Datacenters and Sustainability Goals
How Efficient and Resilient Datacenters Accelerate Sustainability Progress

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Introduction: Datacenters and Sustainability Goals

Digital transformation has opened vast opportunities to reduce waste and improve efficiency across many industries. Climate change is making communities and businesses increasingly aware of the need to become more sustainable and reverse the current trajectory of pollution, high consumption, and waste of natural resources.

A growing number of organizations are harnessing technology to drive greater efficiency and uncover ways to use natural resources sustainably.

At the foundation of this transformation are modernized datacenters

Cloud and colocation datacenters are essential in driving the shift to digital business and supporting the burgeoning demand for IT service and connectivity. Although these facilities are central to digital transformation, they are also energy-intensive, putting them at the center of discussions around sustainability and their impact on the planet and climate.
Introduction Continued: The Work Ahead

While datacenters and IT workloads have grown exponentially, the global energy required to power critical infrastructure has remained relatively flat.

Technologies such as virtualization and highly efficient infrastructure have disrupted the equation that more IT service equals more power consumption. Instead, compute loads have expanded rapidly to support digital transformation, while energy consumption has followed a much less dramatic trajectory. This is a positive sign that the industry’s focus on efficiency has yielded positive results.

However, there is much work to be done to ensure continued improvement. The industry must increase its focus on reducing greenhouse gas emissions, both inside and outside the four walls of datacenters. Enhancing sustainability requires not just the efficient use of energy, but also using cleaner energy sources and reducing embedded carbon throughout the value chain, such as in building materials and waste. Longer term, the industry has an opportunity to become more integrated and impactful, creating sustainable communities.

Getting to the next level of progress will require changes at scale, as well as long-term commitments and investments

Deploying holistically designed sites with a focus on efficiency, sustainability, and resilience will be the key to meaningful progress on the sector’s sustainability journey.
What Are Sustainable Datacenters?

1. THEY USE ALL RESOURCES EFFICIENTLY
• Deploy artificial intelligence and real-time resource management tools.
• Support smart grid integration through metering and forecasting.
• Maximize datacenter utilization rates.

2. THEY ARE DESIGNED AND BUILT TO REDUCE EMBEDDED CLIMATE AND ENVIRONMENTAL IMPACTS
Today, building materials and construction are implicated in 11% of global GHG emissions*
• Apply circular economy principles—waste heat recycling, water recycling.
• Use sustainable building materials and processes to reduce embodied carbon (such as lower carbon concrete).

3. THEY RELY ON CLEANER AND RENEWABLE ENERGY RESOURCES
• Increase reliance on renewable energy generated onsite and offsite.
• Align renewable energy supply with demand through time-of-day workload optimization.
• Utilize fuel cells as a cleaner energy source of primary or backup power.

Where Are We Today?
Importance of being sustainable is broadly understood by all stakeholders

Today, the ability to attract and retain customers, investors, and talent is inextricably linked with environmental sustainability and progress. Being sustainable is no longer buried deep in corporate mission statements — improving sustainability is a top priority for most companies.

89% of organizations say they prefer to do business with a partner that shares similar sustainability goals.

90% of S&P 500 Index companies publish sustainability reports.

87% of organizations include datacenter facility metrics in corporate sustainability reporting.

Most companies are on a path towards improving sustainability, but each is progressing at a different rate. Varying local, regional, and country regulations and expectations make it complex to progress in all areas where business is conducted. Macroeconomic trends in the oil & gas industries may make renewable energy investments attractive in the near term, but companies should also consider long-term solutions.
Drivers and Inhibitors to Sustainable Datacenters

- It is difficult — and in some locations not cost-effective — for organizations to embrace renewable energy sources. There is a lack of market awareness, challenging procurement (e.g., financial, technical, legal or operational barriers) and reporting structures surrounding renewable energy.
- There may be hesitation to act or invest in sustainability due to perceived concerns that inconsistencies in sustainability initiatives across regions detract from progress.

SUSTAINABILITY DRIVERS

- Datacenters and other publicly traded companies are becoming increasingly transparent in sustainability reporting.
- NGOs have been formed to promote education on how to purchase and deploy renewable energy onsite and offsite, paving the way for progress across all sectors to buy renewable energy in places not served by cost-effective local solutions.
- Regional, state, and local governments are pushing for change. Thoughtful, long-term planning processes are being established with a focus on businesses contributing positively to society and helping to address large-scale problems such as climate change.
Datacenters Are Not All the Same
Greener buildings, cleaner energy, smarter use of energy

Strong investment in renewable energy by the datacenter sector is driving the uptake of renewable energy globally. Renewable energy power purchase agreements rose to 9.33 GW in 2019.* This shift is having a positive impact on carbon emissions.

Using cleaner energy is key to progress. But within the sector it is also important to address energy wasted through the inefficient use of power.

Improving utilization rates through virtualization and software-defined infrastructure goes a long way to improve energy use.

Going forward, it is important to leverage modernized facilities that can:

- Support more power-dense systems.
- Leverage greener critical infrastructure technologies.
- Implement best practices in monitoring and management.
- Use artificial intelligence to optimize the datacenter environment.

*Source: REBA 2020
What It Will Take to Improve

Long-Range Vision: Policies That Motivate Progress, and the Technology That Makes It Possible

Adopt holistic community planning

- Engage datacenter operators in long-term urban planning projects.
- Datacenters can be the drivers of and the platform for more sustainable ecosystems.
- Datacenters can be positive for communities—offering benefits such as waste heat that can be recovered for homes and offices.

Consider the entire value chain

- Lowering the embodied carbon within datacenter construction is an opportunity for increasing the sustainability benefits of the sector.
- Future carbon-pricing schemes may impact key datacenter inputs like the cost of power and raw materials.

Offer financial incentives that motivate change

- Tax breaks, rebates, and incentives for pilots and case studies that promote innovation and progress.
- Link executive compensation to achieving sustainability goals. Reward leaders that adopt a long-term approach to setting and achieving targets.
What It Will Take to Improve

Encourage Transparency and Adoption of Cleaner, Renewable Energy

**Encourage information sharing.** Groups such as the Renewable Energy Buyers Alliance (REBA) promote greater transparency and help corporations, municipalities, and other partners scale their renewable energy purchases.

**Promote renewables.** Advocate for open markets and renewable energy-friendly policies. Engage peers and customers to amplify corporate desire to buy renewable energy.

**Require reporting.** Hold companies accountable for disclosing renewable energy usage and operational carbon emissions by requiring full transparency.

If utilities, policymakers, and large datacenters partnered to create an ecosystem for cleaner energy and smarter grids, this ecosystem would open up greater opportunities for all industries to participate.
Accelerating Sustainability Progress

Is it possible for IT and datacenters to be carbon neutral?

Carbon neutral datacenter services will require a holistic commitment to reducing carbon across all areas of the datacenter value chain. Companies who are already measuring and reporting and developing strategies will be well positioned to lead the sector into the next generation of global innovation and leadership.

Impact of Edge on Sustainability Progress

64% of organizations are concerned about energy efficiency of edge deployments

- As more workloads are moved to the edge, there’s opportunity for solar or other renewable energy options to extend progress of larger datacenters to distributed edge datacenters.
- By leveraging advanced technologies such as AI-driven climate control, liquid cooling, or fuel cells datacenter providers can help support expansion to edge while ensuring efficient operation.
MESSAGE FROM THE SPONSOR

Equinix is the world’s digital infrastructure company with operations spanning across more than 220 International Business ExchangeTM (IBX®) datacenters in 63 strategic markets across 26 countries. The company is committed to reaching 100% clean and renewable energy usage globally, minimizing our carbon footprint and advocating for a sustainable future. A future where our planet is healthy, our global communities are thriving and every business leads with integrity. Our Future First sustainability strategy rallies our people and partners to dream of a better future and then do what it takes to make it happen. The impact today’s actions can have on tomorrow is front of mind in all we do.

As we seek to green the electricity used in our datacenters, we are also dedicated to pioneering innovations within the datacenter sector and building and operating highly energy-efficient datacenters across the world to drive sustainability goals. In January 2020, Equinix created an Energy Efficiency Center of Excellence to coordinate performance upgrades to existing facilities and create more sustainable facilities. By reducing consumption of resources and investing in clean and renewable energy, Equinix has reduced its carbon footprint 60% while doubling its datacenter and energy consumption footprint since 2015. Breaking the connection between increased IT and datacenter load and increased energy consumption is significant in the journey to greater sustainability.

For more information on Equinix’s global sustainability initiatives visit our sustainability report website: http://sustainability.equinix.com