



Rent-Lease-Buy Decision Making

A Presentation at

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MERCURY

Methods of Acquiring Vehicles and Equipment

- Rent
- Lease
- Buy
- Beg
- Borrow
- Steal

Why rent?

- To meet emergency, seasonal, and other intermittent, unpredictable, and/or infrequent needs for vehicles or equipment cost effectively
- To obtain vehicles or equipment more quickly than may be possible if they are purchased or leased
- To obtain vehicles or equipment for which you cannot secure the funds needed to purchase or lease

Rent versus Own Decision Points

1. Can the asset be leased or rented locally?
2. Do you expect to use the asset more than once?
3. Do you expect to use the asset on a regular basis for more than six months?
4. Are there or will there be sufficient funds to purchase or lease the asset?
5. What is the average capital and operating cost per day, week, or month to own or lease the asset?
6. What is the cost per day, week, or month to rent the asset?
7. Which of these two costs is lower?

Methods of Financing Vehicle and Equipment Acquisitions

- Ad hoc (i.e., year-to-year) allocations or appropriations of cash
- Accumulation of cash reserves in a fleet replacement fund, usually through the use of an internal leasing or replacement cost charge-back program
- Borrowing cash from financial institutions, including the financing units of vehicle manufacturers
- Borrowing cash from investors through the issuance of bonds
- Leasing from a leasing company, bank, or commercial finance company

A Note on Terminology

- **Financing:** The method used to pay for the acquisition of an asset
- **Funding:** The amount of money required to acquire an asset under a particular financing method

Why is the type of capital financing you use important?

- Because year-over-year funding requirements can vary dramatically depending on the type of financing used

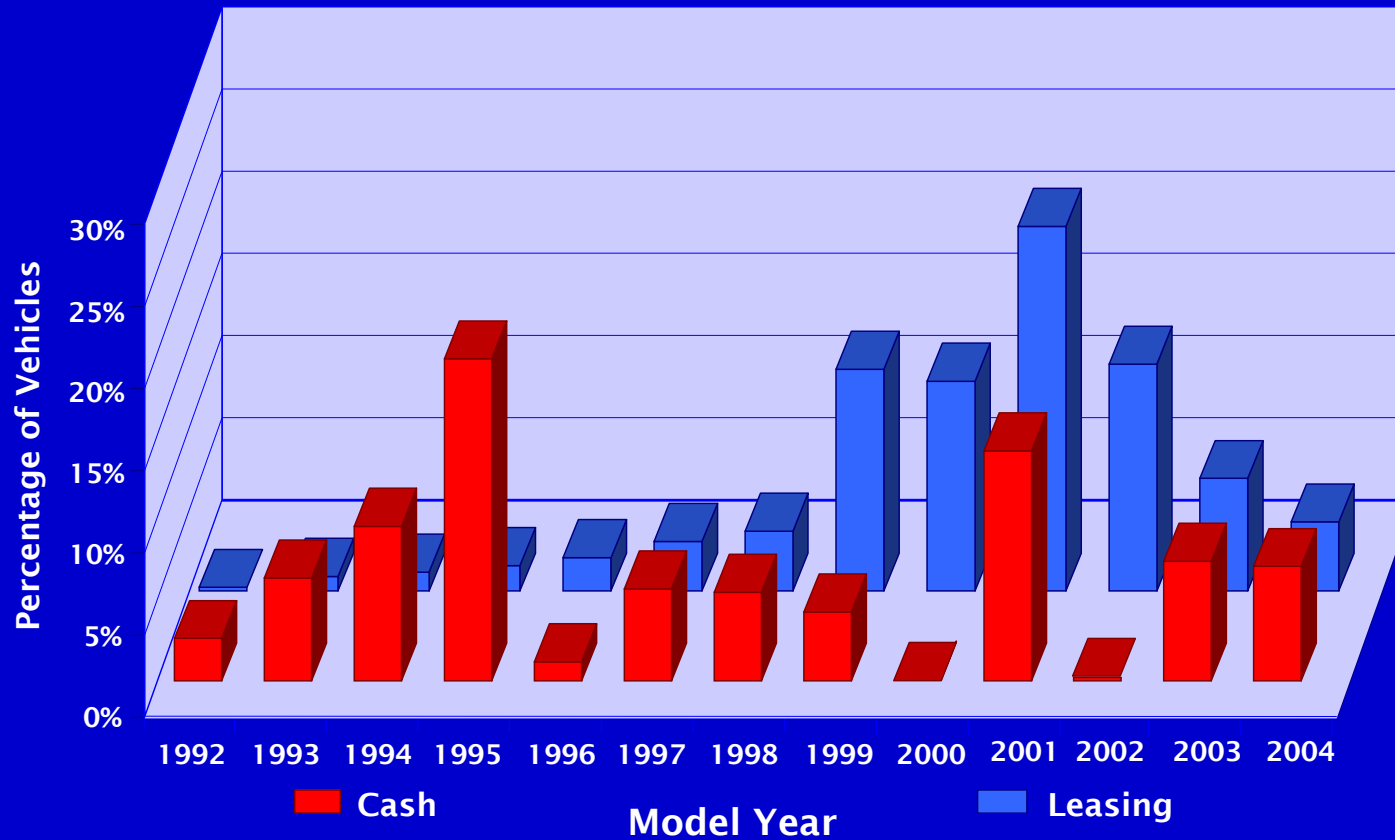
Replacement Funding Requirements by Financing Approach

Total	Year 1	Years 1-5	Years 1-10
Financing Approach A	\$ 56.6 M	\$ 265.4 M	\$ 517.6 M
Financing Approach B	\$ 58.5 M	\$ 265.6 M	\$ 526.6 M
Financing Approach C	\$ 4.1M	\$ 93.2 M	\$ 339.4 M
Financing Approach D	\$ 11.5 M	\$ 158.6 M	\$ 420.1 M
Annual Average	Year 1	Years 1-5	Years 1-10
Financing Approach A	\$ 56.6 M	\$ 53.1 M	\$ 51.8 M
Financing Approach B	\$ 58.5 M	\$ 53.1 M	\$ 52.7 M
Financing Approach C	\$ 4.1M	\$ 18.6 M	\$ 33.9 M
Financing Approach D	\$ 11.5 M	\$ 31.7 M	\$ 42.0 M

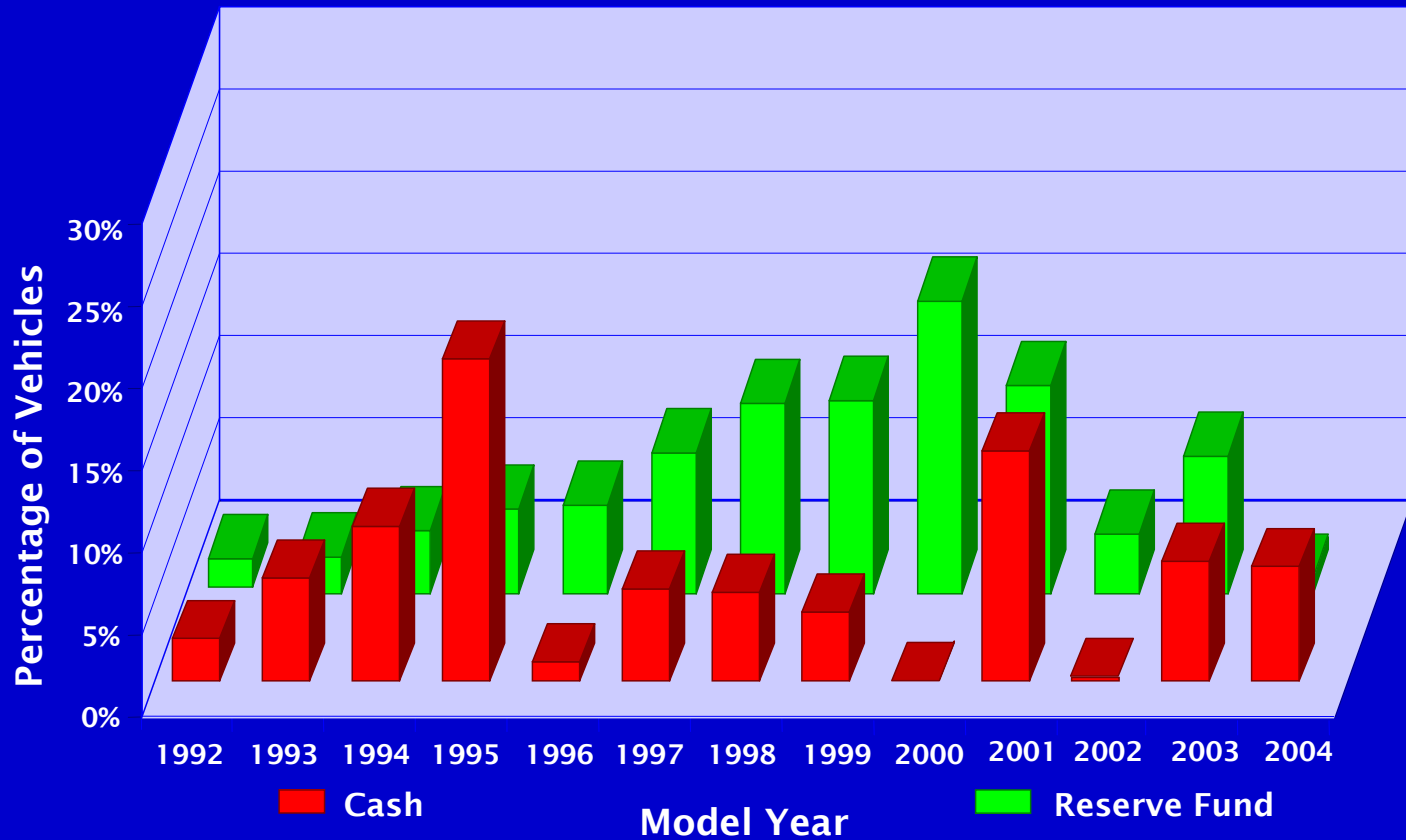
Why is the type of capital financing you use important?

- Because year-over-year funding requirements can vary dramatically depending on the type of financing used
- Because year-over-year funding requirements are a key determinant of how much money most organizations devote to fleet replacement
- Because the amounts of funds an organization devotes to fleet replacement determine whether it has an old or a young fleet

Comparative Distribution of Vehicles by Model Year and Capital Financing Approach



Comparative Distribution of Vehicles by Model Year and Capital Financing Approach

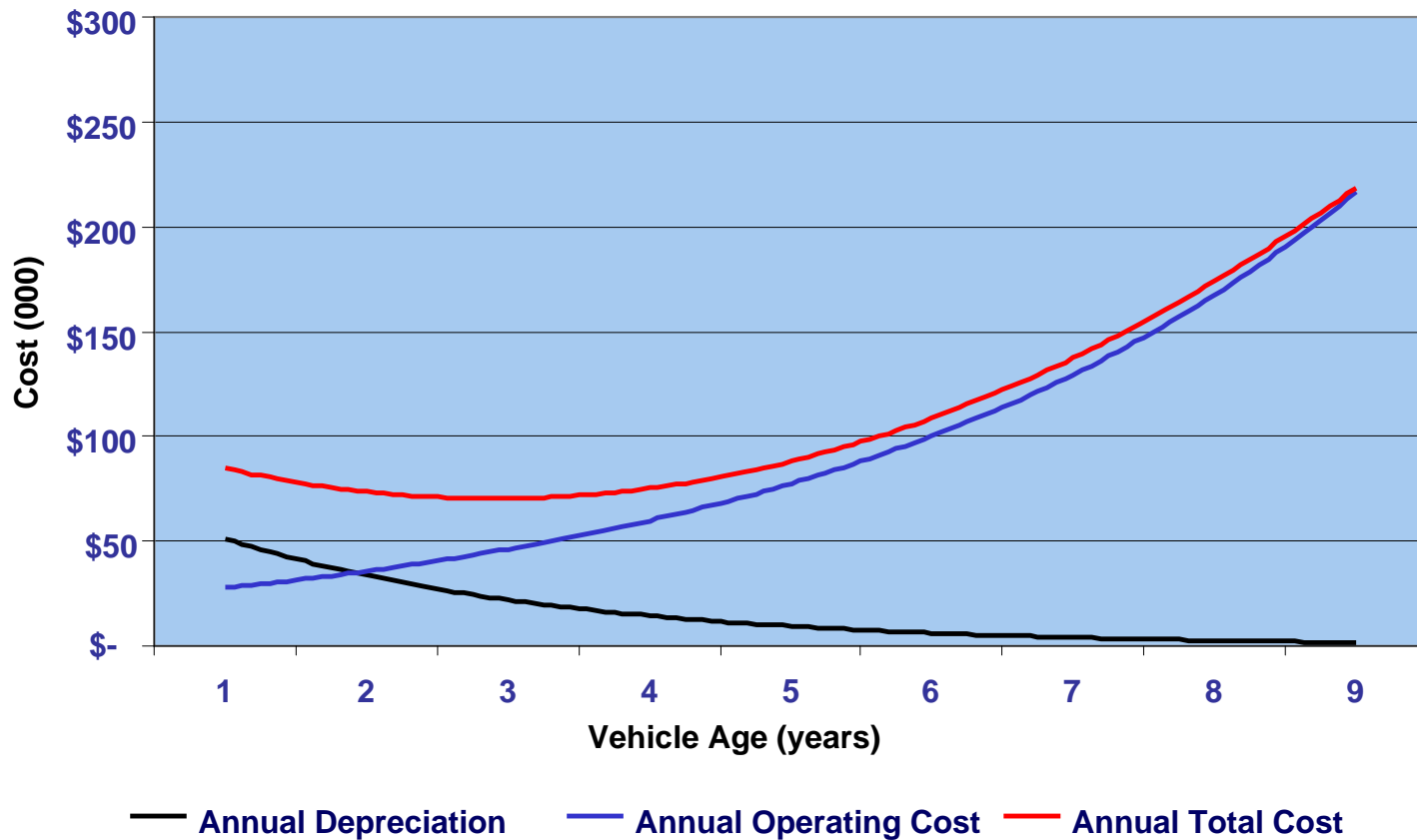


Why is the timely replacement of vehicles and equipment important?

- Controlling employee and public safety
- Controlling fleet maintenance and repair costs
- Managing total costs of asset ownership
- Promoting employee productivity
- Promoting efficiency of fleet management and maintenance activities
- Projecting a positive image to customers, upper management, taxpayers, elected officials, and/or the general public

Sample Life Cycle Costs: Side-loading Refuse Truck

Capital, Operating, and Total Cost Trend Lines



Sample LCA Results: Side-Loading Refuse Truck

REPLACEMENT CYCLE	1	2	3	4	5	6	7	8	9
Mileage at replacement	10,578	21,156	31,734	42,312	52,890	63,468	74,046	84,624	95,202
CAPITAL COST									
Total Residual Value	\$ 161,500	\$ 83,978	\$ 57,991	\$ 44,977	\$ 37,176	\$ 31,991	\$ 28,304	\$ 25,556	\$ 23,436
Annual Depreciation	\$ 28,500	\$ 77,522	\$ 25,987	\$ 13,013	\$ 7,801	\$ 5,186	\$ 3,687	\$ 2,748	\$ 2,120
Cumulative Depreciation	\$ 28,500	\$ 106,022	\$ 132,009	\$ 145,023	\$ 152,824	\$ 158,009	\$ 161,696	\$ 164,444	\$ 166,564
OPERATING COST									
Annual M&R Cost	\$ 19,951	\$ 26,806	\$ 36,017	\$ 48,392	\$ 65,020	\$ 87,361	\$ 117,380	\$ 157,712	\$ 211,904
Annual Fuel Cost	\$ 8,881	\$ 9,239	\$ 9,611	\$ 9,998	\$ 10,401	\$ 10,820	\$ 11,256	\$ 11,710	\$ 12,182
Total Annual Operating Cost	\$ 28,831	\$ 36,045	\$ 45,628	\$ 58,390	\$ 75,421	\$ 98,182	\$ 128,636	\$ 169,422	\$ 224,086
Cumulative Operating Cost	\$ 28,831	\$ 64,876	\$ 110,503	\$ 168,894	\$ 244,315	\$ 342,497	\$ 471,133	\$ 640,556	\$ 864,641
TOTAL COST									
Annual Total Cost	\$ 57,331	\$ 113,567	\$ 71,615	\$ 71,404	\$ 83,222	\$ 103,368	\$ 132,323	\$ 172,170	\$ 226,205
Cumulative Total Cost	\$ 57,331	\$ 170,898	\$ 242,513	\$ 313,917	\$ 397,139	\$ 500,506	\$ 632,829	\$ 804,999	\$1,031,205
NPV of Cumulative Total Cost	\$ 54,086	\$ 161,225	\$ 228,786	\$ 296,148	\$ 374,659	\$ 472,176	\$ 597,009	\$ 759,433	\$ 972,835
Equivalent Annual Cost	\$ 55,709	\$ 84,258	\$ 80,883	\$ 79,672	\$ 81,809	\$ 87,162	\$ 95,824	\$ 108,186	\$ 124,945

Refuse Truck Fleet-wide Cost Savings (Current v Optimal Cycle)

Replacement Cycle (years)	Annual Cost Savings per Unit	Annual Fleet-Wide Cost Savings
9	\$	\$
8	\$ 16,759	\$ 2,145,121
7	\$ 29,121	\$ 3,727,511
6	\$ 37,782	\$ 4,836,150
5	\$ 43,136	\$ 5,521,452
4	\$ 45,273	\$ 5,794,962

¾-Ton Pickup Truck Fleet-wide Cost Savings (Current v Optimal Cycle)

Replacement Cycle (years)	Annual Cost Savings per Unit	Annual Fleet-Wide Cost Savings
16	\$	\$
15	\$ 400	\$ 328,020
14	\$ 775	\$ 635,555
13	\$ 1,125	\$ 922,495
12	\$ 1,462	\$ 1,199,194
11	\$ 1,754	\$ 1,438,056
10	\$ 2,028	\$ 1,663,264
9	\$ 2,286	\$ 1,874,594
8	\$ 2,505	\$ 2,053,941
7	\$ 2,675	\$ 2,193,278
6	\$ 2,834	\$ 2,324,056

Fire Pumper Fleet-wide Cost Savings (Current v Optimal Cycle)

Replacement Cycle (years)	Annual Cost Savings per Unit	Annual Fleet- Wide Cost Savings
16	\$	\$
15	\$ 5,434	\$ 619,500
14	\$ 10,151	\$ 1,157,169
13	\$ 16,214	\$ 1,848,420
12	\$ 19,888	\$ 2,267,206
11	\$ 23,095	\$ 2,632,843
10	\$ 28,842	\$ 3,288,027
9	\$ 28,851	\$ 3,289,031

TCO Savings for 12 Vehicle Types

Vehicle Type	Current Cycle (years)	Recomd Cycle (years)	EAC Under Current Cycle	EAC Under Recomd Cycle	Annual Per-Unit Savings	Annual Fleet-Wide Savings
Hybrid-Electric Sedan	4	4	\$ 4,053	\$ 4,053	\$	\$
7 to 9-Passenger Van	15	8	\$ 7,050	\$ 5,379	\$ 1,671	\$ 138,684
Patrol Car	8	6	\$ 9,701	\$ 9,405	\$ 296	\$ 510,648
Investigative Sedan	11	7	\$ 4,777	\$ 4,214	\$ 421	\$ 414,298
½-Ton Pickup Truck	12	5	\$ 6,821	\$ 4,761	\$ 2,060	\$ 688, 102
¾-Ton Pickup Truck	16	6	\$ 8,823	\$ 5,989	\$ 2,834	\$ 2,324,056
Utility Truck	20	10	\$ 16,265	\$ 14,098	\$ 2,167	\$ 318,567
Bucket Truck	17	9	\$ 23,401	\$ 17,947	\$ 5,454	\$ 414,530
Dump Truck	20	9	\$ 26,731	\$ 19,986	\$ 6,745	\$ 1,112,889
Refuse Truck	9	4	\$ 147,121	\$ 79,672	\$ 45,273	\$ 5,794,962
Ambulance	4	2	\$ 27,944	\$ 23,246	\$ 4,698	\$ 483,873
Fire Pumper Truck	16	9	\$ 77,195	\$ 48,344	\$ 28,851	\$ 3,289,031
						\$15,489,640

Purchases Financed with Ad Hoc Allocations/Appropriations of Cash

- Annual funding requirements equal purchases prices of assets to be replaced less proceeds from the sale of used vehicles
- Pros
 - Vehicles are owned free and clear as soon as they are paid for
- Cons
 - Pay-before-you-go approach results in lumpy year-over-year funding requirements
 - Volatile funding needs coupled with competition for available funds almost always results in under funding of replacement purchases and old fleets
 - Does not promote recognition of vehicle capital costs or management of TCO

Purchases Financed Using a Replacement Reserve Fund

- Cash reserves are accumulated in a special account or revolving fund, usually through the use of an internal lease or replacement cost charge-back system
- Pros
 - Pay-as-you-go approach makes year-over year funding requirements smooth and predictable
 - Use of cost charge-back system promotes recognition of fixed costs
- Cons
 - Revolving funds and cost charge-back systems are difficult to administer properly and cash reserves are susceptible to raiding during tough economic times
 - Costly to establish if fleet is old

Purchases Financed with Bonds

- Various Types, Including:
 - Commercial Paper Program
 - Certificates of Participation
 - General Obligation Bonds
 - Revenue Bonds
- Pros
 - Pay-as-you-go approach
 - Use of cost charge-back system promotes recognition of fixed costs
- Cons
 - Politicizable
 - Use often constrained by borrowing caps
 - More complicated to administer than other types of borrowing
 - Improper use can result in ever increasing debt burdens

Purchases Financed with Loans

- Frequently referred to as lease purchases
- Available from both commercial banks and many vehicle/equipment manufacturers
- Pros
 - Pay-as-you-go approach
 - Use of cost charge-back system promotes recognition of fixed costs
- Cons
 - Require long-term perspective and commitment
 - Difficult to stop using once started

Capital Leases

- Essentially a long-term rental or rent-to-own agreement
- Asset can be returned to lessor or acquired at end of term
 - Fair Market Value
 - \$1 Buy Out
- Pros
 - Pay as you go approach
 - Use of cost charge-back system promotes recognition of fixed costs
 - Relatively easy to qualify for
- Cons
 - Higher cost of capital than any other debt financing approach
 - No interest savings if lease is terminated early

Operating Leases

- Two Types:
 - Open end (widely used by corporate fleets in US)
 - Closed end (widely used by corporate fleets in Europe, and by individuals in US)
- Pros:
 - Pay-as-you-go approach
 - Cost of leasing is not considered to be debt
 - Often bundled with asset management services
 - Flexible in comparison with capital leases
- Cons
 - Taxable
 - Higher cost of capital
 - Off balance sheet (usually not good for investor-owned utilities)

Sample Comparison of Alternative Capital Financing Approaches

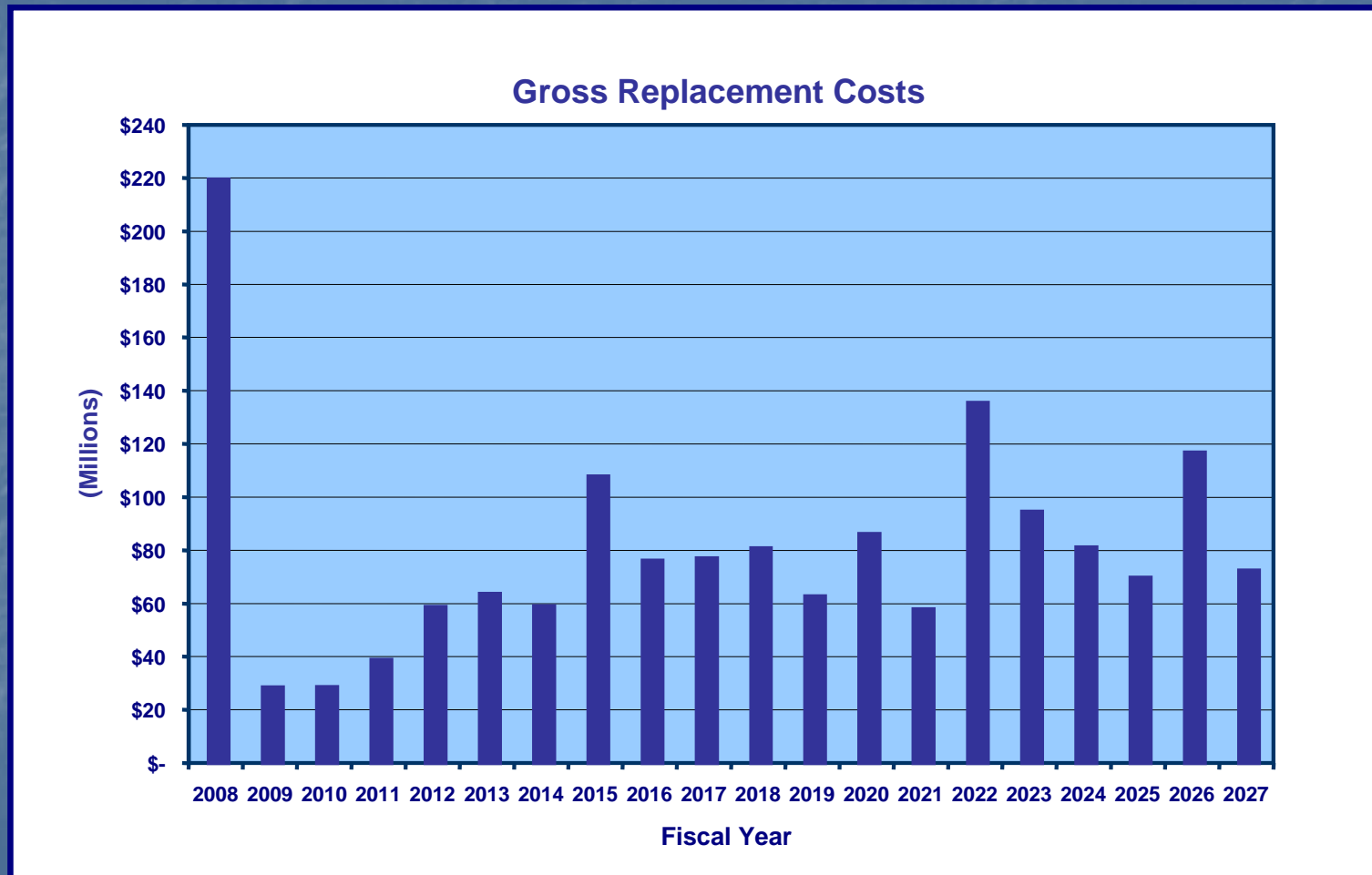
Sample Replacement Cycles

Vehicle Type	Months	Miles
Ambulance (cab and chassis)	24	72,000
Hybrid Electric Sedan	48	50,000
Refuse Truck	48	42,000
Patrol Car	60	68,000
2x4 1/2T Pickup Truck	60	53,000
2x4 3/4T Pickup Truck	72	60,000
Investigative Sedan	84	70,000
Passenger Van	96	60,000
10-Yard Dump Truck	108	56,000
Fire Pumper Truck	108	75,000
Medium-Duty Utility Truck	120	57,000

Sample Purchase Prices

Vehicle Type	Purchase Price
Ambulance (cab and chassis)	\$ 30,072
Hybrid Electric Sedan	\$ 20,876
Refuse Truck	\$ 190,000
Patrol Car	\$ 24,357
2x4 1/2T Pickup Truck	\$ 13,593
2x4 3/4T Pickup Truck	\$ 15,843
Investigative Sedan	\$ 16,076
Passenger Van	\$ 18,256
10-Yard Dump Truck	\$ 135,000
Fire Pumper Truck	\$ 445,000
Medium-Duty Utility Truck	\$ 78,616

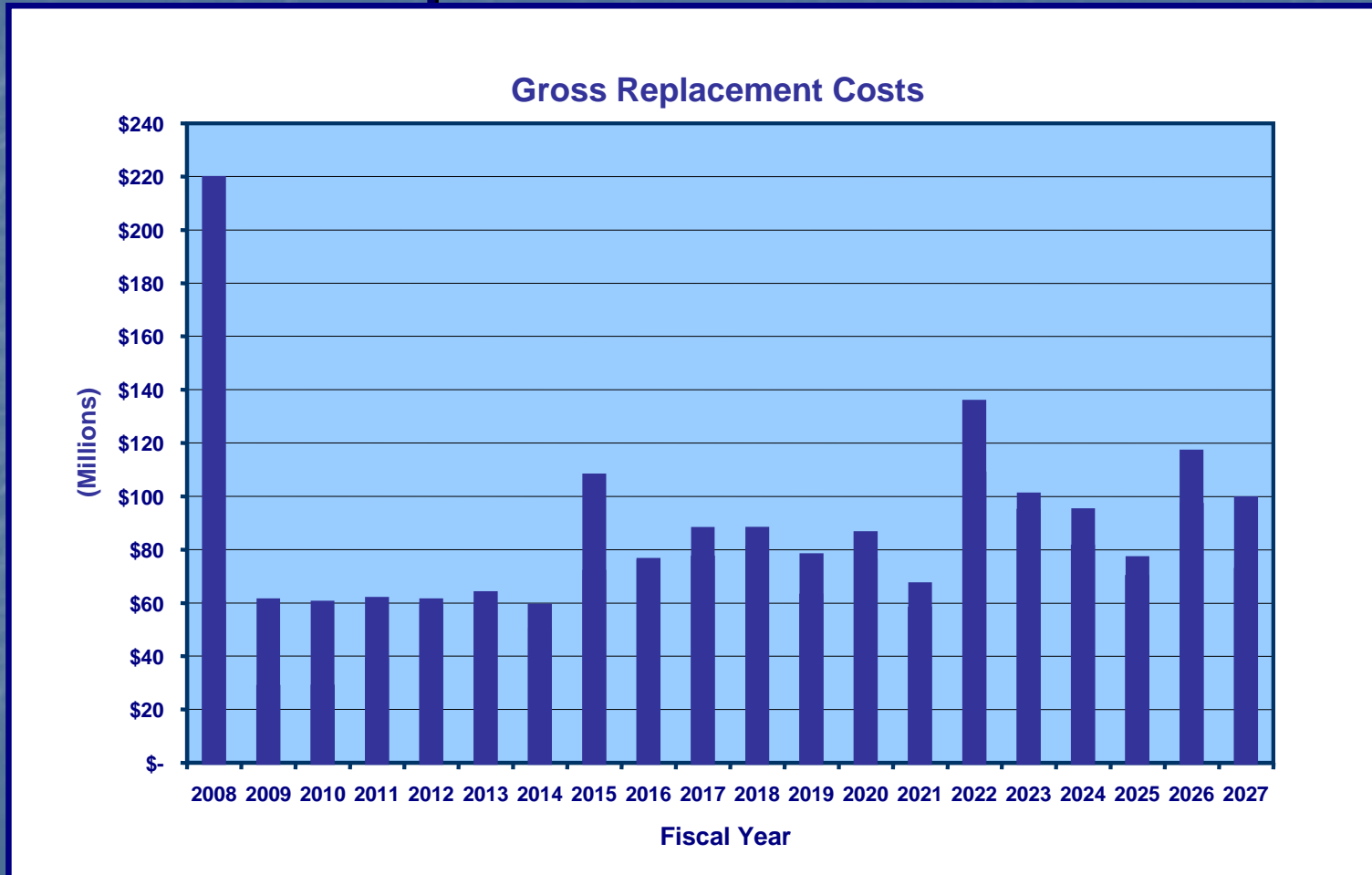
Baseline Fleet Replacement Plan



Fleet Statistics

Total number of units	7,386
Number of asset types	233
Current average age (years)	7.5
Imputed average replacement cycle (years)	15.0
Average recommended replacement cycle (years)	6.2
Original purchase price	\$248 M
Replacement cost	\$366 M
Average annual replacement cost	\$59 M
Current replacement backlog	\$220 M
Number of units that exceed age and/or usage criteria for replacement	5,340
Percentage of units that exceed age and/or usage criteria for replacement	72%

Baseline versus Smoothed Replacement Plans



Key Statistics for Baseline and Smoothed Replacement Plans

Statistic	Baseline	Smoothed
Year 1 Replacement Expenditures	\$ 220.2 M	\$ 60.5 M
Used Vehicle Sale Proceeds in Year 1	\$ 25.5 M	\$ 3.8 M
Net Replacement Cost in Year 1	\$ 194.7 M	\$ 56.7 M
# Vehicles Replaced in Year 1	5,340	2,192
# Vehicles Replaced in Years 1-5	8,723	7,177
Total Replacement Expenditures in Years 1-5	\$ 377.5 M	\$ 305.3 M
Total Sale Proceeds in Years 1-5	\$ 70.3 M	\$ 39.9 M
Total Net Replacement Cost in Years 1-5	\$ 307.2 M	\$ 265.4 M
Average Annual Net Replacement Cost for Years 1-5	\$ 61.4 M	\$ 53.1 M
Average Annual Net Replacement Cost for Years 1-10	\$ 59.1 M	\$ 51.8 M

Financing Approaches Evaluated

- Ad Hoc Appropriations of Cash
- Reserve Fund and Charge-Back System
- General Obligation Bonds
- Operating Lease

Key Analytical Parameters Used

- Under a Reserve Fund
 - Charge-back rates are based on net capital cost of each vehicle (i.e., sale proceeds are returned to fund)
 - Replacement rates are calculated for each vehicle and include two components:
 - ◆ Depreciation
 - ◆ Replacement Surcharge
 - Book value of current assets estimated based on original purchase price less projected residual value
 - Interest earning rate of 3 percent

Key Analytical Parameters Used

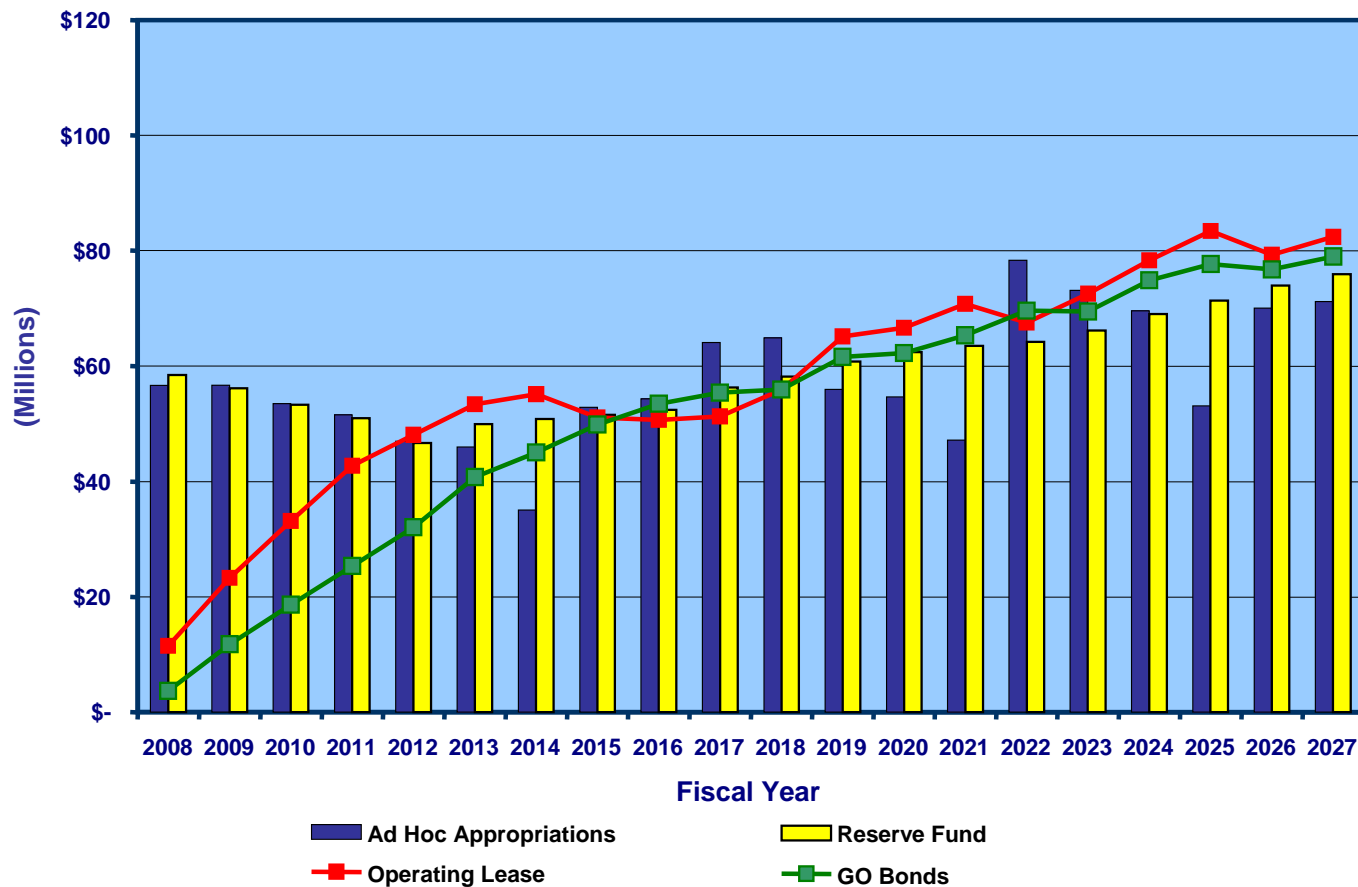
- Under a Bond Program
 - Financing periods used are 60 or 120 months
 - ◆ All vehicles with a life expectancy in excess of 60 months are assumed to be financed over 120 months
 - ◆ All others are assumed to be financed over 60 months
 - All-in COC in both cases is 3.89 percent
 - Current approach involves rolling purchases financed with commercial paper into GO bonds with 96-month term
 - Note that average recommended replacement cycle is 75 months

Key Analytical Parameters Used

- Under a Lease Program
 - Open-ended operating lease
 - ◆ Asset must be retained for minimum of 12 months, after which it can be turned in at any time before or after planned lease term
 - ◆ City participates in gain or loss on sale of asset at end of lease
 - Lease periods range from 48 to 84 months
 - Interest rate used is 5.3 percent for all periods
 - Sales tax is calculated at 7.5 percent of capitalized cost and is collected at lease inception

Capital Financing Comparison

Net Funding Requirements



Net Funding Requirements by Financing Approach

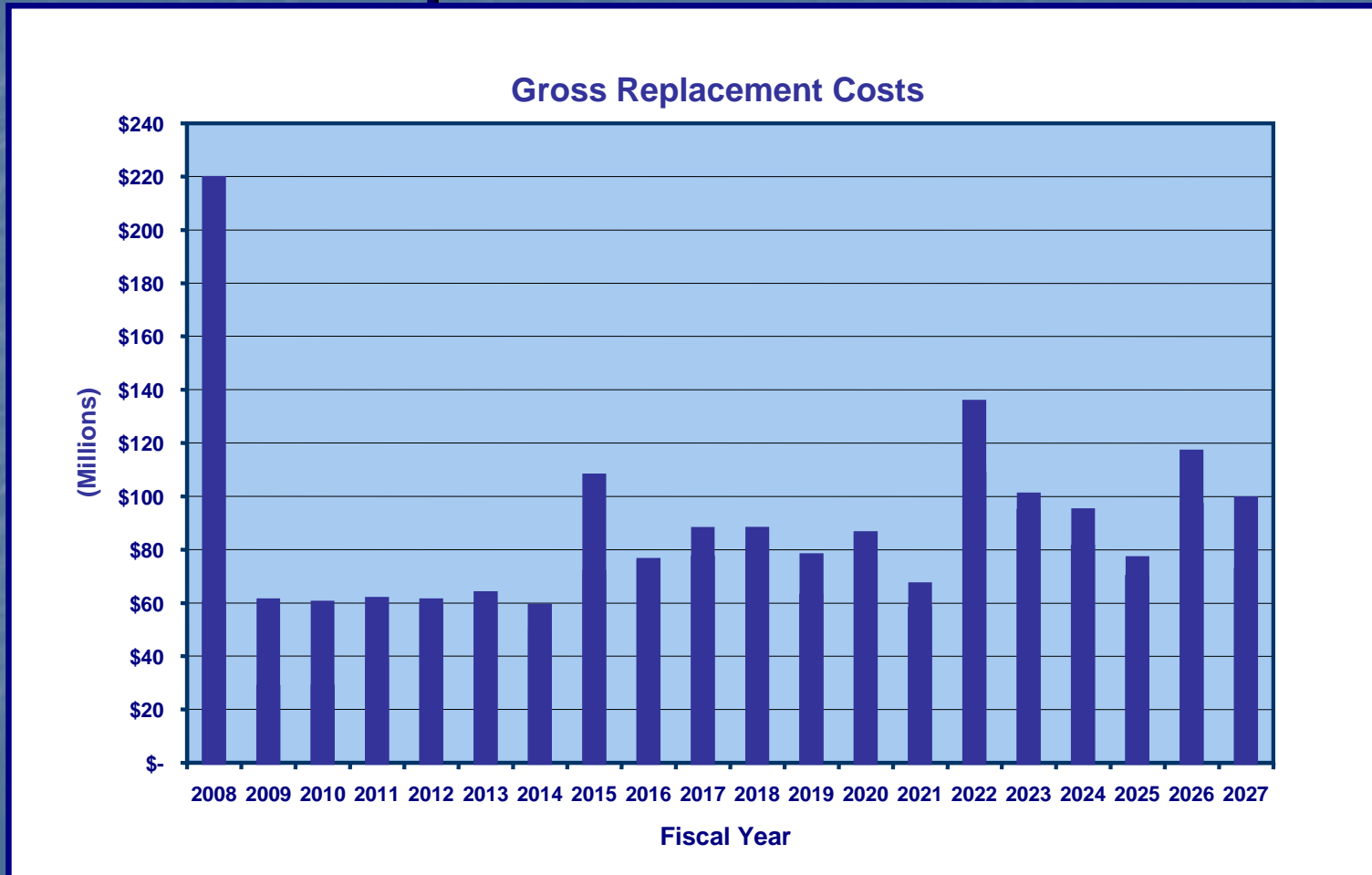
Total	Year 1	Years 1-5	Years 1-10
Ad Hoc Appropriations	\$ 56.6 M	\$ 265.4 M	\$ 517.6 M
Reserve Fund and Charge-Back System	\$ 58.5 M	\$ 265.6 M	\$ 526.6 M
Bonds	\$ 4.1M	\$ 93.2 M	\$ 339.4 M
Operating Leases	\$ 11.5 M	\$ 158.6 M	\$ 420.1 M
Annual Average	Year 1	Years 1-5	Years 1-10
Ad Hoc Appropriations	\$ 60.5 M	\$ 53.1 M	\$ 51.8 M
Reserve Fund and Charge-Back System	\$ 58.5 M	\$ 53.1 M	\$ 52.7 M
Bonds	\$ 4.1M	\$ 18.6 M	\$ 33.9 M
Operating Leases	\$ 11.5 M	\$ 31.7 M	\$ 42.0 M

A Question About Interest

- Why pay it?

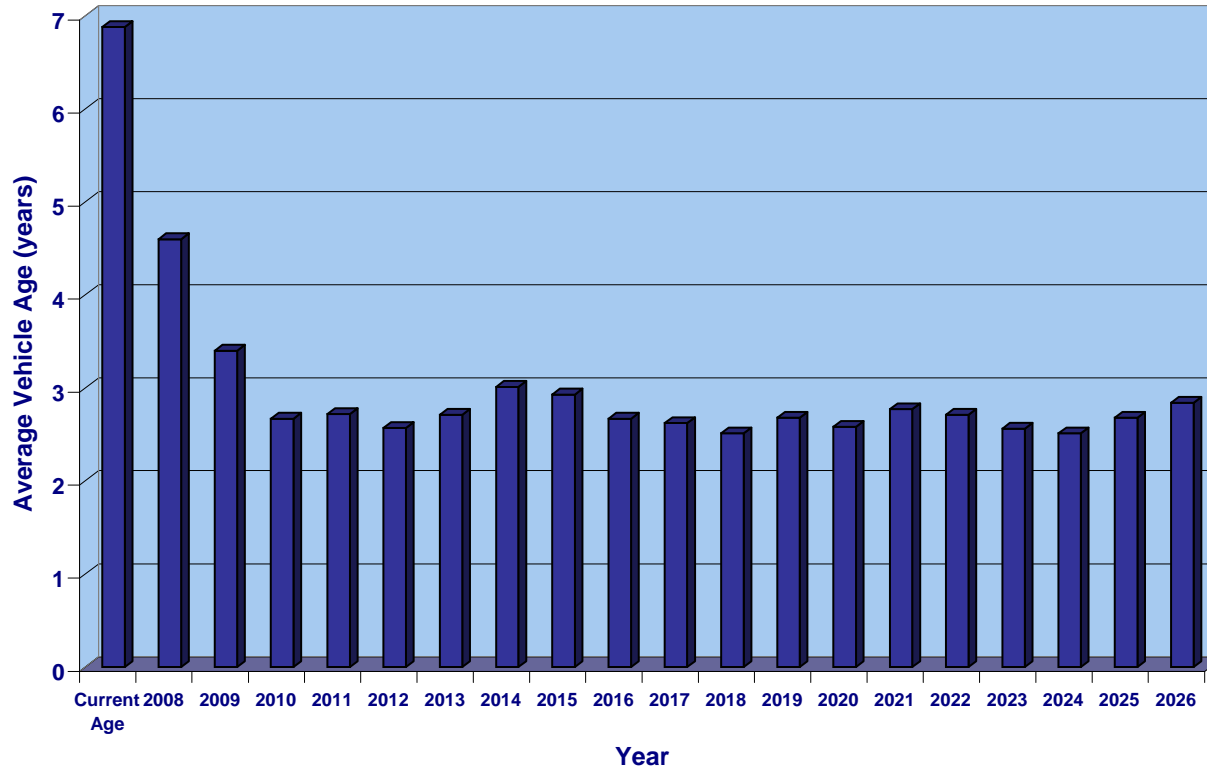
Making the Case for an Increase in Fleet Replacement Spending

Baseline versus Smoothed Replacement Plans

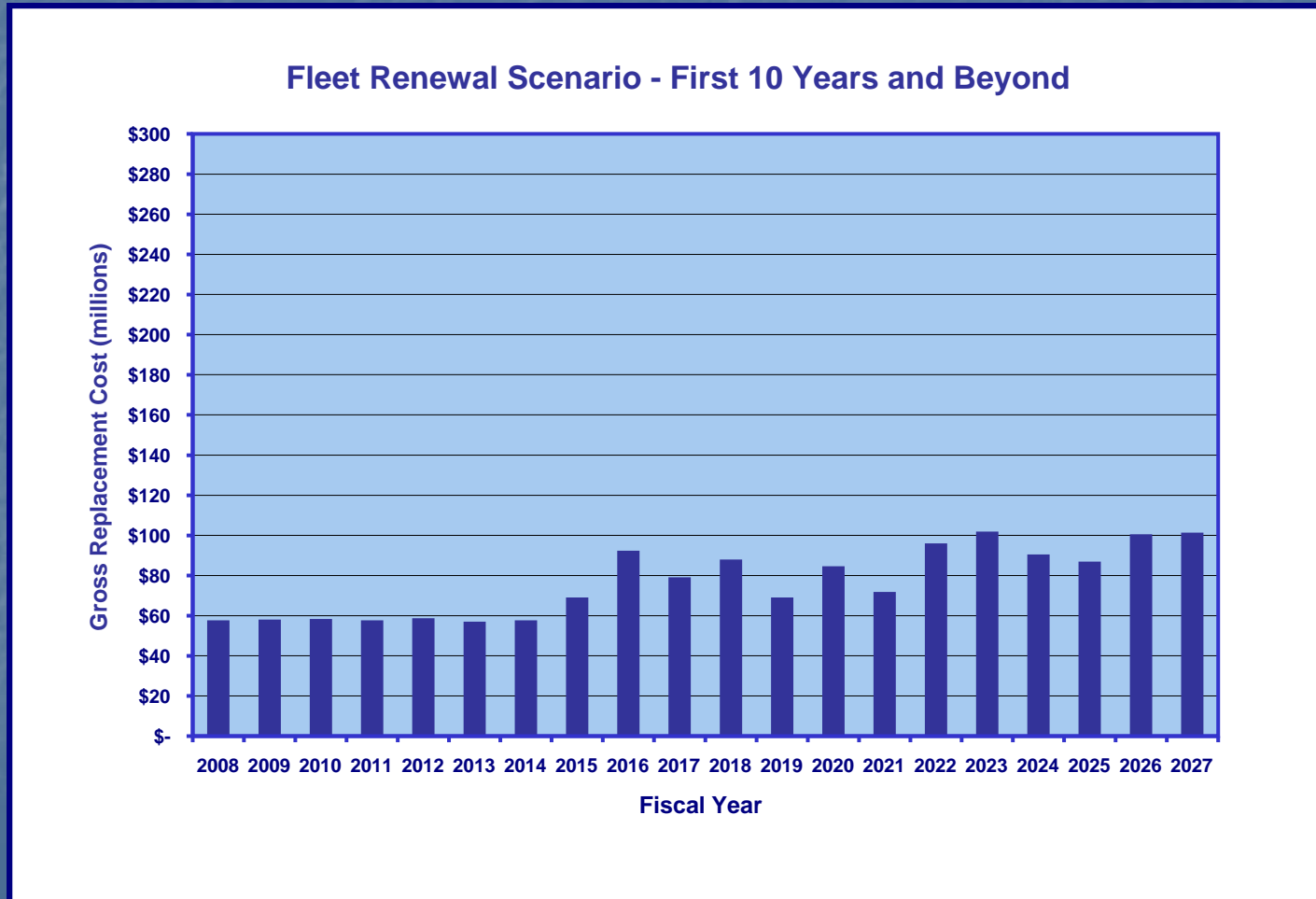


Reduction in Average Vehicle Age if Fleet is Renewed

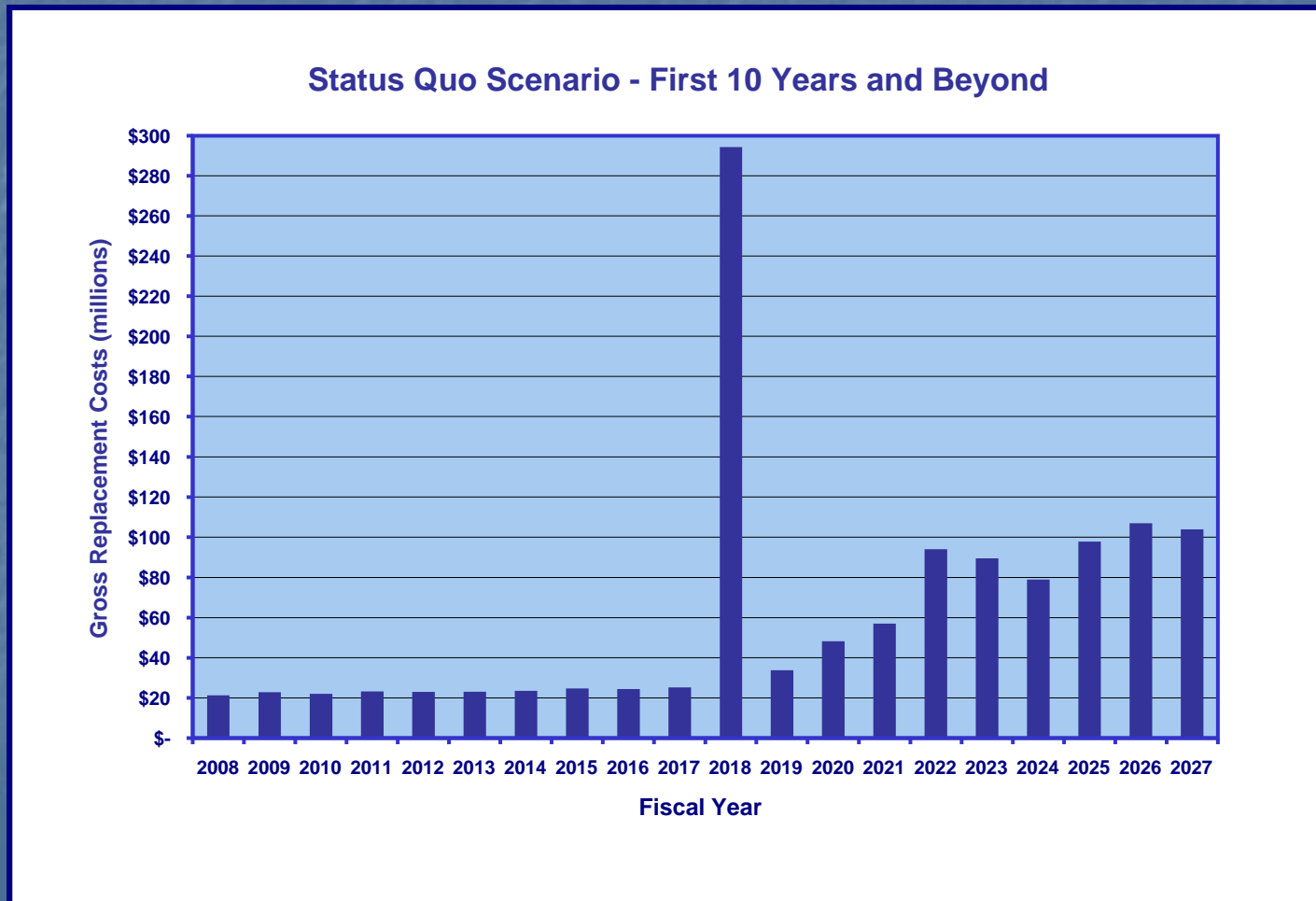
Average Vehicle Age Associated with Implementing Smoothed Replacement Plan



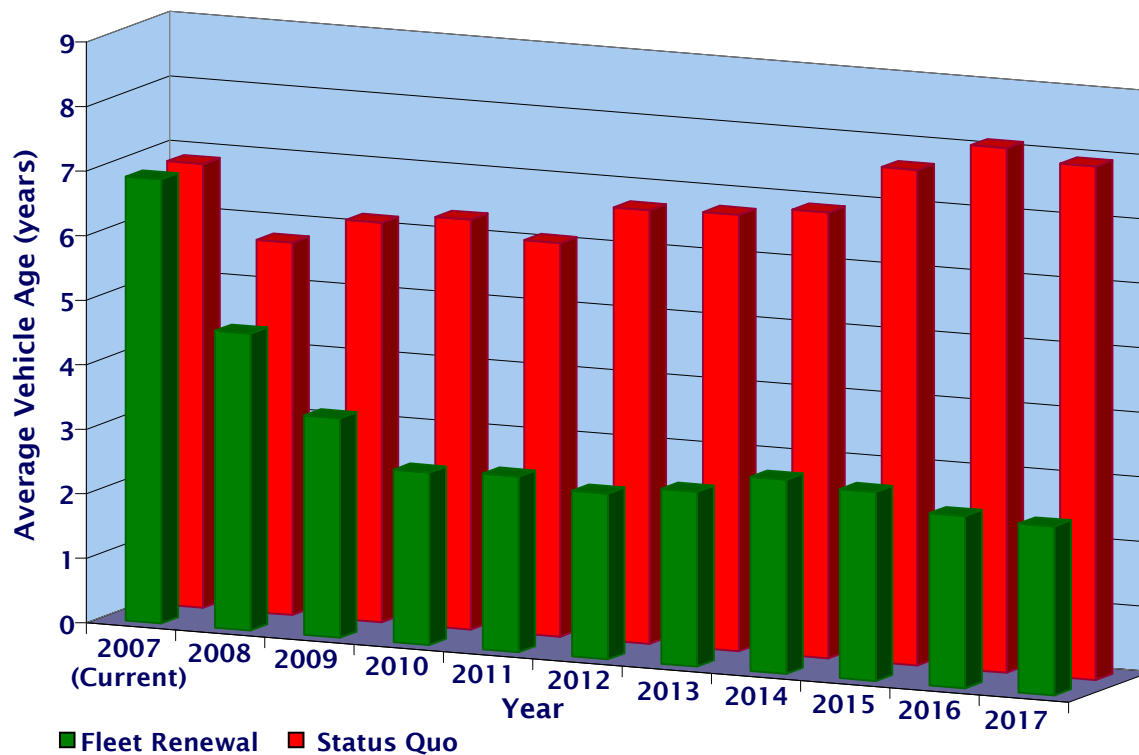
Fleet Replacement Costs Under Fleet Renewal Program



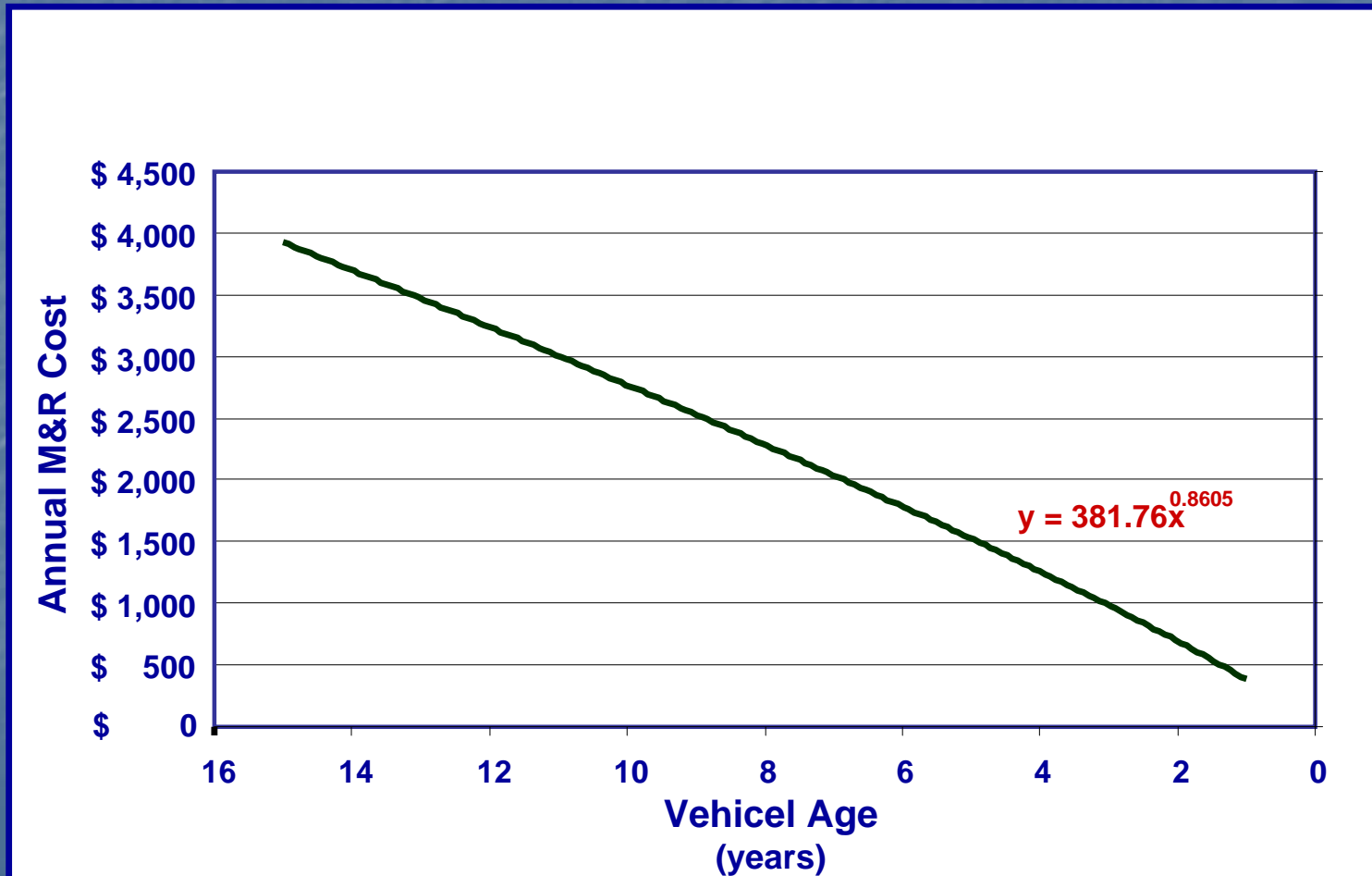
Fleet Replacement Costs Under “Status Quo” Approach



Change in Vehicle Age Under Renewal and Status Quo Scenarios



Annual Maintenance and Repair Cost Per Vehicle as a Function of Vehicle Age



Annual M&R Cost per Vehicle by Age

% Decrease	Age	Cost	% Increase
--	18	\$ 4,591	5%
5%	17	\$ 4,371	5%
5%	16	\$ 4,149	6%
5%	15	\$ 3,925	6%
6%	14	\$ 3,699	7%
6%	13	\$ 3,470	7%
7%	12	\$ 3,239	8%
7%	11	\$ 3,005	9%
8%	10	\$ 2,769	9%
9%	9	\$ 2,529	11%
10%	8	\$ 2,285	12%
11%	7	\$ 2,037	14%
12%	6	\$ 1,784	17%
15%	5	\$ 1,525	21%
17%	4	\$ 1,259	28%
22%	3	\$ 983	42%
30%	2	\$ 693	81%
45%	1	\$ 382	--

Fleet Fuel Cost Savings Resulting from Fleet Renewal

Year	Miles per Gallon	Annual Gallons Used	Annual Savings
Current	10.7	6,063,458	\$ 53,349
1	10.8	5,996,941	\$ 287,298
2	10.9	5,942,923	\$ 425,840
3	11.0	5,887,905	\$ 569,449
4	11.1	5,834,861	\$ 718,636
5	11.2	5,782,764	\$ 873,958
6	11.3	5,731,589	\$ 1,036,022
7	11.4	5,681,312	\$ 1,205,491
8	11.5	5,631,910	\$ 1,383,087
9	11.6	5,583,359	\$ 1,569,604
10	11.7	5,535,638	\$ 1,569,604
20	12.8	5,059,919	\$ 3,452,889

Economic Comparison of Fleet Renewal and Status Quo Scenarios

Fleet Costs/Asset Value Under Fleet Renewal Scenario (millions)

Cost Category/Year	1	2	3	4	5	6	7	8	9	10	Total
Gross Replacement Cost	\$57	\$58	\$58	\$57	\$58	\$56	\$57	\$69	\$92	\$79	\$641
Annual Asset Depreciation	\$34	\$34	\$37	\$39	\$41	\$42	\$42	\$46	\$54	\$53	\$422
Annual Maintenance and Repair Cost	\$24	\$20	\$17	\$15	\$14	\$16	\$17	\$17	\$17	\$17	\$175
Annual Fuel Cost	\$15	\$16	\$16	\$17	\$17	\$18	\$18	\$19	\$19	\$20	\$174
Annual Total Cost¹	\$74	\$70	\$71	\$70	\$72	\$75	\$78	\$82	\$90	\$89	\$771
Ending Fair Market Value of Assets	\$107	\$127	\$140	\$149	\$155	\$157	\$157	\$163	\$180	\$187	

Fleet Costs/Asset Value Under Status Quo Scenario (millions)

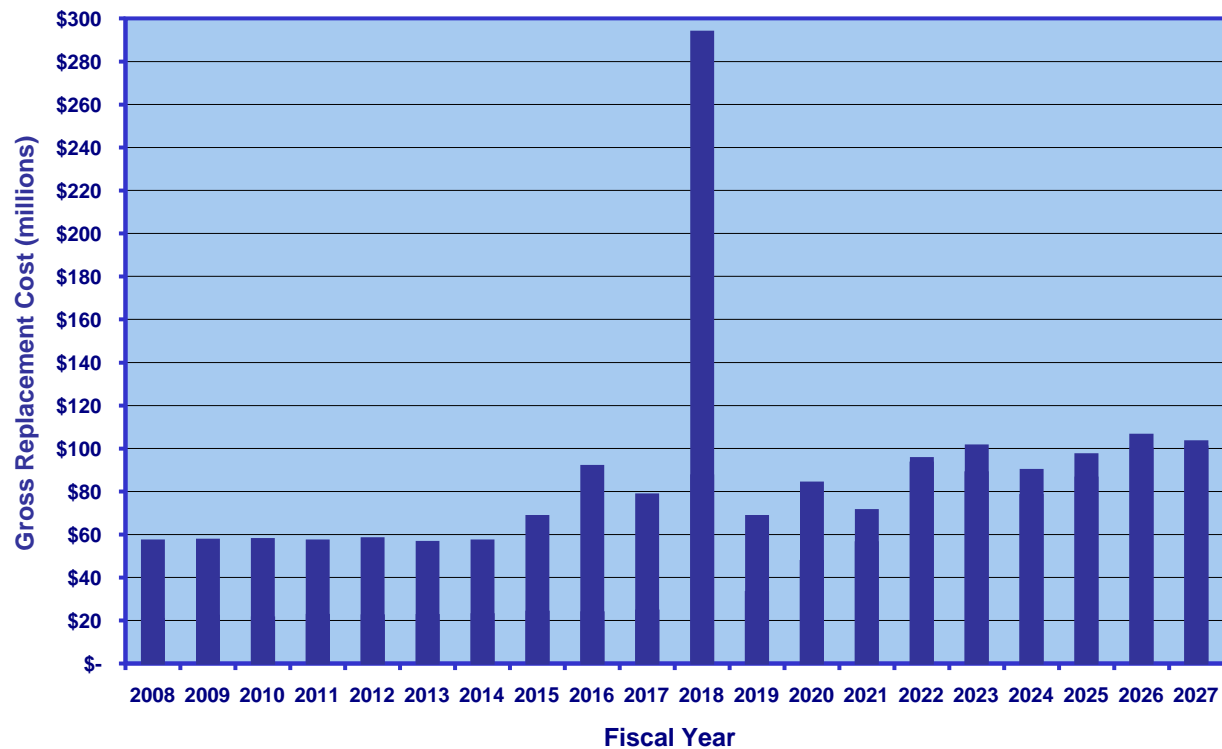
Cost Category/Year	1	2	3	4	5	6	7	8	9	10	Total
Gross Replacement Cost	\$21	\$22	\$22	\$23	\$22	\$23	\$23	\$24	\$24	\$25	\$228
Annual Asset Depreciation	\$24	\$20	\$20	\$21	\$21	\$21	\$21	\$21	\$21	\$21	\$210
Annual Maintenance and Repair Cost	\$26	\$28	\$30	\$31	\$34	\$35	\$37	\$41	\$45	\$47	\$355
Annual Fuel Cost	\$15	\$16	\$17	\$17	\$18	\$18	\$19	\$19	\$20	\$21	\$180
Annual Total Cost¹	\$65	\$65	\$67	\$69	\$73	\$74	\$77	\$81	\$86	\$89	\$745
Ending Fair Market Value of Assets	\$84	\$85	\$85	\$85	\$86	\$86	\$85	\$83	\$82	\$83	

Savings (Costs) Associated with Fleet Renewal (millions)

Cost Category/Year	1	2	3	4	5	6	7	8	9	10	Total
Cumulative Savings from (Costs of) Fleet Renewal	(\$9)	(\$14)	(\$18)	(\$19)	(\$19)	(\$19)	(\$20)	(\$21)	(\$24)	(\$25)	
Increase (Decrease) in Value of Assets from Renewal	\$23	\$41	\$55	\$64	\$69	\$71	\$72	\$80	\$97	\$104	
Net Annual Savings (Costs) from Fleet Renewal²	\$14	\$28	\$38	\$44	\$51	\$52	\$52	\$60	\$73	\$78	
NPV Savings (Costs) from Fleet Renewal³											\$41

Fleet Replacement Costs Under Fleet Renewal Program

Status Quo Scenario - First 10 Years and Beyond



Questions

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