

# Using Distributed Energy Resources (DER) to improve both reliability and sustainability



## Organizations that are seeking to reduce their energy footprint can utilize distributed energy resources to achieve that goal without giving up reliability.

In fact, a system employing DER can exceed the level of reliability of any single resource. The challenge is how to dynamically manage such a flexible network to achieve optimization of cost, reliability and energy efficiency.

There are three components to effective use of DER:

- 1) Access to the distributed energy sources themselves;
- 2) centralized control to optimize use of these sources; and
- 3) cost-effective energy storage to effectively disconnect the generation from consumption of power.

This third facet, of course, remains in development and will for some years to come. Energy storage in such large amounts is still prohibitively expensive. But even without such large-scale storage, DER offers important sustainability and reliability characteristics.

The key to this capability is centralized control, which can be achieved through effective use of a Data Center Infrastructure Management (DCIM) system.

A DCIM system such as ABB Decathlon, which can manage varied energy assets, is vital to lowering a data center's operating cost while maximizing availability and reliability. In turn, this can extend the life of the data center by safely and reliably boosting the productivity of existing assets –doing more with less. It also can quantify the return from sustainable energy investments that reduce the energy footprint.

Every data center is different, of course. But there are some common requirements for DCIM to achieve these goals. They include:

- Near-instantaneous ability to balance the data center's energy supply and demand. This requires two-way communications that deliver real-time information. An effective approach must consider how to manage multiple levels of integration and interoperability among the data center's various components and systems.
- Capability to integrate different forms of distributed energy resources. Depending on geography, certain energy sources are likely to be more practical than others, or offer better economies of scale.
- Monitoring and decision support to allow automation and on-the-fly optimization. For example, the DCIM system should provide breadth and depth of energy management capabilities – such as alerting you to purchase energy from the electrical grid when it's cheaper; and helping to schedule compute loads at times when energy is generally less expensive.
- Ability to evolve along with DER technologies to exploit new applications and benefits. Think beyond the sources of energy; also consider how data center infrastructure will be able to manage distributed power generation, storage and demand response technology.

It won't matter how robust or technically advanced your energy delivery network is if it isn't centrally controlled by a DCIM system that is inadequate for the task. On the other hand, with an effective DCIM system, reliability can improve while costs are carefully managed.

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