



# Energy Solutions



## Solutions for a Connected Energy Industry

Wireless communications is transforming the energy industry by connecting consumers to providers, and power generation to more efficient distribution networks. Electricity, water, gas, and oil utilities are deploying Smart Grid and Smart Metering solutions with the objective of improving customer service, meeting usage demands, increasing efficiency, reducing costs, and meeting environmental targets.

### Energy Applications

#### Energy Generation

- Renewable Energy
- Distributed Generation Sources

#### Transmission & Distribution

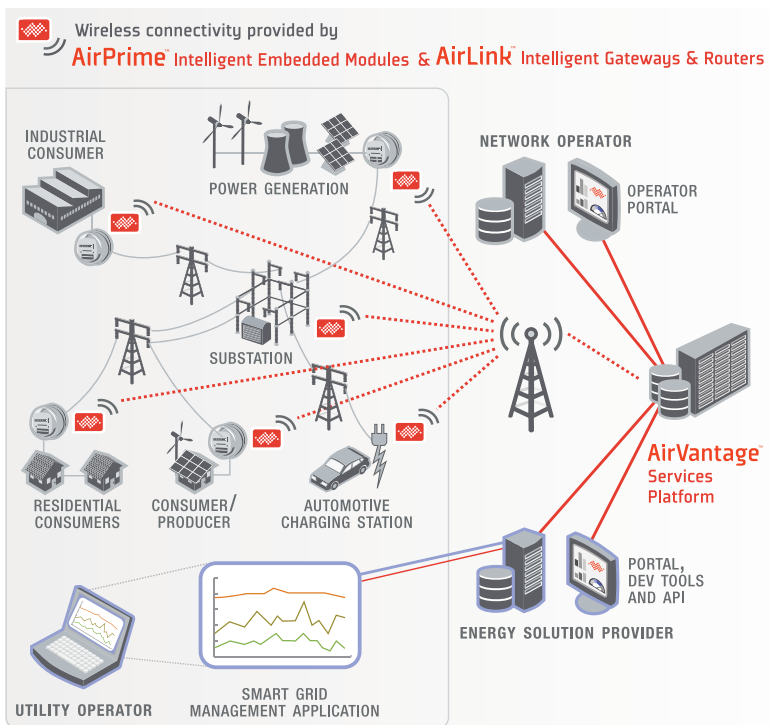
- Load Management
- Demand Response

#### Smart Metering

- Residential
- Commercial
- Industrial

#### Electrical Vehicles

- Charging Station Management



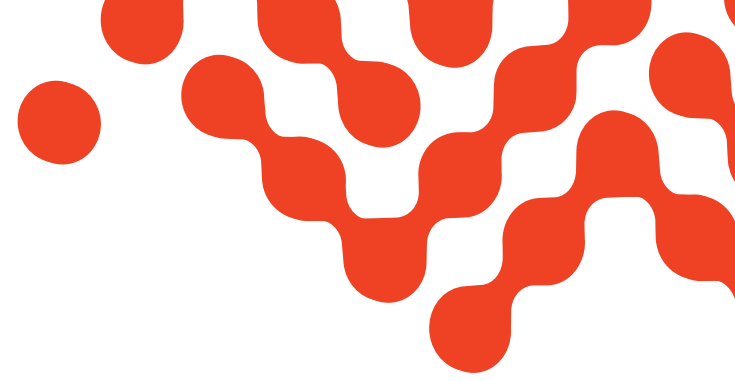
Wireless communications are critical to building end-to-end energy management infrastructures. From intelligent meters, transmission and distribution networks, and remote monitoring to improved management applications, Sierra Wireless understands that wireless connectivity involves more than just adding a modem.

Our broad portfolio of wireless devices, software, and management services are designed to meet a wide array of industry requirements, helping our customers handle the challenges of complex M2M deployments. Robust embedded intelligence and comprehensive device management features simplify installation and operation of large deployments and devices installed in remote areas.

The complete solution from Sierra Wireless gives you the ability to:

- Minimize cost and risk with proven, off-the-shelf wireless technologies.
- Reduce development effort with modules designed for smooth integration into existing systems, achieving fast, large scale deployments.
- Reduce time-to-market with a comprehensive services platform, open development tools and wireless modules pre-certified with major network operators for guaranteed connectivity with intelligent meters that is secure, maintainable and compatible with future needs.
- Develop a web-based energy application quickly through easy to use M2M development tools.
- Deploy and operate the solution on an enterprise side hosted platform, scalable to millions of devices, with support for real-time over-the-air updates.





## Connecting the Energy Industry

Trends	Challenges	Meeting the Challenges with Sierra Wireless
<b>Energy Generation</b> <ul style="list-style-type: none"><li>• Multiple energy sources (traditional, alternative, residentially-generated) feeding into the power grid</li><li>• Transmission &amp; Distribution</li><li>• Monitored transmission and distribution facilities for improved load management and demand response</li></ul>	<ul style="list-style-type: none"><li>• Data security and transmission reliability</li><li>• Cost-effective real-time monitoring to track:<ul style="list-style-type: none"><li>- amount of energy generated</li><li>- condition of energy sources</li><li>- condition of sub-stations and capacitor banks</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Ensure accurate data with secure, reliable, mission-critical wireless connectivity</li><li>• Deliver real-time monitoring of multiple parameters with wireless devices that support broadband IP connectivity, secure layer protocol, and images/video transition</li><li>• Reduce cost to service and ensure device longevity with robust, ruggedized components designed for harsh environments and low power consumption</li><li>• Manage intelligent devices with comprehensive remote services that drastically reduce total cost of ownership</li></ul>
<b>Smart Metering</b> <ul style="list-style-type: none"><li>• Upgrade of residential, commercial, and industrial meters to support embedded intelligence and 2-way communication</li></ul>	<ul style="list-style-type: none"><li>• Cost and logistics of massive, high-volume deployment</li><li>• Data security and transmission reliability</li><li>• Device components that last the lifetime of the meter itself</li><li>• Global coverage</li><li>• Remote management of deployed meters</li></ul>	<ul style="list-style-type: none"><li>• Benefit from Sierra Wireless professional services experience in high volume deployments for the Energy market</li><li>• Reduce quality-related issues with Sierra Wireless's track record for high volume and quality manufacturing process. Minimize cost and increase reliability with lean, programmable modules that deliver only the most essential functions</li><li>• Increase reliability while reducing installation and logistics costs with Embedded SIM</li><li>• Minimize maintenance costs of managing large device populations in remote areas with AirVantage™ Management Services for remote diagnosis and over-the-air software patches</li><li>• Ensure secure, mission-critical data performance with support for secure layer (SSL), jamming detection, IPsec VPN, WPA2 and many more security features</li><li>• Get wireless connectivity anywhere a mobile phone works, with interfaces that support all major cellular networks</li></ul>
<b>Electrical Vehicles</b> <ul style="list-style-type: none"><li>• Market growth in electrical vehicles driving need for charging stations</li></ul>	<ul style="list-style-type: none"><li>• Cost-effective real-time monitoring to track:<ul style="list-style-type: none"><li>- charging station availability</li><li>- usage and payment</li></ul></li><li>• Data security and transmission reliability</li><li>• Wireless devices that last the lifetime of the charging station</li><li>• Global coverage</li></ul>	<ul style="list-style-type: none"><li>• Deliver real-time monitoring and 2-way data transmission with wireless modules that support broadband IP connectivity and secure layer protocols</li><li>• Ensure accurate data with secure, mission-critical wireless data performance</li><li>• Reduce cost to service and ensure device longevity by deploying modules manufactured for quality performance and long life</li><li>• Get wireless connectivity anywhere a mobile phone works, with interfaces that support all major cellular networks</li><li>• Manage two-way communication to ensure uptime and accurate billing</li></ul>



## Utility and Wireless Technology Experience

With more than a decade of deploying wireless data communications for the energy industry, Sierra Wireless offers expertise, products designed to meet Energy industry needs, and strong relationships with wireless carriers. Our participation in associations such as ESMIG (European Smart Metering Industry Group) ensures wireless solutions are compliant with industry standards.

## End-to-End Solution

Only Sierra Wireless can supply all the wireless technology components you need for energy solutions:

- Modules and devices ruggedized to withstand harsh environments, with long life in the field
- Real time embedded operating system with native wireless services as well as software tools and APIs to support a broad range of metering protocols.
- Management platform that reduces the risk and complexity of massive, high volume deployments and maintaining large device populations.

## Simplify Integration and Deployment

Sierra Wireless software and applications leverage the intelligence built into all modules, gateways, and routers to simplify integration, deployment, and maintenance.

Ultimately, simplifying deployment and maintenance drastically reduces time to market and total cost of ownership, translating a quicker return on investment (ROI).

## Rugged, Reliable, Secure

Sierra Wireless has devices designed for secure, mission-critical data performance, rated Class 1 Div 2 for hazardous conditions, and meeting Mil Std 810-F specifications for shock, vibration and extreme temperatures of -40C to +85°C.

## Operator Credibility

Sierra Wireless credibility and long-standing relationships with leading wireless carriers help facilitate network certification and connection for your solution. We can help smooth the certification process for you. Use pre-certified modules for fast time to market, leverage our professional services team to guide you through the network certification process, take advantage of our verification and validation experience and strong operator relationships.

## Partner for Success

When you need to deliver energy solutions that are reliable, cost-effective and easy to maintain, contact Sierra Wireless. Reduce risk and development cost with proven wireless technologies designed for easy integration, fast deployment and scalability.

## Sierra Wireless energy solution customers include:

- AP Systems
- Central Iowa Power Cooperative
- Duquesne Light
- EDM I
- Elster
- Itron
- Oklahoma Natural Gas
- Progress Energy
- SolaireDirect

## Sierra Wireless is certified with network operators worldwide including:

- AT&T (USA)
- O2 (UK and Ireland)
- Soft Bank (Japan)
- Sprint (USA)
- Telecom New Zealand
- Telefonica (Spain)
- Telstra (Australia)
- Telus (Canada)
- Verizon
- Vodafone



# Energy Solutions

## Sierra Wireless Product Advantages

Energy solution requirement	Sierra Wireless AirLink™ Gateways and Routers	Sierra Wireless AirPrime™ Modules
<ul style="list-style-type: none"> <li>• Easy integration to existing energy infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• ALEOS™ embedded intelligence for broad list of industrial/machine protocols</li> <li>• Designed for retrofits or as platform for new applications</li> </ul>	<ul style="list-style-type: none"> <li>• Open AT® Operating System and its set of Plug-Ins allow the integration of any legacy metering protocol</li> </ul>
<ul style="list-style-type: none"> <li>• Secure, reliable data transmission</li> </ul>	<ul style="list-style-type: none"> <li>• Mission-critical reliability with persistent network connections that reconnect automatically</li> <li>• Support for secure communications including: SSL, IPsec, WPA Enterprise, firewall, MAC address filtering</li> </ul>	<ul style="list-style-type: none"> <li>• Mission-critical reliability with persistent network connections that reconnect automatically</li> <li>• Open AT® Operating System provides advanced security features such as encryption, SSL or jamming detection to monitor any potential jamming attack</li> </ul>
<ul style="list-style-type: none"> <li>• Cost-effective, high-volume components</li> </ul>	<ul style="list-style-type: none"> <li>• Embedded intelligence and remote configuration provide the lowest total cost of ownership.</li> </ul>	<ul style="list-style-type: none"> <li>• AirPrime programmable modules support only essential functions and high-volume production needs</li> </ul>
<ul style="list-style-type: none"> <li>• Rugged, high-quality, long life components</li> </ul>	<ul style="list-style-type: none"> <li>• Rated Class I Div 2 to withstand hazardous conditions</li> <li>• Designed to meet Mil Std 810-F specifications for shock, vibration and extreme temperatures of -40C to +85°C</li> </ul>	<ul style="list-style-type: none"> <li>• Ruggedized designs comply with environmental requirements of the smart energy market (vibration, extreme temperature of -40C to +85C)</li> <li>• Designed to withstand harsh environments, the Embedded SIM reduces installation costs, simplifies logistics, and reduces SIM theft security threats</li> <li>• Module qualification process includes Highly Accelerated Life Test (HALT) stress testing</li> </ul>
<ul style="list-style-type: none"> <li>• Flexibility to enter new markets</li> </ul>	<ul style="list-style-type: none"> <li>• Highly extendable with support for all cellular protocols</li> </ul>	<ul style="list-style-type: none"> <li>• Wireless platforms that are scalable, extensible, and form-factor compatible</li> <li>• Allows a single product design that can communicate on any cellular protocol, anywhere in the world</li> <li>• Modules pre-certified with major carriers worldwide</li> </ul>

### AirVantage™ Services Platform

- Services to simplify complexity and logistics of high volume deployments
- AirVantage™ Platform provides a comprehensive, scalable and secure services platform with a web portal and powerful tools that allow remote deployment, configuration, and maintenance of energy solutions and services
- Sierra Wireless professional services understand the utilities industry as well as wireless technologies. We can help with product design and deployment plans, prepare your solution for certification, and help you through network verification



For further company and product information, please visit [www.sierrawireless.com](http://www.sierrawireless.com)

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