

GREEN NETWORK INFRASTRUCTURE

Engineering for Efficiency and Sustainability



In today's hyper-connected world, network performance can no longer come at the cost of energy efficiency. From central offices to edge sites and base stations, telecom infrastructure is drawing more power than ever.

A new wave of carriers, integrators and contractors are shifting the equation by engineering greener networks not just for environmental reasons, but for long-term operational and regulatory resilience that reduces both carbon and operating costs.

THE IMPACT IS MEASURABLE

10-30%

Energy-efficient upgrades and AI-powered optimization have **enabled emissions reductions of 10-30% per network.**

10%

Smart management of telecom network traffic has **saved approximately 10% of energy consumption in large networks.**

70%

Fiber optic networks **reduce energy consumption by up to 70%** compared to traditional copper networks.



What's Behind the Energy Surge in Modern Networks?

Simply put? Exponential growth. More devices, more 5G sites, more edge computing. All contributing to rising energy consumption while demanding uptime, speed and cooling. Key drivers include:

- Heavier equipment loads in cabinets and shelters
- 24/7 service uptime expectations
- Rising cooling needs across all geographies

With energy costs rising and carbon caps tightening, network stakeholders face a clear challenge: **reduce consumption without compromising performance.**

CONTEXT

**289
MILLION**

5G connections in North America now
cover 77% of the region's population.

Efficiency Starts with Smarter Design

The path to sustainability begins with design. Forward-thinking integrators are building efficiency into every network layer with:

- Adaptive, high-efficiency power supplies
- Smart thermal designs using passive cooling
- Low-power optical and wireless components
- AI-driven PDUs for real-time, remote monitoring

GOING FURTHER

Contractors are optimizing site layouts, minimizing trenching and selecting materials that **reduce environmental impact during construction.**





Powering the Edge, Sustainably

As edge sites multiply, sustainable power has become a strategic priority.

Next-generation deployments are turning to:

- Solar-ready cabinets with battery backup
- Hybrid power systems combining grid, solar and fuel cells
- Remote energy management platforms for load balancing and fault detection

These innovations solve real problems in rural and underserved areas where traditional power infrastructure is limited or unreliable.

Green is the New Competitive Advantage

Sustainability now plays a decisive role in vendor selection. Government contracts often include environmental criteria in their scoring models, while enterprise clients demand transparency and accountability.

KEY TAKEAWAY

For integrators and contractors, delivering low-carbon, energy-smart infrastructure isn't just good citizenship.

It's a bottom-line advantage that wins more business.

Envisioning a Future That's Efficient, Resilient and Green

Telecom's energy transformation is accelerating. Organizations that embed efficiency and sustainability into every layer, from design to deployment, won't just meet tomorrow's standards. They'll set them.

**Let's build smarter, cleaner
networks – together.**

Get in touch with a GCG Telecom Solutions expert.

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