



MnDOT Equipment Replacement and Fleet Management

Jed Falgren, PE | State Maintenance Engineer

Office of Maintenance

January 18, 2024

MnDOT Fleet



- 11,347 Units
 - From 12,400 in 2015
- \$584M Replacement cost
 - From \$471M in 2015
- Historical structural budget shortfalls
 - Equipment fund at 50% of need
 - More fleet than we can afford
 - Led to significantly “out of life” cycle (OLD) equipment

Statewide Fleet Managers Group

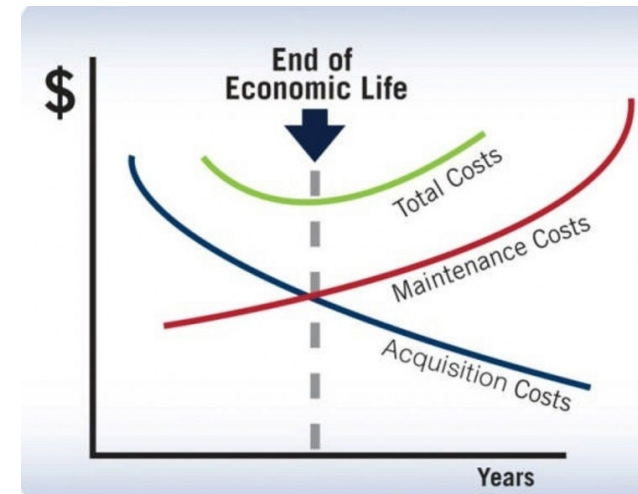
- District Fleet Managers and CO Fleet
- Understand, clean up and review data
- Set goals and hold accountable
- Build department consistency
- Help leaders understand/share

Developing a Comprehensive Fleet Management Plan

- Long-term predictable replacement plan with consistent funding needs budgeted.
- Fleet needs will still be determined by district, and non-district offices.
- Statewide fleet management processes would be determined through representation from each area. (district and non-district offices)
- “Better information will lead to better decisions”. True cost reports will aid all levels in understanding actual fleet expenses.

Ownership Expense Matrix

- $(R_c + I + O) / D = \text{TOC}$
- R_c = Replacement Cost
- I = Insurance (Liability)
- O = Overhead Expense
- D = Lifecycle (Depreciation)
- TOC = Total Ownership Cost



(Not a Rental Rate)

Principles of the Internal Service Program

- Right-size our fleet to its optimal level.
- Work closely with each section to meet their equipment needs.
- Use product and service data to guide our decisions.
- Sustain our ability to respond to emergencies.

What is your plan?

- Do you plan on replacing all the units you currently have today in the future?
- Is that need consistent from year to year to make budgeting predictable?
- Do you know the cost?
- Have you budgeted for it?
- Would you like to? own, share, rent

Internal Service Funding (ISF) Model work to date

- Reviewed/Modified MnDOT equipment classes
- Placing similar equipment into right bucket
- Collect repair costing and resale values to review lifecycles
- Adopting more complete overview of fleet management principals
- Developed a fleet managers Power BI scorecard
- Launching new fleet management software

Fleet Performance Measures

- Total fleet size – count and value
- Life cycle – economic or useful
- Utilization – miles and hours
- Preventative vs reactionary maintenance
- Unit maintenance cost vs purchase price
- Vehicle condition

Tracking fleet size and life cycle

Summary											
MnDOT State of the Fleet (Summary) Status = Active - On-order - Being prepared for service											
Data Set	Total by Unit Count				Total Replacement Value (TRV)				Total Annual Ownership Expense (TAOE)		
	Number of Units	Number of Units Out of Lifecycle	Number of Units In Lifecycle	Percent by Count Out of Lifecycle	TRV	Out of Life Cycle	In Life Cycle	Percent \$ Out-of-lifecycle	TAOE	Out of lifecycle	In lifecycle
12/1/2015 Data	12393	4874	7519	39%	\$ 471,407,895	\$ 153,663,010	\$ 317,744,885	33%	\$ 41,638,271	\$ 14,529,099	\$ 27,109,173
4/16/2016 Data	12130	4049	8081	33%	\$ 452,002,498	\$ 113,926,804	\$ 338,075,694	25%	\$ 39,978,846	\$ 11,134,903	\$ 28,843,943
10/25/2016 Data	11687	3791	7896	32%	\$ 445,633,959	\$ 112,148,047	\$ 333,485,912	25%	\$ 39,591,305	\$ 10,927,251	\$ 28,664,054
5/18/2017 Data	11809	3897	7930	33%	\$ 470,611,127	\$ 119,673,696	\$ 350,937,430	25%	\$ 42,849,146	\$ 11,905,103	\$ 30,944,044
10/3/2017 Data	11509	3886	7623	34%	\$ 479,952,376	\$ 118,913,683	\$ 361,038,693	25%	\$ 45,841,258	\$ 11,877,346	\$ 33,963,912
2/1/2018 Data	11700	3532	8168	30%	\$ 495,936,890	\$ 106,348,567	\$ 389,588,324	21%	\$ 44,641,261	\$ 10,354,366	\$ 34,286,896
7/11/2018 Data	11100	2971	8129	27%	\$ 500,036,583	\$ 100,947,412	\$ 399,089,171	20%	\$ 44,413,648	\$ 9,669,798	\$ 34,743,850
10/30/2018 Data	11026	2780	8246	25%	\$ 504,231,812	\$ 95,977,310	\$ 408,254,502	19%	\$ 44,225,738	\$ 9,060,825	\$ 35,164,914
1/17/2019 Data	11019	2905	8114	26%	\$ 509,426,715	\$ 101,847,238	\$ 407,579,477	20%	\$ 44,663,177	\$ 9,512,888	\$ 35,150,288
4/26/2019 Data	11255	2835	8420	25%	\$ 524,718,413	\$ 97,111,815	\$ 427,606,598	19%	\$ 45,871,270	\$ 9,132,980	\$ 36,738,291
7/30/2019 Data	11237	2580	8657	23%	\$ 533,903,334	\$ 94,396,858	\$ 439,506,476	18%	\$ 46,695,329	\$ 8,814,736	\$ 37,880,593
10/17/2019 Data	11482	2717	8765	24%	\$ 543,414,264	\$ 95,837,079	\$ 447,577,185	18%	\$ 46,811,628	\$ 8,811,862	\$ 37,999,766
1/14/2020 Data	11680	2852	8828	24%	\$ 557,313,228	\$ 104,788,253	\$ 452,524,976	19%	\$ 47,834,445	\$ 9,436,376	\$ 38,398,069
4/8/2020 Data	11569	2732	8837	24%	\$ 556,455,777	\$ 100,694,996	\$ 455,760,781	18%	\$ 47,682,632	\$ 8,956,323	\$ 38,726,309
7/10/2020 Data	11496	2607	8889	23%	\$ 557,708,889	\$ 95,180,042	\$ 462,528,847	17%	\$ 47,897,271	\$ 8,595,737	\$ 39,301,533
10/6/2020 Data	11504	2676	8828	23%	\$ 560,650,895	\$ 98,201,799	\$ 462,449,096	18%	\$ 48,257,949	\$ 8,882,055	\$ 39,375,893
1/20/2021 Data	11637	2815	8822	24%	\$ 572,968,797	\$ 105,191,333	\$ 467,777,464	18%	\$ 51,293,742	\$ 9,949,517	\$ 41,344,225
4/9/2021 Data	11650	2697	8953	23%	\$ 575,845,120	\$ 100,806,014	\$ 475,039,106	18%	\$ 49,108,332	\$ 9,009,706	\$ 40,098,626
7/12/2021 Data	11585	2608	8977	23%	\$ 579,623,214	\$ 98,602,654	\$ 481,020,559	17%	\$ 49,501,732	\$ 8,846,309	\$ 40,655,423
10/18/2021 Data	11285	2349	8936	21%	\$ 579,123,846	\$ 95,175,544	\$ 483,948,302	16%	\$ 49,301,213	\$ 8,381,541	\$ 40,919,673
1/18/2022 Data	11453	2463	8990	22%	\$ 597,233,460	\$ 100,408,675	\$ 496,824,785	17%	\$ 50,804,694	\$ 8,798,840	\$ 42,005,854
4/6/2022 Data	11470	2313	9157	20%	\$ 600,728,221	\$ 95,422,102	\$ 505,306,119	16%	\$ 51,069,543	\$ 8,356,883	\$ 42,712,660
7/5/2022 Data	11373	2227	9146	20%	\$ 600,972,573	\$ 93,305,899	\$ 507,666,674	16%	\$ 51,070,092	\$ 8,243,960	\$ 42,826,132
10/7/2022 Data	11206	2049	9157	18%	\$ 613,094,290	\$ 81,796,028	\$ 531,298,262	13%	\$ 50,746,483	\$ 7,369,554	\$ 43,376,930
1/3/2023 Data	11343	2085	9258	18%	\$ 546,898,496	\$ 111,569,407	\$ 435,329,089	20%	\$ 52,741,956	\$ 9,951,703	\$ 42,790,253
5/5/2023 Data	11347	1908	9439	17%	\$ 562,696,518	\$ 59,289,468	\$ 503,407,050	11%	\$ 48,322,482	\$ 5,722,891	\$ 42,599,591
12/12/2023 Data	11292	1761	9531	16%	\$ 583,919,719	\$ 58,738,121	\$ 525,181,598	10%	\$ 41,728,946	\$ 4,197,631	\$ 37,531,315
TRV					Today's replacement value						
TAOE					Today's total annual ownership expense for all units in inventory						
TAOE Out of lifecycle					Today's annual ownership expense for all out of lifecycle units						
TAOE In lifecycle					Today's annual ownership expense for all In lifecycle units						

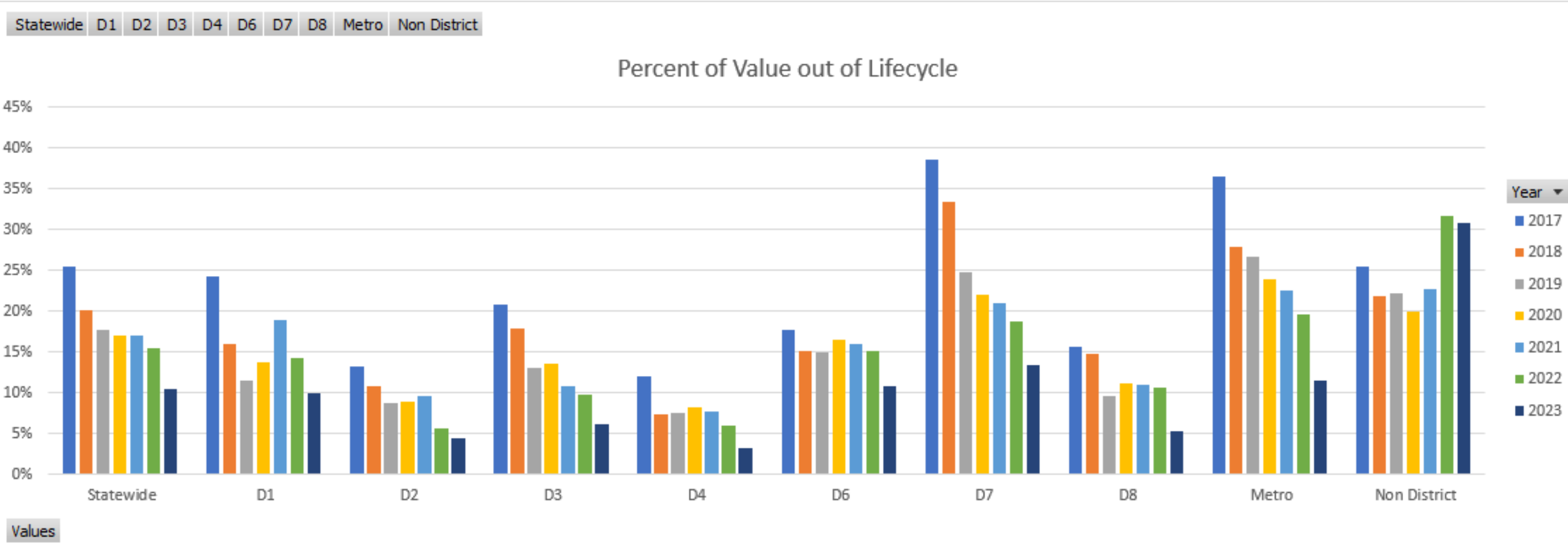
State of the Fleet

Total by Unit Count				
Data Set	Number of Units	Number of Units Out of	Number of Units In	Percent by Count Out of
12/1/2015 Data	12393	4874	7519	39%
5/5/2023 Data	11347	1908	9439	17%

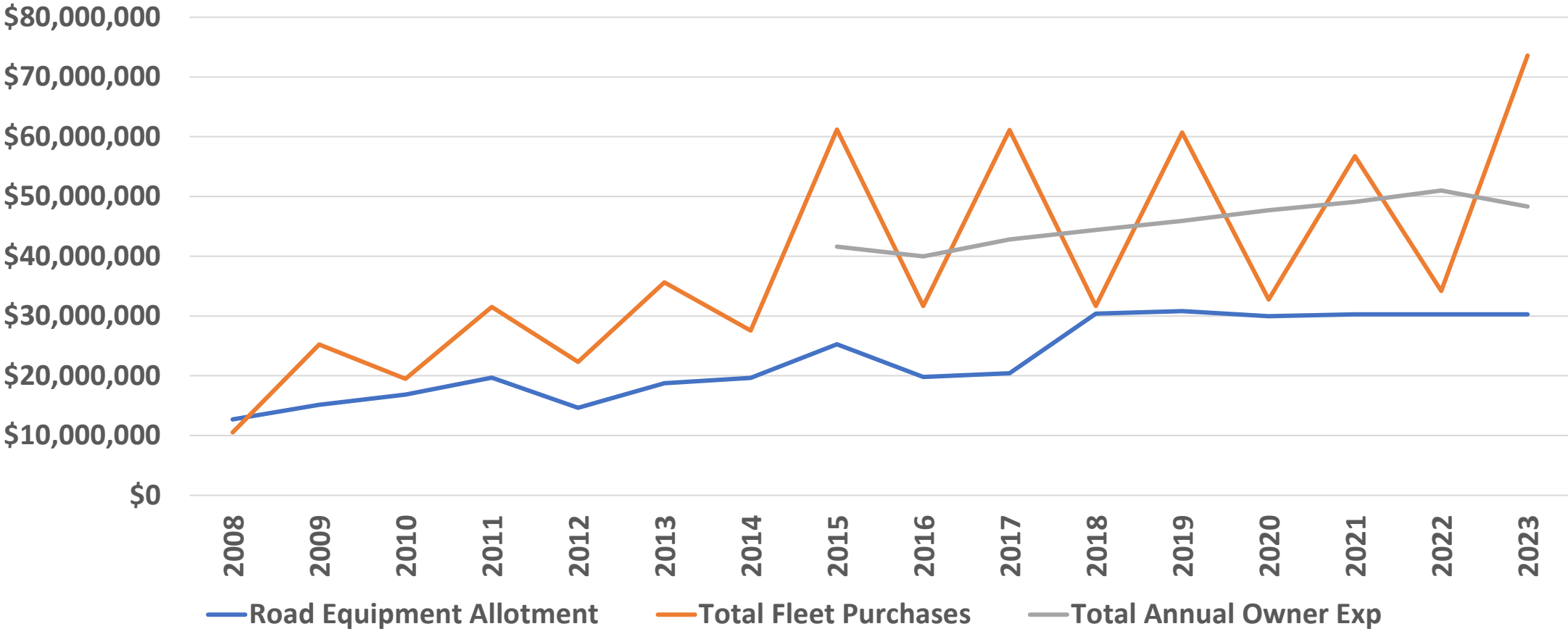
Total Replacement Value (TRV)				
Data Set	TRV	Out of Life Cycle	In Life Cycle	Percent \$ Out-of-
12/1/2015 Data	\$ 471,407,895	\$ 153,663,010	\$ 317,744,885	33%
5/5/2023 Data	\$ 562,696,518	\$ 59,289,468	\$ 503,407,050	11%

Total Annual Ownership Expense (TAOE)			
Data Set	TAOE	Out of lifecycle	In lifecycle
12/1/2015 Data	\$ 41,638,271	\$ 14,529,099	\$ 27,109,173
5/5/2023 Data	\$ 48,322,482	\$ 5,722,891	\$ 42,599,591

Impact on “Out of Lifecycle” Performance Measure



Fleet Spending Budget & Actual vs Need



- GeoTab –AVL, diagnostics and usage data analytics
- Fleet Management system change
- EV Transition
- Sustainable Funding

- Co-manage with Admin – Office of State Procurement
 - 36 Master contracts
 - 230 Individual contracts
 - [Equipment Contracts - MnDOT \(state.mn.us\)](https://state.mn.us)
 - Happy to help when we can (except June of odd years ;-)

Thank you!