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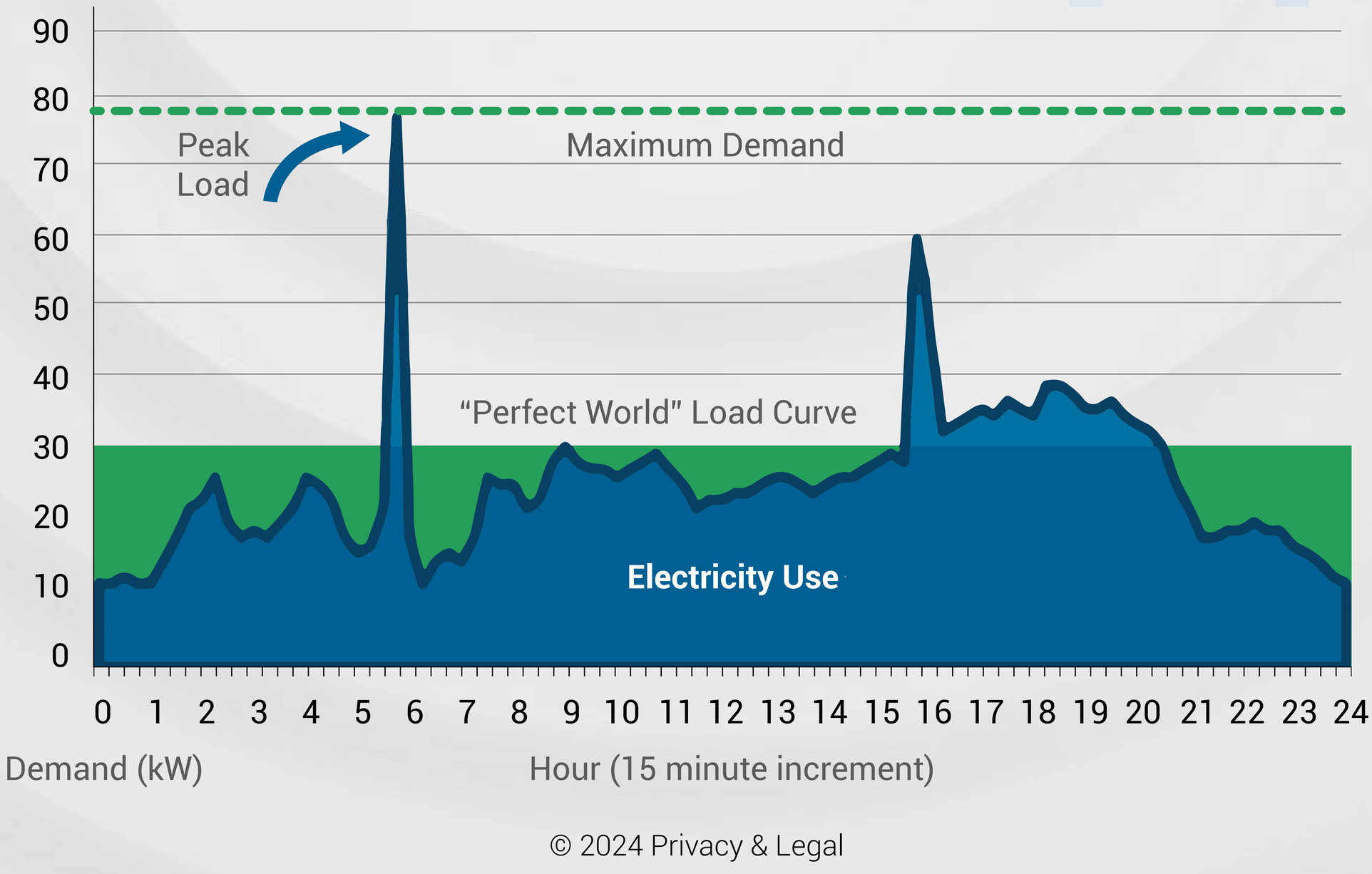
Strategies to Reduce Utility Demand Charges

Understanding and Mitigating Demand Charges from Utilities

As the world moves towards greater electrification, commercial and industrial (C&I) customers are increasingly grappling with the impact of demand charges on their utility bills. Demand charges are fees that utilities impose based on the highest level of power drawn during a billing period, typically measured in kilowatts (kW). These charges can constitute as much as 50% of a C&I customer's utility bill, making them a significant financial concern. With the rise of electrification, particularly through the adoption of electric vehicles (EVs) and other energy-intensive technologies, demand charges are expected to increase, further straining the budgets of businesses. In this article, we explore strategies to mitigate demand charges, including the use of energy storage, on-site energy generation, grid response strategies like demand response, virtual power plants (VPPs), and vehicle-to-grid (V2G) technology, all underpinned by advanced energy management software.

What Are Demand Charges?

Demand charges are calculated based on the peak level of electricity demand a facility reaches during a billing cycle, typically measured over a 15-minute interval. Unlike standard energy charges, which are based on the total amount of electricity consumed, demand charges are tied to the highest demand level, regardless of the overall energy usage. This means that even a short period of high electricity use can significantly impact a facility's utility bill. As businesses adopt more electrified technologies—especially those that require high power for short durations, such as EV charging—the potential for higher demand charges increases.



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How to Reduce Utility Demand Charges: Energy Storage Solutions

One of the most effective strategies for mitigating demand charges is the integration of energy storage systems. Typically in the form of batteries, energy storage allows businesses to store electricity during periods of low demand or when energy prices are lower. This stored energy can then be used during peak demand periods, reducing the facility's reliance on grid power and lowering the peak demand measured by utilities.

By strategically discharging stored energy during times of high demand, businesses can flatten their demand curve, thereby avoiding the spikes that lead to high demand charges. Additionally, energy storage systems can be used to participate in demand response programs, offering further cost-saving opportunities by reducing reliance on the grid during peak demand periods.

On-Site Energy Generation

On-site energy generation, such as solar panels, fuel cells, or generators, can also play a crucial role in mitigating demand charges. By generating electricity on-site, businesses can reduce the amount of power they need to draw from the grid, particularly during peak periods. This approach not only lowers overall energy costs but also reduces the peak demand that contributes to high demand charges.

Moreover, on-site generation can be paired with energy storage systems to maximize efficiency. Excess energy generated during off-peak times can be stored and used later when demand is higher, further reducing reliance on grid power. This combination of on-site generation and storage gives businesses greater control over their energy use and costs.

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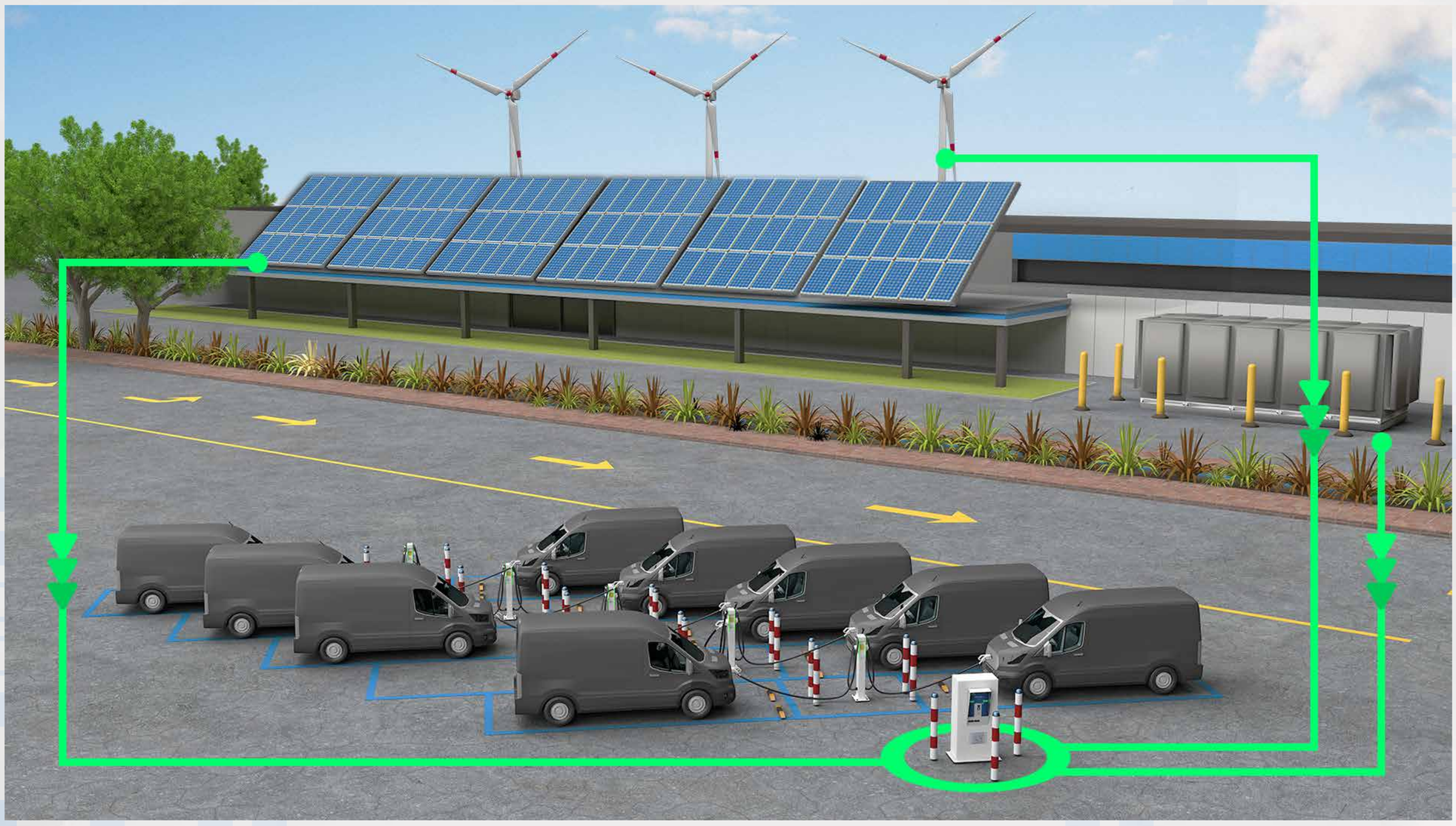

Grid Services: Demand Response, VPPs, and V2G

Demand response programs offer another effective way to manage and mitigate demand charges. In these programs, utilities provide financial incentives to businesses that reduce their energy usage during peak demand periods. By participating in demand response, businesses can not only lower their demand charges but also receive payments or credits from the utility, further offsetting their energy costs.

Virtual Power Plants (VPPs) and Vehicle-to-Grid (V2G) technologies are emerging as powerful tools in demand charge management. VPPs aggregate the capacity of distributed energy resources, such as solar panels and energy storage systems, to provide grid services, including demand reduction. V2G technology allows electric vehicles to discharge stored energy back into the grid during peak times, effectively turning EVs into mobile energy storage units. Both strategies enable businesses to contribute to grid stability while managing their own demand charges.

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Energy Management Software

Underpinning all of these strategies is advanced energy management software. This software enables businesses to monitor and optimize their energy usage in real-time, ensuring that energy is used as efficiently as possible. By integrating data from energy storage systems, on-site generation, and grid response programs, energy management software can automatically adjust energy use to minimize demand charges.

For example, the software can predict when peak demand periods are likely to occur and preemptively shift energy loads, discharge stored energy, or activate demand response measures. It can also optimize the use of on-site generation to avoid the most expensive grid power. By leveraging these capabilities, businesses can significantly reduce their energy costs and emissions.

Conclusion

As demand charges continue to rise due to increased electrification and the adoption of energy-intensive technologies like EV charging, businesses must proactively seek strategies to manage and mitigate these costs. By integrating energy storage, on-site generation, and participating in grid response programs such as demand response, VPPs, and V2G, businesses can take control of their energy usage and reduce the financial impact of demand charges. Advanced energy management software plays a critical role in optimizing these strategies, ensuring that energy use is both cost-effective and sustainable.

For businesses aiming to navigate the complexities of demand charges and explore cost-mitigation strategies, consulting with experts like those at DG Matrix can provide valuable insights and tailored solutions to meet your specific needs. Contact DG Matrix today to learn how you can optimize your energy strategy and effectively reduce demand charges.