

Unlocking the Invisible Grid: How VPPs and Edge Intelligence Can Deliver Hundreds of Gigawatts Without Building New Infrastructure

For years, the conversation around energy infrastructure has focused on how to build more—more transmission lines, more substations, more generation. But what if the real opportunity isn't in building more, but in unlocking what already exists?

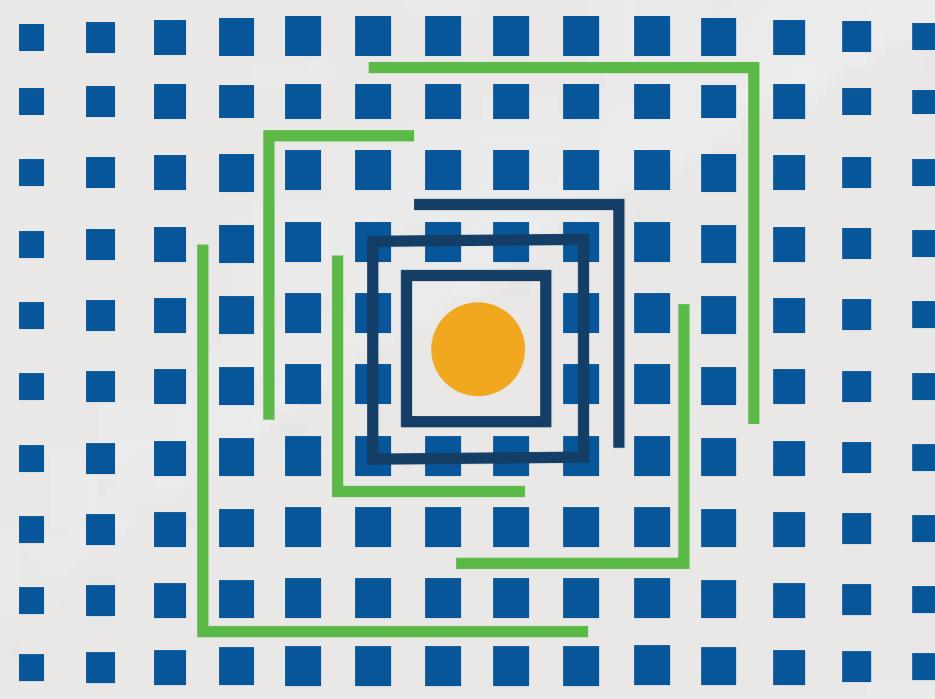
The truth is, the grid's biggest challenge isn't just a lack of capacity. It's a lack of **utilization**. Gigawatts of potential are stranded at the edge—behind the meter, inside buildings, and across distributed assets that remain invisible to the grid.

As electrification and AI drive exponential energy demand, we're entering a new era of grid planning. An era where speed, flexibility, and software-defined infrastructure matter more than traditional expansion timelines. And the most powerful tool in this new playbook? Virtual power plants (VPPs), made possible by intelligent edge platforms like the Power Router from DG Matrix.

The Grid's Bottleneck Isn't Infrastructure – It's Rigidity

From a distance, the U.S. grid looks maxed out. New AI datacenters are requesting gigawatts of power. EV charging hubs are stressing local substations. And interconnection queues are backed up for years.





But zoom in, and the story is different. A vast amount of capacity already exists. It's just **uncoordinated, underutilized, and locked behind outdated infrastructure.**

Take a typical commercial site: it might have solar, batteries, and smart building loads—but none of it is configured to support the broader grid. Even worse, it often operates in a silo, without visibility, standardization, or dispatchability.

This isn't just a technical problem—it's a business problem. As energy demand becomes a constraint on economic growth, stranded capacity is becoming a multi-billion-dollar missed opportunity.

What VPPs Unlock: A New Operating Model for the Grid

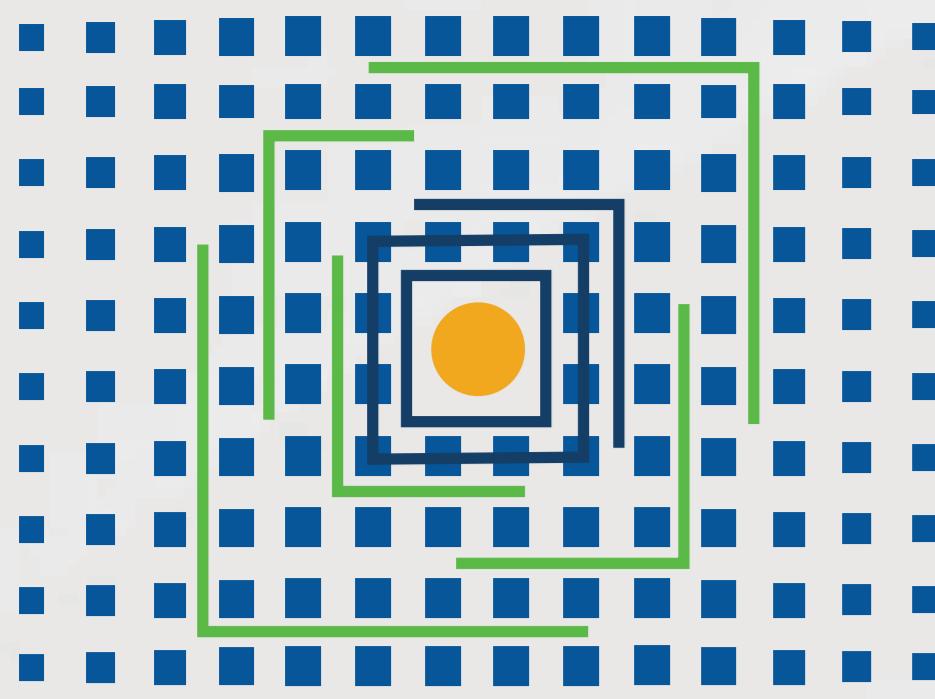
Virtual Power Plants (VPPs) are software platforms that aggregate distributed energy resources (DERs)—like solar, storage, EVs, and flexible loads—into a single, dispatchable entity.

When properly orchestrated, VPPs can:

- **Shift loads** to off-peak hours
- **Balance grid frequency and voltage**
- **Respond to market signals in real time**
- **Operate independently during outages**
- **Deliver resilience and savings for customers**

In essence, VPPs turn passive energy consumers into active grid participants. But here's the catch: you can't run a VPP without edge infrastructure that is intelligent, secure, and programmable. That's where DG Matrix comes in.

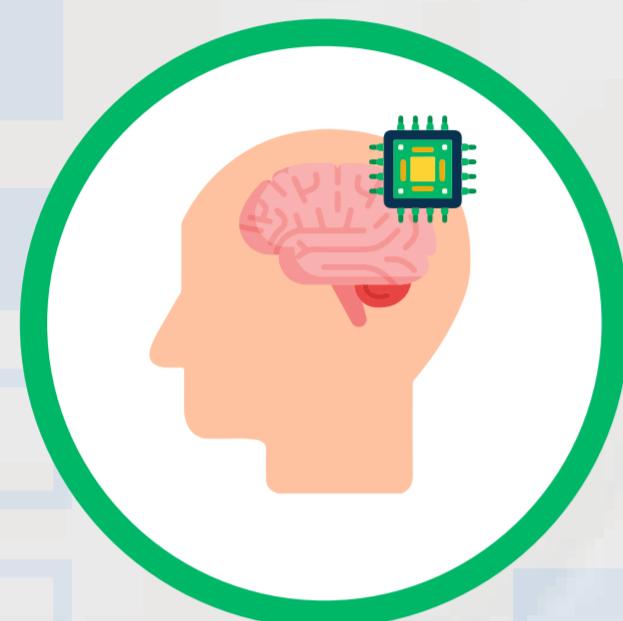




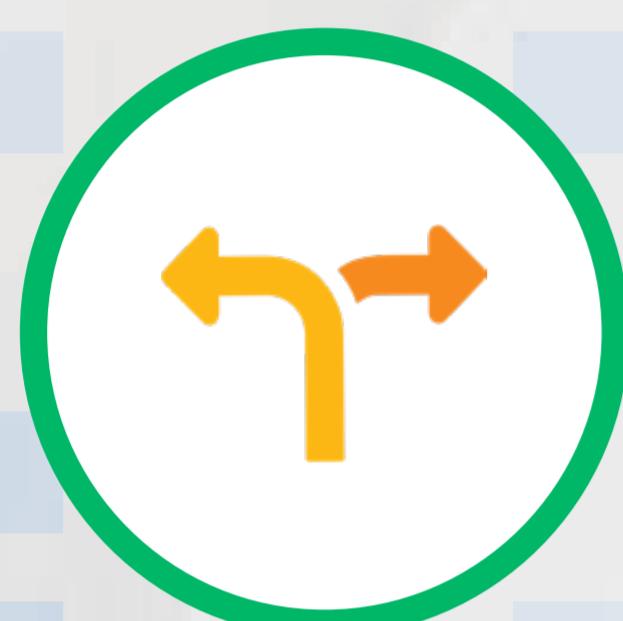
The Power Router: Turning the Edge into a Grid Asset

DG Matrix's **Power Router** is a fundamentally new category of power infrastructure. It combines a complex architecture of power infrastructure into a **single, software-defined solution**. It works natively across both AC and DC, across multiple energy sources and loads, and enables real-time energy control with unmatched granularity.

Here's how the Power Router supercharges VPP deployment:



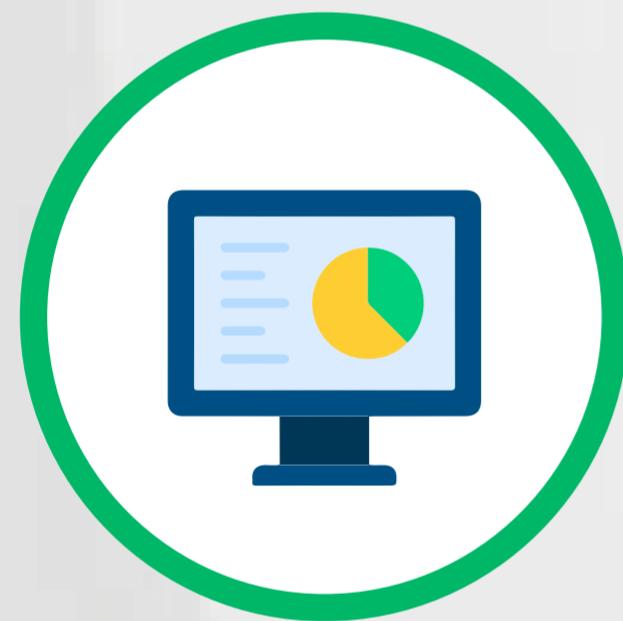
Edge Intelligence: Every unit makes local decisions based on real-time site conditions, market signals, and grid needs.



Multi-Port Flexibility: It seamlessly routes energy between solar, storage, the grid, loads, and more—no external conversion needed.



Standardized + Secure: Instead of bespoke integration, Power Routers are plug-and-play and designed to scale.



Software-Defined Functions: Customers can reconfigure energy behavior without changing hardware—critical for evolving sites.

By deploying Power Routers across commercial, industrial, and datacenter sites, we create a **network of programmable nodes**—a distributed fabric of flexible, high-value energy infrastructure ready to support the grid.

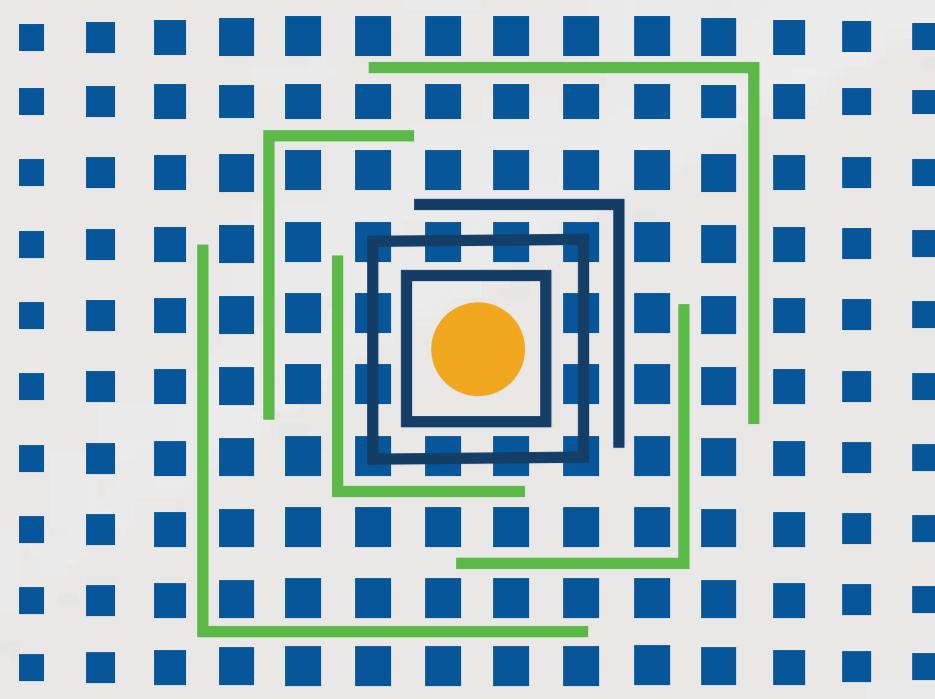
100+ GW of Capacity, Hiding in Plain Sight

According to the DOE, RMI, and others, the U.S. could unlock between 80 to 200 GW of effective capacity by scaling VPPs. That's more than 10% of peak load—and it could be achieved faster and more affordably than any major generation or transmission buildup.

With the right edge hardware and software stack:

- Distributed assets become **visible and controllable**
- New capacity is delivered **without massive infrastructure upgrades**
- Customers monetize assets they already own
- Grid operators gain new levers for **balancing** and **resiliency**

This isn't science fiction. It's already happening—with DG Matrix at the center of it.



Conclusion: The Future of the Grid Starts at the Edge



In an era of accelerating demand and intensifying constraints, the grid needs more than just new capacity—it needs **new intelligence**.

By turning the edge into an orchestrated, responsive, and resilient layer of infrastructure, we can deliver the flexibility needed to support AI, electrification, and economic growth—all without waiting years for traditional upgrades.

The DG Matrix Power Router isn't just a product—it's a platform. A building block for a new kind of grid. One that's decentralized, agile, and designed to scale.

Speed. Flexibility. Intelligence. That's how we unlock the invisible grid.

And that's the future DG Matrix is building—one Power Router at a time.