Guidehouse
INSIGHTS

Research Report

Guidehouse Insights Leaderboard: Smart Street Lighting Vendors

Assessment of Strategy and Execution for 18 Smart Street Lighting Vendors

Published 2Q 2020

Ryan Citron
Senior Research Analyst

Eric Woods
Research Director

Section 1
Executive Summary

1.1 Market Introduction

Smart street lighting is solidifying its position as one of the most rapidly expanding technologies in the smart cities market. The strong business case and platform potential of smart street lighting has accelerated substantial commercial projects in a large variety of cities and utility service areas around the world. With more applications being added to street lighting networks—such as smart parking, traffic management, and small cells for cellular connectivity—new revenue streams are available to industry players and cities that capitalize on these opportunities.

Guidehouse Insights defines smart street lighting as the use of advanced technologies for the efficient operation, monitoring, and management of street lighting within a smart city strategy. Smart street lighting is enabled by a variety of technology innovations, including sensors, control nodes, gateways, cameras, wireless communications, and data analytics. This *Guidehouse Insights Leaderboard* identifies and analyzes the companies that are playing a leading role in the evolution of this important market.

Excluded from the analysis are lighting and energy service companies and pure play LED manufacturers. Guidehouse Insights' coverage of smart street lighting suppliers focuses on public street lighting in cities (i.e., roadways, highways, city parks, and public areas) and excludes companies dedicated to building and commercial outdoor lighting markets. The criteria by which manufacturers are compared in this *Guidehouse Insights Leaderboard* include:

- Strategy Criteria
  - Vision
  - Go-to-Market Strategy
  - Partners
  - Product Strategy
  - Geographic Reach
- Execution Criteria
  - Market Presence
  - Sales, Marketing, and Distribution
  - Product Features and Portfolio
  - Product Integration
  - Staying Power

Detailed descriptions of each criterion are provided in the Criteria Definitions section of this report.

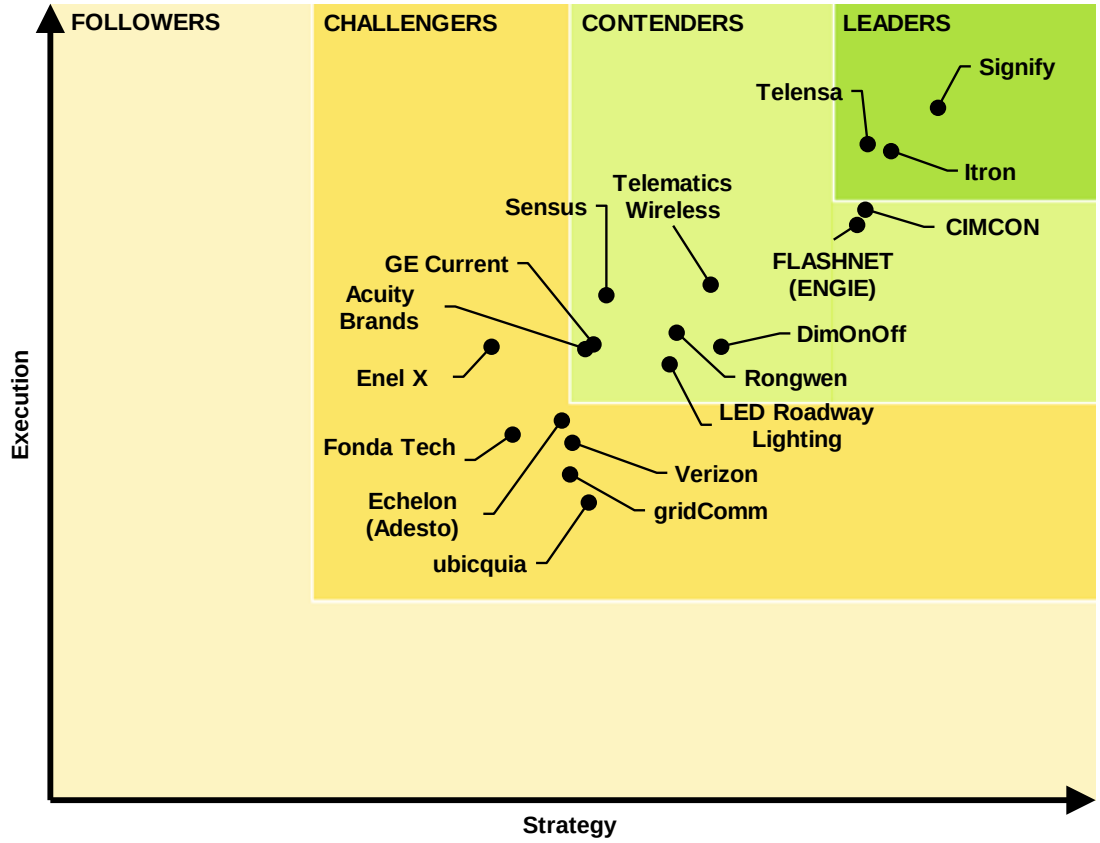
1.2 The Guidehouse Insights Leaderboard Grid

This *Leaderboard* offers an evaluation of vendors in the smart street lighting market with the capacity to play a leading role in large-scale deployments. It focuses on providers of connected lighting controls, software, and networking solutions. This *Leaderboard* also assesses the degree to which companies are integrating their smart street lighting solutions with the broader smart cities market.

Signify, Itron, and Telensa have maintained their position as Leaders in the smart street lighting market. These vendors have clear, compelling visions that are effectively communicated to the industry and a strong market presence globally through the deployment of large-scale connected street lighting projects in multiple world regions. CIMCON and FLASHNET (majority owned by ENGIE) are following closely behind, leading a group of solid Contenders that are deploying innovative technology solutions and leading significant city deployments. All vendor categories included in this *Leaderboard* recognize, to varying degrees, the importance of smart street lighting to the broader smart cities market.

Supplier dynamics in the smart street lighting industry continue to evolve through consolidation, acquisitions, and increasing levels of competition. Additions to this year's *Leaderboard* include LED Roadway Lighting, CIMCON, Telematics Wireless, Enel X, and Fonda Tech. Tvilight is no longer included in the study, as the company declared bankruptcy in August 2019.

Chart 1-1. The Guidehouse Insights Leaderboard Grid



(Source: Guidehouse Insights)

Section 2
Market Overview

2.1 Market Definition

Smart street lighting is a general label for the use of advanced technologies for the efficient operation, monitoring, and management of street lighting within a smart city strategy. It is made possible by a variety of technology innovations, including sensors, controls, gateways, cameras, wireless communications, and data analytics. Guidehouse Insights' coverage of the smart street lighting market focuses on public street lighting in cities (i.e., roadways, highways, city parks, and public areas) and excludes buildings and commercial outdoor lighting such as parking lots.

2.2 Market Drivers

Several key drivers are advancing the smart street lighting market:

- **The broad acceptance of the benefits of LEDs:** Helped by falling costs and improvements in quality, LEDs provide a significant market opportunity for networked control systems. The installation of controls is cheapest when done in conjunction with the installation of new lights, and LEDs lend themselves particularly well to advanced controls.
- **A platform for smart cities applications:** An important attraction of smart street lighting is the ability of the system to act as a platform for future applications. Once a network is established, cities can add additional capabilities as needed in the future without deciding at the time of a connected LED deployment.
- **City energy policies:** City climate action plans, energy reduction goals, and greenhouse gas reduction targets are driving nearly all industries to design and execute plans that further the city's goals. Smart street lighting is a cost-effective and relatively simple way for cities to meet emissions and budget objectives.
- **Opportunities from open data:** Opening data generated from a smart street lighting project to the public can inform residents when making decisions and enable new economic development opportunities. Open data can also be used by software developers to generate new applications and businesses in their cities.

- **Innovative business models and procurement processes:** Energy-saving performance contracts and energy as a service offerings reduce or remove the need for municipal upfront investment (a major barrier in the industry). Some cities are also designing more open and flexible requests for proposals for their street lighting upgrades to consider an array of different smart city innovations that could be implemented in their territory.

2.3 Market Barriers

Several market barriers are hindering parts of the smart street lighting industry. Funding is limited for cities in many regions, leading to resource constraints and difficulty finding necessary capital investment. Although the cost of LEDs and controls continues to drop, a premium for these technologies still exists when compared with less efficient and non-connected technologies.

Deploying smart city technologies that are interconnected and that communicate with each other can raise privacy and security concerns from citizens. When proposing street lights equipped with cameras, microphones, and other sensors that capture data from the surrounding environment (e.g., traffic flow, pedestrian movement), gaining citizen acceptance and support can be a significant challenge. For example, in Hong Kong, protesters damaged more than 20 smart lampposts in 2019 due to concerns of surveillance, which caused a key technology supplier, TickTack Technology, to pull out of the project. Suppliers and cities can reassure citizens by demonstrating that the data collected is anonymized and not used to gather information on individuals. Emphasizing this focus on metadata—and making the data publicly available—will help to alleviate surveillance and privacy concerns.

The street light ownership model in some jurisdictions can also make smart street lighting projects difficult to incentivize. In some countries, street lighting may be provided by the local utility, whereby the city is charged a fixed rate per street light and not for the actual electricity consumption. This model leaves both the business case for energy efficiency and the potential for connectivity dependent on incentives set for the utility by regulators.

Additionally, city governments often exist in departmental siloes, making smart street lighting deployments with additional smart city applications difficult to implement. Deploying and managing a connected street lighting network is enough of a challenge for many lighting and public works departments, as they must ensure real benefits are provided to the city in terms of cost savings and improved lighting services. In this context, implementing additional sensor applications can be viewed as an added complication for cities.

2.4 Market Trends

Over the past 2 years, millions of control nodes have been added to street lights globally. LEDs have evolved into the standard replacement for legacy lighting in most cities, and smart controls are increasingly being installed alongside LED deployments. As a number of cities around the world utilize smart street lighting as a platform for other smart city applications, new revenue streams are becoming available to industry players and cities that capitalize on these opportunities. Sensors and other technologies are increasingly being added to smart street lighting networks to create new city services, including EV charging, mobile broadband coverage, gunshot detection, air quality monitoring, advanced traffic management, and smart parking.

Suppliers are also beginning to offer more lighting products that are platform-ready through the development of smart poles. Of the projects that have been installed to date, most smart poles have fitted into the following use cases: connectivity, public safety, and Internet of Things (IoT) sensor hosting. For more information, see Navigant Research's *Smart Poles* report.[1]

Utilities are emerging alongside cities as a key driver of smart street lighting. The technology provides utilities the opportunity to enhance customer services; meet emissions goals of partner municipalities; improve bottom lines by reducing energy and maintenance costs; and use street light poles for future smart city applications. Utilities such as Oklahoma Gas & Electric (OG&E), Georgia Power, Tampa Electric, and Florida Power & Light Company are leading many of the largest smart street lighting deployments globally—with each utility having deployed or beginning to install more than 200,000 connected street lights in their service territories. Some utilities, such as Georgia Power, are installing far more; within the next 4 years, the utility expects to operate between 900,000 and 1 million networked LEDs.

The market for communication networks used in smart street lighting is a highly fragmented one that can depend largely on the geography in question and the types of smart city applications that cities are looking to deploy. Nevertheless, some networks are more popular and suitable than others: the most commonly used networking options for smart street lighting are RF Mesh, power line communications (PLC), and cellular. Guidehouse Insights segments the global smart street lighting market into cellular (2G, 3G, LTE, 5G, and Narrowband-IoT [NB-IoT]) and non-cellular (e.g., PLC, RF Mesh, Wi-Fi, and proprietary networks such as Telensa's long-range Ultra Narrow Band [UNB] system) communication technologies.

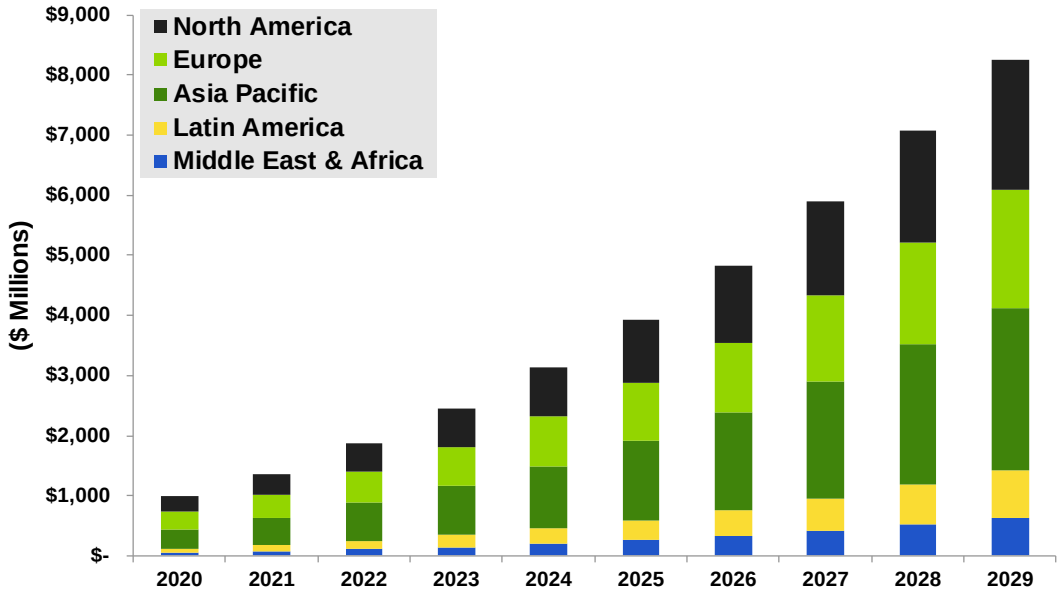
[1] Navigant Research, *Smart Poles*, 4Q 2019.

In 2020, it is estimated that less than 10% of smart street lights globally are connected via cellular networks, with the majority connected through one of the non-cellular options. Guidehouse Insights expects growth for cellular to remain steady during the next 5 years. Acceleration should occur from 2025-2029 as more cities use smart street lighting as a platform for smart city applications and the emergence of 5G accelerates the use of low power cellular networks, such as NB-IoT.

2.5 Market Size

The global market for smart street lighting is expected to be worth $992 million in 2020. Annual revenue is likely to grow to over $8.3 billion by 2029, representing a strong compound annual growth rate (CAGR) of 26.6%. More detailed data segmentation, analysis, and market forecast assumptions can be found in Navigant Research's *Market Data: Smart Street Lighting* report.[2]

Chart 2-1. Annual Smart Street Lighting Revenue by Region, World Markets: 2020-2029



(Source: Guidehouse Insights)

[2] Navigant Research, *Market Data: Smart Street Lighting*, 4Q 2019.

Section 3
The Guidehouse Insights Leaderboard

3.1 The Guidehouse Insights Leaderboard Categories

Guidehouse Insights scored the vendors in this *Leaderboard* according to four categories: Leaders, Contenders, Challengers, and Followers. These categories are defined below.

3.1.1 Leaders

Leaders are vendors that scored 75 or above in both Strategy and Execution. These companies have clearly differentiated themselves from the competition through exceptional solution portfolios, product integration, and large-scale connected lighting deployments in multiple world regions. Leaders are currently in the strongest position for long-term success in the smart street lighting market.

3.1.2 Contenders

Contenders are vendors that scored between 50 and 75 in both Strategy and Execution. While these companies have a solid foundation for growth and long-term success, they have not yet attained a superior position in the market. They are well positioned to become Leaders through their strong portfolio of smart lighting product solutions and commercial projects in their home markets, but they need to further expand their partner networks and geographic coverage to reach international customers in multiple world regions.

3.1.3 Challengers

Challengers are vendors that scored higher than 25 in Strategy and Execution but are not yet Contenders for market leadership. While the vendors are developing innovative product features and the capability for smart city integration in many instances, they face significant challenges stemming from a lack of commercial projects or staying power in the market. Challengers are beginning their arc of smart street lighting launches, resulting in low Execution scores based on limited geographic reach or market presence.

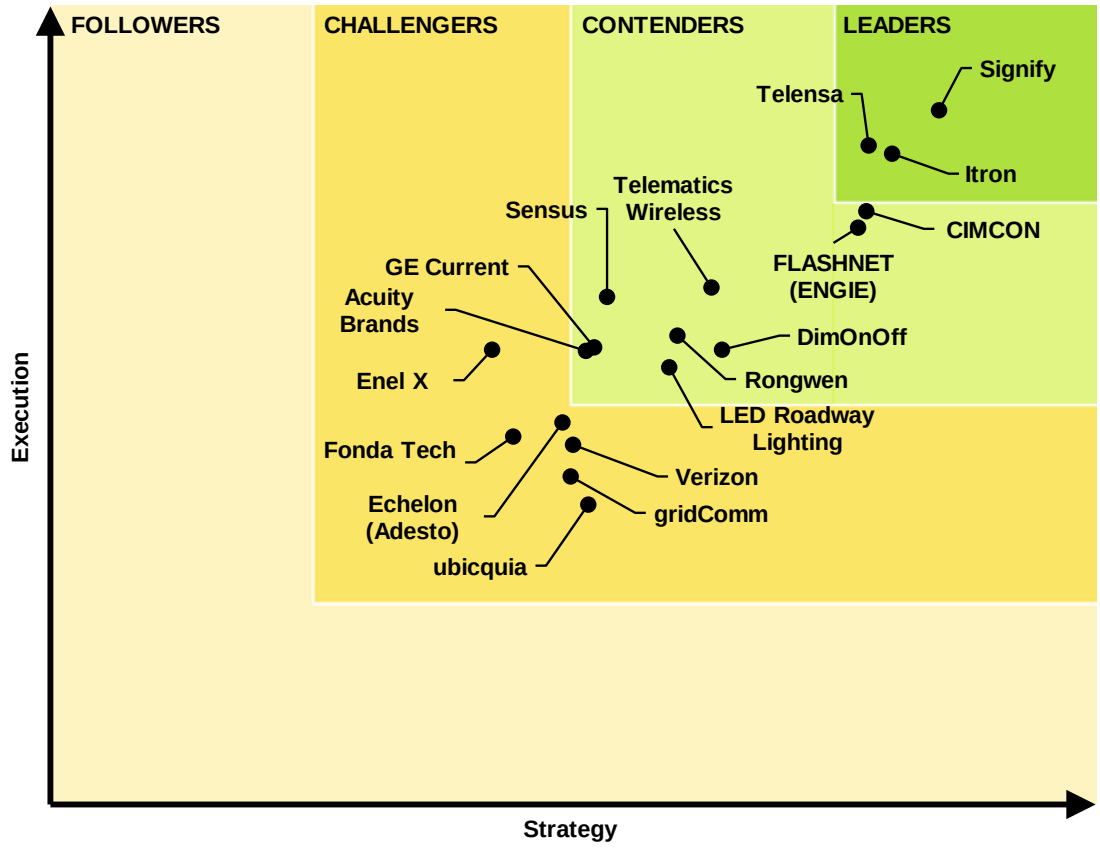
3.1.4 Followers

Followers are vendors that have failed to distinguish themselves and scored below 25 in Strategy and Execution. These companies are not currently expected to challenge the Leaders unless they can substantially alter their strategic vision and expand their resources. No smart street lighting vendors ranked as Followers in this *Guidehouse Insights Leaderboard*.

3.2 The Guidehouse Insights Leaderboard Grid

Signify, Telensa, and Itron have maintained their positions as Leaders in this year's *Leaderboard*. These vendors have strong product portfolios that are recognized in the market as being reliable, mature, and of high-quality. The Leaders have also deployed large-scale connected street lighting projects in multiple world regions and are recognizing the importance of smart street lighting to the broader smart cities market. A strong group of Contenders led by CIMCON and FLASHNET are also leading significant city deployments and developing innovative street lighting technology solutions that integrate with the broader smart cities market. Industry players in the Challengers category are still building their market presence and geographic reach; nevertheless, they are bringing innovative solutions to the market that can be used for unique use cases.

Chart 3-1. The Guidehouse Insights Leaderboard Grid



(Source: Guidehouse Insights)

The 18 companies included in this *Guidehouse Insights Leaderboard* have established themselves among the leading vendors in the rapidly developing smart street lighting market. Company profiles, brief overviews of their solutions, and explanations of the scoring for each can be found in Section 4.

Table 3-1. The Guidehouse Insights Leaderboard Overall Scores

Rank	Company	Score
1	Signify	86.0
2	Itron	81.0
3	Telensa	80.4
4	CIMCON	76.1
5	FLASHNET (ENGIE)	74.8
6	Telematics Wireless	64.0
7	DimOnOff	60.7
8	Rongwen	59.4
9	Sensus	58.6
10	LED Roadway Lighting	57.0
11	GE Current	54.7
12	Acuity Brands	54.1
13	Echelon (Adesto)	50.2
14	Enel X	48.4
15	Verizon	47.6
16	gridComm	45.6
17	Fonda Tech	45.1
18	ubicquia	45.1

(Source: Guidehouse Insights)

Section 4
Company Rankings

4.1 Leaders

To qualify for the Leaders category, a company must score 75 or higher in both Strategy and Execution. This *Guidehouse Insights Leaderboard* features three Leaders: Signify, Telensa, and Itron.

4.1.1 Signify

Total Score: 86.0

Strategy: 85.0

Execution: 87.0

Signify is a global leader in lighting with expertise in the development and application of energy efficient lighting products, systems, and services. Formerly Philips Lighting, the company changed its name to Signify in May 2018 to reflect its vision to shift toward sustainability, innovation, and IoT. Headquartered in Eindhoven, the Netherlands, the company has operations in more than 70 countries and employs 32,000 people worldwide. Signify's background as a lighting company (with over 120 years of experience in the industry) that offers end to end systems gives it an advantage over most of its competitors.

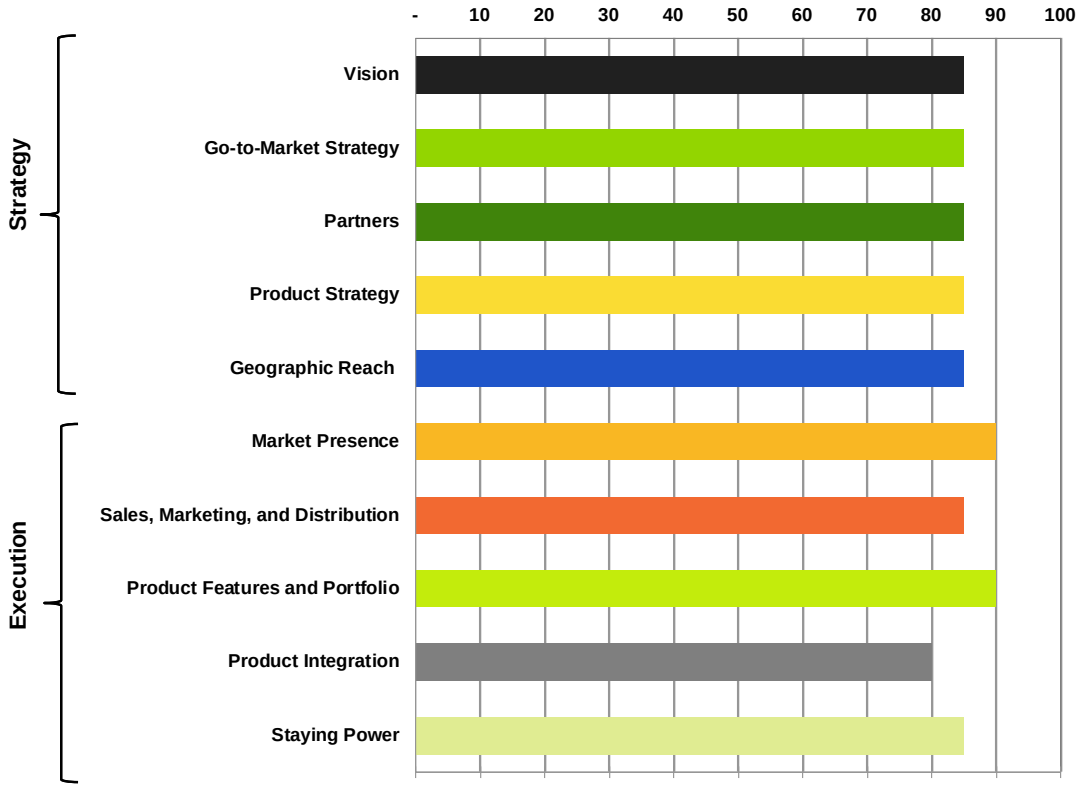
Signify offers LEDs, intelligent controls, lighting management systems, and numerous software solutions and services. The company's cloud-based lighting management system, Interact City, integrates connected devices and software for public lighting applications. The system provides web applications that can be used to monitor, analyze, manage, and measure the performance of connected lighting deployments. Signify's Interact IoT platform offers data-enabled services that can provide insights and enable cities to monitor and manage data from lighting, embedded sensors, and other industry verticals.

With over 2,000 projects across 58 countries, the Interact City system has been implemented in a wide variety of cities. Large-scale smart street lighting projects have been deployed for the New York Power Authority, US; Pune, India; Cologne, Germany; Jakarta, Indonesia; Buenos Aires, Argentina; Eindhoven, the Netherlands; Cardiff, UK; and Los Angeles, California.

Signify is also a market leader in its recognition of smart street lighting's integration with the broader smart cities market. The company's DigiStreet product is a sensor-ready luminaire specifically designed for smart cities applications; sensors or controllers can be attached to the luminaire to activate existing and future applications. Additionally, the company has differentiated itself through its extensive line of BrightSites smart pole products, including the IoT smart pole (with a variety of capabilities through cameras and sensors), the Smart Fusion pole (codeveloped with American Tower, capable of accommodating up to nine radios), and a 4G/5G smart pole. Innovative pilot projects in Los Angeles and Eindhoven, where the company has leveraged smart street lighting networks as a platform for smart city innovations, also contributed to high scores for Signify in the product integration category.

www.signify.com

Chart 4-1. Signify Strategy and Execution Scores



(Source: Guidehouse Insights)

4.1.2 Itron

Total Score: 81.0

Strategy: 80.5

Execution: 81.5

Itron is a leading global technology and service provider in the electricity, water, gas, IoT, and smart cities industries. The company serves more than 8,000 customers in more than 100 countries.

Itron provides an IPv6-enabled wireless networking platform and solution that uses a broad range of technologies, including 900 MHz RF and cellular. In 1Q 2020, Itron launched its Smart City Pilot offering—a bundled solution that offers cities and utilities a limited trial pilot of several smart city solutions. Currently, Itron offers the following use cases as part of its pilot-in-a-box program:

- **Smart Street Lighting:** This product includes options for networked lighting controllers from several vendors, enabling customers to trial a variety of products before committing to large-scale deployments.
- **Air Quality Monitoring:** Through its partnership with Aeroqual, Itron's solution monitors numerous pollutants and enables cities to analyze current and historical pollution data in one dashboard.
- **Traffic Monitoring:** Itron partnered with Houston Radar to provide a pole-mounted traffic monitoring sensor that detects vehicle type, speed, and occupancy. Cities can use this sensor to provide real-time traffic information to drivers, optimize investments for new roadways and infrastructure upgrades, and connect to adaptive traffic control systems to manage traffic signals.
- **Gunshot Detection:** In partnership with Databuoy, Itron's solution provides real-time notifications of gunshots.

The company has several notable smart street lighting projects that include applications for traffic management, including the deployment of a networking platform for 180,000 street lights in Paris, France, and 20,000 street lights in Copenhagen, Denmark. In the UK, the company is involved in the deployment of a multi-application network in Glasgow and is working with the Bristol Is Open program to deploy its IPv6 network as part of a citywide networking project. Itron is also currently under contract for one of the largest networked street lighting projects in the world: the company has installed over 500,000 networked street lights controlled by its Streetlight.Vision software in Florida Power & Light Company's service area.

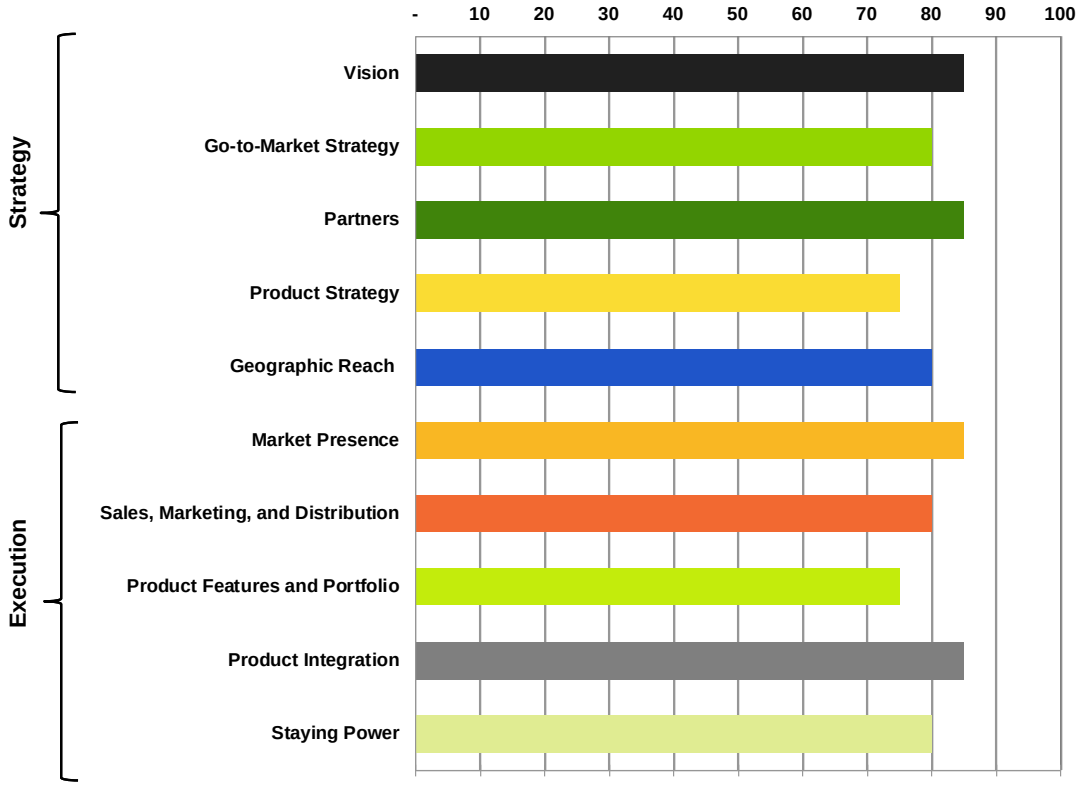
Additionally, Itron was awarded a contract with the City of Chicago (along with Ameresco and other partners) for the deployment of more than 250,000 smart street lights. Through its go-to-market partnership with Rongwen, Itron is deploying more than 80,000 intelligent street lights in Guangzhou, China.

Itron has chosen strategic go-to-market partners to unlock new markets. This includes channel partners that resell Itron's platform and value-added solution partners such as Urban Control in the UK; Rongwen in China; and Acuity Brands and Ameresco in the US.

Through its extensive partnerships and multi-application IoT network, Itron is well positioned to benefit from cites' growing acceptance of using smart street lighting as a platform for smart city applications. The challenge continues to rest on the deployment of additional applications at a greater scale.

www.itron.com

Chart 4-2. Itron Strategy and Execution Scores



(Source: Guidehouse Insights)

4.1.3 Telensa

Total Score: 80.4

Strategy: 78.3

Execution: 82.5

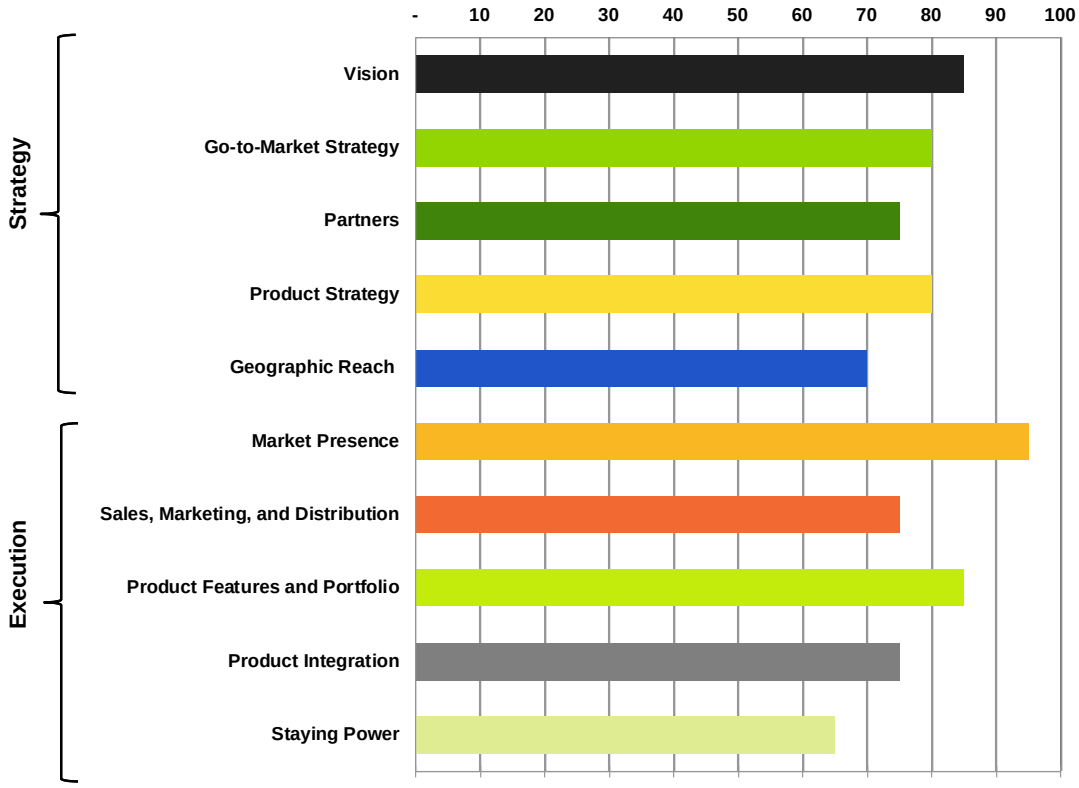
Based in Cambridge, UK, Telensa was one of the first companies to enter the smart street lighting business, and it is widely recognized in the market as a reliable and low risk supplier. The company has the most extensive market presence of any vendor included in the study, having deployed nearly 2 million connected street lights in over 400 cities. While most of Telensa's deployments are in the UK, the company also has significant projects throughout Europe, North America, and Asia Pacific.

Telensa's PLANet connected street lighting system consists of its Telecell wireless control nodes, a UNB network (which is generally city-owned), and a central management system (CMS). Additional smart city applications such as traffic analytics and air quality monitoring can be added to the remote control network. The company's CMS provides integration options for billing, metering, and asset management.

Telensa's Urban IQ builds on the business case for its smart street lighting by providing cities with an open, low cost platform to add multiple sensor applications. The offering provides a sensor hub that is pre-integrated with a range of sensor-makers and designed to connect to any third-party sensor provider. The dashboard for the sensor hub is built on the Microsoft Power BI dashboard, and the device uses hybrid UNB lighting networks and cellular connectivity (such as NB-IoT). Telensa also offers its multisensor pod consisting of a camera and radar imaging system that provides real-time data and insights on traffic patterns and pedestrian movements. Urban IQ and the multisensor pod are being deployed across a number of cities, primarily in the UK. In addition, Telensa has also been a thought leader on data collection and privacy through its work on the Urban Data Project (in partnership with Microsoft and Qualcomm) and the City Data Guardian.

www.telensa.com

Chart 4-3. Telensa Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2 Contenders

To fall into the Contenders category, a company must score between 50 and 75 in both Strategy and Execution. Nine companies are identified as Contenders in this *Guidehouse Insights Leaderboard*: CIMCON, FLASHNET (ENGIE), Telematics Wireless, DimOnOff, Rongwen, Sensus, LED Roadway Lighting, GE Current, and Acuity Brands.

4.2.1 CIMCON

Total Score: 76.1

Strategy: 78.0

Execution: 74.3

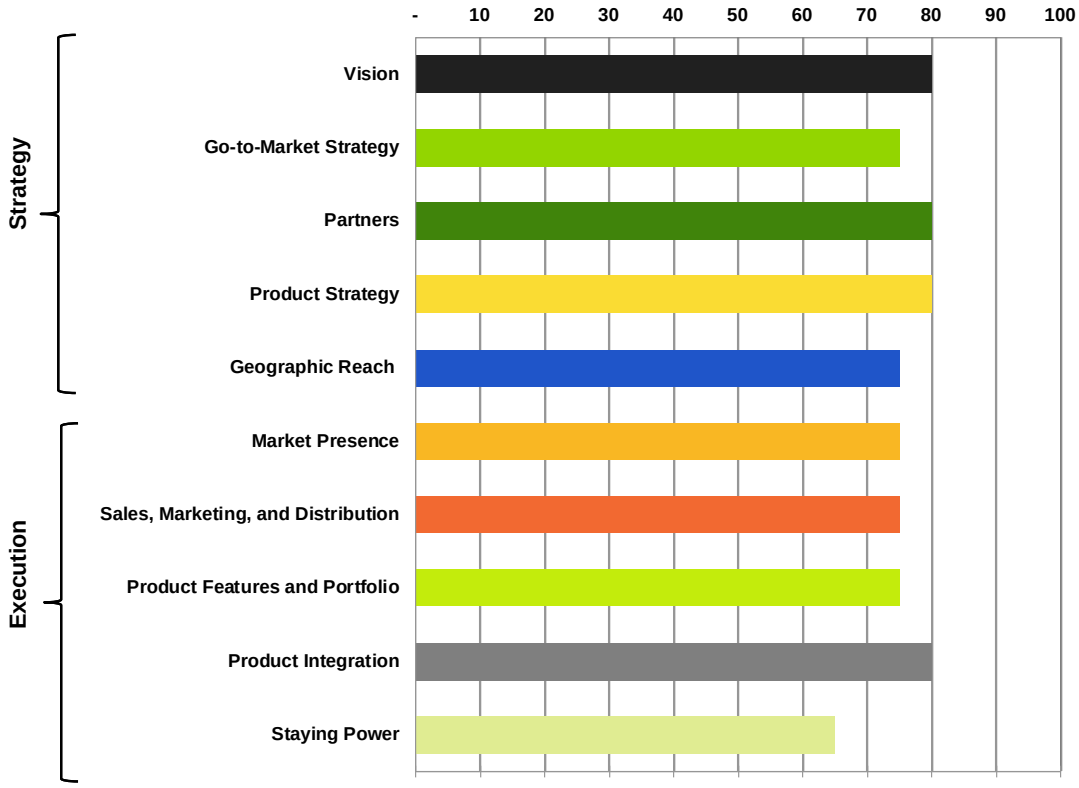
Burlington, Massachusetts-based CIMCON is a global provider of lighting controllers, wireless gateways, management software, and the NearSky 360 smart city platform. With over 25 years of experience in industrial automation and outdoor wireless applications, the company was one of the first suppliers to market several product innovations, including the integration of GPS into lighting controllers.

One of CIMCON's key strengths is the integration between their lighting management system and smart city platform. In addition to offering four types of lighting controllers with advanced features, the company offers the NearSky platform, whose next-generation version was released in May 2019. The platform—which has been deployed in roughly 20 cities globally—is being used for applications such as vehicle counting, people counting, bicycle counting, video surveillance, air quality monitoring, road temperature monitoring/ice sensing, public safety, noise level monitoring, and gunshot detection.

CIMCON is one of the leading suppliers in the *Leaderboard* in terms of its recognition of the importance of smart street lighting to the broader smart cities market, resulting in high scores in the vision and product integration categories.

cimconlighting.com

Chart 4-4. CIMCON Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.2 FLASHNET (ENGIE)

Total Score: 74.8

Strategy: 77.3

Execution: 72.3

Founded in 2005, FLASHNET is an IoT company based in Brasov, Romania. It provides hardware, software, and services to municipalities and electric utilities for a range of networked technologies. In July 2018, the French multinational utility company ENGIE announced the acquisition of 60% of FLASHNET. The acquisition has significantly increased FLASHNET's capability to reach international customers and to promote and sell their solutions in all countries where ENGIE is active.

In 2007, FLASHNET launched its inteliLIGHT product—the company's hardware and software offering designed to provide central control, monitoring, and optimization for street lighting installations. FLASHNET was one of the first companies in the world to release a low power wide area network (LoRaWAN), NB-IoT, LTE-M and Sigfox compatible smart public lighting solution. It also offers controllers that are embedded and installed directly into the lighting pole, which is more aesthetically pleasing compared to some competitor products. FLASHNET offers add-on smart city applications such as security infrastructure, environmental sensors, and EV charging stations once the networked street lighting systems are in place. Additionally, FLASHNET's products have been integrated with major smart city platforms from companies such as Cisco (Kinetic, Jasper), Ericsson (IoT Accelerator), Deutsche Telekom (Cloud of Things), and several others.

In 2Q 2020, FLASHNET is releasing their third generation inteliLIGHT CMS software, which will bring several improved features. These features include higher levels of scalability; machine learning and AI; improved asset management (to include both connected and non-connected street lights); maintenance and workflow optimization; and TALQ2 compatibility. This new product will be an active part of ENGIE Livin', a software suite designed for city infrastructure operators. The company has also developed Wi-SUN connectivity for their products through a partnership with Cisco.

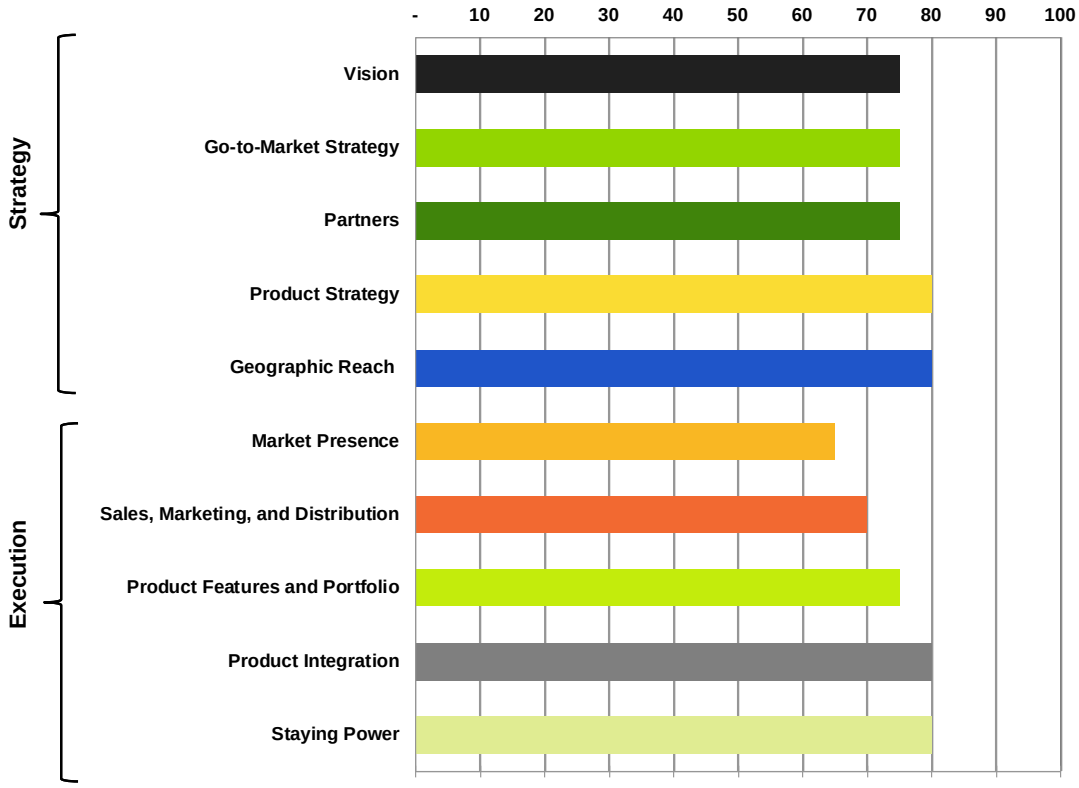
In total, it is estimated that FLASHNET has deployed over 500,000 connected street lights around the world. The company's largest deployment is in Riyadh, Saudi Arabia, where more than 150,000 luminaires are controlled by its inteliLIGHT products. FLASHNET has conducted most of its business in Europe and the Middle East, though it has smart street lighting deployments in all major world regions. FLASHNET is an active member of several alliances defining IoT standards, including the TALQ Consortium and LonMark Alliance.

In Brasov, Romania, FLASHNET's inteliLIGHT solution was deployed for over 16,000 street lights and included a variety of smart city applications through an extensive partner network. (Brasov was used as a proof of concept to test solutions before selling globally.) FLASHNET has reported significant traction with various cities and existing customers using smart street lighting as a platform for smart city applications; more than half of FLASHNET's customers have added applications beyond lighting over projects won in the last 18 months. The most common smart city applications chosen have been environmental and noise monitoring since these solutions have an immediate impact and low cost installation.

www.flashnet.ro

intelilight.eu

Chart 4-5. FLASHNET Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.3 Telematics Wireless

Total Score: 64.0

Strategy: 63.3

Execution: 64.8

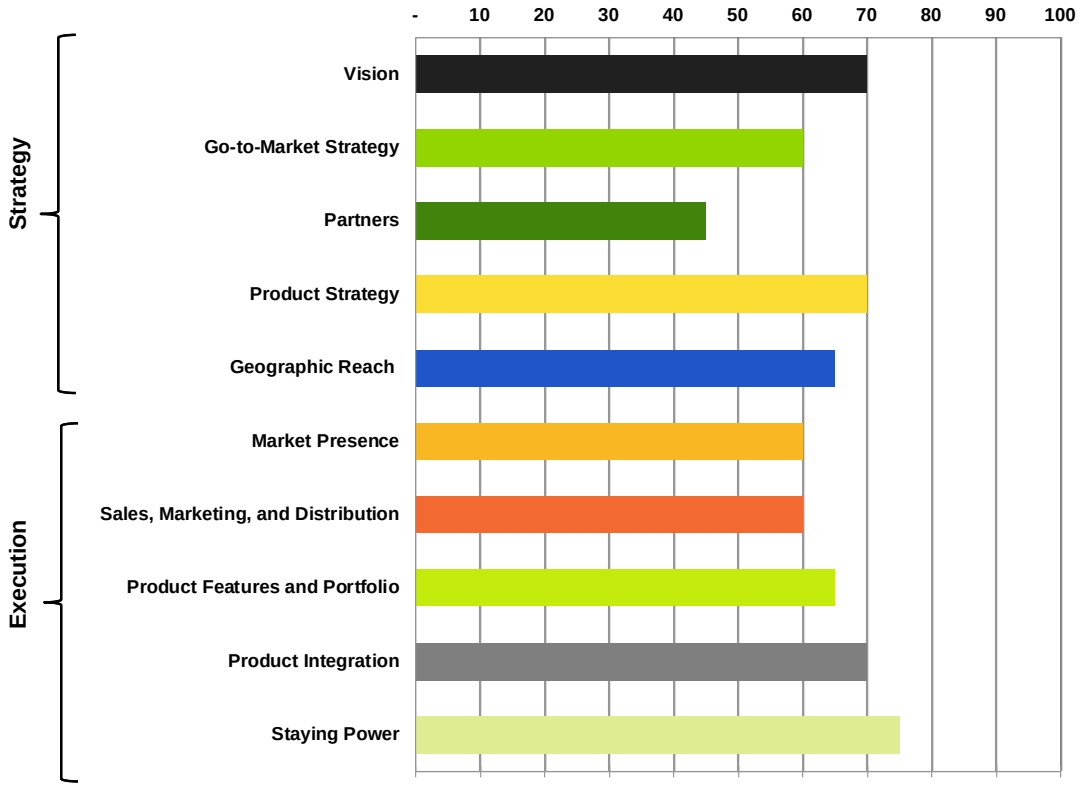
Telematics Wireless is a global provider of outdoor lighting control systems and RF wireless networks. The company was founded in 1996 and has been a subsidiary of Singapore-based ST Engineering since 2008.

Telematics Wireless' T-Light suite of products includes several types of control nodes, base stations, gateways, and a CMS. The company offers three different network options for smart street lighting under the T-Light family. These options include an RF Mesh T-Light Pro operating in the unlicensed 800-900 MHz bands; T-Light Galaxy that utilizes star topology and operates in licensed 450-470 MHz band; and LoRaWAN T-Light LoRa, an open standard solution enabling the addition of an ecosystem of smart city sensors on the same network. The variety of network offerings allow Telematics Wireless to analyze customer requirements and propose the optimal solution based on those requirements and the layout of street lights in a particular area, as opposed to pre-determining a single networking option.

Key recent project wins for the company include a contract with Cleveland, Ohio for the management of 61,000 street lights (including 1,000 cameras being deployed for security applications) and an order from Georgia Power to deploy the T-Light Galaxy network in various parts of Georgia. Telematics Wireless has integrated several other smart city solutions with their street lighting networks, including water metering, sewage and wastewater monitoring, water pressure monitoring, and noise monitoring.

telematics-wireless.com

Chart 4-6. Telematics Wireless Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.4 DimOnOff

Total Score: 60.7

Strategy: 64.3

Execution: 57.0

Based in Quebec City, Canada, DimOnOff is a developer of wireless control and remote monitoring technology for commercial, industrial, and municipal lighting applications. The company's primary solution is a Centralized Adaptive Lighting System that allows for real-time and programmed management of a lighting network and energy savings through dimming and energy trimming. DimOnOff's front-to-end solution is designed for LED conversion projects but can be utilized to retrofit all types of existing fixtures.

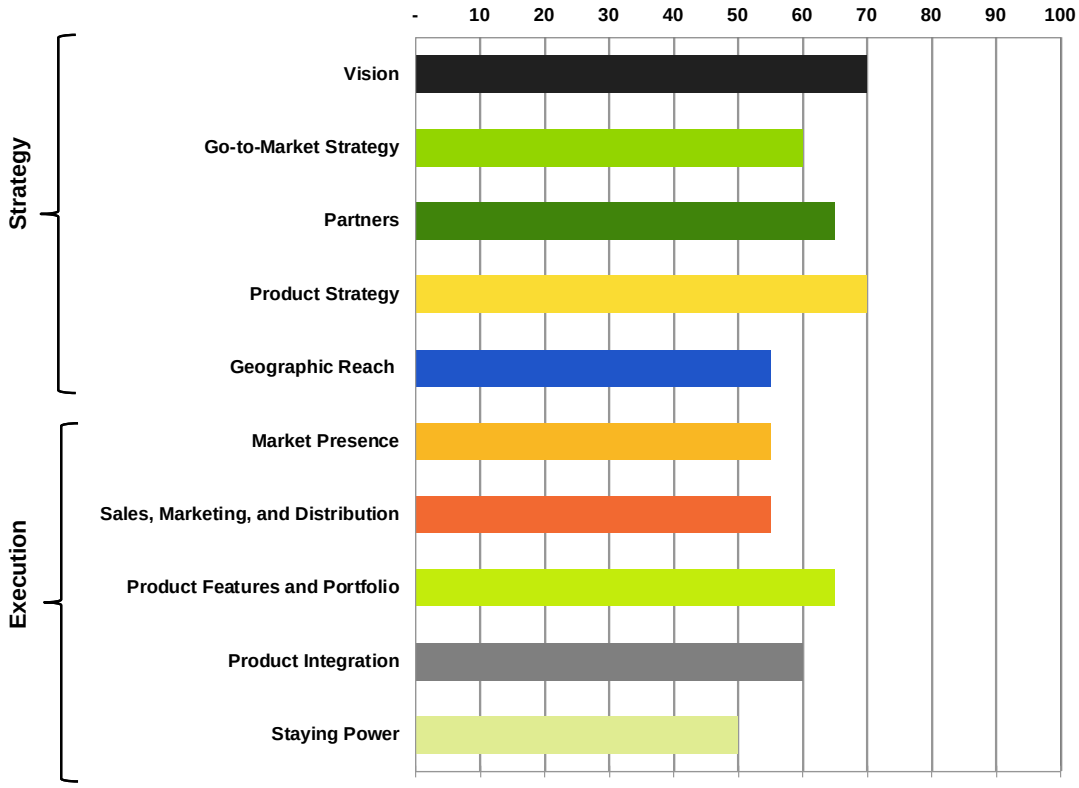
The company's products include wireless nodes, controllers, sensors, gateways, and a proprietary smart city management system (SCMS). The DimOnOff SCMS can support up to 2 billion modules per system, enabling cities scalability options to add additional smart devices to their network over time. In March 2018, the company launched its redesigned version of its SCMS, called SCMS Connect{ED}. It enables cities to remotely control and manage its connected devices, including street lights, cameras, and sensors from a single platform. In addition, the system allows cities to map and manage their various non-connected devices such as park benches and bus shelters.

DimOnOff has deployed roughly 300,000 connected street lights, and it won a large contract in 2016 for the installation of 250,000 smart street lights in Montreal, Quebec. The city uses a wireless mesh network that utilizes self-healing and cognitive radio algorithms. Thus far, nearly 100,000 control nodes have been installed in Montreal, and the city is considering the addition of flood and sewer monitoring sensors.

DimOnOff's smart street lighting deployments have primarily been in the Canadian market, though several other projects are underway globally (excluding Russia and Asia Pacific, where the company is not active). DimOnOff is working on global expansion through its partner network, particularly with Microsoft, which supports its software architecture through the Azure IoT Hub.

www.dimonoff.com

Chart 4-7. DimOnOff Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.5 Rongwen

Total Score: 59.4

Strategy: 60.0

Execution: 58.8

Founded in 2000, Guangdong Rongwen Lighting Group Co., Ltd. is one of the largest suppliers of smart LED street lighting in China with roughly 400,000 controllable street lights installed. The private company is based in Dongguan, Guangdong, China.

Rongwen provides LED street lamps, the D-ONE wireless outdoor controller, and various sensors (e.g., water level and sewer cover monitoring). The company has also developed an ECO Life Smart Pole, which supports a range of services beyond controllable lighting. These services include options for EV charging, air pollution monitoring, sensors, a Wi-Fi hotspot, and emergency signaling.

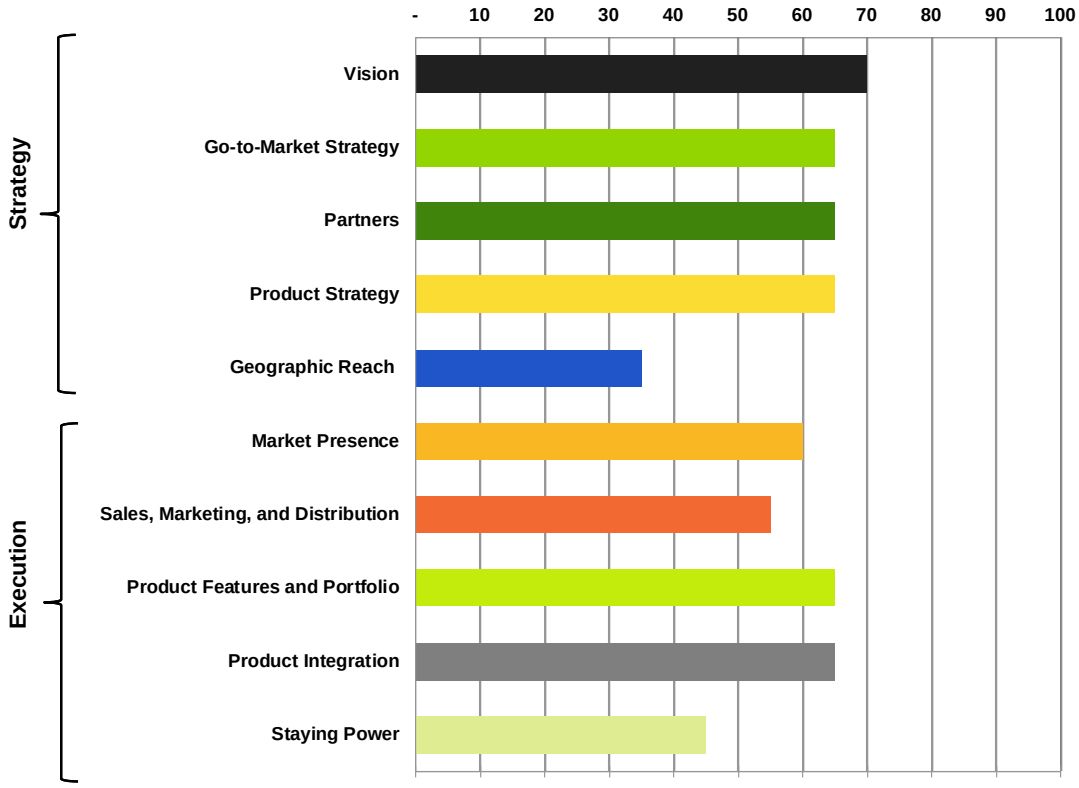
Rongwen has collaborated with companies such as Echelon and Streetlight Vision since 2008 to provide lighting control systems across China. Rongwen typically performs these upgrades through an energy performance contract with the city. The company has been involved with several projects that use smart street lighting for smart city applications. For example, Rongwen, along with a group of partners, completed a districtwide smart street lighting retrofit of nearly 9,000 street lights in the Doumen District in Zhuhai, Guangdong Province. Multiple smart city applications were added to the smart street light network, such as sensors for environmental and road monitoring.

In March 2016, Rongwen announced a key go-to-market partnership with Itron to provide smart cities and smart lighting technologies in China. Rongwen now offers its customers the Itron IPv6 networking platform with its own LED street lights and outdoor lighting controls.

While Rongwen has a strong vision and significant levels of smart street lighting integration with other smart city applications, the company has announced few substantial deployments of outdoor lighting controllers over the past 2 years. Thus, the company has a somewhat diminished market presence compared to the stronger growth of its competitors.

www.rongwenest.com

Chart 4-8. Rongwen Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.6 Sensus

Total Score: 58.6

Strategy: 53.3

Execution: 63.5

Sensus, a Xylem brand, is based in Raleigh, North Carolina. The IT and services company provides a wide range of solutions for utilities, cities, campuses, and industrial customers.

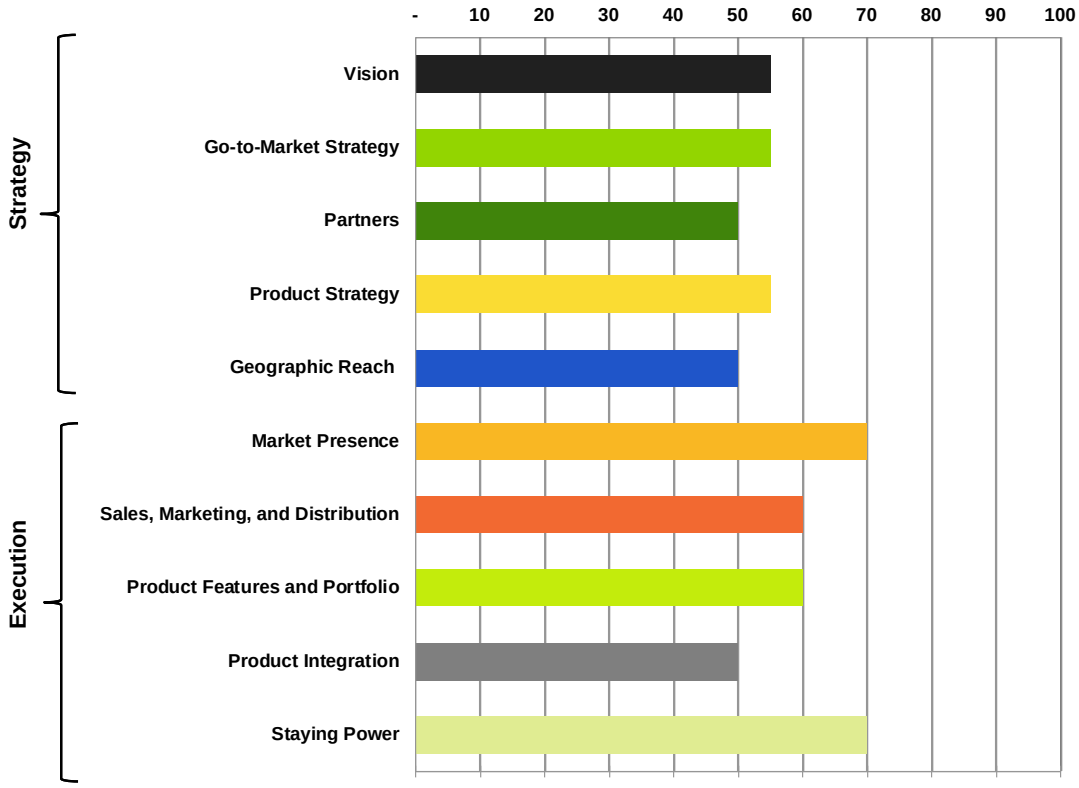
As part of the company's IoT portfolio, Sensus offers smart street lighting controls and services. The Sensus VantagePoint Lighting Control solution uses a lighting control module, lighting control software, and the company's FlexNet communication network to provide an intelligent system with increased control and automation. The FlexNet system is a long-range network that provides a scalable and reliable two-way communications infrastructure, in this case transmitting data from the VantagePoint module. VantagePoint works with both LEDs and legacy systems, enabling a wide range of users. Features include real-time monitoring, dimming controls, and sunrise and sunset management to reduce energy use and costs, safety controls, reporting, and analysis, among others. The company also offers Sensus RF and compatibility with other communications technologies, such as cellular or wired networks.

Part of Sensus' strategy in the smart street lighting market is using its experience and expertise as a provider of advanced metering infrastructure (AMI). Often, the company will provide a client with AMI and then use the existing network to offer smart lighting services. For example, this approach was taken in Atlanta with one of the largest electric cooperatives in the US—the Cobb Electric Membership Corporation (EMC). Cobb EMC adopted Sensus' AMI solution in 2011 and is now using its existing AMI network for smart lighting services (retrofitting a total of 60,000 street lights with Sensus' VantagePoint solution). Sensors are also being added to the street lights to enable flashing for public safety situations.

In late 2017, the company made an important acquisition to expand its market presence with Xylem announcing the purchase of SELC Ireland. SELC is one of the primary control node suppliers for Itron, and its products have been deployed as part of the large Florida and Chicago smart street lighting installations.

www.sensus.com

Chart 4-9. Sensus Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.7 LED Roadway Lighting

Total Score: 57.0

Strategy: 59.3

Execution: 54.8

Established in 2007, LED Roadway Lighting is a private company headquartered in Halifax, Canada. Through its Liveable Cities division, LED Roadway offers a full end to end lighting solution, including LED street lights, intelligent controls, network technology, and smart city sensors.

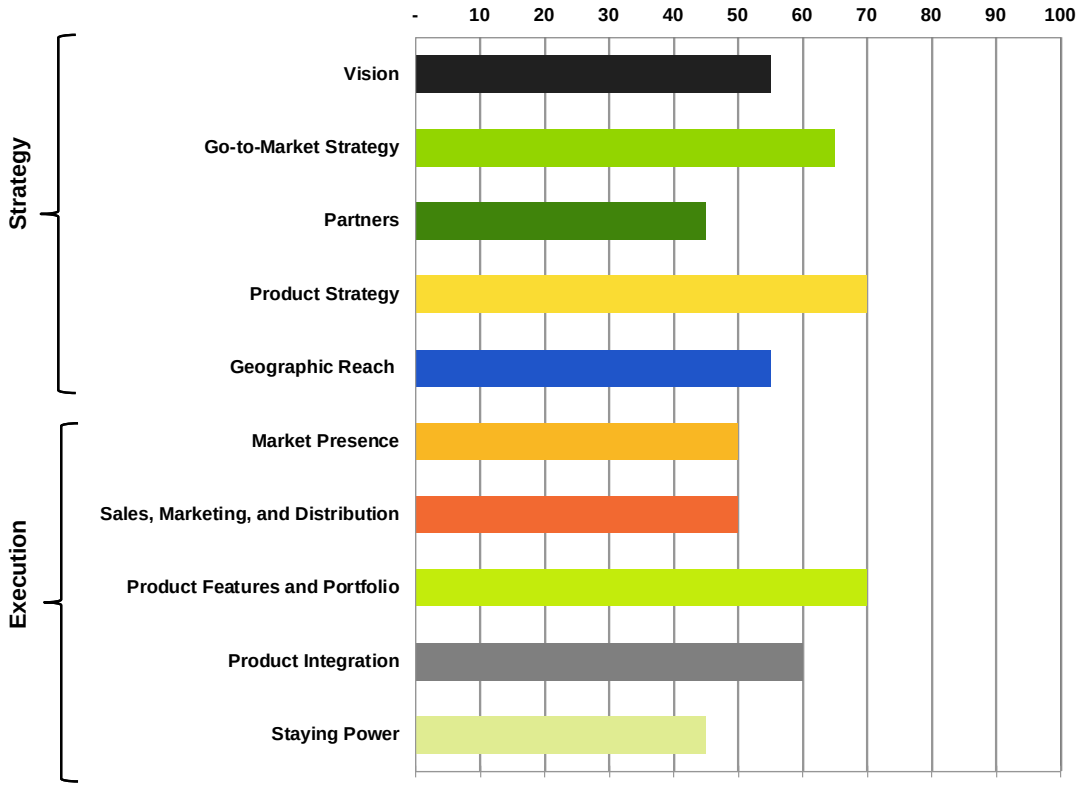
In addition to standard controllers, LED Roadway offers its suite of TSP (Tool-less Sensor Platform) products. The TSP features lighting controllers that are equipped to enable a variety of smart city applications, such as traffic flow analysis, pollution monitoring, and emergency vehicle alerts. The company's SmartLinx CMS provides several smart lighting features, including automatic failure reports, map-based visualizations, customizable reports, and analytics. With appropriate sensor deployments, the CMS also has capabilities to visualize traffic analytics such as traffic flow analysis, traffic counting, and speed monitoring.

In 2019, LED Roadway released its SLiQ luminaire, which features embedded smart controllers inside its LED street light. This integrated product provides ease of deployment for cities and utilities looking to deploy connected LED street lights simultaneously.

LED Roadway has a strong portfolio of smart lighting products and is recognizing the importance of connected street lights to the broader smart cities market. The company can score higher in future *Leaderboard* reports through expanding its connected lighting geographic reach beyond North America and Europe to align with its luminaire sales reach. It could also strengthen its overall visibility in the market through increasing deployments and more effectively communicating its vision to the industry.

www.liveablecities.com

Chart 4-10. LED Roadway Lighting Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.8 GE Current, a Daintree Company

Total Score: 54.7

Strategy: 52.0

Execution: 57.3

Formed in 1892, General Electric (GE) has been a leading manufacturer of lighting products since the lighting industry's beginning. In 2015, GE restructured its lighting division with the creation of the LED and intelligent controls focused startup, Current, powered by GE. In April 2019, the company was acquired by American Industrial Partners (AIP) and, later in the year, re-branded as GE Current, a Daintree company (AIP has licensed the GE brand). The company remains headquartered in Boston, Massachusetts.

GE Current is one of the few companies in the market to provide an end to end smart street lighting system; resulting in high scores in the product features and portfolio category. The company offers LED roadway lighting fixtures, its Lightgrid remote monitoring and control solution, and a CMS that provides real-time lighting information and data analytics programs.

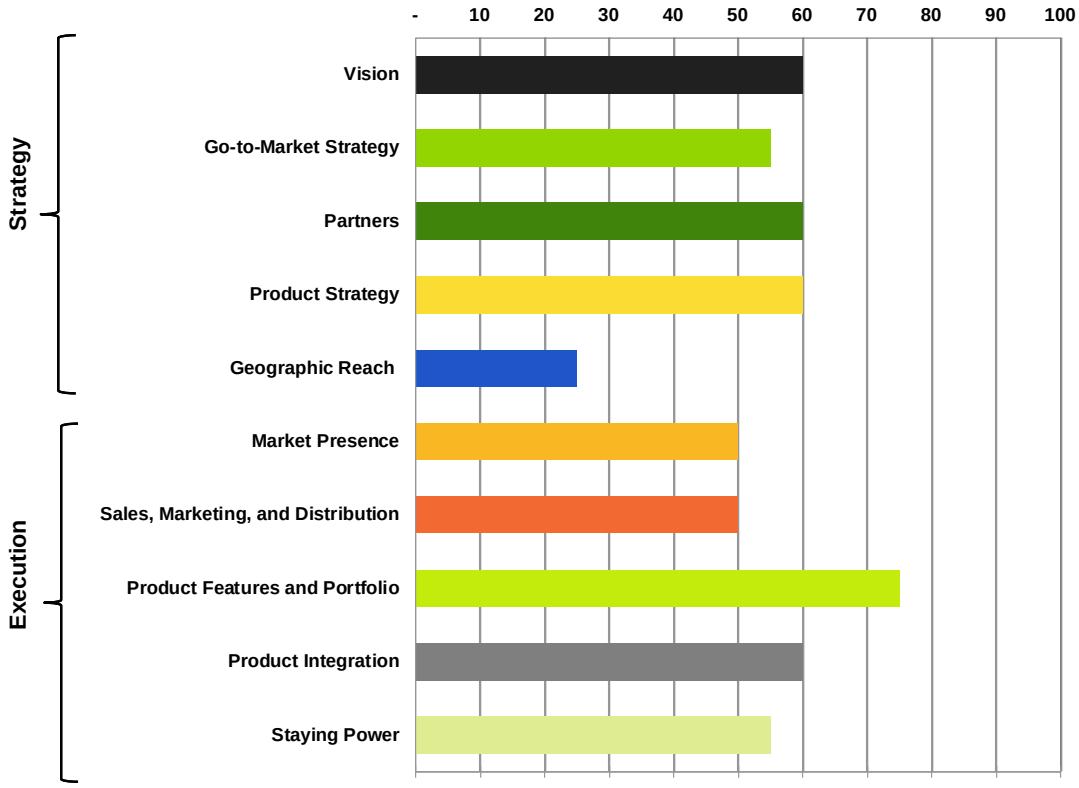
Lightgrid is the company's lighting control product. It contains a GPS for asset tracking and capabilities for scheduling, dimming, and utility-grade energy metering. Current also offers its CityIQ intelligent sensor nodes and IoT platform. CityIQ is a multisensor, multiprotocol intelligent sensing network that provides a flexible environment for the deployment of IoT applications beyond smart street lighting and across multiple city departments. One of the company's first major municipal project wins was in San Diego, California, which is deploying one of the world's largest citywide IoT platforms as part of a wider upgrade to 14,000 connected city lights. GE Current is working with an array of private partners including Intel and AT&T to deploy 3,200 CityIQ intelligent nodes throughout the city that can support a range of applications, including gunshot detection, smart parking, air quality sensing, and vehicle and pedestrian monitoring. A similar (albeit smaller) deployment is currently underway in Atlanta, Georgia.

GE Current benefits from a strong legacy partner network and product portfolio. However, since its re-branding in 2019, the company has placed more emphasis on its mission statement, vision, and go-to-market strategy toward the conventional lighting business of lamps and lighting fixtures (as opposed to IoT). While sensors and software are still key elements of the company's portfolio, the shifted emphasis toward lamps and fixtures and the scaling back of its original vision has resulted in reduced scores in several categories of this *Leaderboard*.

Also, the acquisition by AIP in 2019 has reportedly disrupted progress for the flagship San Diego project, and GE Current has trailed some of its competitors in the rollout of large-scale outdoor connected lighting projects over the past 2 years. As a result, it has comparatively lower scores for product integration and market presence.

gecurrent.com

Chart 4-11. GE Current Strategy and Execution Scores



(Source: Guidehouse Insights)

4.2.9 Acuity Brands

Total Score: 54.1

Strategy: 51.3

Execution: 56.8

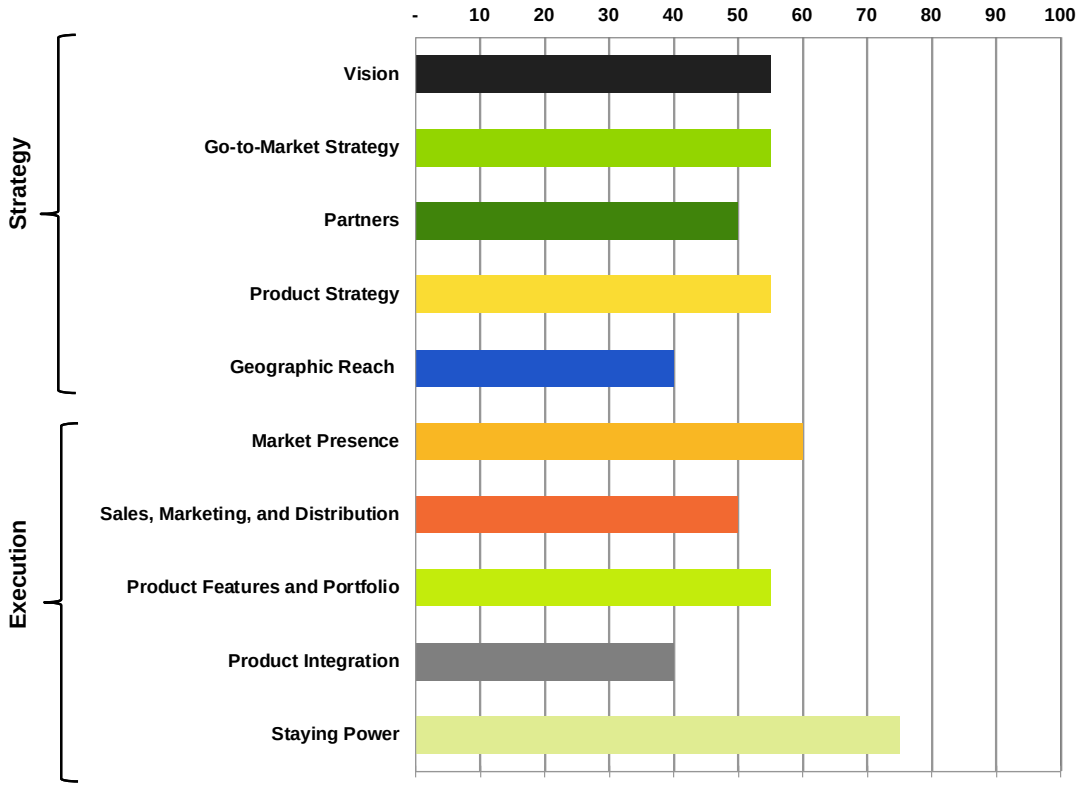
Founded in 2001, Acuity Brands is headquartered in Atlanta, Georgia. Acuity designs, produces, and distributes a broad array of indoor and outdoor lighting fixtures and controls for commercial and industrial, infrastructure, and residential markets throughout North America and select international markets.

While better known for its indoor lighting products and services, Acuity offers a portfolio of outdoor lighting solutions, including LED technology, and lighting controls and systems for smart street lighting applications. The company made a strategic partnership to advance its stake in the smart lighting sector in late 2017, announcing a collaboration effort with Itron to work as technology and channel partners. Through the alliance, Acuity launched its DTL DSN photocontrol module with Itron's IPv6 networking platform. Acuity sells the DTL DSN within existing Itron networks, and it is a value-added reseller of the end to end network solution, including all Itron network as a service and software as a service offerings.

Despite the strong partnership with Itron to strengthen its go-to-market strategy, Acuity is somewhat late to the smart street lighting market and lacks a more diverse partner network compared to its competitors. However, Acuity has strengthened its market presence compared to the last *Leaderboard* report through flagship deployments with major utilities such as OG&E and Florida Power & Light Company.

www.acuitybrands.com

Chart 4-12. Acuity Brands Strategy and Execution Scores



(Source: Guidehouse Insights)

4.3 Challengers

Challengers are vendors that scored higher than 25 in Strategy and Execution but are not yet Contenders for market leadership. These include companies that have made a mark on the smart street lighting market and have the potential to make a bigger impression, but they have yet to establish a substantial list of reference projects. They may also be limited by narrower geographic focus, vision, and a lack of integration of smart street lighting with the broader smart cities market. This *Guidehouse Insights Leaderboard* features six Challengers: Echelon (Adesto), Enel X, Verizon, gridComm, Fonda Tech, and ubicquia.

4.3.1 Echelon (Adesto)

Total Score: 50.2

Strategy: 42.3

Execution: 57.0

Echelon was a networking platform company incorporating an open-source, open-standards approach to its solutions. In September 2018, Santa Clara, California-based Adesto Technologies (provider of semiconductors and systems) completed its acquisition of Echelon, and the company is now integrated into the Adesto Embedded Systems Division.

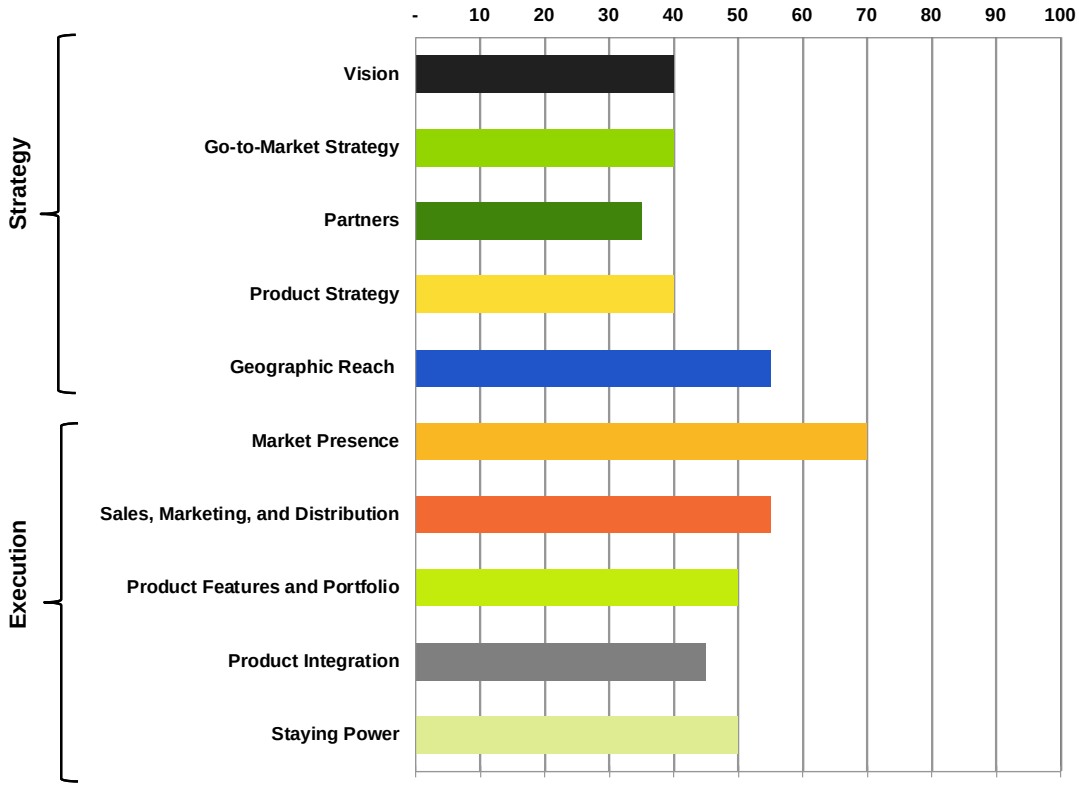
Echelon sells its lighting products under the Lumewave by Echelon brand and its building automation and other industrial IoT-related products as part of its IzoT Platform. More than 140 million devices are installed globally. The company restructured its product lines in early 2018, releasing a range of new controllers and gateways, a cloud-based CMS, and the SmartServer IoT—an edge server that uses cloud-based analytics.

In addition to traditional deployments involving wired and wireless controls, Echelon has been involved in a variety of innovative and experimental smart street lighting projects. These include the development of neighborhood-specific lighting profiles in Cambridge, Massachusetts; updating school zone flasher beacons in Washington State; and white-tunable and weather adaptive lighting in White Bear Lake, Minnesota (in partnership with IBM Watson). In 2017, the company announced a traffic-adaptive lighting pilot project in Spokane, Washington that uses intelligent cameras to detect traffic patterns and adjust lighting levels based on those patterns.

Echelon ranked high in the market presence criteria, with one of the largest project footprints of smart street lights out of the vendors analyzed. However, since the acquisition by Adesto, the company has significantly reduced its focus on the smart street lighting market and appears to be primarily managing its legacy business, resulting in lower scores across a number of key strategy criteria.

adestotech.com

Chart 4-13. Echelon Strategy and Execution Scores



(Source: Guidehouse Insights)

4.3.2 Enel X

Overall Score: 48.4

Strategy: 49.0

Execution: 47.8

Based in Rome, Italy, the Enel Group is a multinational energy company focused on electricity generation and distribution. Enel created Enel X in 2017 through the acquisition of the energy solutions company EnerNOC. Enel X has four global product lines: e-Industries (energy efficiency, demand side management); e-Mobility (EV charging, vehicle-to-grid); e-Home (automation products and services); and e-City (smart street lighting, connectivity solutions).

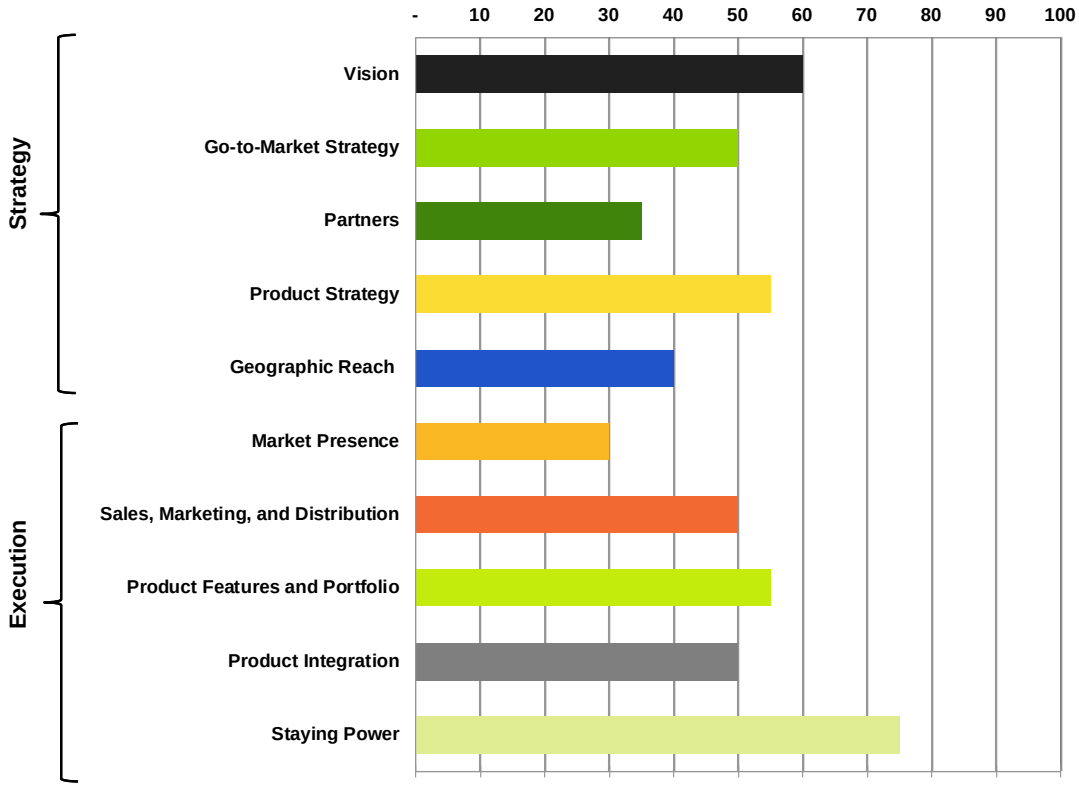
As part of its e-City product line, Enel X offers LEDs, two types of lighting control technologies (cabinet and individual), its Control Room user interface system, and a smart pole called JuiceLamp. Enel X also offers adaptive lighting technologies, which use cameras to adjust street lighting levels based on traffic and weather conditions. The company's JuiceLamp product combines the company's public lighting capabilities and e-Mobility expertise into a single product: an LED street light equipped with lighting control technology (which can also support adaptive lighting) and two built-in EV charging points.

One of the company's flagship projects is in the city of Bologna, Italy. Enel X installed a remote control system for 33,000 street lights that also provides a platform for future smart city services such as video surveillance and traffic control. As part of the project, Bologna trailed an adaptive lighting solution that uses cameras to adjust light levels based on traffic intensity.

While Enel X has a strong vision and product portfolio aimed at the smart street lighting and smart cities market, the company should focus on expanding its partner network and market presence to score higher in future *Leaderboards*.

www.enelx.com/en

Chart 4-14. Enel X Strategy and Execution Scores



(Source: Guidehouse Insights)

4.3.3 Verizon

Total Score: 47.6

Strategy: 50.0

Execution: 45.0

Verizon, headquartered in New York, New York, is a leading telecom company in the US. Verizon acquired smart street lighting provider Sensity Systems in September 2016, so Sensity is now part of the Verizon Smart Communities portfolio. Verizon supports a wide range of smart city applications, including sustainability (intelligent lighting, intelligent traffic management, traffic data services), traffic and parking (intersection safety analytics, parking optimization), and public safety (intelligent video, digital evidence management, real-time response system).

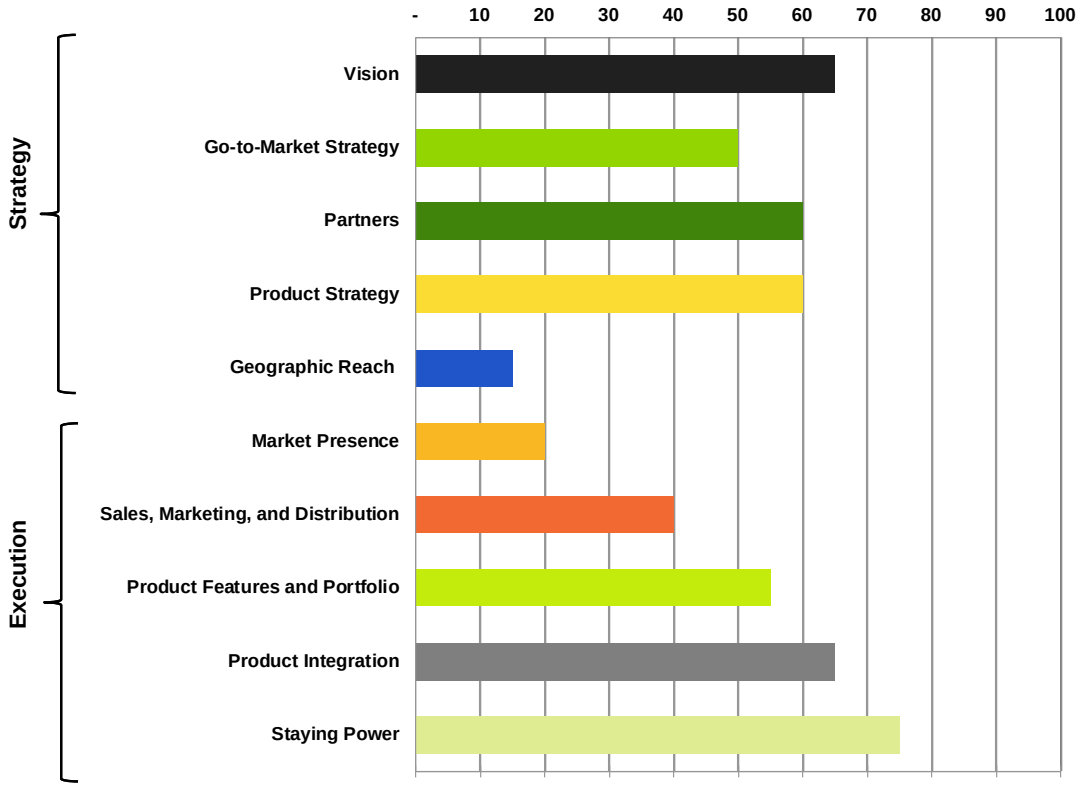
Verizon's Intelligent Lighting solution includes several lighting control node types (Light Sense and City Hub); the NetSense CMS that consists of a cloud platform and Lighting Application portal; and connectivity through Verizon's 4G LTE network. The company's Light Sense node provides lighting control without the use of gateways and is embedded with LTW CAT-M1 cellular connectivity. Verizon's City Hub node can also provide lighting control, with further capabilities for advanced features through the addition of cameras, audio nodes, and environmental sensors. Currently available solutions on City Hub include lighting, parking, and traffic. Verizon is increasingly using lighting as a foundation to offer additional smart city solutions.

Along with the company's City Hub offering, Verizon has several flagship projects that demonstrate the company's strategy of integrating smart street lighting with other smart city applications. In both Kansas City, Missouri and Washington, DC, the company deployed intelligent lighting controls along with video nodes to enable smart parking management solutions.

Cellular connectivity has its advantages over other communications protocols, such as simple setup and ease of deployment for municipalities, no hidden maintenance costs, and strong suitability for adding smart city applications on the network. However, Verizon's lack of choice for additional connectivity options (e.g., Mesh) resulted in lower scores in the product features and portfolio category. The company's current exclusive focus on the US market and the relatively small number of deployments also contributed to lower scores in the geographic reach and market presence categories.

www.verizonenterprise.com

Chart 4-15. Verizon Strategy and Execution Scores



(Source: Guidehouse Insights)

4.3.4 gridComm

Total Score: 45.6

Strategy: 49.8

Execution: 41.0

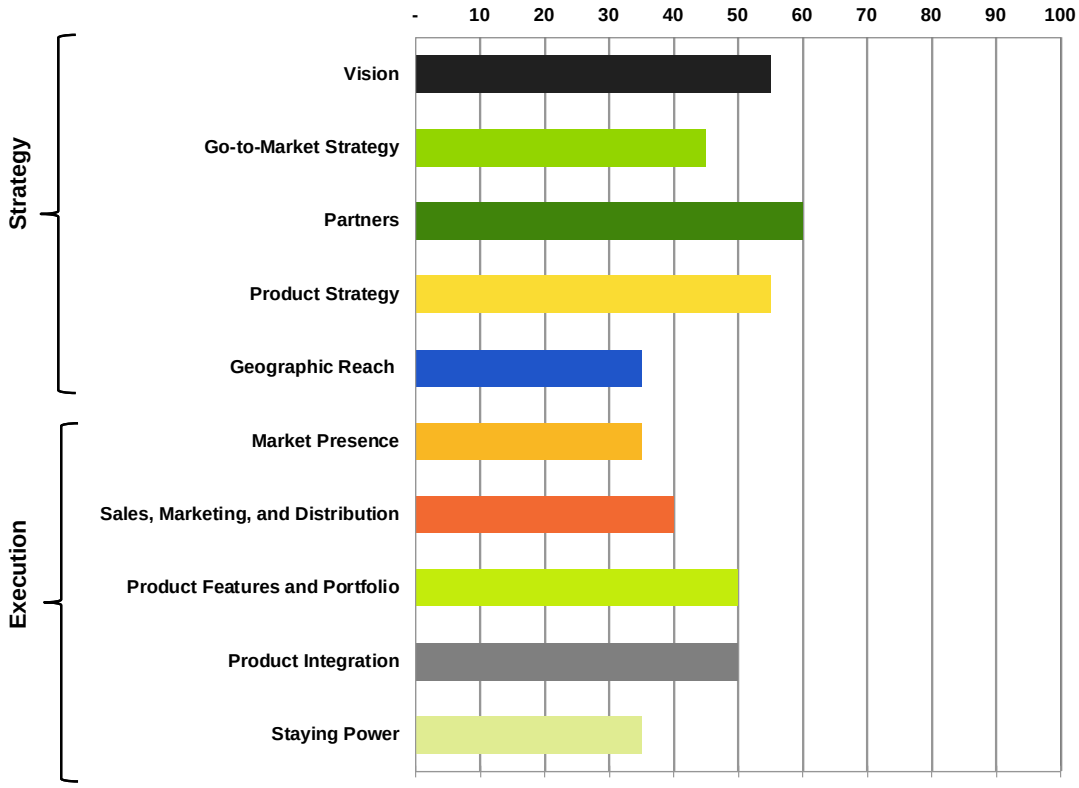
A privately-held company headquartered in Singapore, gridComm provides hybrid PLC/RF mesh devices and systems. The PLC is generally used as the primary method of connecting street lights, and the mesh network is used for any other sensors added to create a smart city network.

The company's products include communications devices, controllers, concentrators, and street light control software. gridComm has a number of sensor partners, enabling cities to deploy new applications to the smart street lighting infrastructure, such as weather, air pollution, and traffic monitoring services.

gridComm is one of the primary suppliers for the large smart street lighting deployment in Jakarta, Indonesia (for conversion of an estimated 90,000 street lights). The company's solution is currently being deployed in Indonesia, China, Australia, and parts of Africa. gridComm could position itself higher in future *Leaderboards* by expanding its geographic reach beyond Asia Pacific and increasing its market presence through new large-scale deployments.

www.gridcomm-plc.com

Chart 4-16. gridComm Strategy and Execution Scores



(Source: Guidehouse Insights)

4.3.5 Fonda Tech

Total Score: 45.1

Strategy: 44.3

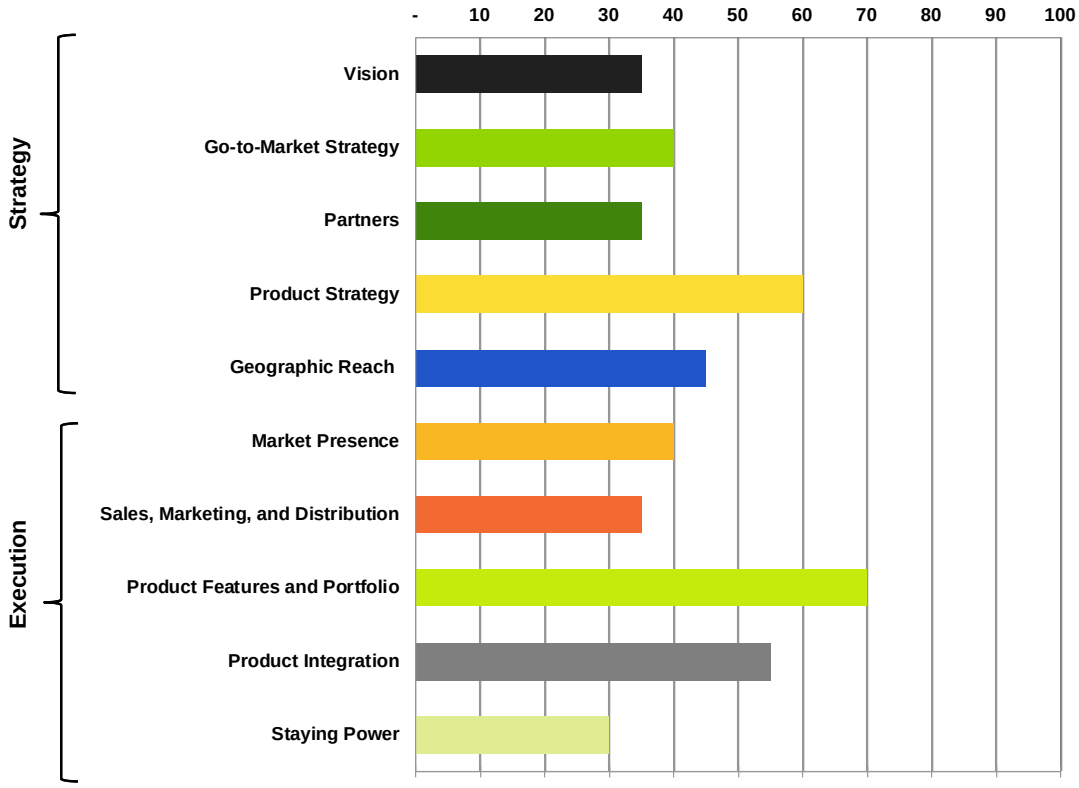
Execution: 46.0

Founded in 2010, Fonda Tech is headquartered in Hangzhou, China. The company offers an LED luminaire, wired and wireless controllers, gateways, and a cloud control system for its intelligent street lighting solution. Fonda's products are compatible with a variety of communication protocols such as PLC, RF Mesh, LoRa, and NB-IoT. Fonda Tech also offers a smart pole equipped with features such as EV charging, Wi-Fi hotspots, an emergency call system, LED screen display, and environmental monitoring (temperature, humidity, wind speed, and particulate matter 2.5).

Fonda Tech is one of the leading players in China and has deployments across a number of other countries, including Saudi Arabia, Cambodia, and Indonesia. While the company has a solid product portfolio and strategy, their lack of a clear and compelling vision along with low visibility in the market resulted in lower scores across several key categories.

www.fondalighting.com

Chart 4-17. Fonda Tech Strategy and Execution Scores



(Source: Guidehouse Insights)

4.3.6 ubicquia

Total Score: 45.0

Strategy: 51.5

Execution: 37.5

Melbourne, Florida-based ubicquia provides cities, utilities, and lighting manufacturers a variety of products in the smart street lighting industry. The Ubicell, Ubimetro, and Ubihub are the company's primary offerings.

ubicquia's Ubicell street light controller provides advanced lighting control, utility-grade metering, tilt and vibration sensing, and connection to sensors and location-based services. The IoT router on the Ubicell device replaces a standard street light photocell and provides a platform to deploy additional smart city and broadband services.

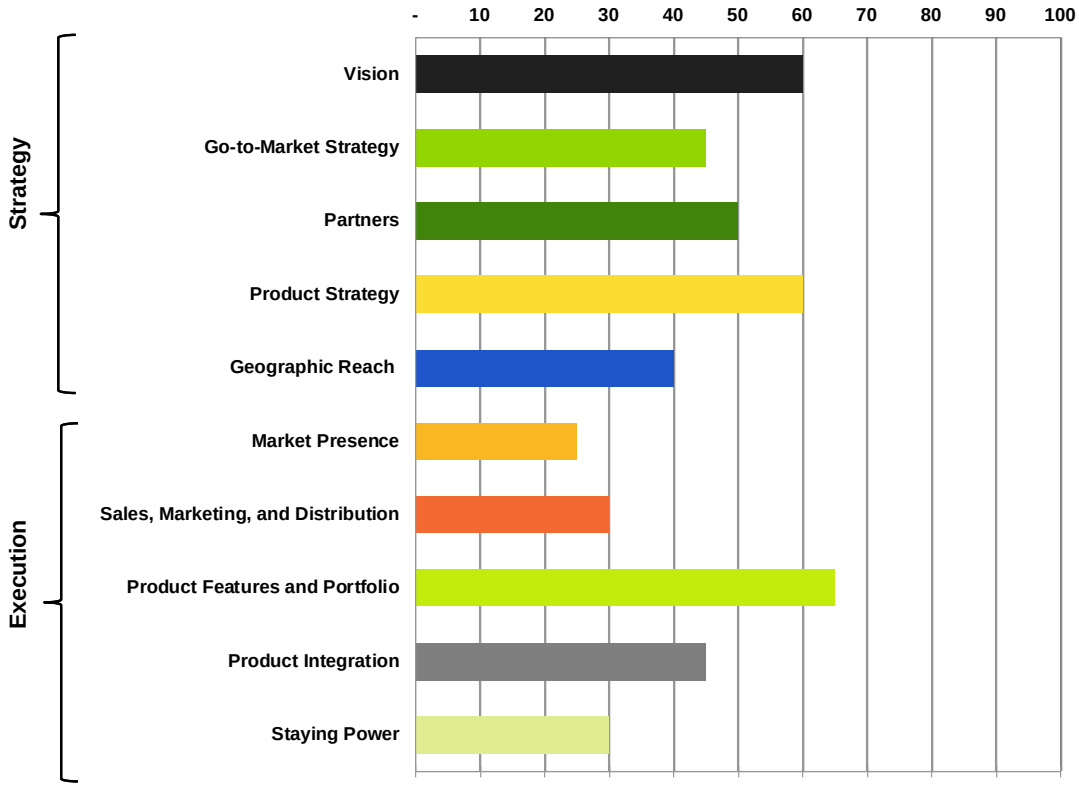
The Ubimetro is a street light-powered small cell for the mobile industry. The product enables operators to densify their networks and improve wireless capacity. The Ubimetro can also promote the growth of 4G/5G and support fiber and ethernet backhaul with OnGo services.

The Ubihub is a smart street light controller with a Wi-Fi 6 router and AI edge processing. It enables lighting controls, high-speed internet access points, and video and audio edge applications through its dual 4K cameras and four microphones.

ubicquia has some strong initial partnerships with mobile operators, utilities, municipalities, energy service companies, and lighting distributors. The company also has a compelling product line that aims to connect the dots between smart street lighting and smart cities. However, the company's lack of existing commercial deployments resulted in low scores for market presence. Additionally, ubicquia received low scores for staying power due to the small size of the privately-funded startup.

www.ubicquia.com

Chart 4-18. ubicquia Strategy and Execution Scores



(Source: Guidehouse Insights)

Section 5
Acronym and Abbreviation List

2G.....Second Generation

3G.....Third Generation

4G.....Fourth Generation

5G.....Fifth Generation

AI.....Artificial Intelligence

AIP.....American Industrial Partners

AMI.....Advanced Metering Infrastructure

CAGR.....Compound Annual Growth Rate

CMS.....Central Management System

EMC.....Electric Membership Corporation

EV.....Electric Vehicle

GE.....General Electric

GHG.....Greenhouse Gas

IoT.....Internet of Things

IPv6.....Internet Protocol Version 6

IT.....Information Technology

LED.....Light-Emitting Diode

LoRaWAN.....Low Power Wide Area Network

MHz.....Megahertz

NB-IoT.....Narrowband Internet of Things

OG&E.....Oklahoma Gas & Electric

PLC.....Power Line Communications

RF.....Radio Frequency

SCMS.....Smart City Management System

TSP ..... Tool-Less Sensor Platform

UK ..... United Kingdom

UNB..... Ultra Narrow Band

US ..... United States

Section 6

Table of Contents

Section 1 1

Executive Summary 1

1.1 Market Introduction 1

1.2 The Guidehouse Insights Leaderboard Grid 2

Section 2 4

Market Overview 4

2.1 Market Definition 4

2.2 Market Drivers 4

2.3 Market Barriers 5

2.4 Market Trends 6

2.5 Market Size 7

Section 3 8

The Guidehouse Insights Leaderboard 8

3.1 The Guidehouse Insights Leaderboard Categories 8

3.1.1 Leaders 8

3.1.2 Contenders 8

3.1.3 Challengers 8

3.1.4 Followers 8

3.2 The Guidehouse Insights Leaderboard Grid 9

Section 4 11

Company Rankings 11

4.1 Leaders 11

4.1.1 Signify 11

4.1.2 Itron 13
4.1.3 Telensa 15
4.2 Contenders 16
4.2.1 CIMCON 17
4.2.2 FLASHNET (ENGIE) 19
4.2.3 Telematics Wireless 21
4.2.4 DimOnOff 23
4.2.5 Rongwen 25
4.2.6 Sensus 27
4.2.7 LED Roadway Lighting 29
4.2.8 GE Current, a Daintree Company 31
4.2.9 Acuity Brands 33
4.3 Challengers 34
4.3.1 Echelon (Adesto) 35
4.3.2 Enel X 37
4.3.3 Verizon 39
4.3.4 gridComm 41
4.3.5 Fonda Tech 43
4.3.6 ubicquia 45
Section 5 47
Acronym and Abbreviation List 47
Section 6 49
Table of Contents 49
Section 7 52
Table of Charts and Figures 52

Section 8 53

Scope of Study and Methodology 53

8.1 Scope of Study 53

8.2 Sources and Methodology 53

8.2.1 Vendor Selection 54

8.2.2 Ratings Scale 54

8.2.2.1 Score Calculations 54

8.2.3 Criteria Definitions 55

8.2.3.1 Strategy 55

8.2.3.2 Execution 55

Section 7
Table of Charts and Figures

Chart 1-1. The Guidehouse Insights Leaderboard Grid 3
Chart 2-1. Annual Smart Street Lighting Revenue by Region, World Markets: 2020-2029 7
Chart 3-1. The Guidehouse Insights Leaderboard Grid 9
Chart 4-1. Signify Strategy and Execution Scores 12
Chart 4-2. Itron Strategy and Execution Scores 14
Chart 4-3. Telensa Strategy and Execution Scores 16
Chart 4-4. CIMCON Strategy and Execution Scores 18
Chart 4-5. FLASHNET Strategy and Execution Scores 20
Chart 4-6. Telematics Wireless Strategy and Execution Scores 22
Chart 4-7. DimOnOff Strategy and Execution Scores 24
Chart 4-8. Rongwen Strategy and Execution Scores 26
Chart 4-9. Sensus Strategy and Execution Scores 28
Chart 4-10. LED Roadway Lighting Strategy and Execution Scores 30
Chart 4-11. GE Current Strategy and Execution Scores 32
Chart 4-12. Acuity Brands Strategy and Execution Scores 34
Chart 4-13. Echelon Strategy and Execution Scores 36
Chart 4-14. Enel X Strategy and Execution Scores 38
Chart 4-15. Verizon Strategy and Execution Scores 40
Chart 4-16. gridComm Strategy and Execution Scores 42
Chart 4-17. Fonda Tech Strategy and Execution Scores 44
Chart 4-18. ubicquia Strategy and Execution Scores 46

Table 3-1. The Guidehouse Insights Leaderboard Overall Scores 10

Section 8
Scope of Study and Methodology

8.1 Scope of Study

Guidehouse Insights has prepared this *Leaderboard* to provide participants in the smart street lighting market with an analysis of the current competitive landscape. The report is intended to help providers in this market understand how companies and brands fit and compete in the overall market. The report could also assist city leaders and utilities with vendor selection for smart street lighting projects.

The major objective of this *Leaderboard* is to provide a timely overview of the companies involved in the market, as well as their Strategy and Execution in developing, marketing, and deploying smart street lighting solutions. Company ratings capture the vendor's standing at the time of publication and are not a retrospective of past accomplishments or an indication of future success. The ratings are likely to change as this market matures and business models continue to evolve.

8.2 Sources and Methodology

Guidehouse Insights' industry analysts use a variety of research sources in preparing Research Reports. The key component of Guidehouse Insights' analysis is primary research gained from phone and in-person interviews with industry leaders including executives, engineers, and marketing professionals. Analysts are diligent in ensuring that they speak with representatives from every part of the value chain, including but not limited to technology companies, utilities and other service providers, industry associations, government agencies, and the investment community.

Additional analysis includes secondary research conducted by Guidehouse Insights' analysts and its staff of research assistants. Where applicable, all secondary research sources are appropriately cited within this report.

These primary and secondary research sources, combined with the analyst's industry expertise, are synthesized into the qualitative and quantitative analysis presented in Guidehouse Insights' reports. Great care is taken in making sure that all analysis is well-supported by facts, but where the facts are unknown and assumptions must be made, analysts document their assumptions and are prepared to explain their methodology, both within the body of a report and in direct conversations with clients.

Guidehouse Insights is a market research group whose goal is to present an objective, unbiased view of market opportunities within its coverage areas. Guidehouse Insights is not beholden to any special interests and is thus able to offer clear, actionable advice to help clients succeed in the industry, unfettered by technology hype, political agendas, or emotional factors that are inherent in cleantech markets.

8.2.1 Vendor Selection

For this Guidehouse Insights *Leaderboard*, vendors were selected for their offerings in the smart street lighting market. The focus is on suppliers with the ability to play a leading role in large-scale deployments by offering connected lighting controls, software, and networking solutions. During the vendor selection process, Guidehouse Insights also considered the degree to which companies are integrating their smart street lighting solutions with the broader smart cities market.

Lighting and energy service companies are excluded from the analysis, as well as pure play LED manufacturers. Guidehouse Insights' coverage of the smart street lighting supplier landscape concentrates on vendors providing public street lighting in cities (i.e., roadways, highways, city parks, and public areas) and excludes vendors focused on the buildings and commercial outdoor lighting markets.

8.2.2 Ratings Scale

Companies are rated relative to each other using the following point system. The ratings are a snapshot in time, showing the current state of the company. These scores are likely to be fluid as new competitors enter the market and customer requirements evolve.

- Very Strong 91 – 100
- Strong 76 – 90
- Strong Moderate 56 – 75
- Moderate 36 – 55
- Weak Moderate 21 – 35
- Weak 11 – 20
- Very Weak 1 – 10

8.2.2.1 Score Calculations

The scores for Strategy and Execution are weighted averages based on the subcategories. The overall score is calculated based on the root mean square of the Strategy and Execution scores.

8.2.3 Criteria Definitions

8.2.3.1 Strategy

- **Vision:** Measures the company's stated goals in designing market solutions against the actual needs of customers based on the entire environment in which they will operate. Clear and compelling visions that are effectively communicated to the industry and recognize the importance of smart street lighting to the broader smart cities market result in higher scores.
- **Go-to-Market Strategy:** Evaluates the company's strategy for reaching the target market, including the sales and marketing channels to be used, as well as the processes established for informing the target market about brand differentiation and unique product value. Assesses specific innovations in engagements with city leaders and other stakeholders.
- **Partners:** Measures the company's established partnerships with key organizations that will provide an advantage in financial backing, sales, business, and product development. The breadth of partnerships across the smart street lighting and smart city market is assessed, as are specific partnerships to address emerging requirements and gaps in the market.
- **Product Strategy:** Evaluates the long-term competitiveness of the product strategy as an effective solution that satisfies market requirements and meets market capacity needs. A component of this is an evaluation of the ability of the company to show innovation in product development to meet emerging market demands.
- **Geographic Reach:** An evaluation of companies' ability to reach national and international customers through networks of distributors and resellers. Scores are higher if products and solutions are sold in multiple global regions.

8.2.3.2 Execution

- **Market Presence:** Evaluates the company's current position in the smart street lighting market, focusing on the estimated number of connected street lights the company has deployed. Recent sales agreements and key customer accounts that are likely to affect sales during the next calendar year are also considered. Guidehouse Insights assigns higher scores for company's deploying individually controlled smart street lights, opposed to cabinet controlled.
- **Sales, Marketing, and Distribution:** Evaluates the company's marketing and sales performance and current distribution channel. Higher scores are given to companies with a large global dealer network with access and support for current products.

- **Product Features and Portfolio:** Higher scores are given if the company's control and networking technology is already a proven market success and/or delivers unique product attributes. The maturity, quality, and reliability of its smart street lighting solutions are considered. Higher points are awarded for companies offering end to end solutions (e.g., LED lamps and luminaires, sensors and controls, and software through an IoT platform), products that support multiple communications protocols (e.g. NB-IoT, mesh, cellular, etc.), and products that enable other smart city applications (e.g., sensor-ready luminaires, smart poles).
- **Product Integration:** Assesses the degree in which companies are integrating their smart street lighting solutions with the broader smart cities market. Higher points are awarded to companies deploying innovative projects that use smart street lighting as a platform for broader smart city applications (e.g., smart parking, traffic and environmental monitoring, etc.).
- **Staying Power:** Evaluates whether the company has the financial resources to withstand weak or variable markets and price-based assaults by competitors. Also measures the company's likelihood to continue to pursue smart street lighting solutions in the event of market softening. Higher scores are given to companies with strong financial performance and the capability to survive market downturns.

Published 2Q 2020

1800 Tysons Blvd., 7th Floor
McLean, VA 22102 USA
www.guidehouseinsights.com

This report closed for editing prior to the World Health Organization's declaration of the COVID-19 global pandemic on March 11, 2020, and therefore, reflects conditions in the smart street lighting market and the general economy prior to the outbreak. Subsequent changes to government priorities and supply chain, manufacturing, and other economic disruptions experienced as a result of the global COVID-19 pandemic are not factored into the forecasts or analysis included in the report.