MUNICIPAL FLEET ELECTRIFICATION ACTION PLAN

FOR VILLAGE OF OAK PARK, ILLINOIS

PEER LEARNING COHORT:
CHARTING A PATH TO MUNICIPAL FLEET ELECTRIFICATION
JULY-DECEMBER 2024

C2C: Clean Energy *to* Communities
U.S. DEPARTMENT OF ENERGY

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Background

From July to December 2024, The Village of Oak Park and the Illinois Alliance for Clean Transportation (IACT) participated in a peer learning cohort on municipal fleet electrification through the Clean Energy to Communities program (C2C), funded by the U.S. Department of Energy and managed by the National Renewable Energy Laboratory (NREL) with support from the World Resources Institute (WRI).

This cohort program supported local governments, Tribes, and municipal utilities to develop action plans for strategic fleet electrification. Over the course of six monthly workshops, participants learned how to identify and work with key project partners, including internal staff and utility representatives; prioritize vehicles for replacement; evaluate charging infrastructure needs; choose sites and install infrastructure; and procure and contract for necessary equipment and services. The cohort also discussed workforce development needs and best practices for preparing and training their teams to drive, manage, and maintain new fleet vehicles.

Cohort participants were paired with Clean Cities and Communities coalitions who provided technical assistance and custom analysis over the course of the 6-month cohort. IACT supported the Village of Oak Park in developing This Municipal Fleet Electrification Action Plan ("Action Plan") for the Village of Oak Park. This Action Plan is based on the work and discussions developed over the period of July to December 2025 based on the workshop agenda below.

Workshop	Suggested Supplemental Activities	Plan Section to Complete
Workshop 1: Planning for Fleet Electrification	**Activity 1.1:** Identify municipality's goals and timeline for fleet electrification **Activity 1.2:** Compile fleet data **Activity 1.3:** Explore AFDC resources and vehicle search tool	1. Goals and Timeline for Fleet Electrification
Workshop 2: Understanding Vehicle and Charging Needs	**Activity 2.1:** Perform fleet assessment and begin developing vehicle replacement schedule **Activity 2.2:** Assess charging needs of fleet replacement plan	2. Fleet Landscape Analysis
Workshop 3: Building Your Team and Working with your Utility	**Activity 3.1:** Develop stakeholder map **Activity 3.2:** Develop a plan to build buy-in from stakeholders that do not trust the technology or are not open to the transition **Activity 3.3:** Initiate/further utility relationship and discuss utility data sharing agreement	3. Stakeholder Engagement
Workshop 4: Assessing, Upgrading, and Future-proofing Sites	**Activity 4.1:** Meet with Facilities team to discuss electrification goals and potential sites **Activity 4.2**: Identify charging locations and conduct site assessments using EVILocate	4. Charging Infrastructure and Facilities Upgrades
Workshop 5: Calculating and Managing Costs	**Activity 5.1:** Calculate TCO for different vehicle options **Activity 5.2:** Identify funding and financing opportunities **Activity 5.3:** Review vehicle replacement schedule and charging needs, based upon TCO and site assessments	5. Financial Planning

Workshop 6: Training, Testing and Preparing for Deployment	**Activity 6.1:** Plan for necessary trainings **Activity 6.2:** Identify operational planning needs **Activity 6.3:** Finalize action plan	6. Operations and Maintenance Executive Summary

Executive Summary

The Village of Oak Park (the Village) continues to strive to be a good steward of community resources, by being fiscally responsible, operationally effective and environmentally thoughtful. Joining this C2C cohort is consistent with these goals, with the specific objective being to investigate best practices for planning, deploying and maintaining the Village's fleet. Based on good ideas presented by the World Resources Institute (WRI) and the National Renewable Energy Laboratory (NREL) team and with the support of the Illinois Alliance for Clean Transportation, the Village has begun integrating some of the best practices presented into plans and processes.

For many years, the Village has established a series of programs in its municipal fleet with an eye towards reducing emissions. Oak Park has been a leader in the Chicagoland region with Alternative Fuel Vehicle (AFV) programs involving Hybrid Electric Vehicles (HEVs), Compressed Natural Gas (CNG) vehicles, propane and flex fuel (ethanol) vehicles and electric vehicles (EVs) - since 2018 The underlying goals in each case have been to reduce tailpipe emissions of criteria pollutants and greenhouse gases (GHGs). The Village has consistently leveraged cash rebates, grants and tax credit programs from the Federal Government, the State of Illinois and the utility (ComEd). Public procurement Sourcewell

The Village has 185 vehicles in total, consisting of 63 passenger vehicles (PV), 51 SUVs, 13 Vans, 14 pickup trucks, 25 Medium duty trucks (MDT) and 18 Heavy Duty Trucks and one golf cart (NV), covering 7 departments. Evaluations related to EVs have been completed since 2019. The effort started with 4 Nissan Leafs.

Table 1 summarizes the current EV inventory plus some purchasing plans for the near future.

Number of Fleet Vehicles	Number Converted to EVs (2024)	Nissan Leafs/ Passenger EVs	Ford Transit /Vans	Chevy Blazer EV, Other SUVs	Pickup / Class 2	Class 3 and Up
185	21	15	4	3		
Planned						
2025		5	2	3	3	
2026			2	2	5	1
2027			2	2	5	2

Table 1: Current EV Inventory (2024) and projected procurement targets for EVs

To fuel these EVs, 8 Level 2 EV Charging Stations (EVCSs) have been sequentially installed. The Village is exploring expansion of its EV inventory to include electrifying medium duty and eventually heavy-duty

fleet vehicles and the supporting EVCSs and EV Charging Infrastructure (EVCI). Planning is further considering including 1 or 2 DCFC at the Public Works facility. These decisions are dependent on these vehicles being available and proven in the expected applications. Table 2 summarizes the current Village EVSE inventory. The EVSEs are located at the following sites.

- Public Works Center:
  - 6 Level 2 Clipper Creek L2, single port 32 Amp, all indoor
  - Considering adding more L2 single EVSEs
- Village Hall: 5 Dual port ChargePoint CT4022, 32 Amp, all outdoor.
  - 3 Dual port for Admin Department EV charging
  - 2 Dual port for public EV charging
  - 3 more dual port ChargePoint CP6000 in planning
- The Village has also installed L2 chargers at 9 public parking garages

Date, Location	Amps	Connector	Volts	Notes
92559 OAK PARK 1 / NORTH BLVD 01	30A	J1772	--	Publicly Accessible
92791 OAK PARK 1 / NORTH BLVD 02	30A	J1772	--	Publicly Accessible
162665 OAK PARK 1 / LAKE FOREST 2	30A	J1772	240V	Publicly Accessible
97697 OAK PARK 1 / HOLLEY COURT	30A	J1772	240V	Publicly Accessible
197707 OAK PARK 1 / AVENUE GARAGE 3	30A	J1772	240V	Publicly Accessible
197725 OAK PARK 1 / AVENUE GARAGE 4	30A	J1772	240V	Publicly Accessible
197727 OAK PARK 1 / HOLLY COURT 3A	30A	J1772	240V	Publicly Accessible
197839 OAK PARK 1 / HOLLY COURT 3B	30A	J1772	240V	Publicly Accessible
1746761 OAK PARK 1 / LAKE FOREST 1	30A	J1772	240V	Publicly Accessible
1832591 OAK PARK 1 / FLEET 1	30A	J1772	240V	Restricted to Village Fleet Vehicles
1835021 OAK PARK 1 / FLEET 2	30A	J1772	240V	Restricted to Village Fleet Vehicles
1835031 OAK PARK 1 / FLEET 3	30A	J1772	240V	Restricted to Village Fleet Vehicles
1835041 OAK PARK 1 / VH4	30A	J1772	240V	Publicly Accessible
1835071 OAK PARK 1 / VH5	30A	J1772	240V	Publicly Accessible

Table 2: Village EV Charging Inventory, 12-24

As greater investments are being made, engaging in the C2C program hopes to inform the effectiveness of the decision-making process.

The Village plans to add a series of EVs over the next five (5) years at the two main Village operation centers, Village Hall and Public Works Center.

The existing EVCSs are in the two main places. At Village Hall, the refueling supports Village administrative EVs and public charging. At the Public Works facility, the current EVCS are set up for fleet administrative EVs and some transit vans, used for a range of services. The Village plans to extend the electrical capacity at both facilities for future EV charging capacity, but plans are currently held in a planning stage, as there are modifications to the Village Hall and Police HQ (new parking facilities) being deliberated which will impact EVCI. At Public Works, the expansion of power is delayed due to the lack of availability of small to medium duty E-trucks.

In the meantime, at Village Hall, several new EVs and EVCSs are being added in 2025, which will leverage existing electrical capacity. More passenger EVs are being added and 3 Chevy Blazer EVs were purchased in late 2024 as part of the Public Works fleet. To meet future demand, the utility will need to be engaged to increase the electrical service. The utility has been contacted and some initial ideas

considered pending other facility decisions. The plan will be to share the EVCSs between departments in a scheduled manner. If required, some electric trucks may have dedicated EVCSs, but the optimal goal is to share both ports and power – meeting operational requirements while optimizing investments. Addition of DC Fast Chargers is being considered to meet more urgent refilling time demands on when this starts to impact the public works operations.

Making informed decisions relies on the collection, compilation, and analysis of fleet data. Oak Park has been gradually advancing these processes and tools to decide which vehicles can be electrified and when. Decision factors include model availability and suitability of right-sized electric versions of various use cases, procurement timing, available funds, and eligible incentives. Several of the tools made available by the C2C program have been used and will be helpful in continuing to advance this effort. The Village also has applied some of the tools and processes used in the Metropolitan Mayors Caucus EV Readiness program for fleet electrification decision making.

Oak Park has been leveraging telematics for fleet tracking – location, routing, fuel usage, and costs, idle control and has integrated this into approximately 90% of its fleet.

Action Plan

Why Electrify?

The Village of Oak Park (VoOP) continues to be a forward-looking community in terms of sustainability and has aggressively pursued reduction in pollution and greenhouse gas emissions for more than a generation. Oak Park was the first community in the area to invest in Compressed Natural Gas vehicles and supporting refueling infrastructure at the Village's Public Work facility. Since 2019, planning and strategies have centered on transportation electrification, including the purchase of 15 Nissan Leaf EVs and 4 Ford Transit EVs. To recharge these EVs, 10 EVSEs have been installed at 3 locations.

Electrification is one of the steps identified as necessary to achieve community-wide net zero greenhouse gas emissions by 2050 as set forth in the Community Sustainability, Climate Action & Resilience Plan adopted in 2022, and accessible from of the Climate Ready Oak Park webpage. As stated in the Transportation section "Reducing our dependence on fossil fuel-powered vehicles will require both a transition to electric vehicles and a transition to more sustainable forms of transportation such as walking, bicycling, and public transit." In December 2023, Oak Park received Gold Level recognition for the Metropolitan Mayors Caucus EV Readiness program.

Oak Park has already completed EV searches for multiple use cases for the village and has a good handle on the procurement process, including EV availability - for their use cases.

It may be worth developing a written policy for the purpose of demonstrating the Village's commitment and formalizing the Village's process. This may be helpful for elected officials or the public when looking

at budget requests and in understanding the current fleet. For example, if the public wonders why ALL vehicles are not electric, the policy could help explain the Village's position that it is more sustainable and a better use of resources to transition fleet vehicles on the regular replacement schedule.

1. Goals and Timeline for Fleet Electrification

A fundamental strategic goal is to continue to electrify fleet vehicles if they support operational constraints and requirements and if the vehicles are available, reasonably priced (including incentives) and have some level of proven track record. Oak Park has not set percentage quotas per se but rather continues to move in a sustainable direction with these provisos. As of 2024, 11% of the vehicle count is electric. Compared to other Illinois municipalities, this is a high percentage. If EV costs including incentives continue to be competitive and the validity of newer models advances, the Village intends to add EVs on a regular basis, as vehicles are retired and suitable EVs are available. According to market forecast, cost parity with passenger ICEVs is expected between 2024 and 2027, depending on the vendor, and this should play favorably with decisions.

Currently as the Village Hall is in the process of potential redevelopment there is limitation on expansion of charging infrastructure which may limit the ability to purchase EVs in the short term.

Oak Park wants to expand and optimize building out their EV charging infrastructure and add larger EVs in time. They are having issues with procurement and purchasing suitable EVs. They are looking to optimize their EVCI investments as they go. Oak Park facilities have limited electrical panel capacity but is interested in installing chargers near existing chargers. The Village is interested in expanding EV charging to light duty and medium duty trucks. The solution likely will involve energy/power/load management systems. There was mention of implementing a pilot project relating to V2G. Fleet management plans to continue the option to buy HEVs until more chargers are installed.

Current Fleet Makeup

As a baseline, Table 3 and Figure 1 tabulate and illustrate the breakdown of the current fleet by fuel type.

Fleet Breakdown by Fuel Type 2024							
Vehicle Type	**Gas**	**B20**	**Hybrid**	**EV**	**Totals**	**Candidates for EV?**	**Notes**
POLICE MARKED	36		12		48	Yes	Depends on vehicle reliability, fit for police duty and final decision on new police station
POLICE UNMARKED	14		1		15	Yes	
VAN	11				11	Yes	
STEP VAN		2			2	Yes	
E VAN				4	4		
LEAF				16	16		
SUV	7		2		9	Yes	
HEV SEDAN			18		18	Yes	15 are planned to be replace with BEVs
PICKUP	15		1		16	Yes	Depends on EV OEMs supporting plowing
1 TON	3	6			9	Yes	
AMBULANCE	1	3			4		
SINGLE AXLE MDT		9			9	Yes	
TANDEM AX		6			6	Maybe	
GARBAGE		1			1		
BUCKET		4			4		
GRAPPLE		1			1		
SEMI		1			1		
LOADER		3			3		
BOBCAT		2			2		
SWEEPER		1			1		
MULTI		3			3		
BACK HOE		2			2		
FIRE ENG		3			3		
LADDER TRK		1			1		
	Gas	B20	Hybrid	EV	Totals	Candidate	
Totals	87	48	34	16	189		

Table 3: Current Breakdown of Fleet by Fuel Type

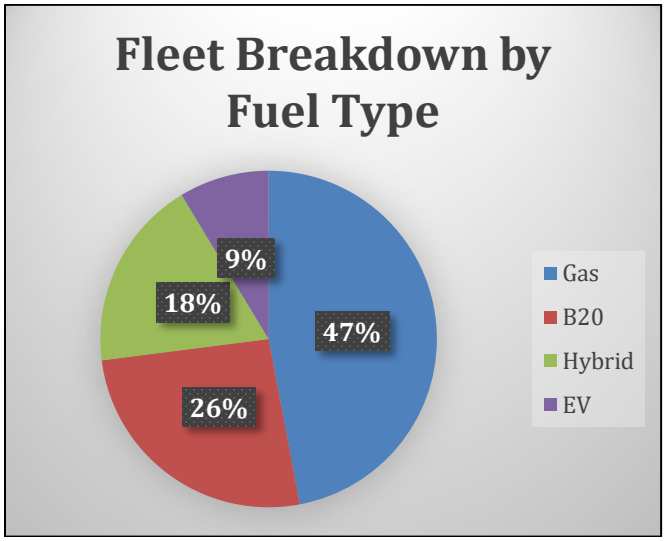

Figure 1: 2023 Fleet Breakdown by Fuel Type

2. Fleet Landscape Analysis

The plan that Oak Park uses to determine which fleet vehicles will be replaced with EV versions takes the following plan elements:

1. Collect and compile fleet data
    a. By department
    b. By location
2. Establish vehicle retirement strategies.
3. Evaluate and confirm candidate EVs are right sized, operationally suitable, fundable and available.
    a. Define current vehicle's needing replacement.
    b. Identify which EV models may be considered as replacement alternatives.
    c. Identify short list of near term and longer term vehicles to electrify.
4. Capture and compile capital costs of new (or leased) EVs as well as ICEV counterparts and determine differential investment costs between ICEV and EV alternatives.
5. Capture and compile operating costs of new (or leased) EVs as well as ICEV counterparts and determine differential operating expenses costs between ICEV and EV alternatives.
6. Based on the targeted short EV list, define the energy and power **demand profiles** for each site of interest based on electrical power demands to support operational charging needs of these vehicles.
7. Based on demand, establish a **supply profile** and establish power supply equipment and branch run circuit designs for EV Charging Infrastructure and EVSEs.
    a. Define peak demand (kilowatts) profiles, aggregate energy consumption (kilowatt hours) and number and power levels of charging point.
    b. Define scope of work and associated cost estimates
8. Based on scope, design and usage specs, calculate differential capital investments between using EVs vs. ICEVs for selected EVs.
9. Calculate differential capital operating expenses between using EVs vs. ICEVs for selected EVs.
10. Calculate ROI analysis based on capital and operating cost differentials. Review analysis with appropriate people and make go-forward decisions.
11. Compile emissions profiles calculating differentials in criteria pollutants and GHGs for ICEV vs. EV alternatives.
12. Finalize procurement decisions.
    a. Review investments, ROI analysis and emissions profiles with appropriate personnel and decide which vehicles to procure near term and what level of supply to install to support some level of EV charging in the future.
    b. Make go forward decisions
    c. Finalize extent (near term vs. long term) of charging infrastructure and design
    d. Procure EVs

e. Approve procure and execute final EVCI design and EVSE selection and construct, install, and commission EV charging solutions (EVCI, EVSE).

These plan elements are captured throughout this document as flow charts and lists.

Current Fleet and Procurement Process

For over a generation, Oak Park has practiced green vehicle procurement. Since 2019, Oak Park has been integrating EVs into their fleet. In 2022, the Village Board adopted the Climate Ready Oak Park (CROP) program, a long-term plan to reduce greenhouse gas emissions and create a more sustainable community. This plan does not quantify specific annual green vehicle procurement targets, but rather continually evaluates vehicle options, and in practice regularly reviews, assesses and includes clean vehicle technologies in each annual procurement cycle. Currently, electric vehicle options are always assessed when replacing vehicles and prioritized when feasible. HEVs have been part of the passenger vehicle group for a decade and gradually, EVs are bought to displace HEVs and remaining fossil fuel vehicles.

The Village maintains a vehicle database for each vehicle, as illustrated in Figure 2 and a sample of data (Data Set #1) from the Admin fleet is provided in Table 4 and for Police in Table 5.

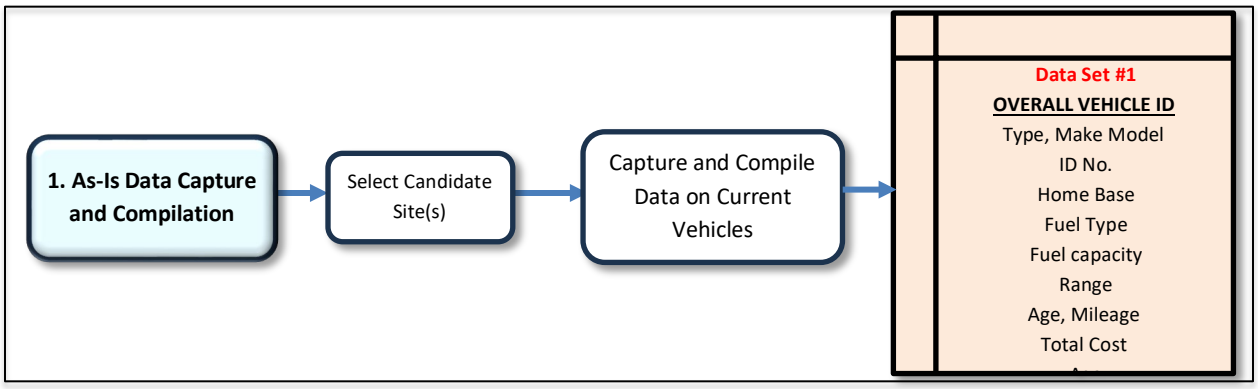

Figure 2: 1. Basic Vehicle Data Collection

The Village follows a procurement vehicle replacement /retirement process based on a points system. Higher points mean higher chance of replacement. Contributing factors to retirement include vehicle year, mileage, hours of operation (if tracked), maintenance history, duty cycle, annual fuel and maintenance costs and fleet maintenance knowledge. Table 4 and Table 5 show the fleet data for the Admin and Police fleet vehicles and the data is sorted based on the points. Table 5 further color codes the points for visualization.

Based on those vehicles that are planned for replacement a series of data distillations are completed to derive a short list of those suitable for EVs. Based on the points systems, plans for subsequent years can be also considered.

Unit #	Make:	Model:	Year:	Unit Age:	Points	Points	Lifetime Evaluation Points	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade =	Condition Points	TOTAL POINTS
Administrative Vehicles										
243	Ford	Explorer	2013	10	2	3	4	$121,313.00	1	10
25	Ford	HY Fusion	2016	6	1	1	4	$39,729.12	1	7
26	Ford	HY Fusion	2016	7	1	1	4	$29,760.00	1	7
27	Ford	HY Fusion	2016	7	1	1	4	$28,575.00	1	7
68	Ford	HY Fusion	2017	5	1	1	4	$34,574.19	1	7
184	Dodge	Sprinter	2008	12	1	1	4	$94,244.51	1	7
29	Ford	HY Fusion	2017	6	1	1	3	$16,272.00	1	6
67	Ford	HY Fusion	2017	6	1	1	3	$31,084.00	1	6
12	Nissan	Leaf	2019	4	1	1	2	$27,514.00	1	5
11	Nissan	Leaf	2019	4	1	1	2	$27,396.00	1	5
14	Nissan	Leaf	2019	4	1	1	2	$27,233.00	1	5
16	Nissan	Leaf	2019	4	1	1	2	$28,352.00	1	5
122	Ford	EV T350	2022	1	1	1	1	$0.00	1	4
38	Nissan	Leaf	2023	1	1	1	1	$26,807.00	1	4
41	Nissan	Leaf	2023	1	1	1	1	$26,807.00	1	4
46	Nissan	Leaf	2023	1	1	1	1	$26,807.00	1	4
48	Nissan	Leaf	2023	1	1	1	1	$26,807.00	1	4
49	Nissan	Leaf	2023	1	1	1	1	$26,807.00	1	4
65	Nissan	Leaf	2023	1	1	1	1	$26,807.00	1	4
	18	Vehicles								19

Table 4: Sample Data Set #1 for Admin Fleet Vehicles

Unit #	Make:	Model:	Year:	Unit Age:	Points	Points	Lifetime Evaluation Points	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade =	Condition Points	TOTAL POINTS
Police Vehicles										
226	Dodge	Charger	2011	11	3	4	4	$94,762.22	1	12
236	Ford	Explorer	2013	10	2	4	4	$114,860.00	1	11
39	Chevy	Expr Van	2002	19	4	1	4	$54,007.36	1	10
237	Dodge	Charger	2012	10	2	3	4	$75,651.47	1	10
240	Dodge	Charger	2013	7	4	1	4	$93,422.91	1	10
253	Ford	Explorer	2016	6	4	1	4	$106,733.06	1	10
254	Ford	Explorer	2016	6	4	1	4	$75,233.00	1	10
257	Ford	Explorer	2017	5	3	2	4	$101,222.85	1	10
260	Ford	Explorer DEA	2016	6	1	4	4	$20,961.16	1	10
263	Ford	Explorer	2016	7	4	1	4	$65,835.00	1	10
595	Chevy	G3500	2001	22	4	1	4	$42,505.03	1	10
142	Dodge	Charger	2017	5	3	1	4	$58,917.93	1	9
231	Chevy	Tahoe	2012	10	2	2	4	$108,417.00	1	9
247	Dodge	Charger	2014	6	3	1	4	$63,220.22	1	9
252	Ford	Explorer	2016	5	3	1	4	$92,603.49	1	9
258	Ford	Explorer	2016	5	3	1	4	$82,916.95	1	9
259	Ford	Explorer	2016	6	3	1	4	$76,013.23	1	9
264	Ford	Explorer	2017	6	3	1	4	$102,300.00	1	9
265	Ford	Explorer	2017	6	3	1	4	$62,649.00	1	9
266	Ford	Explorer	2017	5	3	1	4	$63,191.07	1	9
267	Ford	Explorer	2018	5	3	1	4	$71,529.00	1	9
1	Ford	Explorer	2016	6	1	2	4	$67,869.00	1	8
235	Dodge	Charger	2012	10	2	1	4	$105,664.51	1	8
269	Ford	Explorer	2018	4	2	1	4	$77,279.74	1	8
270	Ford	Explorer	2018	4	2	1	4	$56,329.25	1	8
271	Ford	Explorer	2018	4	2	1	4	$78,363.31	1	8
277	Ford	Explorer	2019	4	2	1	4	$54,183.00	1	8
279	Ford	Explorer	2019	4	2	1	4	$44,853.00	1	8
8	Ford	Explorer	2016	7	1	1	4	$56,492.00	1	7
10	Ford	Explorer	2016	6	1	1	4	$54,763.26	1	7
66	Ford	HY Fusion	2016	7	1	1	4	$39,656.00	1	7
134	Dodge	Charger	2016	5	1	1	4	$69,410.85	1	7
135	Dodge	Charger	2016	7	1	1	4	$76,364.00	1	7
136	Dodge	Charger	2016	6	1	1	4	$91,646.75	1	7
143	Dodge	Charger	2017	6	1	1	4	$58,537.00	1	7
222	Ford	Explorer	2021	1	1	1	4	$53,976.46	1	7
238	Dodge	Charger	2013	9	1	1	4	$113,140.33	1	7
239	Dodge	Charger	2013	9	1	1	4	$91,368.04	1	7
244	Ford	Explorer	2015	7	1	1	4	$82,039.82	1	7
249	Dodge	Charger	2014	7	1	1	4	$70,875.36	1	7
250	Dodge	Charger	2014	7	1	1	4	$60,789.52	1	7
255	Dodge	Charger	2016	7	1	1	4	$56,819.67	1	7
256	Dodge	Charger	2015	5	1	1	4	$51,687.52	1	7
273	Ford	Taurus	2018	5	1	1	4	$22,361.00	1	7
274	Ford	Taurus	2018	5	1	1	4	$37,585.00	1	7
278	Ford	Explorer	2019	1	1	4	1	$44,558.48	1	7
280	Ford	Explorer	2019	3	1	1	4	$56,297.81	1	7
228	Ford	Explorer	2021	1	1	1	3	$49,984.12	1	6
276	Ford	Taurus	2019	3	1	1	3	$35,158.42	1	6
223	Ford	Explorer	2021		1	1	1		1	4
224	Ford	Explorer	2021		1	1	1		1	4
225	Ford	Explorer	2021		1	1	1		1	4
227	Ford	Explorer	2021		1	1	1		1	4
229	Ford	Explorer	2023	1	1	1	1		1	4
232	Ford	Explorer	2022		1	1	1		1	4
233	Ford	Explorer	2022		1	1	1		1	4
234	Ford	Explorer	2022		1	1	1		1	4
245	Ford	Explorer	2023	1	1	1	1		1	4
246	Ford	Explorer	2023	1	1	1	1		1	4
248	Ford	Explorer	2023	1	1	1	1		1	4
261	Ford	Explorer	2023	1	1	1	1		1	4
262	Ford	Explorer	2023	1	1	1	1		1	4
275	Ford	Taurus	2019	1	1	1	1		1	4
282	Dodge	Charger	2020	2	1	1	1	$36,052.24	1	4
283	Ford	Explorer	2020	1	1	1	1		1	4
		Vehicles								65
	Vehicles exceeding standards									2

Table 5: Sample Data Set #1 for Police Fleet

Based on EV availability for any vehicle on this replacement candidates sorted list, a list of possible EVs is next generated. At this point the vehicle costs and incentives are reviewed.

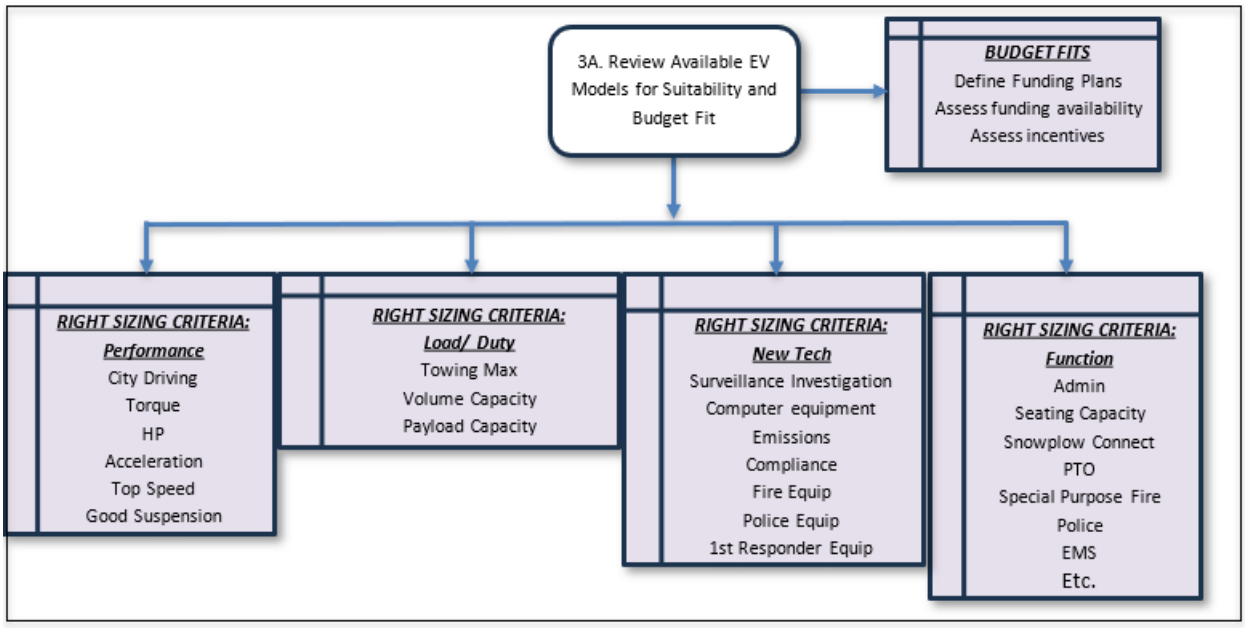

Figure 4 listed the sequence of evaluations to determine which vehicles are to be replaced when. Based on the criteria and the retirement points, the choices are analyzed and sorted by points, as shown in Table 6, for the entire fleet. For this example, if the points total 10 or higher, then an initial plan considers converting to an EV in the current year (2025). The next group of vehicles with 9 points, an assumption is made these should be considered for the subsequent year (2026) and so on.

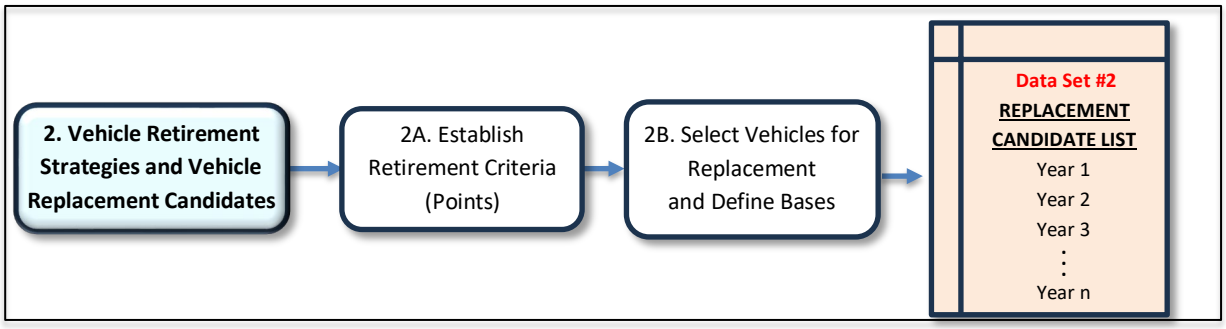

Figure 3: Vehicle Retirement Criteria and Selection

The next steps is to evaluate EV alternatives. This involves pricing the vehicles considering any incentives, making sure funding is in the appropriate budgets and then evaluating the technical requirements to right size the electric versions for each fleet vehicle. Figure 4 illustrates the type of evaluations that occur depending on the vehicle's use case.

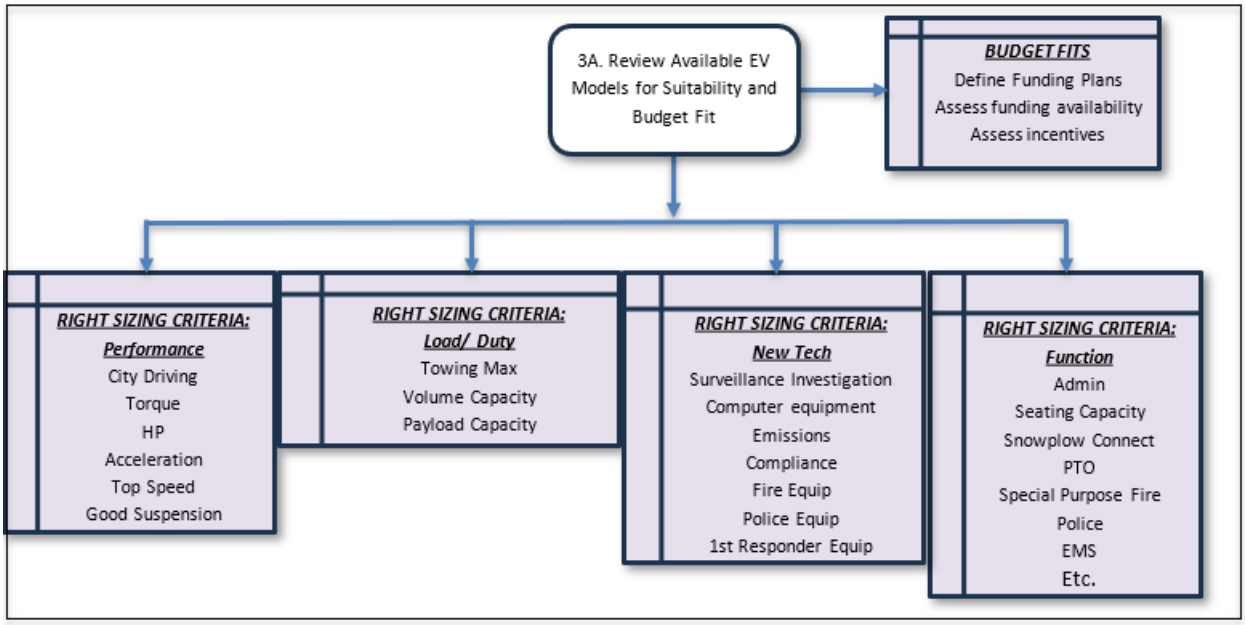

Figure 4: EV Selection Criteria

Once a list of a fleet department is organized based on retirement date, the year of retirement can be assigned, as shown in Table 6. As illustrated in Figure 5, the data can be easily compiled and collated to first isolate all retiring vehicle candidates by year (Data Set #1), then identifying which have EV alternatives that meet right sizing and budgetary criteria (Data Set #3, Table 7 and Table 9). From this point, final selections can be made for each department to arrive at a target list of vehicles to electrify (Data Set #4, Table 10)

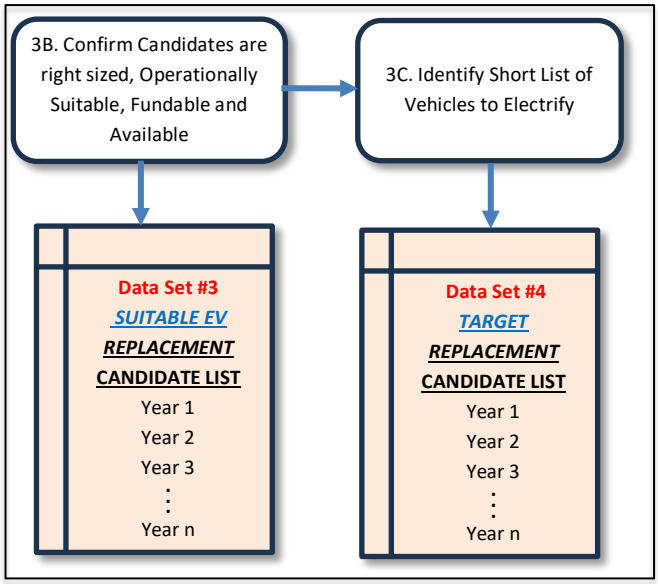

Figure 5: Steps for Generating Short List of EV Candidates

Retiring Candidates based on Total Point (7 or higher)

Dept.	Unit #	Make:	Model:	Year:	Unit Age:	Points	Mileage:	Points	Lifetime Maintenance Cost	Lifetime Evaluation Points	Purchase Price	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade	Con-dition Points	Operating Cost Per Mile/Hour	TOTAL POINTS	EV Candidate?	Plan Year	Comments/ EV Alternatives
Police	226	Dodge	Charger	2011	11	3	188,945	4	$44,984.50	4	$22,561.00	$94,762.22	1	$0.49	12	Y	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	236	Ford	Explorer	2013	10	2	128,777	4	$66,540.00				1	$0.89	11	Y	2025	Blazer EV
Pub Wks	57	IH	4900 4X2	2002	16	4	26,264	1	$53,329.81				1	$6.42	11	N	2025	Need reliable cost effective MDT before considering
Pub Wks	557	Chevy	Express Van	2000	18	4	101,005	2	$26,265.39				1	$0.56	11	Y	2025	Ram Van, Ford E-Transit, Chevy will have e-Van in 2026
Wat & Sew	208	Chevy	2500HD	2008	12	4	52,602	1	$24,093.45				2	$0.97	11	N	2025	Need reliable cost effective MDT before considering
Admin	243	Ford	Explorer	2013	10	2	115,123	3	$72,639.00				1	$1.05	10	Y	2025	Blazer EV
Police	39	Chevy	Expr Van	2002	19	4	11,215	1	$29,875.91	4	$20,389.00	$54,007.36	1	$4.15	10	Y	2025	Ram Van, Ford E-Transit, Chevy will have e-Van in 2026
Police	237	Dodge	Charger	2012	10	2	115,897	3	$37,347.80	4			1	$0.60	10	Y	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	240	Dodge	Charger	2013	7	4	89,385	1	$44,557.83	4			1	$0.97	10	Y	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	253	Ford	Explorer	2016	6	4	117,734	1	$47,926.52	4			1	$0.81	10	Y	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	254	Ford	Explorer	2016	6	4	65,806	1	$29,361.00	4	$27,076.00	$75,233.00	1	$0.88	10	Y	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	257	Ford	Explorer	2017	5	3	106,789	2	$43,173.22	4	$28,303.00	$101,222.85	1	$0.81	10	Y	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	260	Ford	Explorer DEA	2016	6	1	121,799	4	$21,256.00	4	$27,657.00	$20,961.16	1	$0.44	10	Y	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	263	Ford	Explorer	2016	7	4	59,827	1	$32,328.00	4	$28,303.00	$65,835.00	1	$1.10	10	Y	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	595	Chevy	G3500	2001	22	4	2,004	1	$20,956.85	4	$19,481.00	$42,505.03	1	$17.47	10	N	2025	N/A
Pub Wks	59	Ford	F-550 Bkt	2004	17	4	80,455	1	$62,388.77	4	$59,532.94	$153,067.31	1	$1.65	10	N	2025	N/A
Pub Wks	74	Chevy	Silverado	2003	20	4	50,249	1	$31,877.00	4	$24,069.00	$67,421.00	1	$1.16	10	Y	2025	Silverado EV
Pub Wks	207	Chevy	2500HD	2008	14	4	48,717	1	$23,184.14	4	$28,410.00	$67,520.91	1	$1.18	10	N	2025	Need reliable cost effective MDT before considering
Pub Wks	588	Ford	F_550	2000	22	4	31,650	1	$79,128.00	4	$57,275.00	$149,293.00	1	$4.15	10	N	2025	Need reliable cost effective MDT before considering
Pub Wks	598	IH	4900DT 466	2000	18	4	21,568	1	$59,385.94	4	$76,908.00	$148,925.71	1	$6.90	10	N	2025	Need reliable cost effective MDT before considering
Police	142	Dodge	Charger	2017	5	3	35,174	1	$22,097.48	4	$24,719.00	$58,917.93	1	$1.11	9	Y	2027	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	231	Chevy	Tahoe	2012	10	2	108,417	2	$52,244.95	4	$24,571.00	$108,417.00	1	$0.90	9	Y	2027	Silverado EV
Police	247	Dodge	Charger	2014	6	3	49,219	1	$26,540.51	4	$24,855.00	$63,220.22	1	$1.13	9	Y	2027	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	252	Ford	Explorer	2016	5	3	75,802	1	$45,147.77	4	$27,076.00	$92,603.49	1	$1.00	9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	258	Ford	Explorer	2016	5	3	82,441	1	$30,065.07	4	$28,303.00		1		9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	259	Ford	Explorer	2016	6	3	58,833	1	$27,804.14	4	$28,303.00		1		9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	264	Ford	Explorer	2017	6	3	97,415	1	$41,361.00	4	$29,499.00		1		9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	265	Ford	Explorer	2017	6	3	50,921	1	$12,762.00	4	$29,499.00		1		9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	266	Ford	Explorer	2017	5	3	38,367	1	$19,980.16	4	$29,499.00	$63,191.07	1	$1.31	9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	267	Ford	Explorer	2018	5	3	63,853	1	$27,316.00	4	$29,557.00	$71,529.00	1	$1.12	9	Y	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Pkg Maint	164	Ford	Transit connect	2012	11	3	34,614	1	$17,623.00	4	$19,224.00	$44,656.00	1	$0.94	9	Y	2027	Ram Van, Ford E-Transit, Chevy will have e-Van in 2026
Pub Wks	40	Sterling	L9500 Semi	2002	18	4	14,075	1	$26,938.08	3	$107,222.00	$148,868.14	1	$8.94	9	N	2027	Need reliable cost effective HDT before considering
Police	1	Ford	Explorer	2016	6	1	104,354	2	$26,382.00	4	$27,551.00	$67,869.00	1	$0.52	8	Y	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	235	Dodge	Charger	2012	10	2	183,249	1	$60,765.91	4	$19,233.00	$105,664.51	1	$0.55	8	Y	2028	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	269	Ford	Explorer	2018	4	2	69,972	1	$30,573.94	4	$29,557.00	$77,279.74	1	$0.83	8	Y	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	270	Ford	Explorer	2018	4	2	27,301	1	$17,444.29	4	$29,557.00	$56,329.25	1	$1.18	8	Y	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	271	Ford	Explorer	2018	4	2	68,167	1	$27,996.39	4	$29,557.00	$78,363.31	1	$1.57	8	Y	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	277	Ford	Explorer	2019	4	2	25,915	1	$15,221.00	4	$29,557.00	$54,183.00	1	$1.13	8	Y	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	279	Ford	Explorer	2019	4	2	29,554	1	$20,721.00	4	$29,836.00	$44,853.00	1	$1.52	8	Y	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Fire	201	Ford	Dually P/U	2006	15	2	13,212	1	$22,788.89	4	$37,760.00	$63,617.87	1	$3.97	8	Y	2028	Ford F-150 Lightning,
Wat & Sew	397	Ford	F250	2012	10	2	46,165	1	$14,945.00	4	$24,955.00	$54,900.00	1	$0.86	8	N	2028	Electric versions are available, will be considered
Admin	26	Ford	HY Fusion	2016	7	1	22,822	1	$15,709.00	4	$24,475.00	$29,760.00	1	$1.30	7	Y	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	25	Ford	HY Fusion	2016	6	1	13,151	1	$14,474.98	4	$24,475.00	$39,729.12	1	$1.65	7	Y	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	27	Ford	HY Fusion	2016	7	1	18,496	1	$15,165.00	4	$24,475.00	$28,575.00	1	$1.54	7	Y	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	68	Ford	HY Fusion	2017	5	1	15,222	1	$9,670.37	4	$24,475.00	$34,574.19	1	$1.19	7	Y	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	184	Dodge	Sprinter	2008	12	1	28,647	1	$53,125.98	4	$31,112.00	$94,244.51	1	$3.02	7	Y	2029	Ram Van, Ford E-Transit, Chevy will have e-Van in 2026
Police	8	Ford	Explorer	2016	7	1	74079	1	$17,114.00	4	$28,700.00	$56,492.00	1	$0.57	7	Y	2029	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	10	Ford	Explorer	2016	6	1	68779	1	$17,241.07	4	$28,748.00	$54,763.26	1	$0.56	7	Y	2029	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer

2025 Retirement Candidates

Not EV candidates

EV Alternatives

Table 6: Retirement Candidate Vehicles by Department and Points -Data Set #2

Dept.	Unit #	Make:	Model:	Year:	Plan Year	Comments/ EV Alternatives
Police	226	Dodge	Charger	2011	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	236	Ford	Explorer	2013	2025	Blazer EV
Pub Wks	557	Chevy	Express Van	2000	2025	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Admin	243	Ford	Explorer	2013	2025	Blazer EV
Police	39	Chevy	Expr Van	2002	2025	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Police	237	Dodge	Charger	2012	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	240	Dodge	Charger	2013	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	253	Ford	Explorer	2016	2025	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	254	Ford	Explorer	2016	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	257	Ford	Explorer	2017	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	260	Ford	Explorer DEA	2016	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	263	Ford	Explorer	2016	2025	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Pub Wks	74	Chevy	Silverado	2003	2025	Silverado EV
Police	142	Dodge	Charger	2017	2027	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	231	Chevy	Tahoe	2012	2027	Silverado EV
Police	247	Dodge	Charger	2014	2027	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	252	Ford	Explorer	2016	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	258	Ford	Explorer	2016	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	259	Ford	Explorer	2016	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	264	Ford	Explorer	2017	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	265	Ford	Explorer	2017	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	266	Ford	Explorer	2017	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	267	Ford	Explorer	2018	2027	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Pkg Maint	164	Ford	Transit connect	2012	2027	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Police	1	Ford	Explorer	2016	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	235	Dodge	Charger	2012	2028	Hyundai Ioniq 5, Tesla S, Chevy Equinox
Police	269	Ford	Explorer	2018	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	270	Ford	Explorer	2018	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	271	Ford	Explorer	2018	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	277	Ford	Explorer	2019	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	279	Ford	Explorer	2019	2028	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Fire	201	Ford	Dually P/U	2006	2028	Ford F-150 Lightning,
Admin	26	Ford	HY Fusion	2016	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	25	Ford	HY Fusion	2016	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	27	Ford	HY Fusion	2016	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	68	Ford	HY Fusion	2017	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	184	Dodge	Sprinter	2008	2029	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Police	8	Ford	Explorer	2016	2029	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer
Police	10	Ford	Explorer	2016	2029	Blazer EV, Kia EV9, Honda Prologue, Jeep Wagoneer

Table 7: Candidates for Electrification – Data Set #3

Dept.	Unit #	Make:	Model:	Year:	Unit Age:	Points	Mileage:	Points	Lifetime Maintenance Cost	Lifetime Evaluation Points	Purchase Price	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade	Con-dition Points	Operating Cost Per Mile/Hour	TOTAL POINTS
Admin	243	Ford	Explorer	2013	10	2	115,123	3	$72,639.00	4	$19,233.00	$121,313.00	1	$1.05	10
Admin	26	Ford	HY Fusion	2016	7	1	22,822	1	$15,709.00	4	$24,475.00	$29,760.00	1	$1.30	7
Admin	25	Ford	HY Fusion	2016	6	1	13,151	1	$14,474.98	4	$24,475.00	$39,729.12	1	$1.65	7
Admin	27	Ford	HY Fusion	2016	7	1	18,496	1	$15,165.00	4	$24,475.00	$28,575.00	1	$1.54	7
Admin	68	Ford	HY Fusion	2017	5	1	15,222	1	$9,670.37	4	$24,475.00	$34,574.19	1	$1.19	7
Admin	184	Dodge	Sprinter	2008	12	1	28,647	1	$53,125.98	4	$31,112.00	$94,244.51	1	$3.02	7

Table 8: First Cut for EV Choices based on Retirement Year, based on Points - Data Set #2

Dept.	Unit #	Make:	Model:	Year:	Unit Age:	Points	Mileage:	Points	Lifetime Maintenance Cost	Lifetime Evaluation Points	Purchase Price	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade	Con-dition Points	Operating Cost Per Mile/Hour	TOTAL POINTS	EV Candidate ?	Plan Year
Admin	243	Ford	Explorer	2013	10	2	115,123	3	$72,639.00	4	$19,233.00	$121,313.00	1	$1.05	10	Y	2025
Admin	26	Ford	HY Fusion	2016	7	1	22,822	1	$15,709.00	4	$24,475.00	$29,760.00	1	$1.30	7	Y	2028
Admin	25	Ford	HY Fusion	2016	6	1	13,151	1	$14,474.98	4	$24,475.00	$39,729.12	1	$1.65	7	Y	2028
Admin	27	Ford	HY Fusion	2016	7	1	18,496	1	$15,165.00	4	$24,475.00	$28,575.00	1	$1.54	7	Y	2028
Admin	68	Ford	HY Fusion	2017	5	1	15,222	1	$9,670.37	4	$24,475.00	$34,574.19	1	$1.19	7	Y	2028
Admin	184	Dodge	Sprinter	2008	12	1	28,647	1	$53,125.98	4	$31,112.00	$94,244.51	1	$3.02	7	Y	2028

Table 9: Second Cut to Assign Possible Electrification Year by Vehicle- Data Set #3

Dept.	Unit #	Make:	Model:	Year:	Unit Age:	Mileage:	Lifetime Maintenance Cost	Purchase Price	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade	Operating Cost Per Mile/Hour	TOTAL POINTS	EV Candidate ?	Plan Year	Comments/ EV Alternatives
Admin	243	Ford	Explorer	2013	10	115,123	$72,639.00	$19,233.00	$121,313.00	$1.05	10	Y	2025	Blazer EV
Admin	68	Ford	HY Fusion	2017	5	15,222	$9,670.37	$24,475.00	$34,574.19	$1.19	7	Y	2028	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	25	Ford	HY Fusion	2016	6	13,151	$14,474.98	$24,475.00	$39,729.12	$1.65	7	Y	2028	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	26	Ford	HY Fusion	2016	7	22,822	$15,709.00	$24,475.00	$29,760.00	$1.30	7	Y	2028	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	27	Ford	HY Fusion	2016	7	18,496	$15,165.00	$24,475.00	$28,575.00	$1.54	7	Y	2028	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Admin	184	Dodge	Sprinter	2008	12	28,647	$53,125.98	$31,112.00	$94,244.51	$3.02	7	Y	2028	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026

Table 10: 3rd Cut: Investigate EV Alternatives -Data Set #4

This is an effective process that engages cross functional stakeholders in decision making. The fleet operations team prepares the assessments, shares and discusses with the Village staff and Board for approvals. The goals that are attained are consistent with the CROP plan and with incentives applied, there are usually favorable ROIs with all the EV investments.

Some of the specific considerations that are considered:

- Fleet vehicles/equipment replacements are scheduled from a 10 year schedule, as well as technician evaluations. This is a guideline that depends upon budgetary constraints, as well as manufacturer's vehicle availability. Vehicles may move dependent on budgetary constraints, vehicle condition, usage, rightsizing, accidents, etc.
- As the Village's equipment primarily operates within our 4.5 square mile area, high mileage is not historically a factor. Age, technological advancements, efficiencies in fuel usage, improvements in safety features, as well as maximizing returns on disposal of equipment into the secondary market, are just some of the driving factors behind suggested unit replacement.
- In the 2024 Equipment data tab, any unit that has an alternative fuel option, that will theoretically meet the end user's needs, is noted as either already planned for purchase, or the fiscal impact is noted, for feedback from the Village Board.

- Equipment evaluated to have Short duty cycles matches most current EV options and will be the primary equipment evaluated for EV replacement. Long duty cycle equipment replacements are going to require larger battery specs, and fast chargers added to the Village EV charging infrastructure. Long Duty cycle equipment shall still be evaluated for Alternative Fuel options annually, but in conjunction with required infrastructure improvements.
- Criteria used for EV adoption has been the evaluation of duty cycles, whether the vehicle returns to a central location regularly, the availability of an EV from a major manufacturer with a dealer support network, the vehicle meets the needs of the end user, the end user will physically fit in the vehicle, and whether the available options will physically fit in all of our structures.
- After feasibility has been established, the Board is presented with the available options to provide guidance in vehicle replacement.
- All alternative fuel vehicles are researched continually for models and technologies that are suitable for the Village of Oak Park needs.
- All equipment used for emergency infrastructure repairs, or weather events, storm damage, snow, etc., is considered long duty cycle equipment, as it is unknown how long the equipment will need to be run to complete any task at hand.
- All emergency response Police and Fire equipment is considered long duty cycle equipment, as their usage may be unpredictable and the equipment that is required for the end users to carry out their duties; lights, sirens, computers, cameras, etc., can have detrimental effects on battery systems.
- The rest of the fleet is evaluated by fuel usage, mileage, and telematics data, to determine duty cycle.

Error! Reference source not found. lists the current procurement inventory for EVs and Figure 1 shows these data by fuel types.

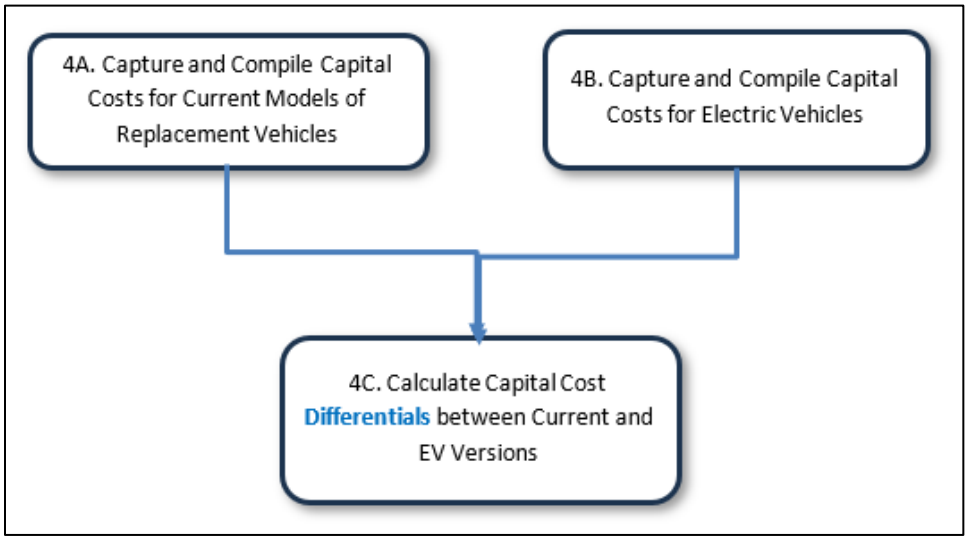

Figure 6: Capital Cost Compilation and Analysis

Vehicle Storage and Implications for Charging

Currently the Village manages 6 locations with fleet vehicles:

- 123 Madison St.
  - Village Hall Outdoor Parking Lot
  - Police Station Parking Garage
- 201 South Blvd, Public Works Indoor parking
- Fire Stations
  - #1 - 100 N Euclid Ave.
  - #2 - 212 Augusta St
  - #3 - 900 S East Ave

Currently, fleet vehicles and equipment are stored and recharged from two primary locations: 123 Madison (Village Hall and Police Headquarters, Figure 7 and Figure 8), and 201 South Blvd. (Public Works facility, Figure 9 and Figure 10). As of 2024, the priority is to expand light-duty vehicle charging infrastructure, as those types of vehicles best fit our EV vehicle replacement criteria.

Village Hall

The parking lot houses a many admin vehicles used for administration and parking management. This has been where most of the conversions to EVs have occurred since 2018 and where many of the next conversions to EVs are expected. The plans are in place to add EVSEs and associated electrical requirements for the Village Hall. Since the Admin and Police are co-located, there may be some benefits in sharing in any service upgrades – i.e., integrating the overall demand of the Police and Administrative fleet vehicles.

However, the Police Department is considering relocating or remodeling, so decisions related to longer-term electrical capacity are pending. The initial stages of new construction discussions at the Village Hall have begun, so the EV infrastructure expansion is on hold as decisions are made regarding footprint and parking relocation. Until the future of the police department changes is better defined, the sizing of new power capacity and the supporting equipment on the Village's side of the meter is not known. In the meantime, for the administrative parking lot on Madison Street, this is a primary location for adding charging stations. However, addition of power will be required at some point. ComEd has been contacted.

Public Works

There is a current surplus of charging ports to vehicles at our Public Works which should ease the expansion of the conversion to EVs. As larger equipment becomes available and battery technology advances, the charging infrastructure needs will be reassessed for larger EV equipment that can match our required emergency response duty cycles.

The Public Works facility continues to add passenger EVs to the fleet as ICEV and HEVs retire. The infrastructure to support will fit the retirement classes and part of the ongoing discussions relate to how

the power supply equipment and conduit distribution should be pre-installed awaiting new EVs. Further, once larger EVs (medium and heavy duty trucks) become available, suitable and cost effective, the Village is considering adding both L2 and DCFCs depending on operational needs.

Fire Stations

The fire station houses fire-fighting trucks, 5 passenger vehicles, 3 SUVs and ambulances. The passenger vehicles are generally not ready to be retired, so this site is not currently considered for EVs. At some point, one or two charging points could be helpful at the relevant location for administrative vehicles when they are ready for retirement.

Figure 7: Aerial View of Village Hall and Parking Lot

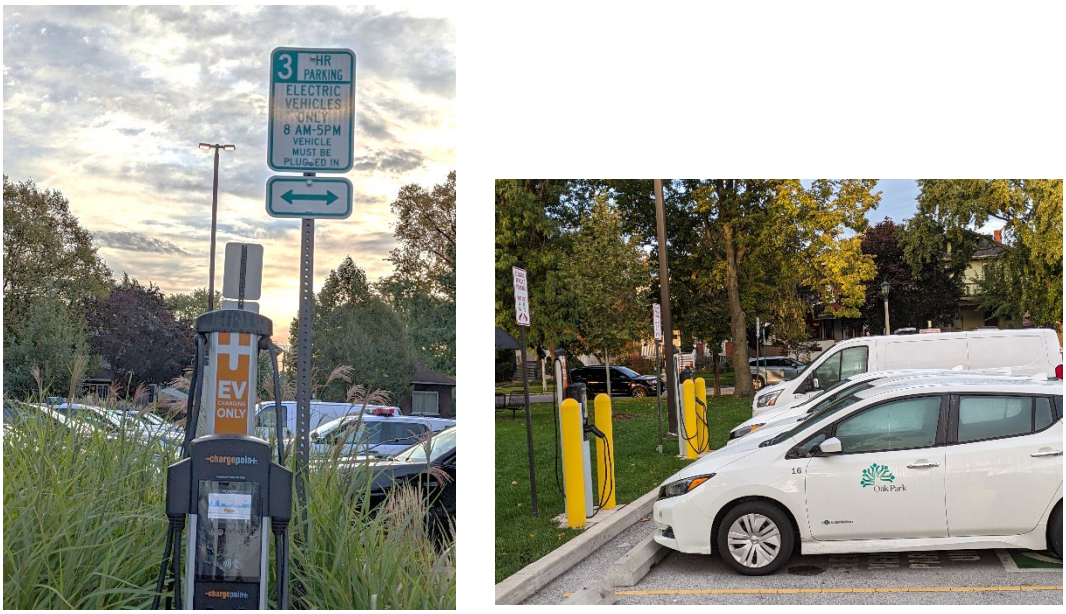

Figure 8: CT4000 Dual Port EV Chargers - Village Hall Lot

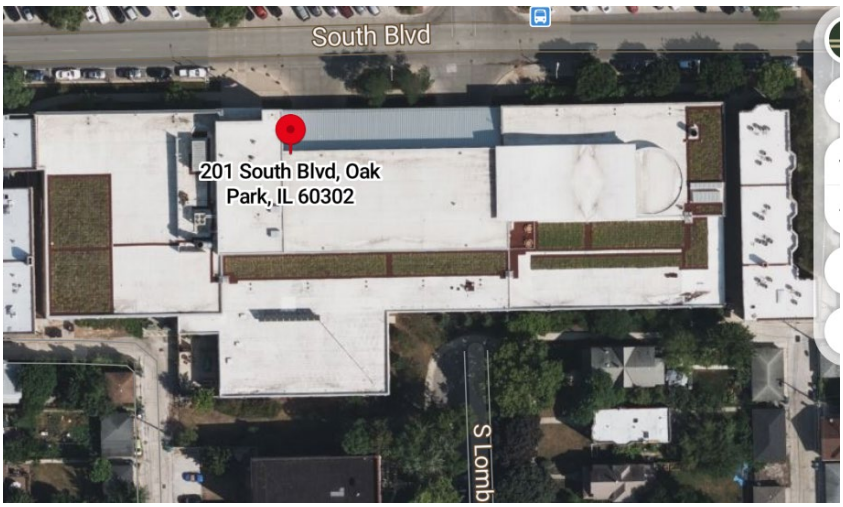

Figure 9: Aerial View of Public Works. All EVSEs indoors

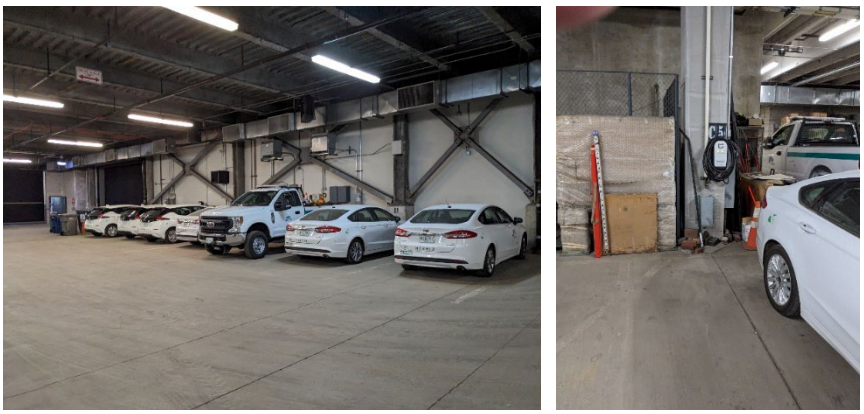

Figure 10: EVs and Clipper Creek 32 Amp L2 EVSEs at Public Works:

EVs are all kept on Village properties owned and managed by the Village. Based on the Climate and Economic Justice Screening Tool (CEJS), Oak Park does not fall in CEJS (Figure 11).

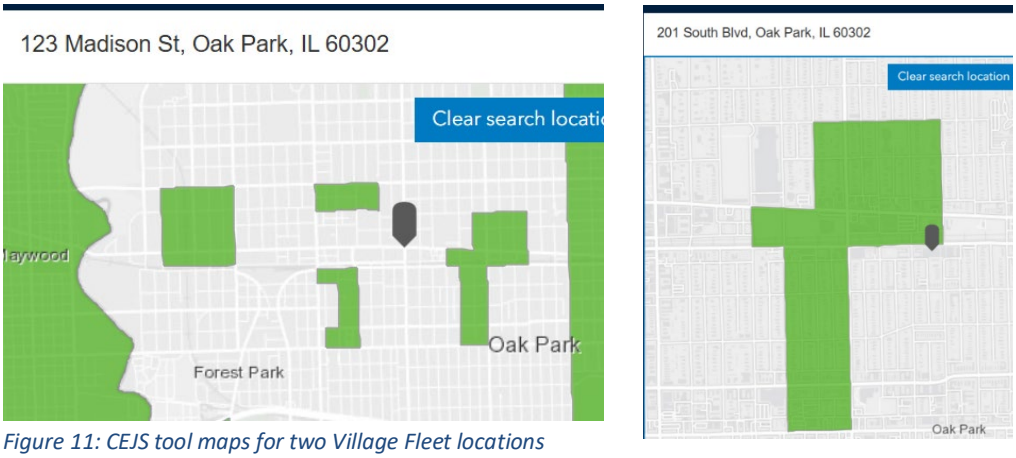

Figure 11: CEJS tool maps for two Village Fleet locations

Electrification Schedule and Recommendations

To start, some comments are provided that inform decisions qualitatively:

- Proposed 2024- 2025 alternative fuel vehicle replacements are determined by examining vehicle usage and end user needs. Most Admin vehicles are a perfect fit and are being replaced with EV options that will accommodate the end user's multiple short distance, short duration trips.
- Pool vehicles may need to travel longer distances for training, in addition to the day-to-day in-town driving, which is why hybrids are still the preferred vehicle type. As nationwide charging infrastructure grows, we will be exploring larger capacity battery EVs for replacement Pool vehicles.
- Patrol use condition tested EVs are in their infancy and should be a viable option in the next few years. High speed charging infrastructure is in the planning stages for the forthcoming EV Patrol vehicles. Hybrid vehicles are the current preferred replacement vehicles, cutting fossil fuel usage, per vehicle, in half.
- All Pick Ups are equipped with 4WD and plows, for snowstorm duties. This combination is not currently (2024) available as an EV.
- Parking Enforcement have similar duty cycles to the Patrol vehicles. As larger capacity battery utility vehicles become available, with suitable ROIs to hybrid vehicles, we will be integrating them into the fleet.
- Large Trucks are used for multiple purposes but need to have the ability to perform through long duration storm events. Current EV options revolve around over the road, and last mile delivery trucks. The duty cycle, and lack of plowing ability make these unsuitable for municipal use.
- One Ton Trucks are used for multiple purposes but need to have the ability to perform through long duration storm events. Current EV options revolve around over the road, and last mile delivery trucks. The duty cycle, and lack of plowing ability make these unsuitable for municipal use.
- Yellow Iron/Loaders/Heavy Equipment have similar needs of the Large Trucks, but some specialty equipment has some Electric options becoming available that may fit some of the

Village's needs. Example being a small loader manufacturer is advertising an all-electric option that should be available in 2024.

- Fire Equipment has some emerging technologies that may meet our needs in the future. The current options, along with our lack of charging infrastructure keep this from being a viable option.
- As viable vehicles are introduced, they will be evaluated, and if suitable, incorporated into the Village of Oak Park Fleet.

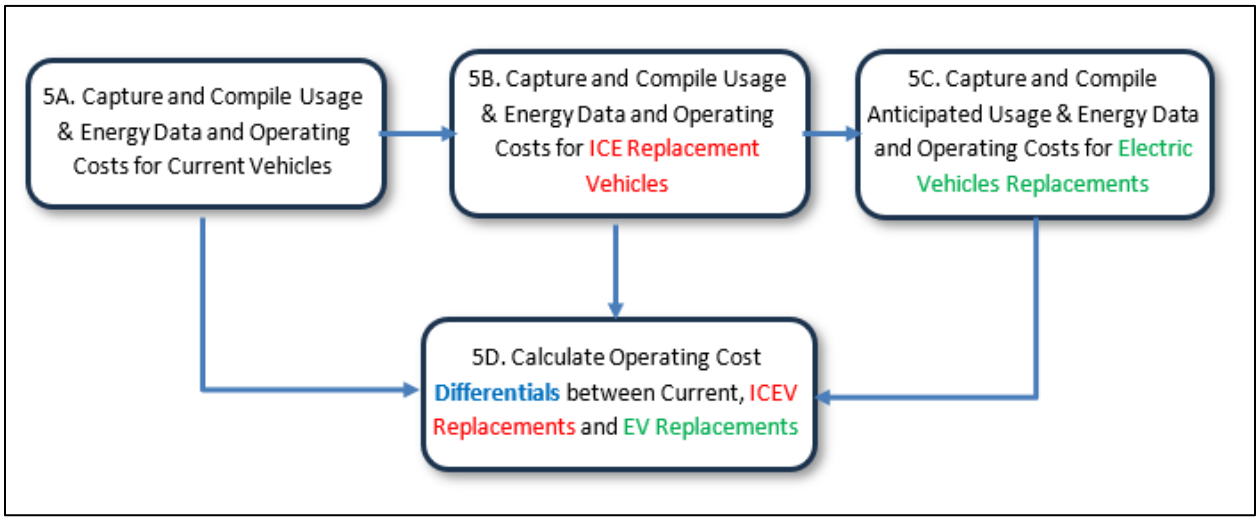

Figure 12: Operating Costs Compilation and Analysis

EV Charging Infrastructure Demand Profile

Next, each EV candidate is reviewed based on its use case to see how much fuel is needed on a regular basis, whether existing EV Charging Stations (EVCSs) can operationally support it, whether the EVCI is sufficient and/or what EVCI and EVCS investments are needed based on a site-by-site basis. A look at the next generation of vehicles to be considered for electrification is also reviewed, to see how this might apply to EVCI planning.

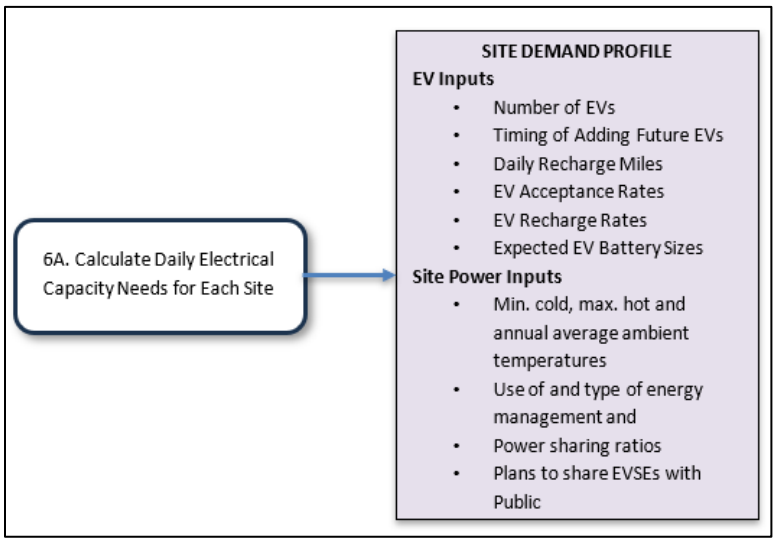

Figure 13: Electrical Costs

EV Charging Infrastructure Supply Profile

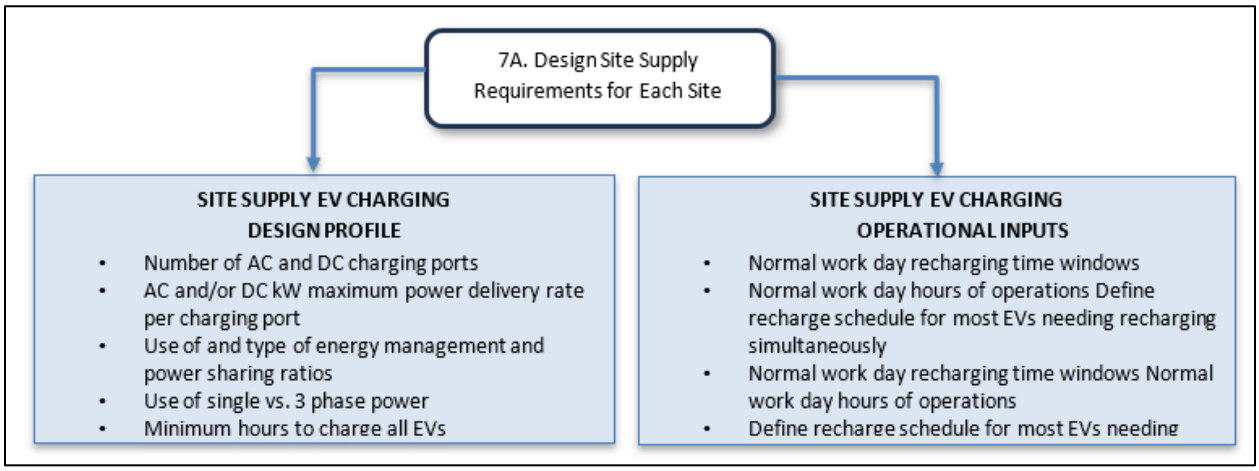

Figure 14: Site Supply Profile

EV Charging Infrastructure and EVSE Scope of Work

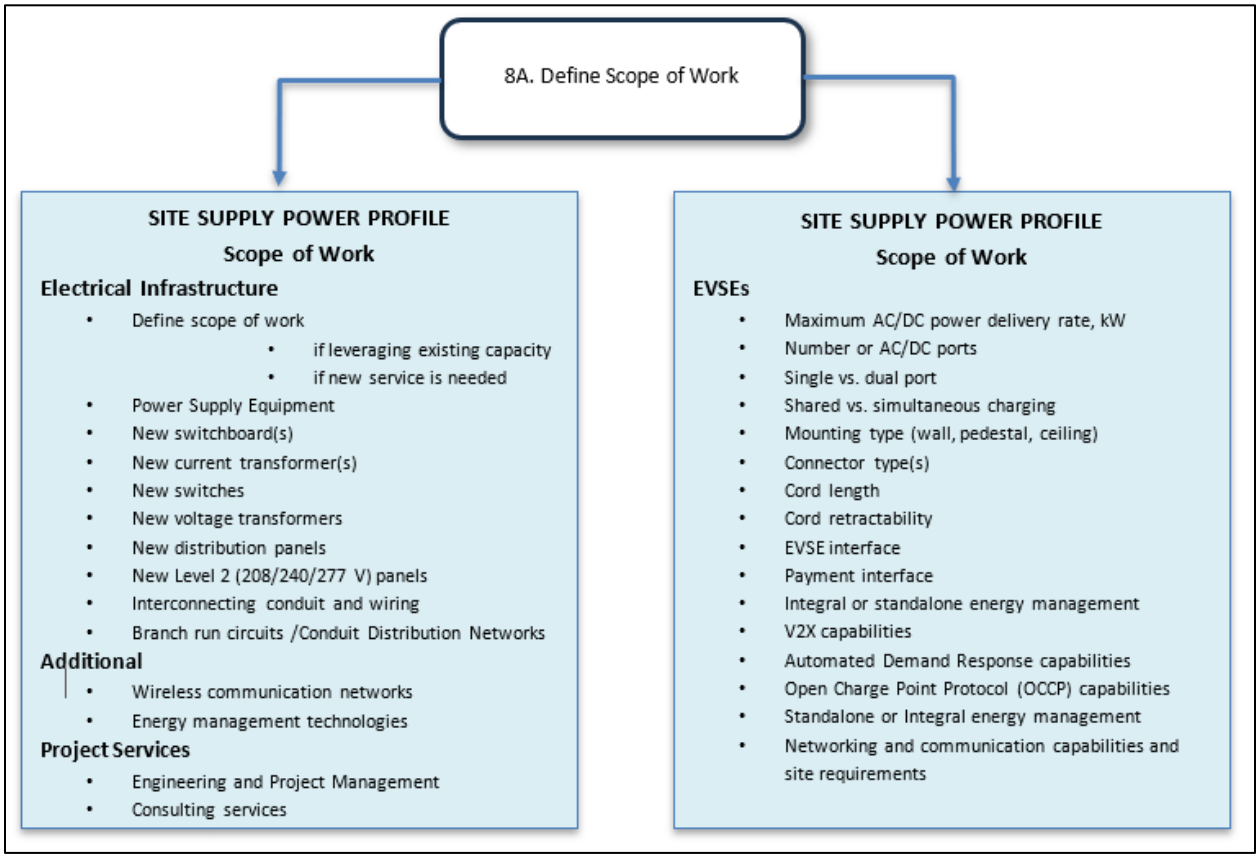

Figure 15: Scope of Work

New kWh/day at Address	Level 2 kW	kW/port	Number of Ports,Full load	Number of Ports with Redundancy	Comments
Total 2025-2026 Admin Only					Admin including parking offices
14.0	1.4	7.0	1	2	
Total 2025-2029 Admin Only					
76.7	9.6	7.0	2	3	
Total 2025-2026 Police Only					Police EVs currenlty tied up in planning of new Police Dept facility
159.16	19.9	7.0	3	5	
Total 2025-2029 Police Only					
597.3	74.7	7.0	11	17	
Total 2025-2026 Police and Admin					
173.1	21.6	7.0	4	6	
Total 2025-2029 Police and Admin					
674.1	84.3	7.0	13	20	

Table 11: Preliminary Electricity Demand and Consumption Near Term and Longer Term Planning: 7 kW Level EVSEs

123 Madison Parking Area (Village Hall Lot and Police HQ Garage)					
New kWh/day at Address	Level 2 kW	kW/port	Number of Ports,Full load	Number of Ports with Redundancy	Comments
Total 2025-2026 Admin Only					Admin including parking offices
14.0	1.4	10.0	1	2	
Total 2025-2029 Admin Only					
76.7	9.6	10.0	1	2	
Total 2025-2026 Police Only					Police EVs currenlty tied up in planning of new Police Dept facility
159.16	19.9	10.0	2	3	
Total 2025-2029 Police Only					
597.3	74.7	10.0	8	12	
Total 2025-2026 Police and Admin					
173.1	21.6	10.0	3	5	
Total 2025-2029 Police and Admin					
674.1	84.3	10.0	9	14	

Table 12: Preliminary Electricity Demand and Consumption Near Term and Longer Term Planning: 10 kW Level EVSEs

Dept.	Unit #	Make:	Model:	Year:	Plan Year	Comments/ EV Alternatives
Pub Wks	557	Chevy	Express Van	2000	2025	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Pub Wks	74	Chevy	Silverado	2003	2025	Silverado EV
Pub Wks	23	Ford	Escape	2017	2029	TBD
Pub Wks	22	Ford	Transit connect	2016	2029	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Pub Wks	24	Ford	HY Fusion	2016	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Pub Wks	30	Ford	HY Fusion	2016	2029	Tesla Model 2 or 3, Hyudai Ioni1 6, Nissaon Leaf, Lucid Air, many others
Wat & Sew	399	Ford	Tran Connect Van	2013	2029	Rivian Van, Ford E-Transit, Chevy will have e-Van in 2026
Wat & Sew	567	Chevy	Workhorse	2000	2029	Silverado EV

Table 13: Example of Planning for Energy Consumption Longer Term – example for Public Works Department

Unit #	Make:	Type	Model:	Year:	Purchase Price	Lifetime Fuel + R&M + Purchase Price - Salvage/Trade =	ICEV Alternative Cost	Difference	MPG ICE	Annual Maint ICE	Fuel Cost, $/gal	Annual Fuel Cost ICE	Annual Fuel & Maint Cost ICE	Annual Fuel & Maint Cost EV	Difference
11	Nissan	BEV	Leaf	2019	$24,987.04	$27,396.00	$ 29,000.00	$ 4,012.96	30	$ 300	$ 3.50	$ 1,251.25	$ 1,551.25	$730.78	$ 820.47
12	Nissan	BEV	Leaf	2019	$24,987.04	$27,514.00	$ 29,000.00	$ 4,012.96	30	$ 300	$ 3.50	$ 758.68	$ 1,058.68	$541.51	$ 517.17
14	Nissan	BEV	Leaf	2019	$24,987.04	$27,233.00	$ 29,000.00	$ 4,012.96	30	$ 300	$ 3.50	$ 1,051.40	$ 1,351.40	$653.99	$ 697.41
16	Nissan	BEV	Leaf	2019	$24,987.04	$28,352.00	$ 29,000.00	$ 4,012.96	30	$ 300	$ 3.50	$ 1,847.53	$ 2,147.53	$959.89	$ 1,187.64
243	Ford		Explorer	2013	$19,233.00	$121,313.00									
46	Nissan	BEV	Leaf	2023	$26,807.00	$26,807.00	$ 29,000.00	$ 2,193.00	30	$ 300	$ 3.50	$ 816.67	$ 1,116.67	$563.79	$ 552.87
122	Ford	BEV	EV T350	2022	$64,085.00	$26,807.00	$ 55,000.00	$ (9,085.00)	16	$ 300	$ 3.50	$ 1,531.25	$ 1,831.25	$563.79	$ 1,267.46
25	Ford		HY Fusi	2016	$24,475.00	$39,729.12									
26	Ford		HY Fusi	2016	$24,475.00	$29,760.00									
27	Ford		HY Fusi	2016	$24,475.00	$28,575.00									
38	Nissan	BEV	Leaf	2023	$26,807.00	$26,807.00	$ 29,000.00	$ 2,193.00	30	$ 300	$ 3.50	$ 816.67	$ 1,116.67	$563.79	$ 552.87
46	Nissan	BEV	Leaf	2023	$26,807.00	$26,807.00	$ 29,000.00	$ 2,193.00	30	$ 300	$ 3.50	$ 816.67	$ 1,116.67	$563.79	$ 552.87
65	Nissan	BEV	Leaf	2023	$26,807.00	$26,807.00	$ 29,000.00	$ 2,193.00	30	$ 300	$ 3.50	$ 816.67	$ 1,116.67	$563.79	$ 552.87
29	Ford		HY Fusi	2017	$23,303.00	$16,272.00									
67	Ford		HY Fusi	2017	$24,475.00	$31,084.00									
68	Ford		HY Fusi	2017	$24,475.00	$34,574.19									
184	Dodge		Sprinter	2008	$31,112.00	$94,244.51									
			X Vehicles												$ 6,701.65

Table 14: Partial Data Set Looking at CapEx and OpEx for ICEV vs. EVs

Infrastructure Future Proofing

	Future Proofing Evaluation						
	NO POWER SHARING			OPTION TO POWER SHARE: Enter Ratio			
Operational Charging Window: Hours/Day Charging all EVs	kW Demand	Amperage Demand	Roundup for Panel Sizing	Power Sharing Ratio	kW Demand	Amperage Demand	Amperage Demand Round Up
2	105.0	323.8	330	2	52.5	161.9	170.0
4	52.5	161.9	170	2	26.3	81.0	90.0
8	26.3	81.0	90	2	13.1	40.5	50.0
12	17.5	54.0	60	2	8.8	27.0	30.0
24	8.8	27.0	30	2	4.4	13.5	20.0

Table 15: Future Proofing Evaluation for EVCI

Number of Fleet Vehicles	Number Converted to EVs (2024)	Nissan Leafs/ Passenger EVs	Ford Transit /Vans	Chevy Blazer EV, Other SUVs	Pickup / Class 2	Class 3 and Up
185	21	15	4	3		
Planned						
2025		5	2	3	3	
2026			2	2	5	1
2027			2	2	5	2

Table 16: Current EV Inventory (2024) and projected procurement targets for EVs

3. Stakeholder Engagement

The Stakeholder engagement spreadsheet was filled out and posted on the Shared Google Drive. A copy of the spreadsheet is presented as Table 17. The team has made many of the connections in the efforts to advance the program thus far.

Stakeholder (people or organizations) that affects fleet electrification project success or that could be impacted by the project in some way	What is the stakeholders role in municipal fleet electrification?	To your knowledge, is this person or organization supportive, neutral, unaware, or resistant to municipal fleet electrification? — Use the drop down to select a viewpoint.	Do you know what could motivate this stakeholder to support municipal fleet electrification?	In what ways could this stakeholder benefit from municipal fleet electrification?	What negative externalities could this stakeholder face?	What is the goal for engaging this stakeholder?	What 'RACI' role will this stakeholder have? — Use the drop down to select.	Have we engaged with this stakeholder before? If so, on what and how did it go?	What strategies could we use to engage this stakeholder?	Do we have contact info or will we need to find it?	Next steps
Office of Sustainability and Resilience	Implementing actions within city climate plan including fleet electrification, supporting interdepartmental coordination around deployment	Champion	Reducing carbon emissions, improving air quality	Demonstrated progress on the goals of the Climate Ready Oak Park plan.	Negative press or public pushback if deployment is too slow, expensive, or unsuccessful	Secure their support to coordinate internally, support outreach to community and other internal departments, recruit them to help find funding for EV chargers	C—Consult before decision	Yes, we have partnered with them on community Truck Touch days	Invite them to municipal fleet electrification working groups, have them lead outreach to resistant stakeholders on the value on the climate plan.	VOP to complete	
Public Works	Defining life cycle of each vehicle, investigating right sizing of new vehicles, investigating available EVs	Supportive	Cleaner fleet with no negative impact on operations	Cleaner vehicles = healthier fleet drivers, less noise	Unplanned operational impacts	PW is at the center of the program and is already deeply engaged	R—Responsible for doing	They are us		VOP to complete	
Purchasing	Assist in procurement of vehicles, EVSEs and infrastructure	Neutral	Education on technology	Support policy		Educate department on procurement specs and other needs	R—Responsible for doing			VOP to complete	
Police	Potential EV user	Resistant	Education on technology	GHG reduction, faster acceleration	Running out of battery power	Demonstrate suitability for EVS	C—Consult before decision				
Fire/ First Responders	Safety	Neutral	First responder training	Better serve changing market and new risks	Lack of knowledge	Meet with fire department and discuss training and any special fire fighting equipment for EVs	C—Consult before decision	They participated in Mayors Caucus training			
Local Electric Utility	Power supply	Supportive	New customers	More customers		Planning	C—Consult before decision	Utility amenable to new capacity, just need clear plan		ComEd:	
Drivers	Driving	Neutral	New vehicles, lower emissions	Newer tech. Quieter. Less pollution, GHG		Education / acceptance	C—Consult before decision	Some interest expressed, awareness growing			
Maintenance Workers	Maintenance	Neutral	Learn about new tech	Newer tech. Quieter. Less pollution, GHG		Education / acceptance	C—Consult before decision	Need to clarify how EVs will be maintained			
Village Trustees/ Board President	Planning and funding approval	Unknown	Greener community, better quality of life	Meet demands of constituents - Quieter. Less pollution, GHG	Re-election	Develop ownership of decisions and approval of funding	C—Consult before decision			Trustees Buchanan, Enyia, Parakkat, Robinson, Straw, Wesley, Waters	
Parking Department	Logistics, space management for planning and deployment	Resistant	Customer satisfaction EV charging as parking service in demand		Capacity shortage- too many or too few EV parking spaces	Planning	C—Consult before decision				
State Representative/ Senator	Assistance for support on sustainability initiatives	Unknown	Support policies, support constituent demand			Communication	C—Consult before decision				

Table 17: Stakeholder Map - Refer to original file in C2C Google Drive

Internal Coordination

A cross functional team has been defined to determine plans, gather, compile and analyze data, and then engage leadership to make informed decisions.

The departments involved include:

- Fleet Management
- Public Works
- Facilities
- Police
- Fire
- Sustainability
- Finance
- Purchasing

Leadership includes:

- Village Board
- Village Manager

All parties have agreed to the purchases and programs to date and support those plans going forward. A team was formed to attain the Mayor's Caucus Gold certification for Village EV readiness. Contractors install and maintain our EV charging infrastructure, and we also have in-house electricians who have done some repairs when the contractors were unavailable, keeping our charging infrastructure operational.

As part of regular communication, the Village convenes demos and informational sessions for any end users with new technologies. Frontline employees who currently own EVs help by dispelling myths and misinformation. A next step will be to equip some decision-makers with take-home EVs, so when the time comes to convert more of the fleet to EVs, they will be able to answer questions and be able to respond to any pushback with their own experience with the technology.

The procurement/finance department will be essential to expanding EV use in that they will be essential to capturing rebates and Direct Pay tax credits.

Sustainability will continue to work with Fleet and Facilities to help make the case for Evs with staff and leadership.

Utility Coordination

Preliminary contact with the utilities has identified locations where new power can originate at the Village Hall. As discussed, decisions are pending, awaiting decisions on a new police facility. Once these decisions are made and based on the vehicle replacement plan for the next few years, utility decisions will be made at the grid level.

Ken Crowley is working with ComEd to assist in refining some fleet electrification activities.

Community Engagement

As a member of the Metropolitan Mayors Caucus EV Readiness Program, Oak Park created a webpage (Electric Vehicles in Oak Park) to communicate about EVs and charging to the public. This includes useful information, hyperlinks regarding the technologies, the benefits, process to install EVs, permitting, public stations and available incentives.

4. Charging Infrastructure and Facilities Upgrades

Charging Strategy

Most of the Village fleet has a dedicated home, simplifying vehicle charging. We use lower-powered Level 2 chargers at all locations. As the fleet expands into vehicles and equipment that may need to be used outside of our normal duty cycles, i.e., police, Fire, storm response equipment, plow truck`s, etc., higher-powered Level 2 chargers, as well as DC fast chargers, will need to be added to our charging infrastructure. This will be evaluated annually as new technology and equipment becomes available.

Calculating Operating Costs

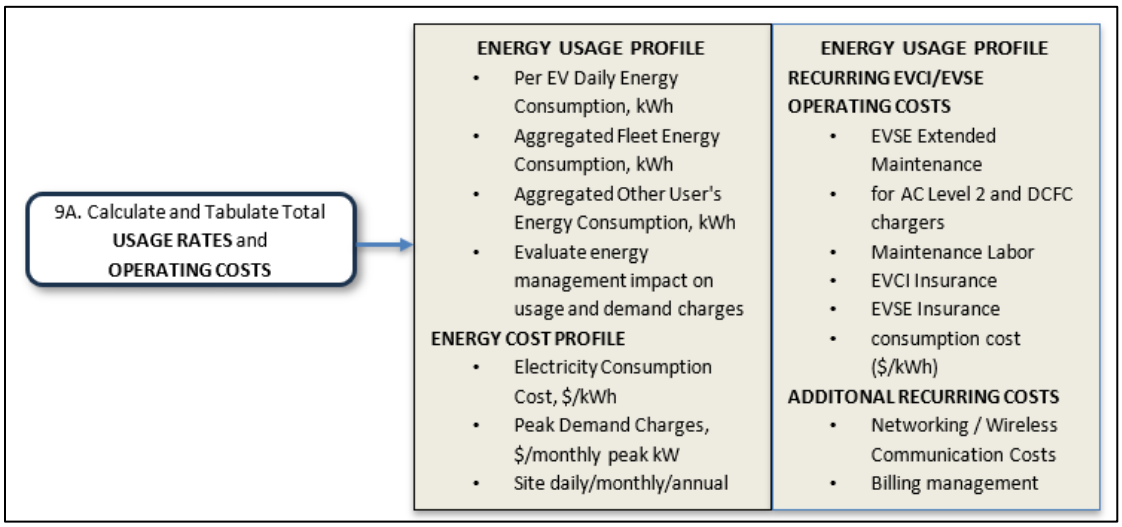

Figure 16: Usage Rates and Operating Costs

Future Proofing

For each, the plan is to analyze the current EV charging power demand and overlay the future objectives for adding loads, based on the demands of the fleet vehicles plus potentially third parties (visitors,

employees) . Table 18 and Table 19 provide a basis for determining power needs, once the usage cases are known for each site.

	NO POWER SHARING			OPTION TO POWER SHARE: Enter Ratio			
Operational Charging Window: Hours/Day Charging all EVs	kW Demand	Amperage Demand	Roundup for Panel Size	Power Sharing Ratio	kW Demand	Amperage Demand	Roundup for Panel Size
2	60.0	185	190	2	30.0	92.5	100.0
4	30.0	93	100	2	15.0	46.3	50.0
8	15.0	46	50	2	7.5	23.1	30.0
12	10.0	31	40	2	5.0	15.4	20.0

Table 18: Evaluation of Power demand based on Use Case

DEMAND SIDE - based on average kWh of home base fleet													
kWh/day ba	Continuous Load for each Level 2 EVSE (Charger Size)		Number of EVSE Circuits Required for Entered Target Charging Hours - all EVs charging simultaneously						Number of EVSE Circuits Required for Entered Target Charging Hours - all EVs charging simultaneously w/ POWER SHARING				
100	Continuous Load Amps	kW	2	4	8	12	24		2	4	8	12	24
Option 1	30	6.24	9.70	4.90	2.50	1.70	0.90		4.9	2.5	1.3	0.9	0.5
Option 2	40	8.32	7.30	3.70	1.30	1.30	0.70		3.7	1.9	0.7	0.7	0.4
Option 3	48	10.0	6.10	3.10	1.10	1.10	0.60		3.1	1.6	0.6	0.6	0.3
Option 4	80	16.64	3.70	1.90	0.70	0.70	0.40		1.9	1.0	0.4	0.4	0.2

Table 19" Evaluation of Demand based on the number of EVSE circuits and power levels

	Future Proofing Evaluation						
	NO POWER SHARING			OPTION TO POWER SHARE: Enter Ratio			
Operational Charging Window: Hours/Day Charging all EVs	kW Demand	Amperage Demand	Roundup for Panel Sizing	Power Sharing Ratio	kW Demand	Amperage Demand	Amperage Demand Round Up
2	105.0	323.8	330	2	52.5	161.9	170.0
4	52.5	161.9	170	2	26.3	81.0	90.0
8	26.3	81.0	90	2	13.1	40.5	50.0
12	17.5	54.0	60	2	8.8	27.0	30.0
24	8.8	27.0	30	2	4.4	13.5	20.0

5. Operations and Maintenance

Maintenance

EV maintenance can be divided into 1) basic vehicle maintenance and 2) electrical sub-system maintenance. For much of any required basic vehicle maintenance (tires, brakes, power steering, suspension, fluids, etc.), the same approach used by trained in house technicians for ICEVs applies. Electrical sub-systems (EV battery, battery thermal management system, on board charger, energy management hubs, interconnecting high voltage cables, computer management systems, etc.) repair will be serviced by the appropriate dealer or certified EV specialty shop. So far, the EVs have proven to be exceptionally reliable and have not needed anything over and above basic maintenance. Battery EVs have been the preference, so oil changes and spark plug changes are not required.

For EVSE maintenance, the software and remote management of the ChargePoint EVSEs provides an effective means of troubleshooting and resolving software issues. For any electric or mechanical issues, the Village will contact the suppliers and as required request on site service or, if an issue can be identified, the Village may remove and replace a part if the repair is simple and straightforward. This has not been an issue thus far.

Training

Oak Park provides operator training as a priority for end users and all EVs drivers will receive vehicle use training. The basic safe operation of the vehicle is explained using hands on training supported by documentation. There should be follow-up training for operators to explore more of the features available once they are acclimated to the vehicle. First responders should be exposed to all available EV crash/rescue training, explaining the hazards associated with these vehicles.

Technicians and vehicle service personnel are given basic EV service and safety training. However, these vehicles are very technologically advanced and include high voltage systems. For the near term, more involved issues with the EVs will mainly be diagnosed and repaired by the OEMs or other certified specialists. As more EVs are added to the fleet, adding more advanced training for servicing these vehicles will be considered.

Charge Management

The end users are responsible for making sure their vehicles are charged, the same rule applied for ICE vehicles. As applicable and providing operational needs are met, Oak Park currently uses load management software through our charger provider's service agreement, which automatically provides more charging points with the same infrastructure.

The evolving plan provides ample charging hours to keep fleet vehicles on the road. The range of the EVs does not require daily charging, as most of the vehicles average fewer than 20 miles per day and a few average 50 miles per day. The charging points are shared with every other day recharging schedule.

Data and Performance Tracking

Oak Park has a telematics provider who provides weekly reports on EV charging and overall equipment usage. Usage (e.g. kWh) and mileage are recorded. Most of the fleet vehicles and equipment are used within our 4.5-square-mile borders and the daily miles are low. Some vehicles idle and consume power without adding miles. The annual telematic reports help us right-size our fleet. Data collection and fleet assessment fall under the Superintendent of Fleet Services' purview. The Charge Point stations also provide reporting of a range of value-added data that are periodically reviewed and analyzed.

Facilities Information and Needed Upgrades

The Village Hall will incorporate potential future EV needs into the plans for future construction. Village Hall EV charging infrastructure decisions are pending, awaiting decisions on the new Police Department facility. The Public Works facility will continue adding Level 2 chargers based on annual evaluations, including the need for higher-speed chargers as vehicles and technology advance. The Fire stations in the Village will also be evaluated annually.

6. Return on Investment Planning

Funding and Financing Fleet Electrification

As the initial costs of EVs decrease, the ROI improves each year. Light-duty, fixed-duty cycle vehicles are prime examples of great ROI since rebates bring the initial investment lower than the ICEV counterpart

on many of the Village's replacements. The other options allow the investments to be recouped based on cost differentials within the first 3 to 4 years, depending on the vehicle. The larger vehicles have yet reached a good ROI point. Public Works has tested some technologies (electric street sweeper, Class 8 E-truck). Investments in medium and heavy duty trucks are expected in the future, assuming they fit the use cases of the end users, and a reasonable ROI is attainable in the vehicle's projected lifetime. When examining options, the vehicle's total life cycle costs need to be considered, including initial capital expenditures and ongoing operating expenses (fuel usage, maintenance, insurance, etc.) required. Part of the capital investments that are included in the ROI is the evolving investments in EV charging infrastructure, EVSEs, energy management, metering and billing, and other value added services.

Partnering with the local Clean Cities coalition and our local utility has been very helpful in identifying incentives and financing opportunities.

Oak Park has a formal Capital Improvement Process (CIP) whereby purchasing plans are submitted along with an operational, financial and emissions analysis. Decision makers will base decisions on these data and analysis and approve procurement budgets and associated timelines.

A key incentive that has applied is the direct pay option for non-profits as part of the Inflation Reduction Act. This process has been overly challenging.

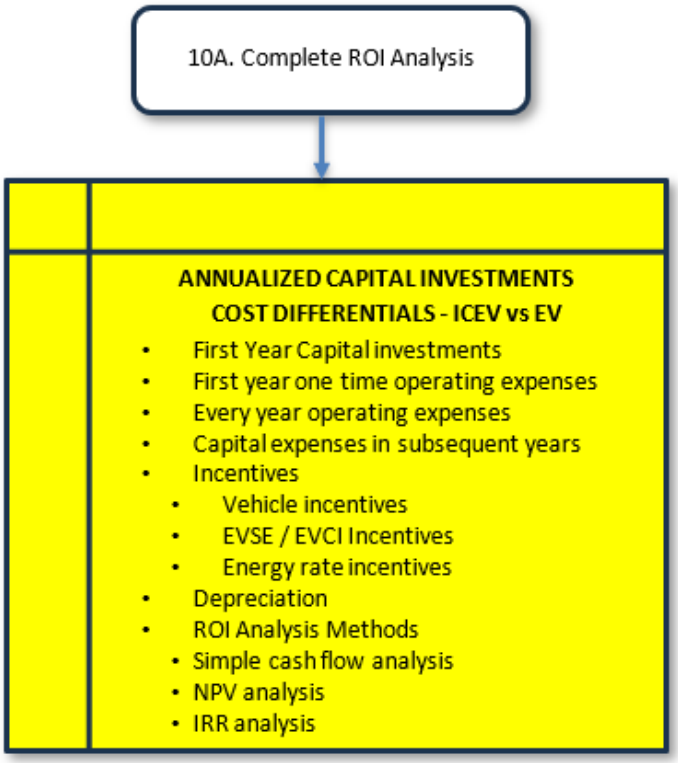

Table 20 provides a sample of the process used to evaluate the TCO for each project. At this point, the Village is adding a limited number of EVSEs based on the latest purchase of vehicles. In the long run, more involved calculations will be applied once the larger EVs are available and decisions on changes in the facilities are known.

Investment Requirements		
	Min	Max
Power level (kW)	7.2	11.5
Number of EVSEs	2	4
Cost per EVSE	$ 2,000	$ 3,500
EVSE Cost	$ 4,000	$ 14,000
Other EVSE costs	$ 1,000	$ 1,500
Branch run unit cost	$ 4,000	$ 8,000
Branch Run total cost	$ 4,000	$ 16,000
Subtotal EVSE and Branch Run	$ 9,000	$ 30,000
New Distribution electrical equipment		
Switchboard switches/modifications		
Description	none	Split existing switch, add new switch
Volts	240	480
Amp	150	200
Installed Price	$ -	$ 8,500
Power transformation		
Type		480/240
kVA	150	300
Installed Price	$ -	$ 7,500
Distribution Panelboards		
Number	0	0
Amperage Rating	0	0
Installed price	$ -	$ -
EV Charging Panel Boards		
Number	1	2
Amperage Rating	100	200
Installed price	$ 7,000	$ 8,000
Distribution Conduit Network	$ -	$ 12,000
Total Infrastructure Price	$ 7,000	$ 24,000
Total EVSE w/ Branch Run Price	$ 9,000	$ 30,000
Total Capital Investment	$ 16,000	$ 54,000
Cost per EVSE	$ 8,000	$ 13,500

Table 20: Sample TCO calculations

Total Cost Of Ownership Analysis

5. Emissions Profile

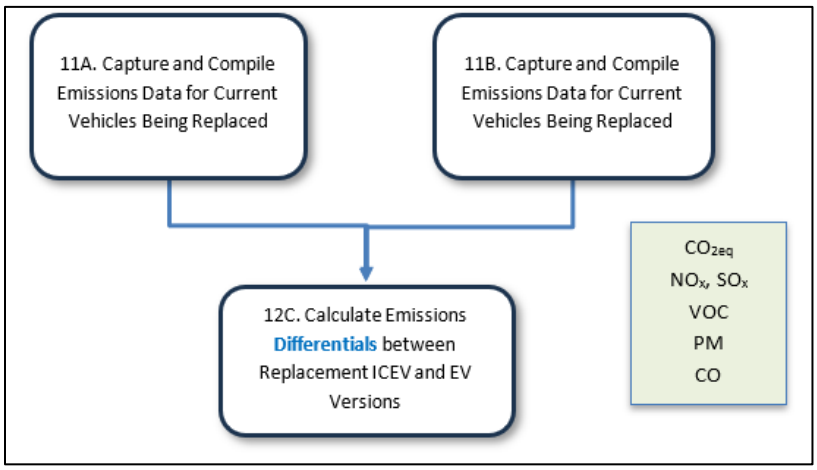

Figure 17: Emissions Profile

Vehicles to be converted				Annual	Emissions, TPY						
Dept	Make	Model	Year		CO2Eq	CO	NOx	SOx	VOC	PM 2.5	PM10
Admin											
Admin											
Admin											
Admin											
Admin											
Police											
Police											
Police											
Police											
Police											
Police											
Police											
Police											

Table 21: Emissions of ICEV replacement

EVs				EV Emissions, TPY						
Dept	Make	Model	Year	CO2Eq	CO	NOx	SOx	VOC	PM 2.5	PM10
Admin										
Admin										
Admin										
Admin										
Admin										
Police										
Police										
Police										
Police										
Police										
Police										
Police										
Police										

	Emissions Differentials, TPY						
Dept	**CO2Eq**	**CO**	**NOx**	**SOx**	**VOC**	**PM 2.5**	**PM10**
Admin							
Admin							
Admin							
Admin							
Admin							
Police							
Police							
Police							
Police							
Police							
Police							
Police							
Police							

7. Decision Making

The final step is to collect all the analyses completed thus far and make decisions on which vehicle in which departments and which site will be approved for procurement. Tied to this will be decisions related to the infrastructure and the EV charging stations and other technologies. Figure 18 illustrates the flow of these events.

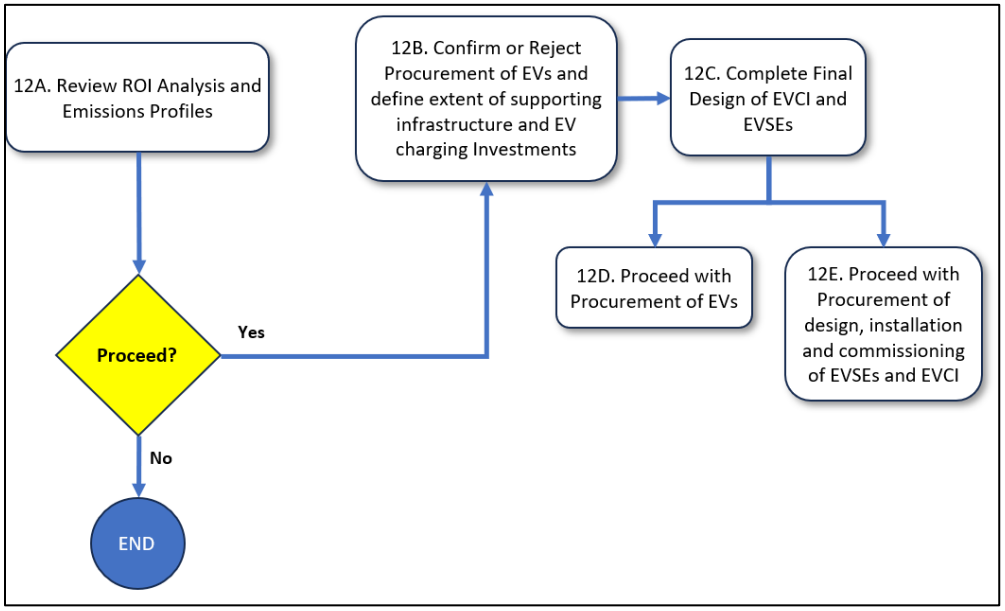

Figure 18: Procurement Decisions

Demonstrating the positive technical, financial and environmental outcomes of using EVs is critically important to Oak Park. These include the reduction in pollutants and petroleum products for maintenance, as well as the prolonged life of the brake components due to regenerative braking.

As for ROI, for the Village, the purchase price of the EVs is actually less, with rebates for some of our vehicles. The vehicles that exceed the purchase price of their ICE counterparts will have the difference made up within the first few years in fuel savings.

Glossary

Alternative Fuel Vehicle	A vehicle that runs on a fuel other than traditional petroleum fuel (such as gasoline or diesel)
Carbon Dioxide	A standard component of conventionally powered vehicle emissions and a principal greenhouse gas
Demand Charge Rate	Additional fees that utilities charge customers for maintaining a constant supply of electricity
Direct Current Fast Charger (DCFC)/ Level 3 Electric Vehicle Charger	Fastest electric vehicle charger. Charges a vehicle with at least 50 kW but ranging up to 150kW, 250kW, or more
Disproportionately Impacted Communities	Census block groups where greater than 40% of households are low income, housing cost-burdened, or include people of color
Electric Vehicle (EV)	A vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source
EVCS	Electric Vehicle Charging Station is the equipment that delivers electricity from a source to charge a plug-in electric vehicle (also called EVSE)
EVCI	EV Charging Infrastructure is the electrical power supply equipment, from the utility through main switchboard, transformers, conduits and wiring that supplies power to the EV charging stations.
Electric Vehicle Supply Equipment (EVSE)	Equipment that delivers electricity from a source to charge a plug-in electric vehicle (i.e. an electric vehicle charging station)

Fuel	Includes gas, diesel, compressed natural gas (CNG), electricity, or other source of energy for vehicle operation
GHG	Green House Gases are gaseous compounds that capture heat in the atmosphere contributed to global warming
HEV	Hybrid Electric Vehicle is a fossil fuel power vehicle that recovers energy when braking and stores in a battery. When accelerating or when load is increased, energy from this battery is used to propel the vehicle, resulting in improvements in fuel efficiency.
ICEV	Internal Combustion Engine Vehicle
Level 1 Electric Vehicle Charger	Slowest electric vehicle charger, delivers up to 2.5 kW
Level 2 Electric Vehicle Charger	Medium electric vehicle charger, delivers up to 19.2 kW
Net Present Value	A method of calculating a return on investment
Total Cost of Ownership (TCO)	An estimate of expenses associated with the purchasing, maintenance, and decommissioning of a piece of equipment
Utility	Electricity provider
Zero Emission Vehicle (ZEV)	A vehicle that produces zero exhaust or emission of any criteria pollutant under all possible operational modes and conditions