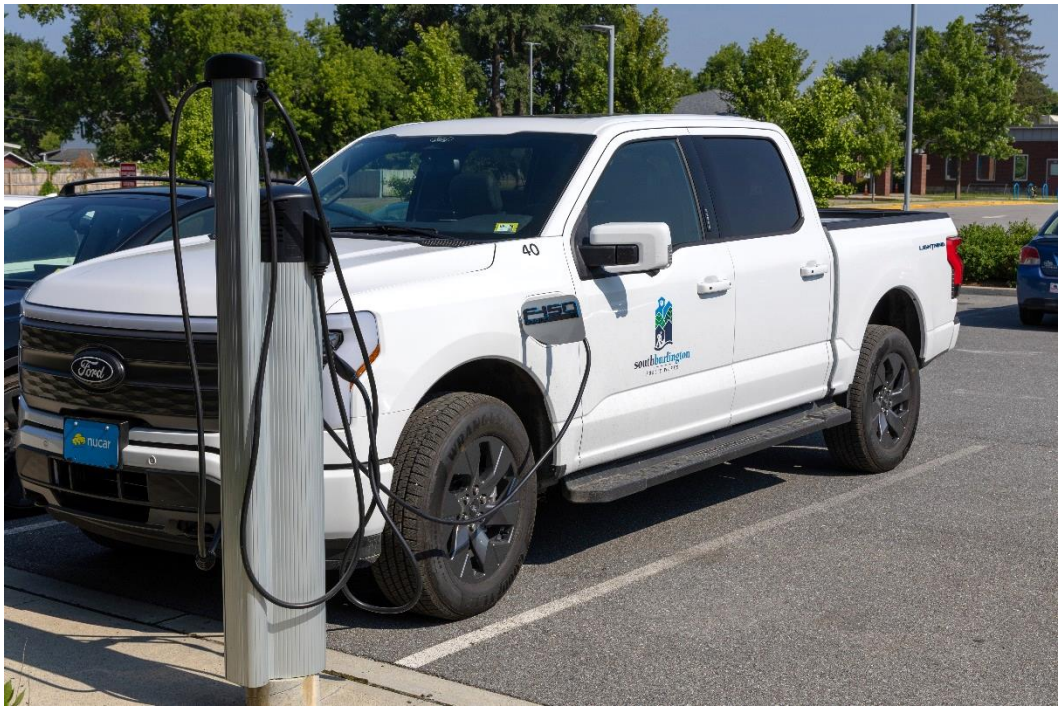
City of South Burlington
Fleet Electrification Analysis

Final Report

November 20, 2025



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Prepared for

southburlington
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CHITTENDEN COUNTY RPC

This project is supported by FHWA, Vermont Agency of Transportation, the Chittenden County Regional Planning Commission, and the eighteen municipalities in Chittenden County.

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Introduction

The City of South Burlington (the City), with support from the Chittenden County Regional Planning Commission (CCPRC), commissioned VEIC to conduct an analysis of its existing city fleet, their use cases and usage patterns to determine next steps for the City's electrification journey. The City adopted its first-ever Climate Action Plan (CAP) in October 2022 which sets targets for Transportation, Buildings and Thermal, and Government Operations sectors. This plan lays the foundation for the community to meet the City's and State of Vermont's ambitious greenhouse gas reduction and climate targets over the coming years and decades. In November 2023, the City published a Transportation Sector Implementation Plan (TSIP) to support progress on transportation action items identified in the CAP. The TSIP includes a target to replace 75% of gas vehicles used within the City with plug-in electric vehicles (EVs), including all-electric and plug-in hybrid vehicles to reduce emissions by 42% by 2030. The City is holding itself accountable to meet its own goals as well, so within the Government Operations sector the CAP commits to determining a strategy and budget for municipal vehicles and equipment to electrify or become zero emissions.

In May 2025, the City provided VEIC a list of vehicles in the current city fleet. The City fleet is approximately 104 vehicles, owned and operated by the Department of Public Works' (DPW) Highway, Wastewater, Facilities, Parks Maintenance, and Stormwater Divisions, the Fire Department (FD), Police Department (PD), and the Recreation Department. Most of the City-owned vehicles belong to the Highway Division of DPW, with approximately 35 vehicles in their fleet. The second largest fleet belongs to PD with about 24 vehicles. FD's fleet is currently comprised of 13 vehicles. VEIC focused its analysis on the medium and heavy-duty vehicle class in the City's fleet list at the City's request. While most of the City-owned fleet are light-duty, there are approximately 58 medium and heavy-duty vehicles. The City owns all the vehicles in its fleet.

Methodology

After the City shared its existing vehicle list in May 2025, the VEIC team created an initial fleet list with information about each vehicle necessary for electrification considerations. This included vehicle make, model, year, total mileage, and anticipated replacement schedule. For the comprehensive list of existing City-owned vehicles, please refer to Appendix A. VEIC then performed an initial analysis to identify potential electrification options guided by City staff, which included:

- Vehicles that are medium and heavy-duty vehicles.
- Vehicles with expected replacement year in the next 3-5 years; and

- Vehicles with market-available, like-for-like replacement options in either battery electric vehicles or hybrid vehicles,

Vehicles that fit the above criteria were selected for the City's consideration for near-term electrification with options for EV replacements in the next 3-5 years. See Table 1 below for the detailed listing.

The VEIC team met monthly with the City to communicate progress and gather additional information to further narrow the list. Based on the information collected, VEIC then conducted research in the medium and heavy duty electric and hybrid vehicle market for suitable replacement options. VEIC compiled the findings into presentations and shared them through meetings with the City and each department that owned the vehicles on the list. The purpose of these meetings was to further gather information regarding the operational needs of each of the vehicles, such as typical daily mileage, parking location, idle time while deployed and the ability to conduct specific functions. For example, some vehicles need to be able to plow snow and tow in their daily operation, so any electrified replacements should be able to fulfill the same functions.

Through meetings with departments, VEIC also captured any concerns about limited redundancy in small fleet electrification. For example, in the case of emergency response vehicles such as e fire trucks or specialty vehicles like the aerial bucket truck, the entire fleet may only have one or two of these vehicles and their availability during emergencies is crucial for its intended function. In these cases, VEIC may recommend against short term electrification and suggest the City consider alternative strategies. After compiling findings from these meetings, VEIC further narrowed the list of electrification candidates to recommended vehicle replacements in Table 2 below.

VEIC's scope did not include comprehensive analysis of the light duty vehicles in the City-owned fleet as the City is already advancing light-duty EV options when suitable, including recent purchases of three Hyundai Kona Electric vehicles and two Ford F-150 Lightning trucks. For this reason, the light duty police vehicle fleet was not analyzed for this report, but two pursuit-rated police vehicle options were included in Appendix B - EV Replacement Candidates as representative examples. VEIC encourages the City to continue consideration of light duty EVs when planning for the fleet's future, including potential charging infrastructure needs.

Analysis Results

Table 1: Medium and Heavy-Duty Electric Vehicles Considered for Electrification

Department	Vehicle ID	Year	Make	Model	Fuel Type	Vehicle Type	Typical Daily Mileage	Max Daily Mileage	Retirement Year	Towing/ Plowing?
Fire	Engine1	2009	Pierce	PUC Pumper	Diesel	Fire Truck	less than 50	less than 50	2029	No
Fire	Engine3	2009	Pierce	PUC Pumper	Diesel	Fire Truck	less than 50	less than 50	2026	No
Fire	Ladder1	2012	Pierce	PUC Quint	Diesel	Fire Truck	less than 50	less than 50	2027	No
Highway	H38	1998	GMC	Bucket Truck	Diesel	Bucket/Aerial Truck	less than 50	less than 50	2018	No
Highway	H39	2007	Bucket	Truck	Diesel	Bucket/Aerial Truck	less than 50	less than 50	2019	No
Highway	H20	2011	Dodge	Ram 1 Ton	Diesel	Medium-Duty Pickup Truck	less than 50	less than 50	2021	Yes
Highway	H02	2012	Ford	F350 Dump	Gasoline	Dump Truck	less than 50	less than 50	2020	Yes
Highway	H23	2012	Ford	F350 Flatbed	Gasoline	Medium-Duty Pickup Truck	less than 50	less than 50	2020	Yes
Highway	H18	2015	Ford	F350 Utility	Gasoline	Medium-Duty Pickup Truck	less than 50	less than 50	2025	Yes
Highway	H25	2022	Ford	F450	Gasoline	Medium-Duty Pickup Truck	less than 50	less than 50	2030	Yes
Parks Maintenance	H04	2013	Ford	F350 Dump	Gasoline	Dump Truck	less than 50	less than 50	2021	No
Stormwater	SW47	2008	TV	Cargo Express Van	Gasoline	Cargo Van - Compact	less than 50	less than 50	2028	No
Stormwater	SW48	2012	Ford	F450 Super Duty	Gasoline	Medium-Duty Pickup Truck	less than 50	less than 50	2020	Yes
Wastewater	H19	2015	Ford	F350 Pickup	Gasoline	Medium-Duty Pickup Truck	less than 50	50-100	2025	No
Wastewater	WW32	2018	Ford	F350	Diesel	Medium-Duty Pickup Truck	less than 50	less than 50	2028	No

Table 2 includes vehicles in the existing fleet with like-for-like electric vehicle or hybrid replacement options in the US market. VEIC has excluded vehicles from fleets where the department operators highlighted concerns about small fleet size and the need for redundancy. Uncertain reliability of new and unproven electric fire truck and emergency response vehicle options is also a consideration for the City's operational needs.

Table 2: Medium and Heavy-Duty Electric Vehicles Recommended for Electrification

Department	Vehicle ID	Year	Make	Model	Fuel Type	Vehicle Type	Typical Daily Mileage	Max Daily Mileage	Retirement Year	Towing/ Plowing ?
Stormwater	SW47	2008	TV	Cargo Express Van	Gasoline	Cargo Van - Compact	less than 50	less than 50	2028	No
Wastewater	H19	2015	Ford	F350 Pickup	Gasoline	Medium-Duty Pickup Truck	less than 50	50-100	2025	No
Wastewater	WW32	2018	Ford	F350	Diesel	Medium-Duty Pickup Truck	less than 50	less than 50	2028	No

Suggested Next Steps

VEIC recommends the City consider the list of vehicles in Table 2 for near-term procurement of electric replacement vehicles in the next 3 to 5 years. VEIC suggests the City start to engage with vendors regarding EV replacement options as detailed in Appendix A to collect pricing information and understand what would be included in the purchase (driver training, warranty, maintenance services, etc.) and delivery timelines. By gathering this information, the City can plan fleet transition activities into capital budgeting over the next few years.

For the vehicles in the fleet that are not included in Table 2, VEIC recommend the City monitor the EV market routinely for new options. VEIC has also highlighted the following two non-EV options that could help reduce vehicle emissions as the medium-and-heavy duty EV market continues to develop:

1. **Electrifying Boom Appendage of Aerial Boom Trucks** - In our research of electrification of aerial boom trucks, VEIC came across several options for complete and partial electrification. For complete electrification, the City can choose from the two market-available electric trucks whose manufacturers have partnerships with electric boom suppliers and can install the boom onto the EV, creating an entirely electric aerial boom truck. There is also the option of purchasing the electric aerial boom appendage from the vendors and installing them on an internal combustion engine vehicle to create a partially electric aerial boom truck. Appendix E provides a breakdown of each option and its benefits and drawbacks.

2. **Implementing Anti-Idling Technologies and Strategies** - Vehicle idling occurs when the propulsion system of the vehicle is turned on, but the vehicle is not moving. Many of the vehicles in the City's fleet have long idling time when deployed, for example fire trucks, public utilities vehicles and police vehicles. This is because of vehicles on duty and on standby, parked running accessory equipment (such as booms, compressors, or

lights) or serving as traffic control or increased visibility while work is performed nearby. In times of extreme weather, the vehicle is left idling so the onboard heat and air conditioning system can run to provide a safe environment for its operator. Vehicle idling creates environmental hazards for vehicle operators and bystanders due to emissions and noise and can increase vehicle operation and maintenance costs by creating wear and tear on the engines and consuming fuel while idling. VEIC recommends that the City consider vehicle idling reduction strategies and technologies that can be implemented at low cost and in short duration for these vehicles. Appendix E includes information on idle reduction technologies and strategies and case studies for publicly owned medium and heavy-duty vehicle use cases.

Appendix A: Comprehensive City-owned Vehicle List

Department	Year	Make	Model	Fuel Type
DPW	2017	Volvo	Loader	Diesel
DPW	2015	JCB	Backhoe	Diesel
Facilities	2014	Ford	F150 Pickup	Gasoline
Fire	2015	Ford	F450	Diesel
Fire	2024	Ford	F550	Diesel
Fire	2011	Ford	F450	Diesel
Fire	2022	Ford	Police Interceptor	Gasoline
Fire	2022	Ford	Police Interceptor	Gasoline
Fire	2009	Pierce	PUC Pumper	Diesel
Fire	2015	Pierce	PUC Pumper	Diesel
Fire	2009	Pierce	PUC Pumper	Diesel
Fire	2012	Pierce	PUC Quint	Diesel
Fire	2005	Ford	F250	Diesel
Fire	2014	Ford	Explorer	Gasoline
Fire	2014	Ford	Explorer	Gasoline
Fire	2014	Ford	Edge	Gasoline
Highway	1998	GMC	Bucket Truck	Diesel
Highway	2007	Bucket	Truck	Diesel
Highway	2009	Dodge	Charger	Gasoline
Highway	2012	Ford	F350 Dump	Gasoline
Highway	2013	International	Dump	Diesel
Highway	2017	International	Dump	Diesel
Highway	2018	International	Dump	Diesel
Highway	2021	International	Dump	Diesel
Highway	2022	Freightliner	Dump	Diesel
Highway	2014	Freightliner	Dump	Diesel
Highway	2012	International	Dump	Diesel
Highway	2019	International	Dump	Diesel
Highway	2023	Ford	F150 Pickup	Gasoline
Highway	2023	Ford	F150 Pickup	Gasoline
Highway	2024	Ford	F150	Gasoline
Highway	2019	Ford	F350 Super	Gasoline
Highway	2015	Ford	F350 Utility	Gasoline
Highway	2011	Dodge	Ram 1 Ton	Diesel
Highway	2012	Ford	F350 Flatbed	Gasoline

Department	Year	Make	Model	Fuel Type
Highway	2022	Ford	F450	Gasoline
Highway	2011	Ford	F250	Gasoline
Highway	2024	Ford	F450	Gasoline
Highway	2017	Wacker Neuson		Diesel
Highway	2006	JCB Skidsteer		Diesel
Highway	2023	Trackless		Diesel
Highway	2020	Trackless		Diesel
Highway	2020	Trackless		Diesel
Highway	2021	Trackless		Diesel
Highway	2014	Volvo	Excavator	Diesel
Highway	2014	Mass/Ferg		Diesel
Highway	2011	Vactor		Diesel
Highway	2018	Vactor		Diesel
Highway	2013	Ford	F550	Diesel
Highway	2022	Ford	F600	Diesel
Highway	2016	Ford	Escape	Gasoline
Parks Maintenance	2013	Ford	F350 Dump	Gasoline
Parks Maintenance	2015	Ford	F150 Pickup	Gasoline
Parks Maintenance	2013	Ford	F250	Gasoline
Parks Maintenance	2022	Ford	F250	Gasoline
Parks Maintenance	2024	Ford	F350	Gasoline
Parks Maintenance	2024	Ford	F350	Gasoline
Parks Maintenance	1985	Ford	Tractor	Diesel
Police	2018	Dodge	Charger	Gasoline
Police	2016	Dodge	Charger	Gasoline
Police	2013	Dodge	Charger	Gasoline
Police	2013	Dodge	Charger	Gasoline
Police	2013	Dodge	Charger	Gasoline
Police	2016	Dodge	Charger	Gasoline
Police	2017	Dodge	Charger	Gasoline
Police	2018	Dodge	Charger	Gasoline
Police	2018	Dodge	Charger	Gasoline
Police	2018	Dodge	Charger	Gasoline
Police	2019	Dodge	Charger	Gasoline
Police	2019	Dodge	Charger	Gasoline
Police	2019	Dodge	Charger	Gasoline

Department	Year	Make	Model	Fuel Type
Police	2019	Dodge	Charger	Gasoline
Police	2021	Dodge	Charger	Gasoline
Police	2015	Ford	Edge	Gasoline
Police	2020	Ford	Fusion	Gasoline
Police	2021	Ford	Explorer-Utility	Gasoline
Police	2022	Ford	Explorer-Utility	Gasoline
Police	2022	Ford	Explorer-Utility	Gasoline
Police	2023	Ford	Explorer-Utility	Gasoline
Police	2023	Ford	Explorer-Utility	Gasoline
Police	2023	Ford	Explorer-Hybrid	Hybrid
Police	2023	Ford	Explorer-Hybrid	Hybrid
Recreation	2008	Ford	F150 Pickup	Gasoline
Recreation	2014	Ford	F150 Pickup	Gasoline
Recreation	2015	Ford	F150 Pickup	Gasoline
Recreation	2016	John Deere	Gator 825i	Gasoline
Recreation	2022	Can Am	Defender PRO	Gasoline
Stormwater	2008	TV	Cargo Express Van	Gasoline
Stormwater	2016	Freightliner	Dump	Diesel
Stormwater	2014	Ford	F150 Pickup	Gasoline
Stormwater	2023	Ford	F150 Crew	Gasoline
Stormwater	2012	Ford	F450 Super Duty	Gasoline
Stormwater	2014	Mini Excavator		Diesel
Stormwater	2024	Johnston	Sweeper	Diesel
Stormwater	2024	Johnston	Sweeper	Diesel
Stormwater	2018	Ford	Escape	Gasoline
Wastewater	2009	Dodge	Charger	Gasoline
Wastewater	2015	Ford	F150 Pickup	Gasoline
Wastewater	2024	Ford	F150	Gasoline
Wastewater	2015	Ford	F350 Pickup	Gasoline
Wastewater	2022	Ford	F450 Flatbed	Diesel
Wastewater	2018	Ford	F350	Diesel
Wastewater	2012	John Deere	Skidsteer	Diesel
Wastewater	2024	Freightliner	Tanker	Diesel

Appendix B: EV Replacement Candidates

Police Vehicles

2025 Chevrolet Blazer EV	
FHWA Vehicle Class	2
GVWR (Gross Vehicle Weight Rating)	6945 lb.
Model Year	2025
Estimated MSRP	$68,000
Nominal Range	286 miles
All Wheel Drive (Yes/No)	Yes
Maximum Tow Capacity	1,500 lb.
Payload Capacity	Between 1,120 and 1,680 lb. (estimate)
Pursuit Rated (Yes/No)	Yes
Manufacturer Link	

Ford-150 Lightning Pro SSV

FHWA Vehicle Class	2b
GVWR (Gross Vehicle Weight Rating)	8,550 lb.
Model Year	2025
Estimated MSRP	$63,345 - $91,995
Nominal Range	230-320 miles
All Wheel Drive (Yes/No)	Yes
Maximum Tow Capacity	10,000 lb.
Payload Capacity	2,235 lb.
Pursuit Rated (Yes/No)	No

Manufacturer Link

Bucket Aerial Trucks

Mack MD Electric with Terex Aerial	
FHWA Vehicle Class	7
GVWR (Gross Vehicle Weight Rating)	33,000 lb.
Model Year	2024
Estimated MSRP	$265,000
Nominal Range	135 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	Check with manufacturer
Payload Capacity	Check with manufacturer
Manufacturer Link	

International eMV with Terex Aerial

FHWA Vehicle Class	7
GVWR (Gross Vehicle Weight Rating)	33,000 lb.
Model Year	2024
Estimated MSRP	$265,000
Nominal Range	135 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	Check with manufacturer
Payload Capacity	Check with manufacturer

Manufacturer Link

Cargo and Step Vans

Ford ETransit Cargo Van, Cutaway and Chassis Series	
FHWA Vehicle Class	2
GVWR (Gross Vehicle Weight Rating)	9,500 lb.
Model Year	2023-2025
Estimated MSRP	$46,000-$51,000
Nominal Range	126-159 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	4,409 lb. (Cutaway and Chassis Series)
Payload Capacity	3,997 lb.
Manufacturer Link	

Dodge Ram Promaster EV

FHWA Vehicle Class	2
GVWR (Gross Vehicle Weight Rating)	9,350 lb.
Model Year	2024
Estimated MSRP	$78,000
Nominal Range	162 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	6,410 lb.
Payload Capacity	3,020 lb.

Manufacturer Link

Mercedes eSprinter Series

FHWA Vehicle Class	2
GVWR (Gross Vehicle Weight Rating)	9,370 lb.
Model Year	2025
Estimated MSRP	$63,475 - $75,855
Nominal Range	81-113 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	4,277 lb. to 4,100 lb.
Payload Capacity	3,516 lb.

Manufacturer Link

Rivian RCV 500 & 700 Series

FHWA Vehicle Class	2
GVWR (Gross Vehicle Weight Rating)	9,350 lb.
Model Year	2025
Estimated MSRP	$83,000 - $87,000
Nominal Range	153-161 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	0 lb. (not meant for towing)
Payload Capacity	2,663 lb. (500 series), 2,258 lb. (700 series)

Manufacturer Link

Chevrolet BrightDrop 400 & 600 Series

FHWA Vehicle Class	2 or 3
GVWR (Gross Vehicle Weight Rating)	11,000 lb.
Model Year	2024-2026
Estimated MSRP	$78,000 - $91,000
Nominal Range	159-272 miles
All Wheel Drive (Yes/No)	Yes
Maximum Tow Capacity	0 lb.
Payload Capacity	3,350 lb.

Manufacturer Link

GreenPower EV Star Stakebed Battery Electric Truck

FHWA Vehicle Class	4
GVWR (Gross Vehicle Weight Rating)	14,330 lb.
Model Year	2024
Estimated MSRP	Not Available
Nominal Range	150 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	6,000 lb. (depending on configuration)
Payload Capacity	6,000 lb.

Manufacturer Link

XOS Stepvan Series	
FHWA Vehicle Class	5
GVWR (Gross Vehicle Weight Rating)	19,500 lb.
Model Year	2024
Estimated MSRP	Not Available
Nominal Range	100-200 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	Contact manufacturer
Payload Capacity	9,500 lb.
Manufacturer Link	

Workhorse W56

FHWA Vehicle Class	6
GVWR (Gross Vehicle Weight Rating)	23,000 lb.
Model Year	2024
Estimated MSRP	Not Available
Nominal Range	150 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	Contact manufacturer
Payload Capacity	10,000 lb.

Manufacturer Link

Medium-Duty Pickup Truck

RIZON L, M, and X Series	
FHWA Vehicle Class	4
GVWR (Gross Vehicle Weight Rating)	15,995 lb.
Model Year	2024
Estimated MSRP	Not Available
Nominal Range	105-160 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	Contact manufacturer
Payload Capacity	Contact manufacturer
Manufacturer Link	

Bollinger B4

FHWA Vehicle Class	4
GVWR (Gross Vehicle Weight Rating)	15,500 lb.
Model Year	2025
Estimated MSRP	Not Available
Nominal Range	185 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	Contact manufacturer
Payload Capacity	7,325 lb.

Manufacturer Link

ISUZU NRR EV

FHWA Vehicle Class	5
GVWR (Gross Vehicle Weight Rating)	19,500 lb.
Model Year	2022-2025
Estimated MSRP	Not Available
Nominal Range	80,100, 180 & 235 miles
All Wheel Drive (Yes/No)	No
Maximum Tow Capacity	19,500 lb.
Payload Capacity	12,951 lb.

Manufacturer Link

Fire Trucks

Rosenbauer RTX Electric	
FHWA Vehicle Class	8
GVWR (Gross Vehicle Weight Rating)	42,000 lb.
Model Year	Not Available
Estimated MSRP	Not Available
Nominal Range	132 miles (2 batteries)
All Wheel Drive (Yes/No)	Yes
Maximum Tow Capacity	Contact manufacturer
Payload Capacity	Contact manufacturer
Manufacturer Link	

Rosenbauer RTX Electric

FHWA Vehicle Class	8
GVWR (Gross Vehicle Weight Rating)	42,000 lb.
Model Year	Not Available
Estimated MSRP	Not Available
Nominal Range	155-244 miles
All Wheel Drive (Yes/No)	Yes
Maximum Tow Capacity	Contact manufacturer
Payload Capacity	Contact manufacturer

Manufacturer Link

Appendix C: Case Studies - Cold Climate Examples

Kruger Energy all-electric Semi: Montreal, Quebec

- Two Peterbilt 579EV electric semi-trailers
- Battery range of up to 348 miles with a 50-ton load.
- Two trucks run 20 hours per day, traveling roughly 40 miles per trip between Crabtree and Laval.
- Company has ordered 50 additional electric since 2023.

Kruger Energy puts first two electric trucks into service, plans to add 50 more

EV FLEETS JAN 26, 2023 MEHANAZ YAKUB

With two Class 8 trucks finally hitting the road outside Montreal, Kruger Energy is expanding its ambitions and plans to add 50 new electric trucks to its Canadian fleet

Kruger Energy, a Montreal-based developer and manager of renewable energy power plants, has made a significant step towards sustainable logistics by deploying a pair of all-electric class 8 vehicles in Quebec. Photo: Kruger Energy

Rizon Class 4-5 Trucks Reach Canada

- 22 class 4-6 Rizon trucks with various body upfits including dry boxes, service bodies, and landscape dumps were shipped to British Columbia and Quebec Canada in November 2024.
- Rizon recently expanded its North American operations in Canada starting in April 2024.
- Rizon dealerships are now located in British Columbia, Ontario, and Quebec Provinces.

FleetOwner

EMISSIONS & EFFICIENCY

Daimler Truck's first wave of electric Rizon trucks reaches Canada

Nov. 6, 2024

Nineteen of the units will be delivered to customers in British Columbia and Quebec. The remaining three units will be used for demonstration purposes.

Snowplow Semi Truck Trial: Norwegian Public Road Administration

- Built on Volvo FH Chassis created by Swiss Firm Designwerk Technologies AG
- Equipped with a 1,000-kWh battery.
- Battery range of up to 348 miles with a 50-ton load.
- Operated for nearly nine hours with battery depletion from 90% to 28% during the trial.

The world's first semi electric truck with 1,000 kWh capacity is plowing snow in Norway like a boss

Michelle Lewis | Feb 8 2024 - 2:52 pm PT | 24 Comments

Photo: Eli Ramstad/Norwegian Public Roads Administration

Appendix D: Electrification Options for Aeriel Boom Truck

International eMV

- FHWA Class: 7
- GVWR: 33,000 lbs.
- Model Year: 2024
- Estimated MSRP: $265,000*
- Nominal Range 135 miles

(70 miles in extreme temperature)

- Battery Capacity (kWh): 210
- All Wheel Drive: No
- Cold Weather Deployment: Ann Arbor, MI, New England (ConEdison)

*MSRP reflects International eMV baseline model and does not include Terex or Altec specialty equipment

International eMV- Boom Comparison

Terex Boom System

- 100 miles in range
- Has own battery system
- Charging would require two ports
- Terex system can only be charged with level 2

Altec Boom System

- 90 miles in range
- Uses chassis battery

Mack MD Electric

- FHWA Class: 7
- GVWR: 33,000 lbs.
- Model Year: 2024
- Estimated MSRP: Not available
- Nominal Range 140 miles
- Battery Capacity (kWh): 100
- All Wheel Drive: No

Equipment Specs

- The International eMV Series and Mack MD7 chasses have a 33,000 Gross Vehicle Weight Rating (GVWR) and a Terex Optima 55-foot aerial device.
- Altec sells an all-electric aerial devices solution that uses an International eMV chassis
- The boom, outriggers, and in-cab functions like heating and cooling are powered by the 28.2 kWh HyPower SmartPTO by Viatec.
- The SmartPTO operates independent of the chassis to ease range anxiety and allow utility crews to work for a normal workday without taking away charge from the chassis
- Terex, an electric boom truck manufacturer, works with Viatec (https://www.viatec.us/) on a system that will equip a diesel fuel boom truck with an all-electric boom by installing Viatec's hydraulic system
- Altec has an electric boom system for gas/diesel trucks - JEMS

Electrification Options for Aerial Bucket Truck

1. Complete Electrification
   - Electric Chassis (International eMV) + electric boom (Terex/Altec)
2. Complete Electrification
   - Electric Chassis (Mack) + electric boom (Terex)
3. Hybrid Electrification
   - Gas/Diesel Chassis (Ford 550/650 and comparable) + electric boom (Altec JEMS)
4. Hybrid Electrification
   - Gas/Diesel Chassis (Ford 550/650 and comparable) + electric boom (Terex Boom + Viatec Smart PTO)

Contacts

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International Zero-Emissions contact – Rudy Velez – 909 709 0144

Appendix E: Vehicle Anti-Idling Solutions

Vehicle Anti-Idling

What is Vehicle Idling?

Idling is running a vehicle's propulsion engine when the vehicle isn't moving. Idling wastes fuel and creates harmful emissions. Idling has significant environmental and economic consequences as the vehicle consumes fuel and increase engine-wear while idling.

Technologies/Strategies to reduce vehicle idling

- Auxiliary power units (APUs)
- Heaters/Air conditioners
- Engine idle management systems
- Electrified parking spaces (EPS)
- Telematics Systems
- Cab insulation, window glazing, reflective paint, passive measures
- Anti-idling policies and driver training

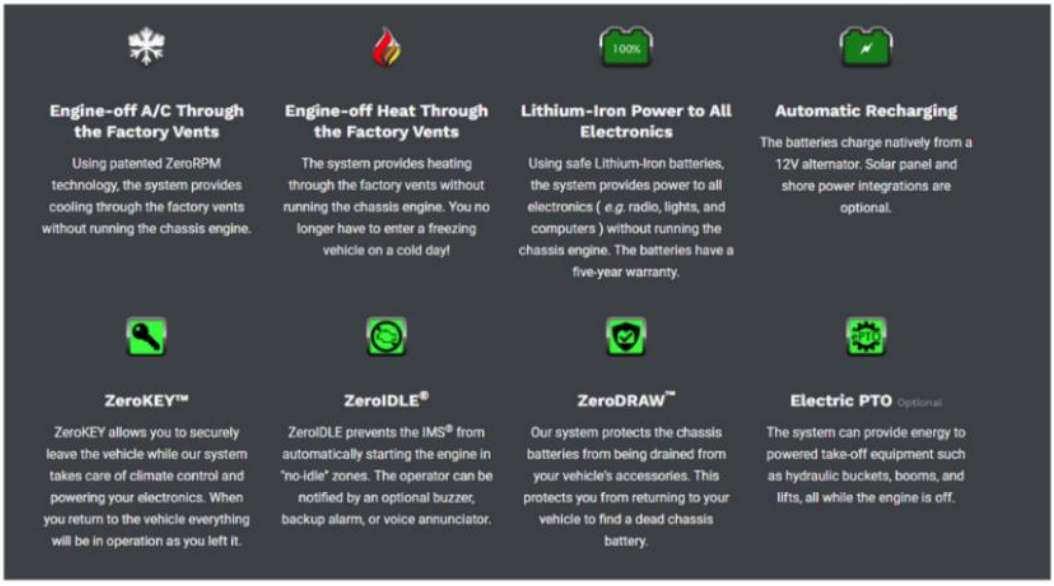
Using APU for idle reduction in Fire Department

- Reported by Argonne National Laboratory and Firehouse Magazine
- Fire apparatus often have more idle time than actual transit time
    - Traffic controls, medical calls when the vehicle sits idle in standby mode for the majority of calls
- Idleness provides a good use case for deploying APUs. When in idle mode, APUs can supply enough power for the communication equipment, HVAC and Heat
    - reducing fuel costs, emissions and engine-wear

APU and EPS in action

- Case Study: Argonne National Laboratory
    - Location: Vermont (Vermont Dept. of Environmental Conservation)
    - Vehicle type: Ambulance
- Ambulances often idle to maintain equipment and medication temperatures. The study tested two solutions using APUs and EPS kiosks.
- Battery APUs helped ambulances save at least $5,100 annually per vehicle in fuel and reduced oil changes by 50%, with a payback period of 1.1 to 1.3 years.
- EPS kiosks at hospitals provided plug-in electricity and climate control, reducing idling and emissions near sensitive populations without requiring ambulance modifications.

ZeroRPM: an engine idle management system



Vehicle Anti-Idling- Recommendation for next steps

Initial MD/HD Vehicles to focus on:

- Vehicles not identified on initial list
- Vehicles not having any commercially available electric/hybrid replacement option
- Vehicles with lots of idle time in its daily operation