



Endeavour Energy



Edge Zero

# Managed Charging to Reduce Electric Depot Interconnection Upgrades



## OBJECTIVES

Endeavour Energy sought to address the challenges posed by the electrification of bus depots, which introduce significant electrical loads on the distribution networks in urban areas where grid constraints are particularly pronounced. The goal was to ensure these loads are managed efficiently by utilizing existing infrastructure during periods of low demand, thereby optimizing network utilization and avoiding costly upgrades. A further objective was to enable the depot to apply for larger capacity connections and support ongoing EV adoption in a sustainable manner, ultimately reducing the CapEx for necessary upgrades while maintaining grid stability.



## APPROACH

- **Comprehensive Monitoring:** Implemented Edge Zero's platform for wide Low Voltage (LV) monitoring across key transformer locations to provide real-time data on network load and optimize resource use.
- **Optimized EV Charging Schedule:** Developed a dynamic EV charging schedule that leverages periods of low network demand to reduce strain on the grid.
- **Integration with Endeavour Energy Systems:** Seamlessly integrated the monitoring and optimization systems into Endeavour Energy's existing operations to enable efficient load management and capacity approval processes.
- **Cost Management:** Focused on reducing capital expenditures by minimizing the need for extensive infrastructure upgrades, instead relying on the strategic use of existing assets.

## RESULTS

Endeavour Energy optimized resource utilization by effectively managing the new electrical loads from the EV bus depot, maximizing existing infrastructure, and avoiding unnecessary upgrades. This approach led to significant cost savings, reducing capital expenditures from \$6.5 million to \$2.5 million (AUD). Additionally, the solution improved grid stability by balancing the increased demand, providing a scalable model for future depot electrifications and supporting broader EV adoption and sustainability goals.

## AT A GLANCE

### Challenges

- Infrastructure Capacity
- Bus Charging Schedules
- Timeframe to Upgrades
- Grid Congestion

### Benefits

- \$4M CapEx Reduction
- Resource Optimization
- Grid Stability
- Scalability for Future Growth

## WHAT'S NEXT?

There are 56 bus depots across the Sydney metropolitan and outer metropolitan regions with an estimated total of \$100M (AUD) of grid upgrades required. This project will investigate the potential savings that can be achieved through dynamic load management and whether connection applications can be fast tracked by avoiding upgrades.