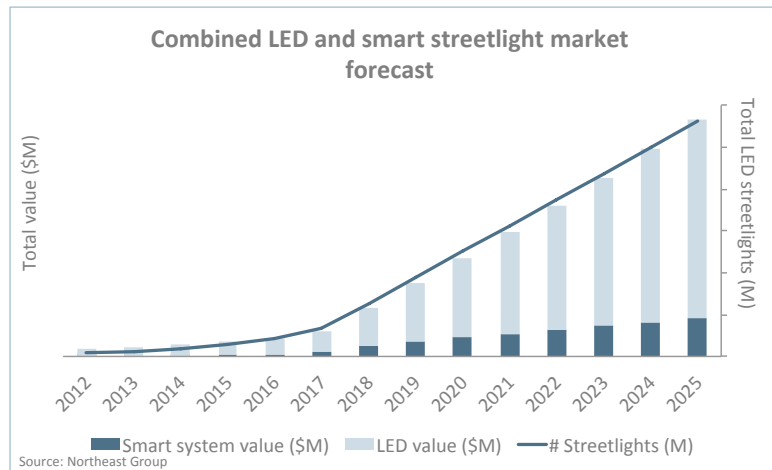
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United States Smart Infrastructure: LED and Smart Street Lighting

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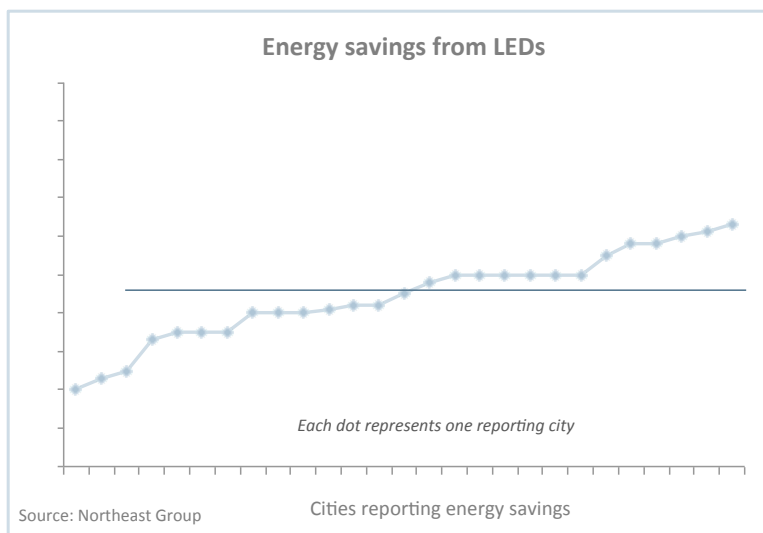
Light-Emitting Diode (LED) streetlights are quickly transforming the landscape of cities and municipalities across the United States, but still only make up about 1% of the country's more than 50 million streetlights. The next step of advanced smart lighting systems will improve upon the existing benefits of LED streetlights and contribute to cities' growing "smart infrastructure." This study identified nearly 400 US cities and towns that range from those having



considered LED streetlights to those having completed changeovers and experimented with advanced smart lighting systems. After receiving responses from nearly 100 cities and municipalities, Northeast Group's survey results show that LED streetlights are well liked by nearly all stakeholders, that they provide significant cost savings, and that there is growing interest in smart lighting systems.

The Northeast Group survey confirms what many LED vendors and consultants have already claimed: the cost savings of LEDs are real and so are the benefits. LED streetlights can improve overall lighting quality while paying for themselves over time. But this report also produced more nuanced findings. For example, energy cost savings on average were reported to be slightly lower than some manufacturers claim and the payback time for installations is highly dependent on context—in many cases the maintenance cost savings are actually the decisive factor rather than energy cost savings.

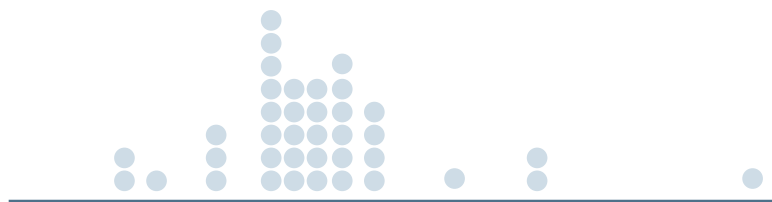
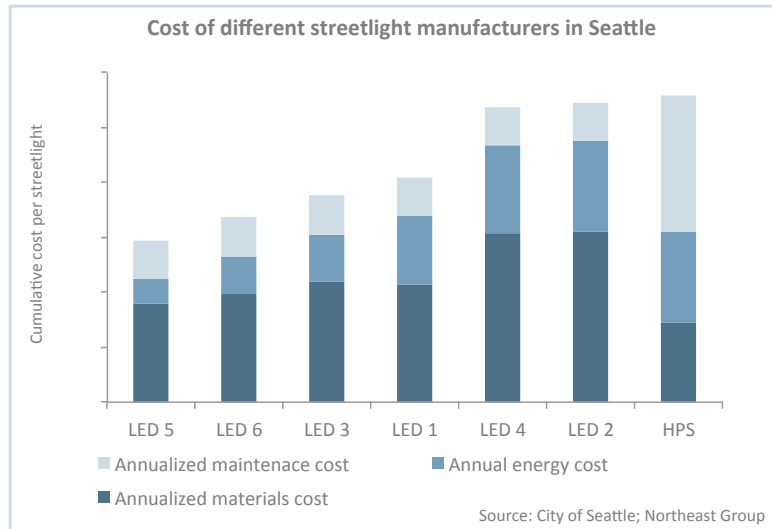
Additionally, while LED streetlights in almost all cases would pay for themselves before the end of the lifetime of the streetlight, the high upfront costs have meant that many cities were only able to begin installations with the



help of federal and state grant money. With the future of these grants uncertain, this casts some doubt on the near-term future of the market. The near-term market for advanced smart lighting systems is even less clear as many cities expressed liability concerns over streetlight dimming and cost-savings analyses are currently less favorable for smart streetlights.

The LED and smart streetlight market is currently at an inflection point. Hundreds of deployments over the past three years

have brought this market to the forefront and organizations such as the Department of Energy's Municipal Solid-State Street Lighting Consortium are ensuring that key learnings from these projects are spread. Meanwhile, the long-term drivers of reducing energy consumption, improving lighting quality, and incorporating lighting into larger smart grid and smart infrastructure systems ensure that this will be a growing market throughout much of this decade. This report provides a snapshot of the current status of both LED and smart streetlights and finds a degree of divergence between the positive response to existing installations and some hesitancy about the future. The results of Northeast Group's survey show that there are no longer significant concerns about public skepticism towards the new lights or about the durability or performance of LED streetlights. In almost all cases cities found few technical issues with LED streetlights and the public reaction was overwhelmingly positive. Yet, the survey also shows that cities remain concerned about financing for future deployments, utility commitment to implementing LED streetlight rates, and standards for smart streetlight systems.



Payback on LED streetlight projects

The LED and smart streetlight markets are at a critical juncture where cities, state and federal governments, and vendors need to assess what has been successful with existing deployments and what hurdles remain. This report focuses a wide lens at the experiences of towns and cities with populations from under 5,000 to nearly 4 million people to assess how this largely untapped market will develop over the next decade and beyond.

Key questions answered in this report:

- What were the average energy and maintenance cost savings for cities and municipalities implementing LED and smart streetlight projects?
- What are the typical break even periods for these projects?
- What are the primary financing mechanisms for these deployments?
- How large will the LED and smart streetlight markets be through 2025?
- Who are the leading vendors in the US LED market and who is poised to lead the growing smart streetlight market?
- Which cities are leading the way in smart streetlight installations and how can other cities emulate them?
- How will smart streetlights fit into larger smart infrastructure plans?

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Companies covered in this report

- American Electric Lighting
- Amerlux
- Arizona Public Service Co
- Cooper Lighting
- Cree
- Detroit Edison
- Dialight
- Duke Energy
- Duralight
- Echelon
- Ecofit
- ESL Spectrum
- GE
- Georgia Power
- Global Green Lighting
- Greenstar
- Holophane
- Kansas City Light & Power
- Kim
- King
- LED Roadway
- Leotek
- Lighting Science
- LSI
- Omega Pacific
- Pacific Gas & Electric
- Portland General Electric
- Progress Energy
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- Sensus
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