

Five Electrification Trends to Watch in 2025

Electrification is transforming the way we power the world, driven by advancements in technology, shifts in policy, and growing demand across industries. As we move into 2025, several key trends are set to shape the trajectory of electrification, from innovations in battery technology to the expansion of distributed energy generation, and even policy changes that will help us deploy faster. These trends are interconnected, amplifying their collective impact and creating opportunities for businesses to lead the charge in enabling sustainable, reliable energy systems.

Here are five electrification trends to watch in 2025:

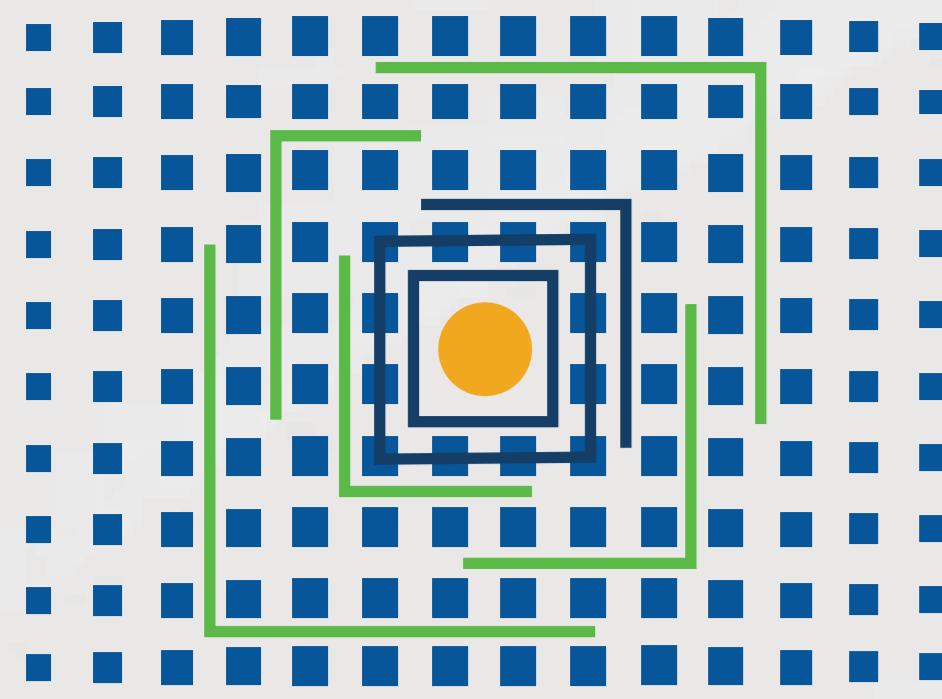
Advancements in Battery Technologies

Battery technology continues to be the backbone of electrification, with breakthroughs in energy density, charge rates, and cost reductions accelerating adoption. Solid-state batteries and other next-generation chemistries are set to hit the market, offering longer lifespans, faster charging, and enhanced safety compared to today's lithium-ion batteries. At the same time, adjacent capabilities—such as vehicle batteries with vehicle-to-grid (V2G) functionality—will play a critical role in enabling batteries to unlock their full potential.



Permitting Reform and Regulation

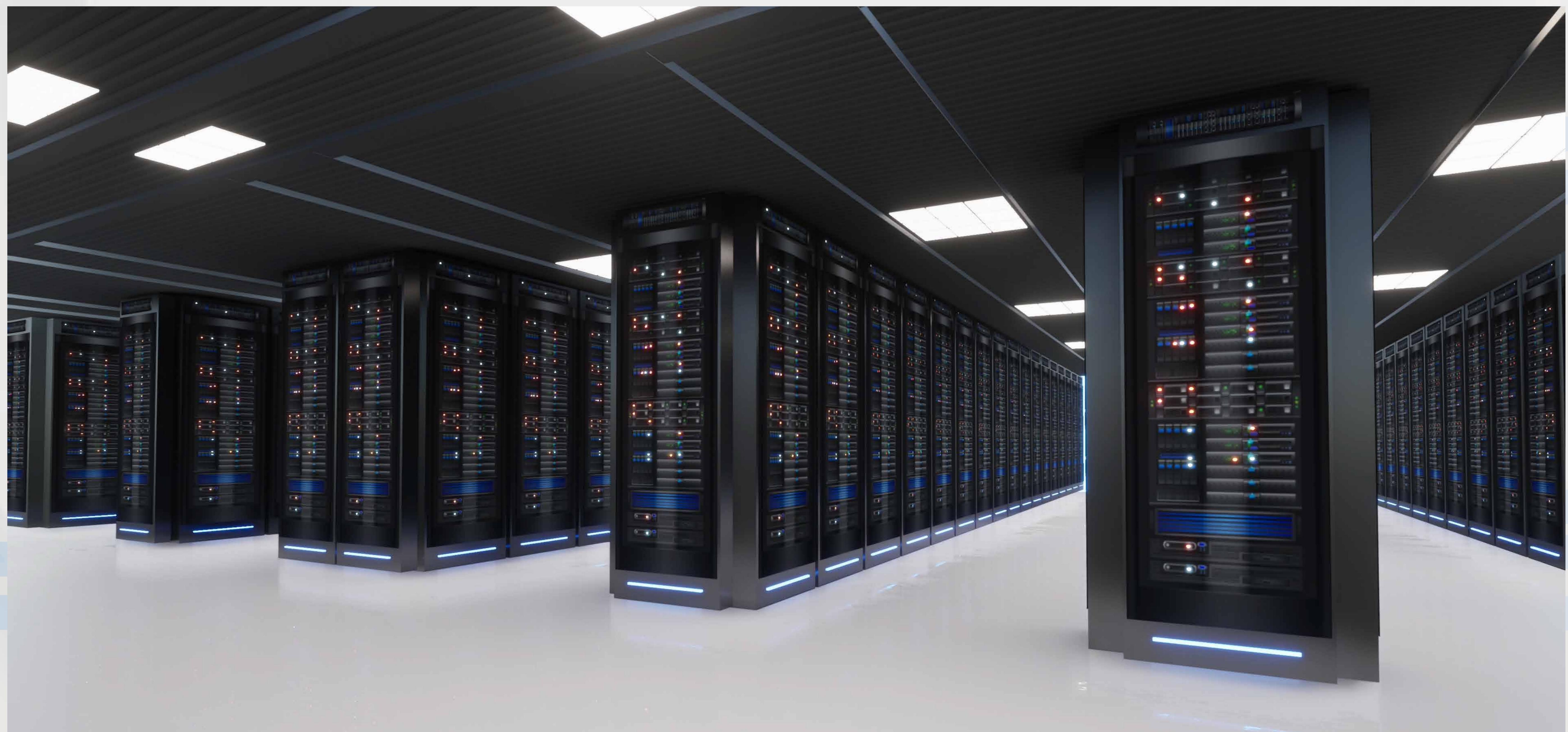
Streamlining permitting processes and reforming regulations will play a pivotal role in accelerating electrification projects. Historically, lengthy and complex permitting processes have slowed the deployment of critical infrastructure, such as EV charging stations and renewable energy installations.



Expected policy changes aim to expedite these processes, enabling the faster deployment of distributed energy resources and battery storage systems. For example, as distributed generation grows, permitting reforms will be crucial for facilitating rooftop solar and microgrid projects. Additionally, streamlined approvals for large new loads, such as AI data centers, will help accelerate both the demand and supply sides of electrification.

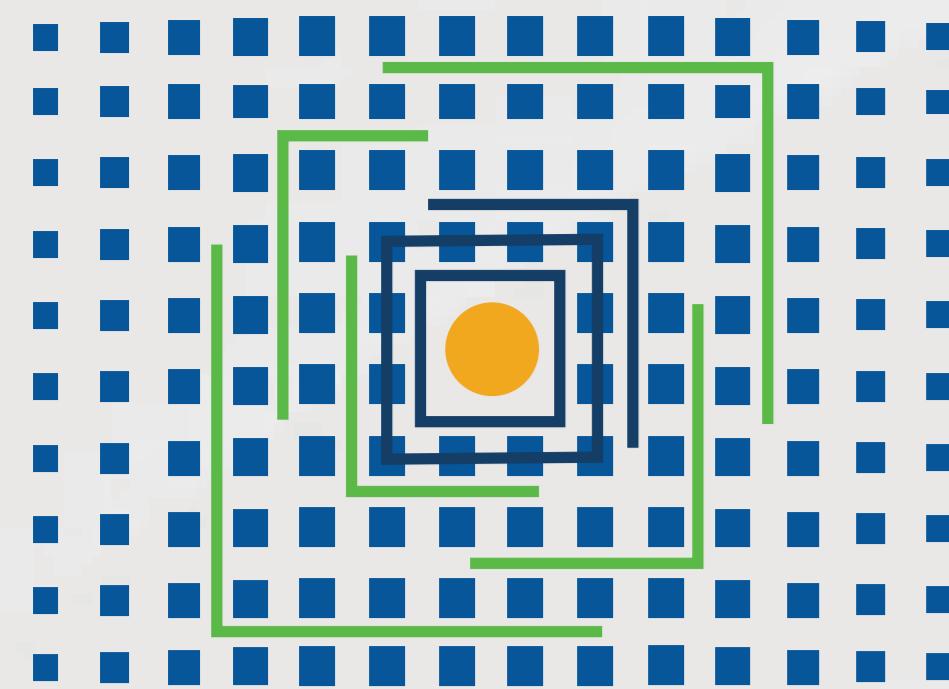
Continued Strong Electricity Demand Growth Led by AI Datacenters

The rapid rise of AI workloads is creating unprecedented electricity demand from data centers, which already account for a significant share of global energy consumption. Data center electricity demand is projected to double or even triple over the next five years, requiring many terawatt-hours (TWh) of new electricity generation. While data centers lead the growth of new demand, trends in vehicle electrification and building electrification will also continue to bolster demand.



Demand-Side Management with Smart Grid Technologies

Smart grid technologies like virtual power plants (VPPs), vehicle-to-grid (V2G), and demand response will transition from being nice-to-have to must-have. As electricity demand increases rapidly, these systems will become critical in enabling consumers and businesses to actively participate in balancing supply and demand, reducing grid stress, and optimizing energy use.



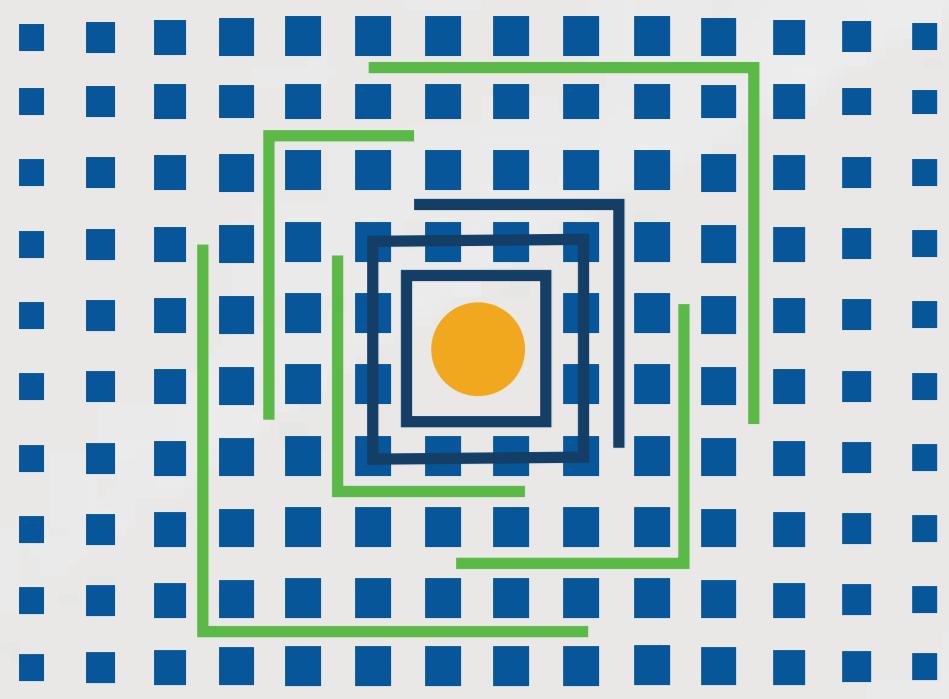
For example, a fleet of EVs equipped with V2G capabilities can provide backup power to AI data centers during peak demand periods. VPPs can aggregate distributed generation from rooftop solar panels and community energy storage systems to supply additional energy when demand spikes. These capabilities will become more common as our energy infrastructure becomes increasingly connected.



Growth of Distributed Generation

The growth of distributed energy resources will reshape the traditional grid. With electricity demands increasing sharply, we will rely more on distributed energy, as large, centralized power plants take far too long to construct. Coupling the urgent need for new generation with permitting delays and transmission congestion makes distributed energy the clear winner. As costs continue to decline and adoption accelerates, decentralized energy systems will become a cornerstone of global electrification efforts.





Conclusion

As we look to 2025, electrification will continue to drive significant change across industries, with trends such as battery advancements, permitting reform, and distributed generation shaping the future of energy. These interconnected developments highlight the growing importance of sustainable, flexible, and resilient energy systems. Companies like DG Matrix are at the forefront of this transformation, delivering the solutions needed to power the future. By embracing these trends, we can accelerate progress toward a cleaner, more electrified world.