



Smart Grid Electric Vehicle Charge Management Solution

City of Fort Collins

PROJECT PARTNERS

Fort Collins Utilities
Transfort Bus - City of Fort Collins
Panasonic Smart Mobility Office

Opotony Inc.
Geotab
Flagship Fleet Management



PROJECT CHALLENGE

The City of Fort Collins has a goal to advance vehicle electrification while providing reliable and affordable electric service. An advanced smart grid system that is aware of distributed vehicle charging needs and constraints, as well as local grid distribution bottlenecks, is critical to supporting reliable electric service, without overbuilding new infrastructure. The City seeks to implement a smart grid electric vehicle (EV) charge management solution for the more than 45 EVs that it currently operates that will demonstrate effective load and demand balancing and provide a path to minimizing rate-payer costs as the number of electric vehicles increases in the service area.

IMPACT

The City of Fort Collins has a population of 168,538 and is located in northern Colorado. The City owns and operates the local municipal electric utility, so the City recognizes the challenges of fleet electrification, such as the costs of electrical infrastructure upgrades necessary to support charging, which are ultimately distributed among ratepayers. Rate increases typically have a disproportionate impact on low-income communities if not properly controlled. More intelligent electrical load management and infrastructure planning can limit cost impacts to ratepayers, with the greatest benefit to lower-income households, which are less equipped to absorb rate hikes. Moreover, fleet electrification benefits from tailpipe emissions reduction will disproportionately benefit lower-income individuals.

CURRENT STATE OF THE ISSUE

Fort Collins faces a 23% annual electric cost from peak charges, with a projected 1800 kW demand by 2025, risking \$293,904 in charges. Strategic demand management could save \$26,719 yearly. The city's transport, with a fleet of 60, including CNG, LPG, and BEBs vehicles, aims for sustainability, planning to add 9 BEBs. Effective energy management enhances efficiency and environmental stewardship.

POLICY QUESTIONS

1. How can Fort Collins optimize energy demand management for cost savings and reliability in its transit fleet, especially with increased BEB usage? 2. What policies can incentivize EV adoption in Fort Collins' fleet and among residents, aligning with sustainability goals and rising charging demand?

STAGE 1 OUTCOMES

Fort Collins will pilot managed charging software on existing chargers to optimize charging, reduce demand charges, and monitor sessions across multiple sites with up to 6 vehicles, aiming to improve fleet EV performance and battery health. The city will also develop electrification standards to minimize risks as fleets electrify, integrate charging management with Fort Collins Utilities' DERMS, evaluate managed fleet charging's value and cost savings to ratepayers, and explore accelerating electrification through grants and partnerships. The pilot will also explore how to utilize software to ensure real-time performance of fleet EVs and optimize charging for vehicle battery health.

STAGE 2 VISION

Fort Collins plans to implement a city-wide charge management solution for all city-owned and privately owned EV charging stations, encouraging EV adoption across city fleets through a municipal fleet electrification standards framework. The initiative also involves upgrading and replacing city-owned, non-networked, and non-OCPP compatible EVSE to enable comprehensive charge management for fleet vehicles. Additionally, the city will purchase BEBs to replace buses past their useful life and enhance charging capacity at the bus maintenance depot with new chargers and infrastructure.