Resource Library: How Fleets Can Reduce Expenses with Managed Charging

Overview

Commercial fleets are increasing their adoption of electric vehicles (EVs), replacing gas- and diesel-powered vehicles with zero-emissions vehicles that do not produce pollutants harmful to health or the environment. EVs can also help fleet operators save money by lowering operating costs, replacing higher fuel expenses with lower-cost electricity. As fleets adopt EVs, *managed charging* is a means of reducing charging costs by charging at times when electricity rates are lower. This resource library provides information to fleets about managed charging for EVs and details how utilities in New York are implementing programs to support managed charging. Each section includes a table linking to relevant documents and summarizing their key takeaways.

Key Insights on EV Managed Charging Programs

- **Managed versus unmanaged charging:** In unmanaged charging, a vehicle owner charges whenever is convenient, without consideration for rates. In managed charging, the time and rate of charging are controlled to minimize electricity bills.
- **Passive versus active managed charging:** There are two types of managed charging: active and passive. Passive charging is when a utility sets rules for when charging is more or less expensive and the vehicle owner chooses when to charge based on that information. For example, an EV owner could choose to charge at night to take advantage of a utility's lower rates. In contrast, active charging gives an outside entity, such as a utility or charge management software provider, the ability to control the time and power level of charging sessions in real time. The entity charges the EV when doing so is relatively cheap and ensures that the vehicle is fully charged by the time the vehicle owner has indicated it must be ready.
- **Active managed charging solutions use control algorithms** to optimize power flows to plugged-in EVs. The aim is to reduce load on distribution networks, thereby lowering customer costs, system costs, or both.

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- **Managed charging is often preferred by utilities to reduce charging demand:** In addition to reducing fleet owners' monthly bills, managed charging is preferred by utilities because it can minimize electric grid impacts of EV charging. As a result, many utilities provide monetary incentives for participation in managed charging programs to encourage EV owners to charge when the grid is less constrained.
- **New York utilities have programs to support managed charging:** Residential managed charging programs are more common in New York State than programs for commercial EVs. Six investor-owned utilities—Central Hudson, Con Edison, National Grid, New York State Electric and Gas, Orange and Rockland, and Rochester Gas and Electric—have managed charging programs for residential customers. New York currently has one Public Service Commission-approved commercial managed charging program: the SmartCharge Commercial Program. The program is operated by two utilities, Con Edison and Orange and Rockland, in their respective service territories.[1] There are also multiple commercial managed charging programs under consideration for approval by the New York Public Service Commission.

[1] Con Edison is the parent company of Orange and Rockland Utilities.

Introduction to Managed Charging

The following table provides resources on managed charging, the current state of the technology, case studies, and lessons learned from program implementation.

Resource	Author/Date	Key Topics	Summary
A Comprehensive Guide to Electric Vehicle Managed Charging	Smart Electric Power Alliance, 2019	Managed charging overview	This report provides an in-depth overview of managed charging, utility applications (residential, workplace, commercial programs, etc.), details about the complex communication pathways, and the role of utilities and vendors.
The State of Managed Charging in 2024	Smart Electric Power Alliance, 2024	Managed charging overview	This report provides an overview of the status of managed charging technologies and utility programs across the country. Managed charging programs have been in place for several years, and many utilities have updated their program offerings based on initial findings.
Electric Vehicle Managed Charging	New York State Energy Research and Development Authority, 2022	Types of managed charging	This white paper details the different ways that managed charging measures can be used for behavioral (passive) and direct load control (active) programs (Table 4). Price signals (through EV rates) for public, workplace, and commercial/heavy-duty vehicle fleets are common. The use of energy management systems is increasing for heavy-duty vehicles. An analysis of managed charging uptake of medium- and heavy-duty vehicles in New York finds that the managed charging is expected to be less than 100% by 2050 due to operational needs.
Guide for Managing Light-Duty Electric Vehicle Fleet Charging	Vermont Energy Investment Corporation, 2022	Light-duty fleets	This report is a guide to managed charging for fleet operators. Table 5 provides an overview of the different levels of managed charging options, ranging from a simpler, cheaper manually controlled system to more expensive, software-based systems.
Smart Charging for Electric Truck Depots	Ampcontrol and North American Council for Freight Efficiency, 2025	Electric trucks	This report provides insights into the pros and cons of different smart charging options for electric trucks. Cloud-based managed charging can be easier to implement for growing electric fleets. It relies on an internet connection but does not require many on-site upgrades. On-site smart charging can be more reliable but may have less computational capabilities for optimizing charging. A hybrid approach tends to be the best option for fleets because it can provide the reliability of an on-site system and optimization capabilities of a cloud-based system.

Resource	Author/Date	Key Topics	Summary
Managed Charging Programs: Financial Insights and Benefits	Sacramento Municipal Utility District	Financial considerations	This web page describes financial considerations of managed charging. EV project implementers can review how up-front utility incentives, EV charger tax incentives at the federal or state level, and shifting charging to off-peak hours can reduce managed charging programs costs.

New York's Utility Managed Charging Programs

This section provides links to and summaries of the managed EV charging programs offered by the six New York State investor-owned utilities: Central Hudson, Con Edison, National Grid, New York State Electric and Gas, Orange and Rockland, and Rochester Gas and Electric. **Note:** At the time of publication, the commercial managed charging programs proposed by the upstate utilities (Central Hudson, National Grid, New York State Electric and Gas, and Rochester Gas and Electric) are under consideration by the New York Public Service Commission. Updates to the petition can be tracked on the commission's website.

Program	Utility	Summary	Potential Customer Savings
SmartCharge Commercial Program (for Station Operators)	Con Edison	This web page provides an overview of the managed charging program and incentives for off-peak charging for commercial EV charging sites such as light-, medium-, heavy-duty fleets, workplaces, and public sites. It also details the steps that interested customers can take to sign up for the program and additional resources (program participation guide.)	Customers can earn incentives of $0.03 per kWh for charging during off-peak hours throughout the year, and an additional peak avoidance incentive of $2 per kW (in winter) and $10 per kW (in summer).
SmartCharge Commercial Incentive Program	Orange and Rockland Utilities	This web page provides an overview of the managed charging program and incentives for off-peak charging for commercial EV charging sites such as light-, medium-, heavy-duty fleets, workplaces, and public sites. It also provides additional resources with links to the utility's implementation plan and program design for the program.	Customers can earn incentives of $0.03 per kWh for charging during off-peak hours throughout the year, and an additional peak avoidance incentive of $1–5 per kW (October–May) and $7–17 per kW (June–September).
Load Management Technology Incentive Program	Six investor-owned joint utilities	This web page provides an overview of a load management software, equipment, and energy storage program offered by six utilities in New York for commercial customers. It also provides details on customer eligibility and program budget, and links to the individual utility's Load Management Technology Incentive Program website.	Incentive levels and savings vary by utility.

Fleet Savings and Bill Impacts from Managed Charging Programs

This section highlights real-world case studies, utility program evaluation reports, and utility estimates of the potential cost savings, incentives, and revenue generation opportunities available to light-, medium-, and heavy-duty electric fleets that participate in managed charging programs, including vehicle-to-grid (V2G) programs.

> Vehicle-to-grid (V2G) refers to bi-directional (two-way) charging in which V2G-enabled electric vehicles can both charge their battery and send the same power stored in their battery back to the grid (when not in use) through managed charging. **V2G is primarily being tested for electric school buses, which hold immense potential for managed charging given their high charging loads and predictable schedules**. V2G electric school buses also have the potential to generate revenue for schools and reduce peak load demand on the grid by sending power back to the grid. This can be helpful during grid emergencies when power demand on the grid is extremely high. V2G can also be used for electric trucks and light-duty fleets.

Resource	Author/Date	Key Topics	Summary
Case Study: Revel Rideshare - Commercial Fleet V2G & Demand Response	Smart Electric Power Alliance, 2023	Vehicle-to-grid revenue generation	Case study on lessons learned and revenue earned from a pilot V2G project for a light-duty EV rideshare fleet in New York City. Revel earned approximately $10,000 from three Nissan LEAF vehicles participating in 2022 and 2023. Project takeaways include that there is an opportunity cost for rideshare vehicles participating in V2G programs during the day, so V2G program design should consider schedules that benefit both fleet operations and the grid.
Distribution System Investments to Enable Medium- and Heavy-Duty Vehicle Electrification: A Case Study of New York	Synapse Energy Economics, 2023	Managed charging fleet cost savings	The report models fleet cost savings for participation in managed charging in Con Edison territory. Modeled estimates for managed charging scenarios found that a 50-vehicle fleet site in New York City could save $61,000 by avoiding demand charges by reducing peak demand through managed charging – compared to the unmanaged charging scenario.

Resource	Author/Date	Key Topics	Summary
How EV Fleets Can Ease Grid Overload with Managed Charging	CLEAResult, 2025	Managed charging fleet cost savings	This evaluation report of medium- and heavy-duty utility pilot projects in California found that increased adoption of managed charging across all the sites to shift EV charging to midday when renewable energy is abundant on the grid can reduce fleet operational expenses by 28%. Because off-peak periods vary by location, scheduling managed charging to align with local grid conditions can further reduce fleet costs.
Fleet Electrification: Lowering Operating Costs with Utility Programs	National Grid, 2025	Vehicle-to-grid and managed charging revenue	Based on its V2G incentive of $200 per kW of power discharged, National Grid Massachusetts estimates that a fleet of five medium-duty electric trucks can earn up to $50,000 in one summer under their ConnectedSolutions program. Light-, medium-, and heavy-duty EV fleets can also save $275, $1,100, and $3,300 per year respectively by participating in the utility's off-peak rebate program (a type of passive managed charging).
Semi-annual report on Con Edison and Orange and Rockland Utilities' commercial managed charging program	Con Edison, 2025	Rate impact	As part of this managed charging evaluation report, Con Edison provides an indirect assessment of the rate impacts on customers resulting from the commercial managed charging program. The analysis suggests that the program had a downward pressure on rates for ratepayers although an exact value is not provided. Con Edison and Orange and Rockland Utilities have 35 and 19 participants respectively participating in just the commercial managed charging program, and another 10 participants (collectively) enrolled in both the commercial managed charging and demand rebate program.

Electric School Bus Managed Charging

Transitioning to electric school buses (ESBs) can be a large undertaking, especially as converting even a few fleet buses to electric can result in a large power draw from the grid. This section provides resources on managing charging for ESBs, including through vehicle-to-grid (V2G) strategies, and highlights the potential for ESBs to generate revenue through V2G program participation.

Resource	Author/Date	Key Topics	Summary
All About Managed Charging and "Vehicle-to-Everything" or V2X	World Resources Institute, 2022	Charging options	This article provides a detailed overview of two key charging options for ESBs: managed and bidirectional charging (vehicle-to-everything). Bidirectional charging allows the bus to serve as a mobile battery that can dispense, as well as receive, power.
Advanced Electric School Bus Charging Strategies	Vermont Energy Investment Corporation, 2024	Charging strategies	Takeaways from this report on ESB charging strategies include 1) managed charging can help ESBs mitigate demand charges and reduce charging costs, and 2) bidirectional charging offers cost and grid benefits, but feasibility should be evaluated (see Table 5 V2X Feasibility and Benefits Checklist).
Charge Management Software Catalog	World Resources Institute, 2024	Vehicle-to-grid software	Directory of charging management software providers. Key details include provision of financial incentives, charger evaluations, charger compatibility, integration with solar, customer service, and experience with real-world electric bus deployments.
Latest Lessons from Electric School Bus Vehicle-to-Grid Programs	World Resources Institute, 2025	Vehicle-to-grid pilots	Summary of V2G pilots. Takeaways include 1) well-designed compensation schemes can make V2G attractive, 2) ESBs can serve as an emergency power source for communities, and 3) power from electric buses can be valuable to utilities during grid emergencies.
Findings from Con Edison Electric School Bus V2G Project	Con Edison, 2022	Managed charging fleet cost savings	Pilot project report with a modeled estimate for the total cost of ownership for five electric school buses in Con Edison territory across several scenarios. The modeled estimates found that managed charging has the potential to reduce energy costs (i.e., cost to fuel or charge a bus) by 1) 50% compared to an unmanaged charging scenario and 2) 15% compared to diesel buses (based on 2021 diesel prices).[2] Figure 7 provides additional details.

[2] The modeling did not account for changes in capital or operating costs over time in the total cost of ownership analysis.

Resource	Author/Date	Key Topics	Summary
Synop software facilitates first U.S. commercial vehicle-to-grid (V2G) program for electric school buses	Synop, 2023	Vehicle-to-grid revenue generation	Case study summary of the first commercial V2G project in the United States, which was undertaken as part of a National Grid program in Massachusetts. V2G operations generated revenue worth $23,500, sending back 10.78 MWh of electricity to the grid during the summers of 2021 and 2022.

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