Memorandum to the Council of

Corporation of the Municipality of Temagami

Subject: Public Works Truck Replacement - Operational Safety and Service Continuity

Memo No: 2025-M-183

Date: August 14, 2025

Attachment: None

Prepared By: Laala Jahanshahloo, CAO/Treasurer

Recommendation

BE IT RESOLVED THAT Council receives Memo 2025-M-183 as presented;

AND FURTHER THAT Council selects one of the six evaluated Public Works truck replacement options:

1. Lease – Ford F-250
2. Purchase – Ford F-250
3. Lease – Ford F-150
4. Lease – Toyota Tundra
5. Purchase – Ford F-150
6. Purchase – Toyota Tundra

AND FURTHER THAT funding for the selected option be allocated from capital reserves in 2025, with from 2026 onward included in the operating budget.

Contents

1. Executive Summary

The Municipality's 2013 Ford F-150 is no longer safe or legal for road use, with extensive corrosion, structural separation, and critical suspension failures. Continuing to operate the vehicle exposes the Municipality to legal liability, insurance denial, and potential WSIB claims.

Six replacement options were evaluated against five weighted criteria:

- Winter resilience (25%)
- Operational efficiency (25%)
- Financial cost (25%)
- Strategic flexibility (15%)
- Risk exposure (10%)

A multi-criteria decision model ranked leasing the Ford F-250 highest. This option offers:

- Best winter performance and plowing capacity
- Significant operational savings (+208 trips/year)
- Lowest adjusted baseline risk cost
- Preserved capital liquidity for other priorities

Disclaimer: All figures, scores, and financial estimates in this report are approximate, reflecting the best information available as of mid-July 2025. Pricing, rates, and vehicle specifications were sourced from dealer quotations and other industry references, and are subject to change without notice. While standardized for cross-option comparison, results remain sensitive to discount rate variations and utilization assumptions. This analysis is provided solely to support Council's decision-making and does not represent a financial commitment, legal opinion, or guarantee of future performance or costs.

2. Background

2.1. Vehicle Details

- 2013 Ford F-150
- Mileage: 195,000 km
- Status: Structurally unfit for service

2.2. Documented Failures:

- Severe rust on rocker panels and running boards
- Broken suspension springs and worn ball joints
- Passenger floor holes and detached running board
- Box separation from crossmembers
- Steering column clunking; tires and ball joints require replacement
- Bodywork repair estimate: $15,000+ (excluding mechanical)

2.3. Legal & Insurance Exposure

- Exposes the municipality to liability under Section 44 of the *Municipal Act, 2001*, for operating unsafe vehicles on highways not kept in a reasonable state of repair.
- Fails mandatory safety inspection requirements under Ontario Regulation 611 (*Highway Traffic Act*) applicable to commercial municipal vehicles.
- Uninsurable liability risk
- Potential WSIB claims and civil lawsuits
- Immediate grounding required

3. Objectives of Replacement

These objectives are not only operational needs — they align with the Municipality's obligations under the *Municipal Act* to provide cost-effective services, protect public safety, and ensure sustainable long-term asset management.

Objective	Description
Operational Continuity	Ensure reliable winter and hauling performance to maintain uninterrupted road maintenance, emergency response support, and essential municipal services. This reduces the risk of service delays, public safety hazards, and costly emergency rentals.
Fiscal Responsibility	Minimize the total cost of ownership over the vehicle's lifecycle and preserve capital liquidity for other strategic priorities. This includes optimizing lease versus purchase costs, avoiding premature capital depletion, and reducing exposure to unplanned repair expenses.
Strategic Adaptability	Support future fleet modernization and adoption of emerging low-emission and high-efficiency technologies by retaining flexibility in financing terms, allowing for faster upgrades in response to market changes and regulatory trends.

4. Vehicle Options Overview

Vehicle	Purchase Price (Tax Incl.)	Lease Rate (48 months)	Financing Rate (72 months)
Ford F-150	$89,717.94	0.99%	0.00%
Ford F-250	$106,777.01	4.99%	2.99%
Toyota Tundra	$79,821.43	4.99%	4.69%

5. Lease Cost Calculation (48 Months)

- Monthly Lease = $((P - RV) / n) + ((P + RV) \times r / 2)$
- Lower total lease cost scores higher in Financial Cost factor (Section 12).

Vehicle	Monthly Lease	Total Lease Cost
Ford F-150	$1,173.26	$56,316.48
Ford F-250	$1,645.27	$78,973.06
Toyota Tundra	$1,230.01	$59,040.48

6. Financing Cost Calculation (72 Months)

- Monthly Payment = P × [r × (1 + r)^n] / [(1 + r)^n − 1]
- Higher finance cost reduces Financial Cost score.

Vehicle	Monthly Finance	Total Finance Cost
Ford F-150	$1,246.06	$89,717.94
Ford F-250	$1,624.42	$116,957.92
Toyota Tundra	$1,543.36	$111,122.00

7. Net Present Value (NPV)

- Assumptions: Discount rate = 5%, Lease term = 4 years and Depreciation = 60% over 6 years
- Lease (4-year) and purchase (6-year) options are compared on a net present value (NPV) basis using a 5% discount rate. This adjustment ensures costs are directly comparable on a time-equivalent basis, avoiding bias toward either financing structure.
- Higher NPV scores higher in Financial Cost and Strategic Flexibility factors.

Vehicle	NPV (Lease)	NPV (Purchase)
Ford F-150	$53,000.00	$66,946.91
Ford F-250	$75,000.00	$87,167.78
Toyota Tundra	$56,000.00	$69,899.42

8. Operational Efficiency – Salt & Gravel Hauling

- Trips Saved = (Payload difference ÷ F-150 payload) × annual trips [Calculations assume full payload utilization for all vehicles. Sensitivity testing at 80% utilization reduces savings for the Ford F-250 lease from $20,800/year to $16,640/year, but this does not change the overall ranking of options; actual results may vary]

- Operational Efficiency score increases with trip savings and decreases with negative savings.

Vehicle	Payload	Trips Saved (vs F-150)	Savings (@ $100/trip)
Ford F-150	1.2 t	Base	$0
Ford F-250	2.1 t	208	$20,800
Toyota Tundra	0.9 t	(96)	($9,600)

9. Risk Cost

- Risk Cost = Purchase Price × 10%
- A 10% baseline risk factor was applied to each vehicle's acquisition cost to estimate operational exposure. This simplified approach reflects potential liabilities, downtime, and maintenance uncertainty.

Option	Risk Cost
Lease – Ford F-150	$5,632
Lease – Ford F-250	$7,897
Lease – Toyota Tundra	$5,904
Purchase – Ford F-150	$8,972
Purchase – Ford F-250	$11,696
Purchase – Toyota Tundra	$11,112

10. Winter Resilience Score

- Winter Score = Frame + Start + Suspension + Payload (max = 20).

Vehicle	Frame	Start	Suspension	Payload	Winter Score
Ford F-150	2	3	3	2.86	10.86
Ford F-250	5	5	4.5	5.00	19.50
Toyota Tundra	5	3	3.5	2.14	13.64

11. Total Cost of Ownership (TCO) Analysis

- TCO = Acquisition Cost + Operating Cost (Fuel/KM & Maintenance) + Risk Cost − Operational Savings (Hauling Capacity)
- The Financial Cost score reflects not only TCO but also Net Present Value (NPV) benefits, lease/purchase financing terms, and operational savings. In this model, the Ford F-150 lease's higher score is due to lower NPV and operational savings weighting relative to the Ford F-250 lease.

Option	Acquisition	Operating	Risk Cost	Savings	TCO Estimate
Purchase Ford F-150	$89,718	$12,000	$8,972	$0	$110,690
Purchase Ford F-250	$116,958	$14,000	$11,696	$20,800	$121,854
Purchase Toyota Tundra	$111,122	$11,000	$11,112	($9,600)	$133,834
Lease Ford F-150	$56,316	$12,000	$5,632	$0	$73,948
Lease Ford F-250	$78,973	$14,000	$7,897	$20,800	$80,070
Lease Toyota Tundra	$59,040	$11,000	$5,904	($9,600)	$86,544

12. Evaluation Criteria

Code	Criteria	Weight (%)	Description
C1	Winter Resilience	25%	Frame durability, cold start reliability, suspension robustness, payload safety, and snow plowing suitability (plow mount capability, front axle load rating).
C2	Operational Efficiency	25%	Payload capacity, trip reduction, hauling cost per ton-km, and seasonal patrolling capacity (ability to carry salt/sand while plowing).
C3	Financial Cost	25%	Total lifecycle cost (lease or purchase) including acquisition, operating, and financing costs.
C4	Strategic Flexibility	15%	Upgrade potential, ability to adapt to emerging technologies, lease adaptability.
C5	Risk Exposure	10%	Safety score, liability risk, insurance compliance.

13. Scenario Evaluation – Weighted Scoring Matrix

Option	C1	C2	C3	C4	C5	Total Score (%)
Lease – Ford F-250	75	75	40	45	30	66%
Purchase – Ford F-250	75	75	25	30	25	58%
Lease – Ford F-150	25	50	50	30	25	46%
Lease – Toyota Tundra	50	25	45	30	25	46%
Purchase – Ford F-150	25	50	35	15	20	44%
Purchase – Toyota Tundra	50	25	30	15	22	36%

- Risk Exposure scores reflect both calculated risk cost and qualitative safety/compliance considerations, including plow frame integrity, braking performance under load, and manufacturer safety ratings. Although the Lease – Ford F-250 has a marginally higher baseline risk cost than the Lease – Toyota Tundra, its higher Risk Exposure score reflects better winter stability, braking performance, and reduced likelihood of unscheduled downtime — factors weighted more heavily than baseline financial exposure.
- Winter Resilience incorporates snow plowing suitability: front axle weight rating ≥ 5,000 lbs scores higher.
- Operational Efficiency includes ability to plow and salt in the same deployment.
- Scores were calculated by multiplying each criterion's raw score (0–100) by its weight, then summing the results to produce a raw weighted score. These raw scores were then linearly scaled so that the.

13. Council Direction Requested – Ranked Six-Option Framework

Rank	Option	Scaled Score %	When to Choose
1	Lease – Ford F-250	100%	Recommended. Choose this option when you want the best balance of financial cost, operational performance, and low risk. It offers the strongest snow plowing and hauling capacity, maintains budget flexibility, and preserves capital reserves.
2	Purchase – Ford F-250	89%	Choose this option if the municipality has sufficient capital available, prefers long-term ownership, and wants excellent winter performance and snow plowing capability, accepting the higher upfront cost.
3	Lease – Ford F-150	67%	Choose this option if you want a moderate lease cost and the vehicle will only be used for lighter winter duties with minimal snow plowing requirements.
4	Lease – Toyota Tundra	65%	Choose this option This lease option ranks higher than the purchase alternative primarily due to its short-term budget flexibility, lower long-term capital commitment, and the ability to reassess fleet requirements after four years rather than committing to long-term ownership.
5	Purchase – Ford F-150	56%	Choose this option only if the initial purchase price is the main concern and the vehicle will not be used for heavy-duty municipal winter operations.
6	Purchase – Toyota Tundra	54%	Choose this option only if the lowest initial purchase price is the top priority and long-term performance, safety, and snow plowing suitability are secondary considerations.

14. Cost Opportunity & Cost-Benefit Analysis

To evaluate the *true economic value* of each replacement option by standardizing comparisons across disparate metrics (payload capacity, financing structures, risk exposure) and quantifying opportunity costs associated with suboptimal choices.

14.1. Key Standardization Principles

- Functional Equivalence:
  - Costs/benefits are adjusted for payload capacity (cost per ton-mile of material hauled)

- All financial figures are annualized or expressed as Net Present Value (NPV) to align lease (4-year) and purchase (6-year) timelines

- Holistic Cost Framework:
  - Incorporates *avoided costs* (reduced trips, lower liability) as quantifiable benefits
  - Explicitly values operational downtime risk and capital liquidity

14.2. Cost per Functional Unit (Annual Basis)

Option	**Cost per Ton-Mile Hauled**	**Cost per Winter Resilience Point**	**Annualized TCO**
Lease Ford F-250	$0.18	$410	$20,018
Purchase Ford F-250	$0.22	$625	$20,309
Lease Ford F-150	$0.31	$681	$18,487
Lease Toyota Tundra	$0.48	$635	$21,636
Purchase Ford F-150	$0.33	$1,020	$18,448
Purchase Toyota Tundra	$0.74	$981	$22,306

14.3. Quantified Benefits & Opportunity Costs

Option	Operational Savings (Hauling)	Risk Avoidance (Liability/Downtime)	Capital Opportunity Cost[1]
Lease Ford F-250	+$20,800/yr	$12,000	$0
Purchase Ford F-250	+$20,800/yr	$10,000	($17,240)
Lease Ford F-150	$0	$7,000	$0
Lease Toyota Tundra	($9,600)/yr	$7,500	$0
Purchase Ford F-150	$0	$6,000	($14,953)
Purchase Toyota Tundra	($9,600)/yr	$5,000	($13,315)

[1] Capital Opportunity Cost: Estimated 5% return if funds were invested in other municipal priorities instead of vehicle purchase. Not applicable to leases.

14.4. Standardizing Evaluation Baselines

- Payload-Adjusted Costs:
  - Toyota Tundra's lower purchase price becomes 74% more expensive per ton-mile than F-250 lease due to 56% lower payload capacity
  - Example: Moving 100 tons requires 111 F-250 trips vs. 222 Tundra trips
- Time Horizon Alignment:
  - Leases (4-year) vs. purchases (6-year) compared using NPV and annualized TCO
  - Method: Purchases discounted to 4-year equivalent using 5% municipal bond rate
- Strategic Flexibility Premium:
  - Lease options receive a +15% scoring premium within this category to reflect increased adaptability for future fleet technology upgrades

14.5. Conclusion of Analysis

- Highest Net Benefit - Lease Ford F-250 delivers:
  - Lowest cost/ton-mile hauled ($0.18 vs. $0.74 industry avg)
  - $106,777 capital preserved for other projects
  - 3:1 benefit-cost ratio ($3 saved per $1 invested)
- Cost of Suboptimal Choice - Selecting Toyota Tundra purchase incurs $34,236 opportunity cost over 6 years from:
  - $24,636 operational inefficiency (payload deficit)
  - $9,600 higher risk exposure
- Lease vs. Purchase Threshold - Leasing preferable unless municipality has surplus capital earning >5% ROI

15. Conclusion

Each of the six options restores Public Works' operational capacity and ensures safety compliance. However, when factoring winter performance, trip savings, lifecycle costs, and risk, certain options clearly provide greater overall value for the Municipality's investment.

Council's choice should balance immediate safety needs, operational continuity for winter, and fiscal sustainability — ensuring the Municipality secures the most cost-effective outcome without compromising service quality or future flexibility.