

# The Hidden Costs of Energy Losses in Electrification Systems



As the world rapidly electrifies, businesses are contending with systems that present new opportunities as well as challenges. However, a less-obvious challenge is undermining their efficiency and effectiveness: energy losses. Often overlooked, these losses carry significant hidden costs that impact operations, economics, and sustainability. Understanding and addressing energy losses is crucial for delivering on the promise of clean, reliable, and efficient energy.

## Higher Energy Costs

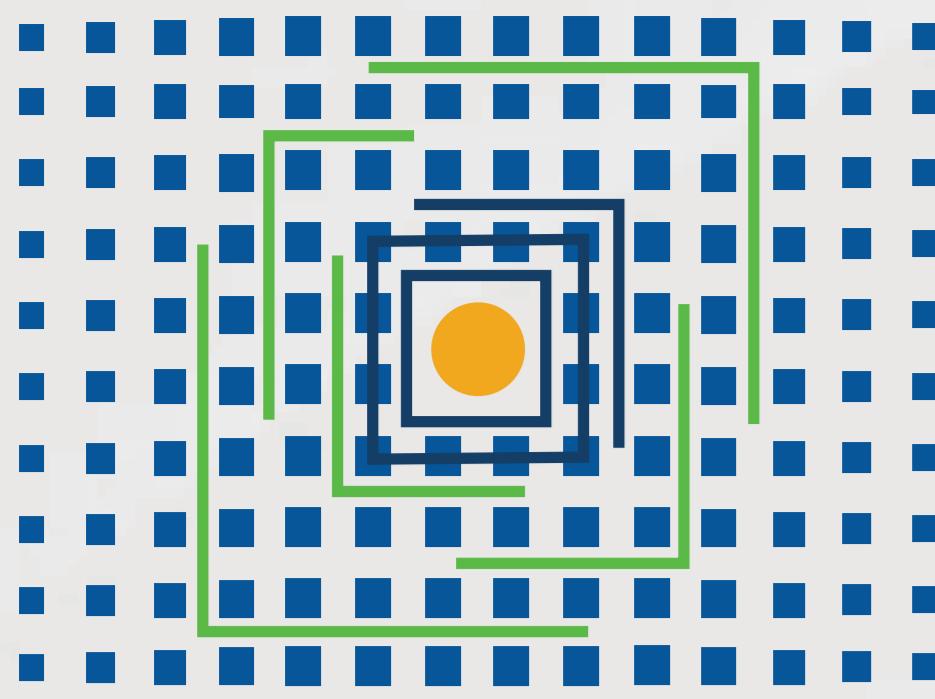


Energy losses directly translate into higher operational costs. In electric systems, inefficiencies in power conversion and distribution require more energy to deliver the same output. For example, a power system with 90% efficiency wastes 10% of the energy as heat, which accumulates significantly over time as utilization increases. These losses drive up electricity bills for operators and create a ripple effect, making the overall cost of electrification less competitive. For building or fleet operators, this can result in paying far more for energy than anticipated, eroding the financial benefits of electrification.

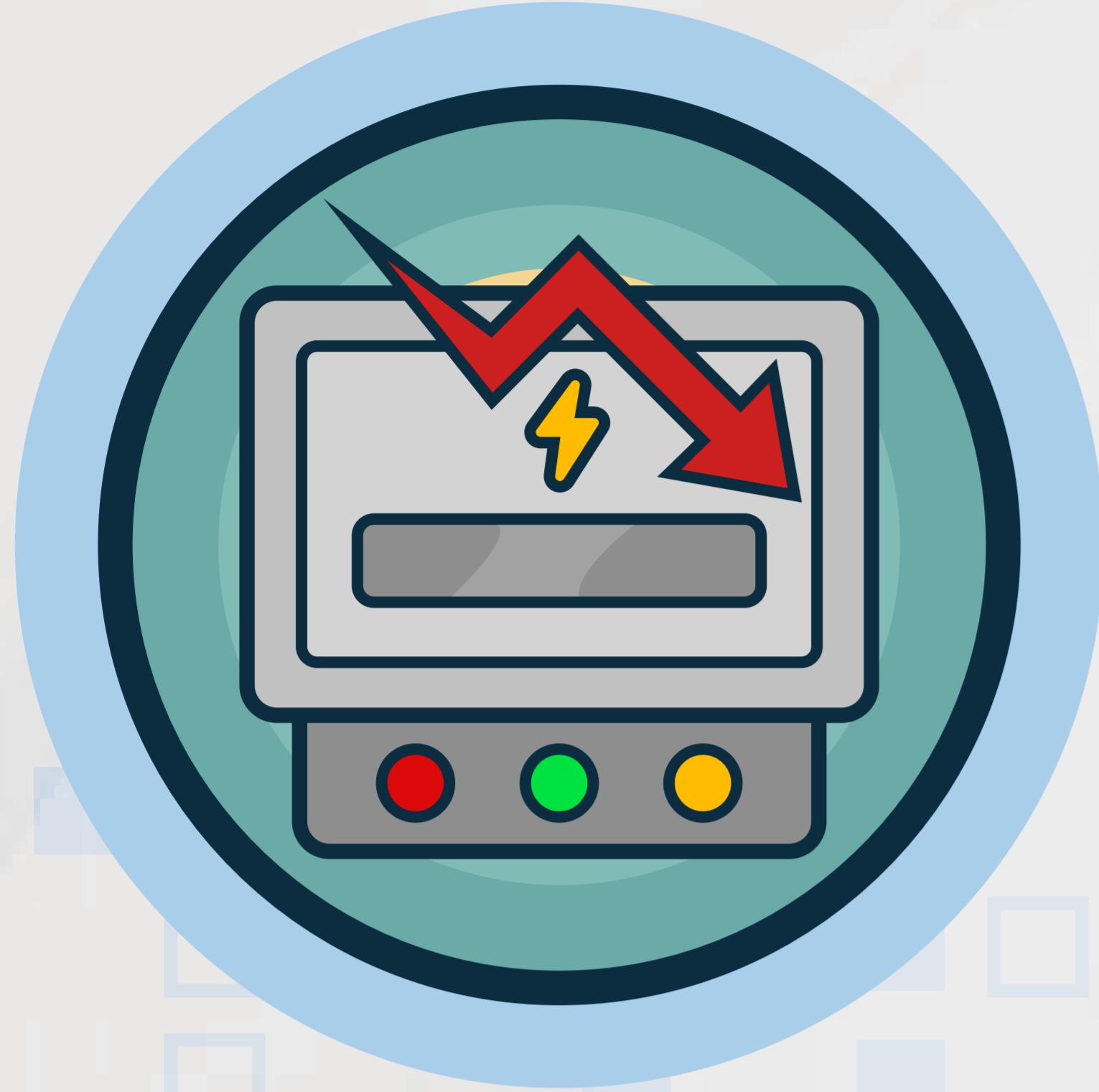
## Lower Reliability and Higher Chance of Unit Failure



Energy losses not only waste power but also generate heat, which places stress on critical components. Over time, this can lead to overheating, increased wear and tear, and even premature unit failure. In building electrification systems, where reliability is paramount, such failures can disrupt operations, causing costly downtime and diminishing trust in the system. Similarly, for fleet EV charging stations, failures can leave vehicles stranded and inconvenience customers, undermining the user experience. In both cases, the long-term maintenance and repair costs caused by inefficient systems can far exceed the initial savings from lower-cost infrastructure.



## ■ Lower Energy Output



Energy losses reduce the effective output of the system, which is particularly detrimental for applications requiring consistent and high-performance energy delivery. In microgrids, for instance, losses can limit the ability to integrate distributed energy resources like solar panels and batteries, reducing the system's overall efficiency and capacity. For EV charging, energy losses mean longer charging times or lower power delivery, creating bottlenecks for fleets and consumers. This inefficiency not only reduces system productivity but also slows the pace of electrification adoption by creating avoidable operational challenges.

## ■ Conclusion

The hidden costs of energy losses—higher costs, reduced reliability, and lower output—pose significant challenges for the adoption of electrification systems. However, these challenges also present opportunities for innovation. At DG Matrix, we're addressing energy losses head-on with our Power Router technology, which maximizes efficiency and reliability while minimizing downtime. By eliminating redundant power conversions and optimizing energy management, we're enabling electrification systems to deliver on their promise of clean, cost-effective, and reliable power. The future of electrification depends on tackling energy losses today—and we're leading the charge.