

IoT CONNECTIVITY BUYER'S GUIDE ENERGY & UTILITIES EDITION



THE CHALLENGE:

Finding the Right Connectivity Strategy in a Diverse Market

The internet of things has transformed the entire energy and utilities sector from production through distribution. However, the industry is not a monolith, and has varying connectivity needs for different types of energy sources and for different aspects of energy and utilities management. Companies designing remote tank monitoring systems don't need the same things from their connectivity service as companies creating on-grid solar metering systems, which have different requirements than companies building water management solutions.

While all cellular network providers enable the transport of data to and from connected devices, there are many subtle differences in the ways in which they accomplish this. These small variances can result in significant business impact, which can impact the success of your solution. The right connectivity provider can help you:



Extend the life of battery-powered equipment



Streamline equipment maintenance at a low cost



Ensure the reliability of your service



Reduce your overall operational expenses

The trouble with subtle differences is that they can be very difficult to identify. On the surface, all connectivity providers can seem very similar. However, by knowing precisely what questions to ask prospective suppliers during your research phase, you can make the wisest selection for your energy or utilities management solution—whatever it may be.

THE FIRST THREE THINGS YOU'LL NEED

Whatever type of energy or utilities management solution you provide, it's beneficial to select a connectivity supplier that has broad experience helping businesses of all sizes, in all geographies, and across various industries and use cases.

A capable connectivity partner should be able to help you navigate these three foundational pieces:



1 Coverage:

Whether you're monitoring gas tanks at a factory or metering solar power on a residential property, it's important to consider not only the number of carriers your supplier makes available, but also how they prioritize access to them (based on signal strength or just costs?). Factors such as international roaming and the availability (or lack thereof) of cellular technologies like LTE-M may affect the quality of your solution.



2 Quality of Service:

When you're managing critical resources in multiple locations, near real-time monitoring and diagnostics is imperative not just for avoiding overages, but in some cases for ensuring the safety of workers. Make sure your connectivity supplier offers you the tools to detect, diagnose, and resolve connectivity issues anywhere in your end-to-end system—from device, to network, to application—based on near-real time device behaviour data. If your equipment has a gas leak, you want a provider who will notify you right away.



3 Costs:

As you expand to tens or hundreds of thousands of devices, even small overages can translate into significant, unnecessary expenses, while large overages can destroy your business. Beyond rate plans that match your actual usage patterns, tools to automatically optimise costs across the entire device lifecycle become more important.



MONITORING SYSTEMS

Solutions that monitor fluid levels in gas tanks, flow volume through pipelines or irrigation systems, energy production in wind or solar farms, or the health of substations are well suited for cellular connectivity. As fixed devices often in rural areas, coverage is absolutely essential. And because IoT tends to be a business management tool rather than a revenue enabler or end-user billing mechanism for monitoring systems, achieving optimal solution performance at a low cost is required for the economics to make sense.

Extending device lifespan through expert solution design and configuration is also important, as monitoring systems are often in the field for 10+ years.

Additionally, systems that monitor combustible energy sources are typically considered mission-critical for safety purposes, and the connectivity provider enabling these solutions must be held to incredibly high standards.

METERING SYSTEMS

The smart metering landscape is evolving quickly, and the cast of characters is complex due to municipalities taking on a larger role in utilities smart metering and, more broadly, smart cities. Still, smart metering solutions providers often play a central role in delivering bundled applications, particularly for emerging energy sources such as solar.

In urban and suburban locations, where connectivity options are plentiful, smart metering solution providers have a lot of choices, and often have to fit into a larger connected infrastructure. For instance, apartment complexes may opt for a hybrid solution using a

Low-Power Wide Area Network (LPWAN) to transmit data from each unit to a Long Range (LoRa) gateway that uses cellular networks to transmit that data to application servers. For residential solar panel providers that typically rely on WiFi, cellular networks can serve as a failover for instances where the end user updates their password or switches internet providers and the panels can no longer connect to the WiFi.

In these types of complex scenarios, it's important to thoroughly vet your connectivity provider to ensure they have the expertise to ensure your success.



KEY REQUIREMENTS & VETTING QUESTIONS:



How to Find a Provider Equipped To Help You Succeed

Requirement	Reliable Global Coverage	Near Real-Time Issue Detection & Diagnosis	Expert Onboarding	Proactive Support
Crucial Feature	Performance-optimized, 2G,3G, 4G, and LTE-M coverage from carriers in every geography where you plan to deploy	Self-service tools to detect, diagnose, and resolve issues anywhere in your end-to-end system in near-real time, so businesses never miss critical data on the condition of their equipment or resources, and consumers have seamless experience using and paying for their energy	Consultative guidance to assist with complex solution design and device configuration that optimizes performance in a hybrid connected system, common in metering solutions	Quick and consistent access to technical experts who are proactively monitoring the connectivity of your solution and can diagnose and resolve any issues, so that your solution can operate efficiently
Questions to Ask	<ol style="list-style-type: none">1. How many carriers do you have in each country where I expect to deploy devices?2. Can you provide test results that show if there is coverage where I need it?3. Do you control network steering ("the preferred PLMN")?	<ol style="list-style-type: none">1. Do you provide complete visibility into my deployment from device through the cloud?2. How quickly can I see if a problem exists with my device, the network, or my application?3. How quickly do alerts get triggered? What is the lag time between data transmission and usage reporting?4. Can you help me determine the cause of an SMS delivery failure?	<ol style="list-style-type: none">1. How have you helped other customers optimize solution performance?2. How have you helped other customers with hybrid connectivity models configure their solution?	<ol style="list-style-type: none">1. Which time zones does your support department work in?2. How is your support team structured? Who answers the phone? Who actually solves customer tickets?3. What is your average response time?4. What is your average resolution time?



Regulatory Compliance

Dependable connectivity to ensure data is accurately and consistently collected for various environmental and regulatory requirements

1. What kind of regulations have you helped your clients navigate?
2. What back up measures do you have in place to ensure that we won't lose our data in the event of a connection failure?

Best-in-Class Security

Multi-layer security, including password management, dedicated IP addresses, and endpoint pre-authorization, so that you won't be subject to a data breach

1. What options do you provide for securing the connection to my data center or cloud instance?
2. How do you ensure that my devices only communicate with authorized endpoints?
3. What tools do you provide to help my operations team detect suspicious activity?
4. What can you do if one of my devices becomes compromised?

Cost Control

Capabilities that substantially reduce connectivity costs by preventing connection failures, enabling remote diagnostics, and extending the life of battery-powered devices

1. What best practices do you offer to help extend the life of battery-powered devices?
2. In what ways do you help me lower my operational costs?

Adjustable Quality of Network Services

Ability to provide different network service quality based on throughput and reliability requirements to support applications that need higher speed and volume of data transmissions

1. How do you ensure the data throughput required for my application is provided?
2. What are the minimum UpLink and DownLink speeds? Can this be changed or modified for my requirements?
3. Is there a cost associated with needing a higher throughput rate?

HOW AERIS HELPS ENERGY AND UTILITIES MANAGEMENT SOLUTION PROVIDERS SUCCEED

At Aeris, we go beyond covering just the basics. We provide custom solutions, smart advice, and hands-on support to help energy management solution providers achieve cutting-edge results:



Detectronic:

This leading provider of water monitoring devices helps water companies comply with regulatory and environmental requirements. Detectronic counts on Aeris as a strategic partner that can help them expand their reach into new markets by delivering high quality, reliable connectivity globally.



Badger Meter:

As an innovator in flow measurement and control products, Badger Meter serves water utilities, municipalities, and commercial and industrial customers worldwide. Aeris helps Badger Meter provide an exceptional, cost-effective service to its customers with reliable and flexible connectivity.



Blue NRGY:

This global provider of engineered systems and solutions for distributed power generation, climate control, and energy efficiency is relied upon by utilities and governments. Aeris provides enterprise-grade security, efficient device management, and streamlined troubleshooting to help Blue NRGY confidently serve its customers in the solar market.



Lorentz:

This leading provider of solar powered water pumps depends on Aeris to gain near real-time visibility into and control over their devices. Lorentz is able to remotely manage their off-grid water pumps to ensure rural communities, livestock, and crops receive the water they need.

Learn more about how Aeris can help you manage and scale your fleet management solution.

Ready to get started? Contact us.

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