



Demystifying LTE and Cellular IoT Technology for Utility Companies

A Guide for Utilities Considering Cellular IoT Technology

The relative low cost and ease of using cellular technology has been driving many utilities to adopt Long-Term Evolution (LTE) cellular networks over the past few years. However, there remains a level of skepticism and unease with LTE technology as a primary means of connecting assets in their distribution network. Even with improved overall accessibility to data, many questions remain on whether the cellular networks can provide all the required capabilities for utility companies.

This eBook provides an overview of how LTE cellular networks can help improve grid intelligence, operations and data management; how public cellular networks compare to other communication networks (such as radio mesh, fixed point-to-point, private cellular, etc.) including technical choices for investments; and explores the future evolution of connected IoT for utilities.





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Current State of the Utility Industry

Utilities have historically preferred to acquire their own physical assets and the software required to manage these assets, store all related data in-house and use their own staff to perform related business processes.

Over the past two years, the industry has shifted to using service-based delivery for enterprise applications, such as customer relationship management (CRM), billing systems and asset management. However, any technologies that deal with network operations have typically remained in-house.

Currently, there are several different flexible options to asset and process delivery that utilities are either currently adopting or could adopt in the near future:



Data services:

collection, storage and analysis of data in the cloud.



Cloud-based software:

delivery of software as a service (SaaS) or enterprise-hosted software.



Fully-managed services:

delivery of physical assets and business processes as a fully-managed service.

Adoption of fully-managed services is most widespread in CRM and IT, while network operations and new technologies continue to remain in-house.



Utility companies will increase adoption of IoT solutions to ensure operational cost efficiency, grid reliability, enhance safety for workers and customers and improve customer experience:

1. Utilities are adopting a more flexible approach to business process.

The need for speedy time-to-market to meet growing customer demand.

2. New business models and revenue opportunities will transform the utilities value chain.

By 2030, a mature Smart Grid in which the industry's revenue allocation shifts significantly toward the customer is likely. One of the most significant changes is the shift from a commodity-based supply business to an energy service provider.

3. Improve operational costs and services.

By 2030, The distribution network will use artificial intelligence and Internet of Things (IoT) to become self-healing.



Opportunity for Transformation: LTE for Utilities

The shift to public cellular networks has transformed how utility companies manage assets, infrastructure and operations and serve their customers. They need to transform themselves into comprehensive service providers by better engaging with customers, generating more resources and dynamically balancing supply and demand on an increasingly complex grid, all while still providing reliable, affordable service to millions.

One of the key ways in which utilities have sought to address these challenges is with new IoT applications. The IoT provides them with the data and control needed to better monitor and manage supply, demand and grid operations.

Drivers for Industry Adoption



Changing consumer expectations: consumers demand better service and expect uninterrupted service.



Increase in competition: utilities are increasingly realizing that data, if analyzed correctly, can deliver a competitive advantage.

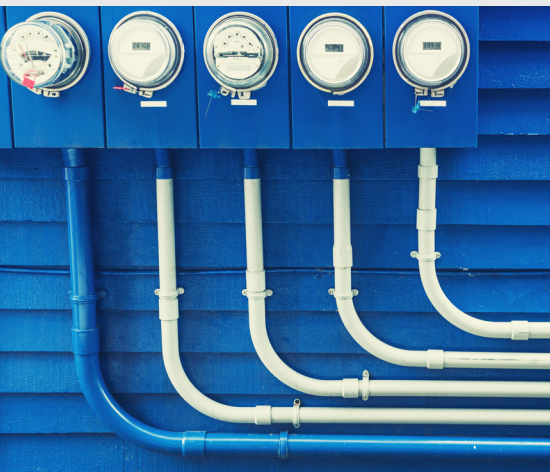


Demand for future-proofing: with network and consumer demands rapidly changing, utilities now need flexible technology solutions that can help them quickly adapt to change.

IoT applications require connectivity. Utilities have a lot of options when it comes to connectivity, though until recently, most of these options also came with significant drawbacks.

There is a technology that delivers most of the capabilities needed for utility applications—wide coverage, strong security, low cost and a long lifetime—cellular Long-Term Evolution (LTE). Most people are familiar with the technology; it's secure, provides high bandwidth and broad coverage for their smartphones.

While LTE adoption continues to grow, there is still some skepticism within the utility industry about adoption.



LTE Perception

Concern	Perception
Coverage	LTE won't adequately meet network needs.
Security	LTE won't protect sensitive company and customer data.
Duration	LTE has a lifespan and will be replaced with future technology.
Cost	LTE will be expensive to implement.

Applications and Systems Requiring Connectivity

AMR/AMI

Grid sensors


SCADA

Connected home
(intelligent appliances)




LTE Empowers Utility Stakeholders

Public




- ✓ Better service
- ✓ Fewer power outages; less downtime
- ✓ Real-time access to usage and billing data

Field Workers



- ✓ Instant remote access to vital network data
- ✓ Less time spent troubleshooting
- ✓ Faster, more informed decision-making

Operations Professionals



- ✓ System reliability
- ✓ Complete control over mobile and fixed network
- ✓ Secure network

Industry Requirements

The requirements facing the utility industry are now expansive—encompassing technical, operational, regulatory and security aspects.

To fulfill each of these requirements, today's connectivity solutions must tightly integrate with other systems, applications and processes to support:

- **More reliable communications:** deliver low latency, self-healing and shorter time to restore.
- **Stronger security:** deploy agile and advanced security measures and practices that are interwoven with the communication solution.
- **Compliance management:** meet or exceed federal, state and local utility regulations and mandates.
- **Operational efficiency and agility:** be able to quickly evolve with minimum impact applications, systems and devices.



Future-Proofing Your Organization

Cellular IoT provides a viable and mature alternative to other communication technologies:

- Low latency, higher security levels and configurable bandwidth based on global cellular standards network technologies
- Rapid deployment and low maintenance requirements of cellular solutions
- Future-proofed communications technology—an evolution versus specific version upgrades

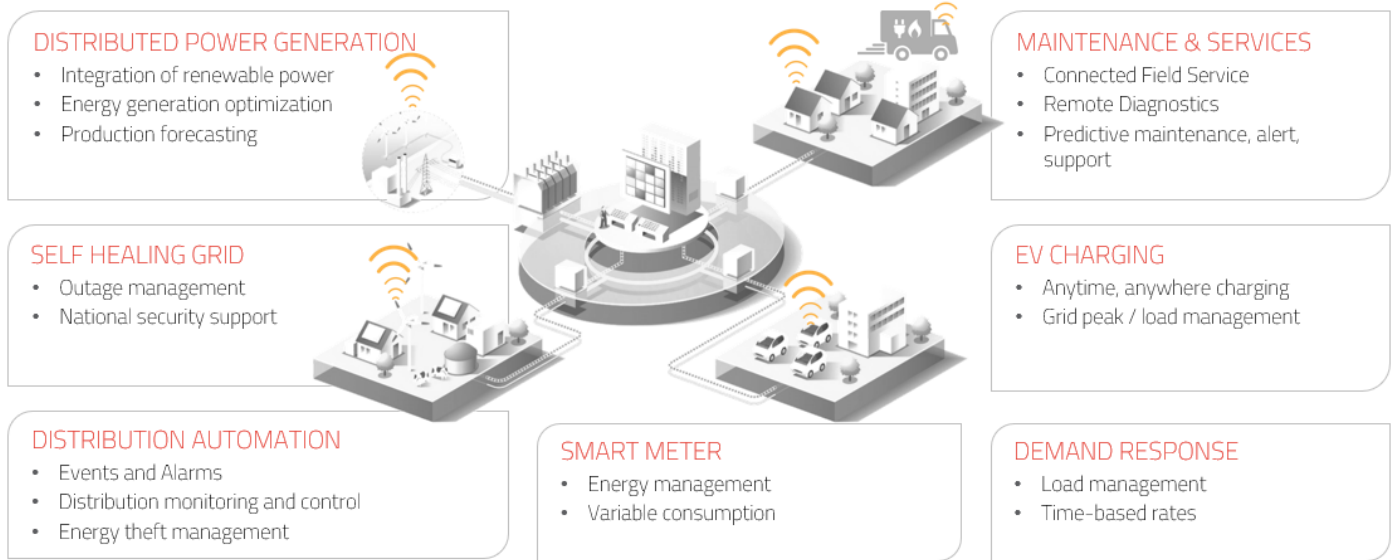
LTE Perception...and Reality

LTE is a viable option for utility applications. Cellular IoT begins with demystifying common misconceptions about the technology.

Concern	Reality
Coverage	Most extensive coverage available—flexibility of LTE allows operators to continually upgrade to meet network demand.
Security	LTE has been field tested and proven to provide end-to-end standardization and secure solutions to keep both company and consumer data safe.
Duration	Operators support customer needs; remote device management supports long product cycles.
Cost	LTE provides lower operating costs and has become a proven utility standard globally.



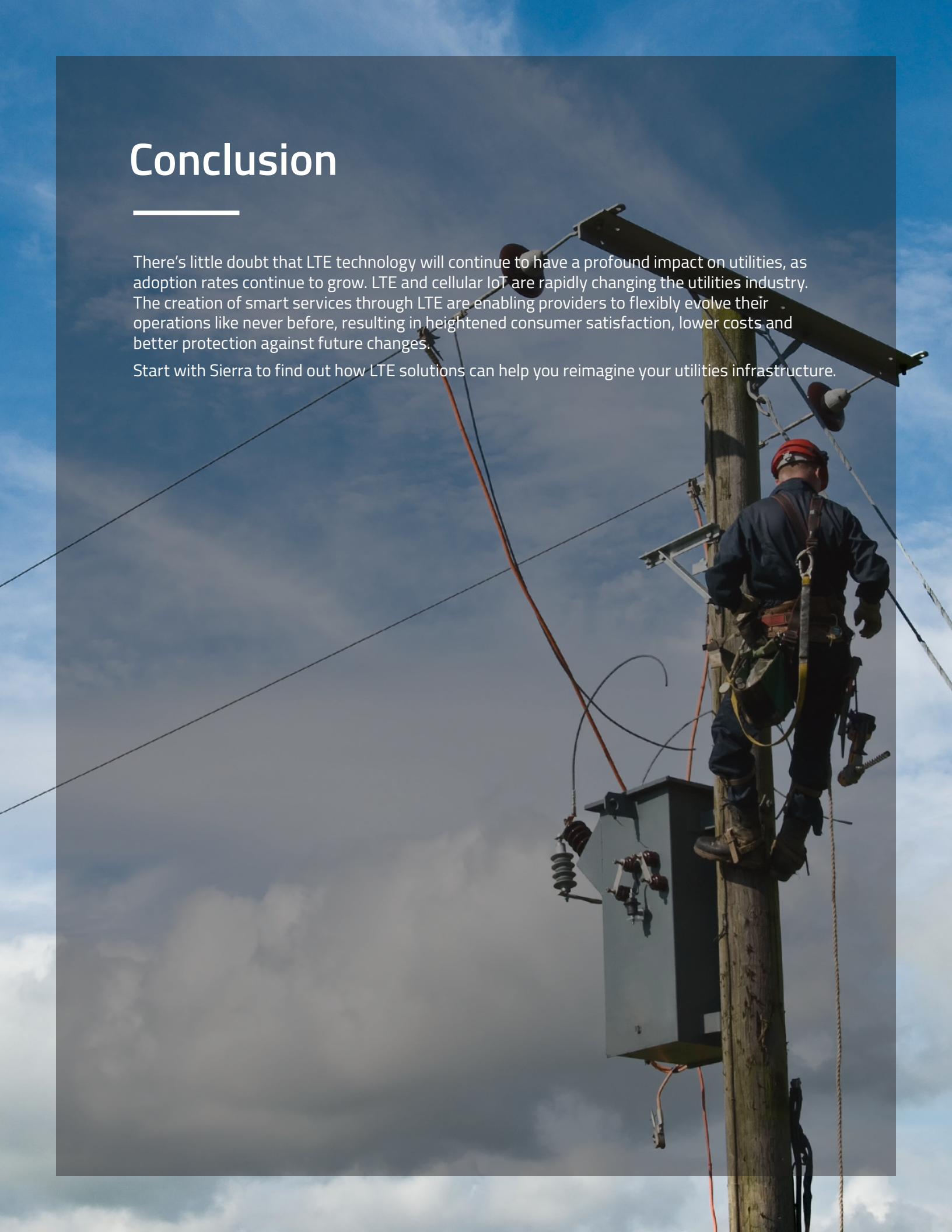
LTE Applicability Across Functions, Technologies and Geographies



Conclusion

There's little doubt that LTE technology will continue to have a profound impact on utilities, as adoption rates continue to grow. LTE and cellular IoT are rapidly changing the utilities industry. The creation of smart services through LTE are enabling providers to flexibly evolve their operations like never before, resulting in heightened consumer satisfaction, lower costs and better protection against future changes.

Start with Sierra to find out how LTE solutions can help you reimagine your utilities infrastructure.





About Sierra:

Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is an IoT pioneer, empowering businesses and industries to transform and thrive in the connected economy. Customers Start with Sierra because we offer a device to cloud solution, comprised of embedded and networking solutions seamlessly integrated with our secure cloud and connectivity services. OEMs and enterprises worldwide rely on our expertise in delivering fully integrated solutions to reduce complexity, turn data into intelligence and get their connected products and services to market faster. Sierra Wireless has more than 1,300 employees globally and operates R&D centers in North America, Europe and Asia.

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