

6th Telematics Conference SEEurope: Pre-Conference Workshop

Fundamentals of Fleet Management

How Telematics Solution Providers Can
Help their Customers be Better Fleet
Managers

Budapest, Hungary
28 September 2016



MERCURY

Workshop Agenda

| | |
|--|-----------|
| Introductions | 1400-1415 |
| 1. Fleet Management Defined | 1415-1445 |
| 2. Key Trends in Fleet Management | 1445-1515 |
| Break | 1515-1530 |
| 3. Strategies for Managing Fleet Performance and Costs | 1530-1645 |
| Identifying and Managing Fleet Costs | |
| Managing Fleet Supplier Costs and Performance | |
| 4. Performance Measurement and Benchmarking | 1645-1745 |
| 5. Fleet Management Training and Certification | 1745-1800 |
| Adjourn | 1800 |
| Dinner | 1900-2100 |

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About the Instructors

Paul Lauria

- Master's Degree in Transportation Planning from the University of North Carolina at Chapel Hill
- 32 years' experience as a transportation and fleet management consultant
- President of Mercury Associates, Inc. (www.mercury-assoc.com) fleet management consultancy
- Previous experience conducting presentations and one to five-day fleet management workshops in 20 countries around the world
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About Mercury Associates, Inc.

- Largest dedicated fleet management consultancy in North America; headquartered in Washington, DC area
- More than 600 clients served, with fleets of <100 to >200,000 vehicles and pieces of equipment
- Company's mission is to help organizations improve fleet management practices, improve fleet performance, and reduce fleet costs



Mercury Associates Consultancy Services

- Fleet Management Best Practices Studies
- Fleet Management Program Consolidation and Organizational Restructuring Studies
- Fleet Cost Analysis, Reduction, and Containment Studies
- Fleet Utilization, Optimization, and Rightsizing Studies
- Fleet Management Information System Requirements Definition, Acquisition, Implementation, Hosting
- Outsourcing Feasibility Studies

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Mercury Associates Consultancy Services

- Development of Requirements, Specifications, and Tenders – Vehicles, Services, Information Systems
- Supplier Selection, Contract Negotiation, and Performance Reviews
- Determination of Optimal Vehicle Replacement Cycles
- Evaluation of Lease versus Buy and other Capital Financing Strategies
- Financial Audits of Fleet Leasing Company and other Supplier Invoices
- Management Training

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- Johnson & Johnson
- Pacific Gas & Electric
- Pfizer
- Quanta Services
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- Toyota

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- British Columbia Hydro
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- Flint Hills Resources
- Georgia Power Company
- Goodwill Industries
- Gulf Stream Marine
- Hoosier Energy
- Horizon Utilities
- Hunt Brothers Pizza
- Laidlaw
- Lancaster Foods
- Lighting Maintenance, Inc.
- Terra Renewal
- Whiting Oil & Gas

Government/NGO

- US Army, Navy, Air Force, Marine Corps
- US departments of Agriculture, Defense, Energy, Homeland Security, Interior, Labor, State, Veterans Affairs
- US Postal Service
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- United Nations
- LDS Church
- RAND Corporation
- Transportation Research Board
- 33 of 50 largest cities in the US, including 10 largest;
- 3 of 5 largest cities in Canada
- 35+ state and provincial governments
- 40+ colleges and universities

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 - Slovakia
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 - Saudi Arabia
 - United Arab Emirates
- Caribbean and South America
 - Brazil
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 - Jamaica
 - Trinidad and Tobago
 - US Virgin Islands
- Asia
 - China
 - India
 - Malaysia
 - Singapore
 - Thailand
- Australia

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About the Instructors

Marcel Punga

- Bachelor's Degree in Automotive Engineering from the University of Transylvania at Brasov
- 22 years' experience in vehicle maintenance area, consultancy and fleet management areas, operations and logistics areas, training area
- Certified coach, teacher and speaker
- Previous experience transport & fleet optimization, training, program creation of safety & economical driving
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1. Fleet Management Defined

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The Science of Fleet Management

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The bottom of the slide features a black silhouette of a city skyline against a light blue background. On the left, the word "MERCURY" is written in white, bold, sans-serif capital letters. The skyline includes a suspension bridge on the left, a large dome in the center, and various other buildings and structures on the right.

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What is a “scientific” approach to the management of anything?

Scientific (definition)

- Something that is done in an **organized** way that agrees with the methods and principles of science

Science (definition)

- The state of knowing; **knowledge** as distinguished from ignorance or misunderstanding
- A department of **systematized** knowledge as an object of study
- Knowledge or a **system** of knowledge covering general truths or the operation of general laws, especially as obtained and tested through scientific method

Scientific Method (definition)

- Principles and procedures for the **systematic** pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of hypotheses

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More Definitions

Strategy

- The *science* of planning and maneuvering into the most advantageous position prior to actual engagement

Tactics

- The *science* of arranging and maneuvering to attain short-range objectives

Confusion

- An indiscriminate mixing or putting together of things; a disturbance of the proper order or arrangement of parts or activities

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Many organizations do not approach fleet management in a scientific fashion because...

...the **goals** of fleet management activities are not clear or well understood

The goals of any fleet management program are to furnish assets that are:

1. Suitable
2. Available
3. Reliable
4. Safe
5. Economical
6. Sustainable

Different stakeholders may view the importance of these goals very differently from one another

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Many organizations do not approach fleet management in a scientific fashion because...

... there is insufficient appreciation of the **importance** of fleet management activities to the enterprise.

Some stakeholders may not appreciate the importance of fleet management because...

- The fleet is a cost, not a (direct) revenue or profit, producer
- The contribution of the fleet to the organization's mission is not clear or well understood
- Fleet management is an internal support function whose beneficiaries or "customers" are internal to the organization
- The magnitude of the cost of the fleet is not known or appreciated
- Fleet costs are small in relative, enterprise-wide terms, even if significant in absolute terms
- Fleet management is not viewed as a "real" profession

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Effective fleet management practices *are* important because they affect:

- Employee performance and job satisfaction
- Employee and public safety
- Risk and liability exposure
- Costs and profitability
- Regulatory compliance
- Customer service and satisfaction
- Corporate image, reputation, and social responsibility

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Many organizations do not approach fleet management in a scientific fashion because...

... there is insufficient appreciation of the **complexity** of fleet management activities

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Fleet management is complicated because...

- Managing a fleet involves the performance of two distinct, but interdependent, types of activities:
 - Asset management activities
 - Enterprise management activities
- Performing these activities requires different types of knowledge and skills and many individuals who are skilled in one area are not skilled in the other
- Responsibility for performing these activities usually is fragmented, with different employees and/or organizational units responsible for different “pieces of the puzzle”
- Many enterprise management activities are designed and conducted to manage an entire enterprise, not just a fleet; enterprise-wide goals and management policies and procedures are not always aligned with the demands of effective fleet management

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Asset Management Activities



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Enterprise Management Activities



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Enterprise Management Activities that Affect Fleet Management Practices

- Financial management
- Supply chain management
- Human resources management
- Information technology management
- Risk management
- Facility management

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The Elements of an Effective Fleet Management Program

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Master List of Fleet Management Activities

Asset Allocation and Utilization Management

1. Asset requirements definition
2. Acquisition alternatives analysis (e.g., rent v. own) and decision making
3. Asset utilization measurement and exception management
4. Personal use management
5. Personally owned vehicle use management

Asset Acquisition and Disposal

6. Purchase specifications development, bid solicitation, and asset/supplier selection
7. Purchase/lease/rental contract establishment and management
8. Asset commissioning (including upfitting)
9. Asset decommissioning and remarketing/disposal

Driver/Operator Management

10. Operator license management (MVR checks, substance abuse testing, etc.)
11. Operator training and discipline
12. Safety management
13. Accident management

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Master List of Fleet Management Activities

In-House Asset Maintenance and Repair

14. Pre-/post-trip inspection and defect reporting
15. Preventive maintenance program design and execution
16. Work planning and scheduling
17. Service writing and job assignment
18. Technician supervision and work quality assurance
19. Mobile service
20. Roadside assistance and asset recovery
21. Warranty management

In-House Maintenance and Repair Parts Management

22. Supplier selection and contract establishment
23. Inventory and ad hoc parts procurement
24. Parts disbursement
25. Inventory management and control

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Master List of Fleet Management Activities

Outsourced Maintenance and Repair

- 26. Vendor selection and contract establishment
- 27. Service requisition and authorization and transaction administration
- 28. Vendor performance management

Asset Fueling

- 29. Supplier selection and contract establishment
- 30. Bulk fuel procurement
- 31. Bulk fuel inventory management and control
- 32. Fueling facility operation and maintenance
- 33. Commercial fuel transaction/credit card program management

Asset Replacement

- 34. Replacement cycle guideline development
- 35. Replacement planning
- 36. Replacement earmarking and budgeting
- 37. Replacement financing

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Master List of Fleet Management Activities

Fleet Management Resources Management

- 38. Organization structure and staffing
- 39. Employee classification and compensation
- 40. Employee professional development and
- 41. Maintenance and fueling facility site selection, design, construction, and utilization management
- 42. Facility housekeeping, maintenance, and regulatory compliance
- 43. Safety management

Fleet Management Information Management

- 44. Management information system functionality, configuration, deployment, and maintenance
- 45. Data capture and integrity and security management
- 46. Management reporting
- 47. Ad hoc management analysis

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Master List of Fleet Management Activities

Fleet Cost and Financial Management

- 48. Budgeting
- 49. Activity-based cost determination/charge-back rate development
- 50. Cost allocation/charge-back system management
- 51. Cost and expenditure analysis and control

Fleet Service Delivery Management

- 52. Transaction-based communication
- 53. Operator/customer satisfaction measurement
- 54. Customer relationship management

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The effective performance of FM activities requires documented policies and procedures that...

- Ensure that all the elements required to perform a particular fleet management activity effectively and efficiently are identified and understood
- Can uncover deficiencies in current practices
- “Institutionalize” knowledge and maintaining sound practices despite employee turnover
- Demonstrate professionalism and commitment to high-quality performance to management and customers

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Summary: Key Attributes of a Scientific Approach to Fleet Management

- Clear understanding of goals and objectives
- Recognition of fleet management as a complex set of principles, policies, and processes that need to be applied/practiced in a systematic fashion
- Formally defined (documented) policies and procedures for performing all key asset management activities and for leveraging/influencing pertinent enterprise management practices
- Formally designated responsibilities and *matching* authority
- Structured, data-driven goal and policy setting, forecasting, planning, and decision making methodologies
- Cost and performance transparency

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How can telematics solutions support a scientific approach to fleet management?

- They can facilitate knowledge-based asset, driver, and employee mobility management
- They can facilitate an interdisciplinary approach to fleet management (e.g., through integration of vehicle, driver, trip, and traffic data)
- They can illustrate the value of objective, quantitative data relative to that of knowledge based only on experience, past practice, subjective judgment, and first-hand observation

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Questions

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2. Key Trends in Fleet Management: Group Discussion

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Fleet Industry Trends that are Shaping the Future

- Brain drain
- Chronic underinvestment in human capital
- Shortage of new talent entering the fleet management profession
- Increasing complexity and potential applications of *information* technology
- Increasing complexity of *automotive* technology
- Big data

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Implications of Industry Trends for Fleet Owners

- Increasing reliance on third-party service providers (i.e., outsourcing)
- Growing demand for ongoing fleet management support services
- Growing, albeit still largely unfocused, demand for “data analytics”
- Growing demand for professional training and certification services
- Growing demand for technical guidance in the areas of AFVs and telematics

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3. Strategies for Managing Fleet Performance and Costs

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The Mercury logo consists of the word "MERCURY" in a bold, white, sans-serif font, set against a blue rectangular background with a white border. The logo is positioned in the bottom left corner of the slide.

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Identifying and Managing Fleet Operating Costs

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Key Truth's About Managing Fleet Costs

You can't manage costs that you can't see

Managing *expenditures* is not the same thing as managing *costs*

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Primary Types of Fleet Costs

- Asset capital costs
- Asset operating costs
 - Ownership costs (registration, insurance, taxes, etc.)
 - Maintenance and repair costs
 - Fuel costs
 - Management costs
- Activity-based cost (ABC) analysis is a tool for making fleet *operating* costs visible and, hence, manageable

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Uses of ABC Analysis in Fleet Management

- Determine the reasonableness of fleet asset and fleet management costs
- Determine whether or not and how costs can be reduced if they are not reasonable
 - By changing fleet management practices
 - By changing fleet resource consumption practices
- Provide the foundation for establishing internal cost charge-back rates
- Assess the benefits of outsourcing or insourcing certain fleet asset management activities

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Key Steps in the ABC Analysis Process

1. **Identify** all annual costs associated with managing and operating the fleet
2. **Define** fleet management activities for which costs will be calculated
3. **Allocate** costs to cost pools associated with each activity
4. **Convert** annual costs to unit costs of performing each activity
5. **Assess** reasonableness of costs using appropriate benchmarks

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1. Identify Fleet Operating Costs

Direct (out of pocket) costs

- Personnel salaries and fringe benefit costs
- Parts and supplies
- Warranty and insurance claim recoveries
- Fuel
- Vendor and contractor service charges
 - For fleet assets
 - For fleet management resources
 - ◆ Facilities and equipment
 - ◆ Personnel (uniforms, training, etc.)

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1. Identify Fleet Operating Costs

Indirect costs

- Depreciation
 - Fleet management infrastructure
 - Fleet management vehicles
- Support services costs
 - Procurement and contract management
 - Budget and finance
 - Legal
 - Risk management
 - HR management
 - Facility management
 - IT infrastructure and support

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2. Define Fleet Management Activities

- Manage asset acquisition, operation, utilization, replacement, and disposal
- Manage drivers/operators
- Furnish in-house maintenance and repair labor
- Furnish in-house maintenance and repair parts
- Procure maintenance and/or repair services
- Procure (and supply) fuel
- What else?

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3. Allocate Costs to Activities

- Define cost pools for each fleet-related product or service for which an annual cost will be calculated
- Develop appropriate allocation methods and statistics (group exercise)

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4. Convert Annual Costs to Unit Costs

$$TC_i / C_i = UC_i$$

Where:

TC_i Is the projected annual cost of providing all units of goods or services of Type i

C_i Is the projected total annual consumption (by fleet users) of goods or services of Type i

UC_i Is the cost of one unit of a good or service of Type i

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Calculating Unit Costs – An Example

$$\$1.97\text{M} / 21,000 = \$108$$

Where:

\$1.97M Is the projected annual cost of employing and supporting a workforce of 12 maintenance technicians

18,000 Is the total annual number of hours of in-house technician labor charged to work orders

\$108 Is the “fully loaded” cost per technician labor hour

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Estimating Annual Consumption of Resources

- Months of asset ownership
- In-house M&R labor hours
- Costs of in-house M&R parts
- Costs of outsourced maintenance and repair services
- Litres of fuel

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Activity-Based Cost Analysis Recap

- Understanding the unit costs of fleet management activities is essential for managing and ensuring their reasonableness; no organization can effectively manage fleet costs that it cannot see
- Any organization can manage fleet-related expenditures but this is not the same thing as managing fleet costs
- Many fleet costs do not generate regular invoices or receipts that can be retrieved from the finance department/system for compilation and analysis
- Identifying fleet operating costs begins with the development of an annual fleet operating budget; if an organization doesn't currently have one, it should consider creating one as a critical first step toward improving the management of such costs

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Questions

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Identifying and Managing Fleet *Capital* Costs

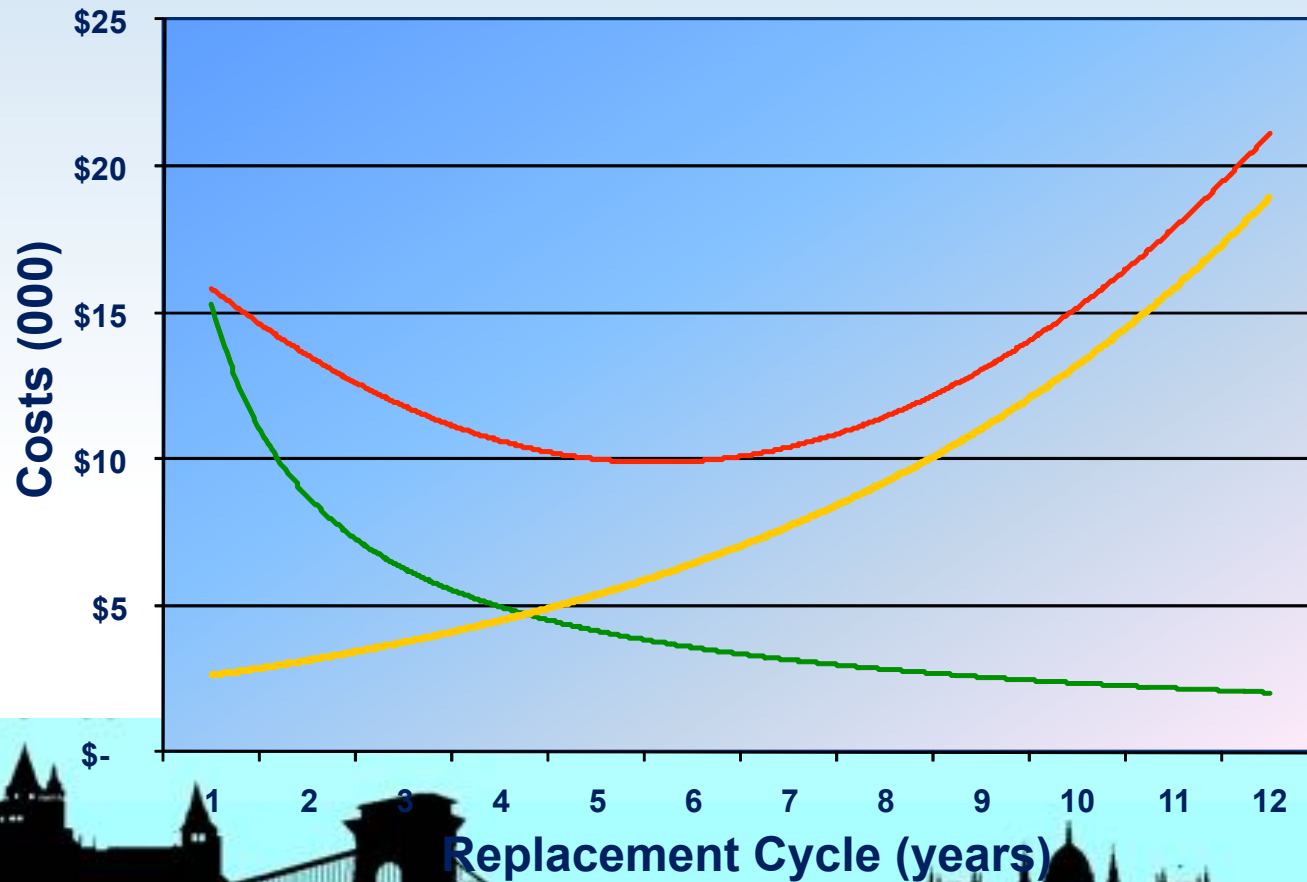
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A black silhouette of a city skyline is positioned at the bottom of the slide. On the left, a suspension bridge with two large towers is visible. To the right of the bridge, various buildings of different heights and shapes form the rest of the skyline. The entire silhouette is set against a light blue background that transitions into a white background at the top.

Life Cycle Costs of a Vehicle

Capital, Operating and Total Cost Trend Lines
(Single-Axle Dump Truck)



Costs to Include in a Vehicle Life Cycle Cost Analysis

- Capital
 - Acquisition cost (purchase price or capitalized lease cost)
 - Upfitting cost
 - Rebuilding cost
 - Residual value
- Operating
 - Routine maintenance and repair (exclude accident costs)
 - Fuel
 - Insurance
 - Taxes
- What else?

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Sample Life Cycle Cost Analysis

| Replacement Cycle (years) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|----------|----------|----------|----------|----------|----------|-----------------|----------|----------|----------|
| Year-End Odometer Reading | 13,315 | 26,630 | 39,945 | 53,260 | 66,575 | 79,890 | 93,205 | 106,520 | 119,835 | 133,150 |
| CAPITAL COST | | | | | | | | | | |
| Year-End Fair Market Value Percentage | 70.0% | 58.5% | 48.8% | 40.8% | 34.1% | 28.5% | 23.8% | 19.9% | 16.6% | 13.9% |
| Year-End Fair Market Value | \$13,144 | \$10,979 | \$9,170 | \$7,660 | \$6,398 | \$5,344 | \$4,464 | \$3,728 | \$3,114 | \$2,601 |
| Annual Capital Cost | \$5,633 | \$2,165 | \$1,809 | \$1,511 | \$1,262 | \$1,054 | \$880 | \$735 | \$614 | \$513 |
| OPERATING COSTS | | | | | | | | | | |
| Annual M&R Cost | \$798 | \$936 | \$1,098 | \$1,288 | \$1,510 | \$1,772 | \$2,078 | \$2,438 | \$2,859 | \$3,354 |
| Annual Fuel Cost | \$1,908 | \$1,985 | \$2,065 | \$2,149 | \$2,236 | \$2,326 | \$2,420 | \$2,518 | \$2,619 | \$2,725 |
| Total Annual Operating Cost | \$2,706 | \$2,921 | \$3,163 | \$3,436 | \$3,746 | \$4,097 | \$4,498 | \$4,955 | \$5,479 | \$6,079 |
| Total Annual Operating Cost (2014\$) | \$2,706 | \$2,836 | \$2,981 | \$3,145 | \$3,328 | \$3,534 | \$3,767 | \$4,029 | \$4,325 | \$4,659 |
| Cumulative Operating Cost (2014\$) | \$2,706 | \$5,542 | \$8,523 | \$11,668 | \$14,996 | \$18,530 | \$22,297 | \$26,326 | \$30,651 | \$35,310 |
| Avg Annual Operating Cost (2014\$) | \$2,706 | \$2,771 | \$2,841 | \$2,917 | \$2,999 | \$3,088 | \$3,185 | \$3,291 | \$3,406 | \$3,531 |
| TOTAL COST | | | | | | | | | | |
| Annual Total Cost | \$8,339 | \$5,086 | \$4,971 | \$4,947 | \$5,008 | \$5,151 | \$5,378 | \$5,690 | \$6,093 | \$6,592 |
| Cumulative Total Cost | \$8,339 | \$13,425 | \$18,396 | \$23,343 | \$28,351 | \$33,502 | \$38,880 | \$44,571 | \$50,664 | \$57,256 |
| EQUIVALENT ANNUAL COST | \$8,339 | \$6,736 | \$6,165 | \$5,874 | \$5,711 | \$5,624 | \$ 5,592 | \$5,603 | \$5,652 | \$5,734 |

Calculating Equivalent Annual Cost

$$EAC = NPV \frac{r(1+r)^n}{(1+r)^n - 1}$$

Where:

EAC Is the equivalent annual cost of a stream of future costs

NPV Is the present value of a stream of future costs

r Is the discount rate less inflation

n Is the length in years of the stream of costs

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Vehicle Operating Cost Savings from an Increase in Capital Costs

| Asset Type | Number of Units | Current Average Age (years) | Current Replacmt Cycle (years) | Recom-mended Replacmt Cycle (years) | Avg Ann Operating Cost Under Current Cycle | Avg Ann Operating Cost Under Recomm. Cycle | Avg Ann Operating Cost Savings per Vehicle | Ann Operating Cost Savings per Vehicle (%) | Total Avg Annual Operating Cost Savings |
|----------------------|-----------------|-----------------------------|--------------------------------|-------------------------------------|--|--|--|--|---|
| Intermediate Sedan | 3,155 | 6.2 | 10 | 8 | \$3,531 | \$3,291 | \$240 | 7% | \$757,200 |
| Compact SUV | 803 | 7.2 | 12 | 9 | \$3,588 | \$3,215 | \$373 | 10% | \$299,519 |
| Minivan | 1,470 | 5.6 | 9 | 7 | \$4,497 | \$4,260 | \$237 | 5% | \$348,390 |
| MD Passenger Van | 2,428 | 6.4 | 11 | 8 | \$5,181 | \$4,826 | \$355 | 7% | \$861,940 |
| MD Cargo Van | 1,131 | 7.7 | 12 | 8 | \$4,658 | \$4,194 | \$464 | 10% | \$524,784 |
| LD Pickup Truck | 1,135 | 8.4 | 14 | 9 | \$5,009 | \$4,729 | \$280 | 6% | \$317,800 |
| MD Pickup Truck | 1,684 | 7.2 | 13 | 9 | \$6,097 | \$5,824 | \$273 | 4% | \$459,732 |
| HD Pickup Truck | 1,139 | 7.2 | 13 | 9 | \$5,183 | \$4,953 | \$230 | 4% | \$261,970 |
| MD Truck | 1,086 | 9.5 | 15 | 8 | \$9,128 | \$7,999 | \$1,129 | 12% | \$1,226,094 |
| HD Truck | 2,396 | 7.3 | 14 | 7 | \$26,134 | \$15,430 | \$10,704 | 41% | \$25,646,784 |
| Total/Average | 16,427 | | 12 | 8 | | | | | \$30,714,213 |

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Strategies for Securing Enough Funds to Optimize Vehicle Replacement Cycles and Costs

- Empirically identify optimal vehicle replacement cycles
- Develop a plan that quantifies long-term fleet replacement costs

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Developing a Fleet Replacement Plan

1. Develop fleet inventory
2. Categorize assets by type, purchase price, and unique operating characteristics (if any)
3. Establish planning parameters for each asset category
 - Recommended replacement cycle
 - Purchase price (in present value cost)
 - Purchase price inflation rate
4. Apply parameters to fleet inventory to project future replacement dates and costs for each asset in the fleet

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Sample Replacement Cycles

| Vehicle Type | Replacement Cycle (Months) |
|--------------------------------|----------------------------|
| Auto, Compact, 4 Door | 84 |
| Light Truck, Pickup | 96 |
| Truck, Med Duty, Utility Body | 120 |
| Excavator | 144 |
| Backhoe / Loader | 144 |
| Truck, Dump, CC | 120 |
| Truck, Dump, 12-14 Cubic Yard | 120 |
| Van, 1 Ton, TV Inspection | 120 |
| Truck, Catch Basin, Vacuum Jet | 120 |

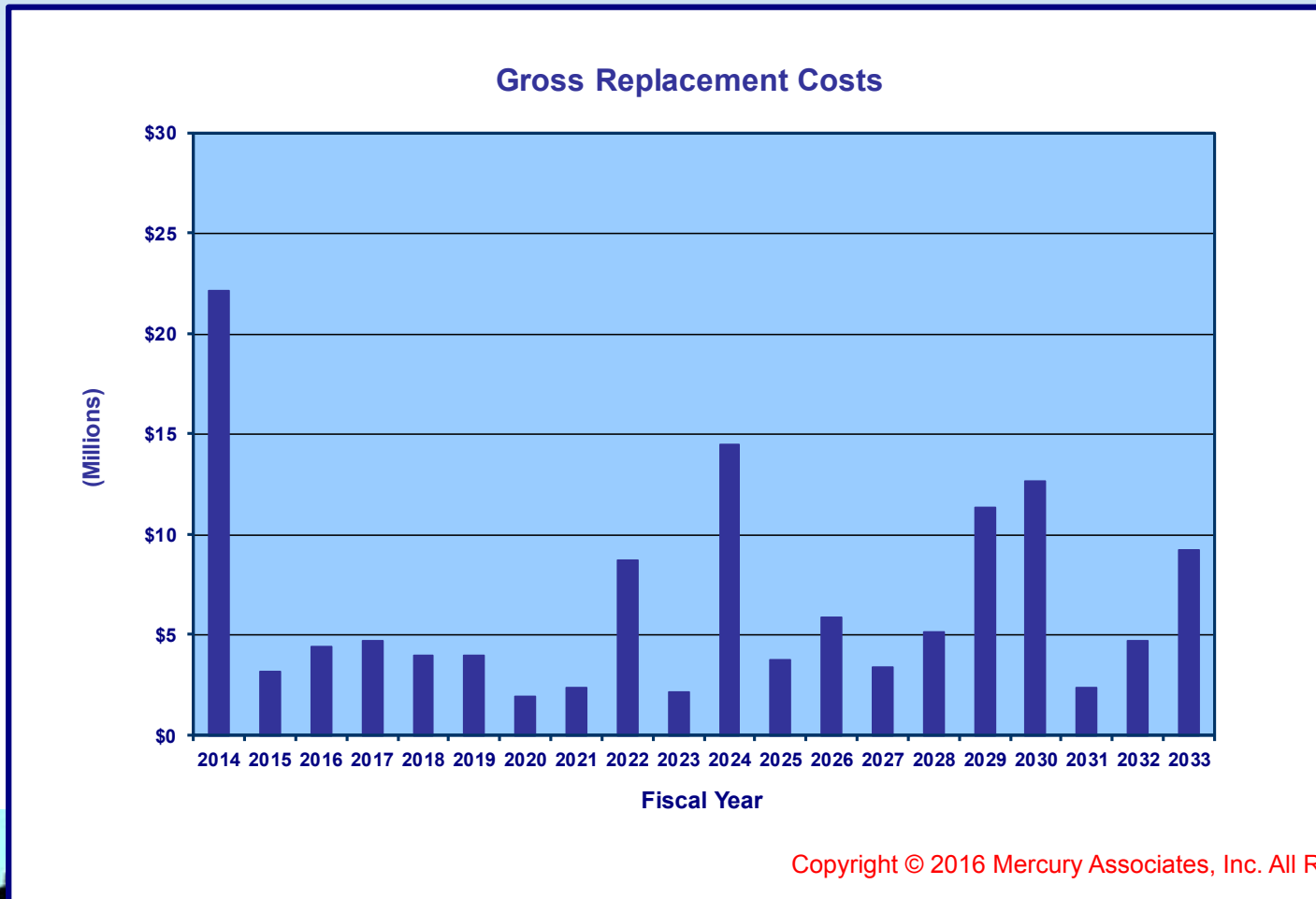
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Sample Purchase Prices

| Vehicle Type | Current Purchase Price |
|--------------------------------|------------------------|
| Auto, Compact, 4 Door | \$ 15,000 |
| Light Truck, Pickup | \$ 17,000 |
| Truck, Med Duty, Utility Body | \$ 49,000 |
| Excavator | \$ 63,000 |
| Backhoe / Loader | \$100,000 |
| Truck, Dump, CC | \$120,000 |
| Truck, Dump, 12-14 Cubic Yard | \$122,000 |
| Van, 1 Ton, TV Inspection | \$153,000 |
| Truck, Catch Basin, Vacuum Jet | \$304,000 |

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Baseline Fleet Replacement Plan

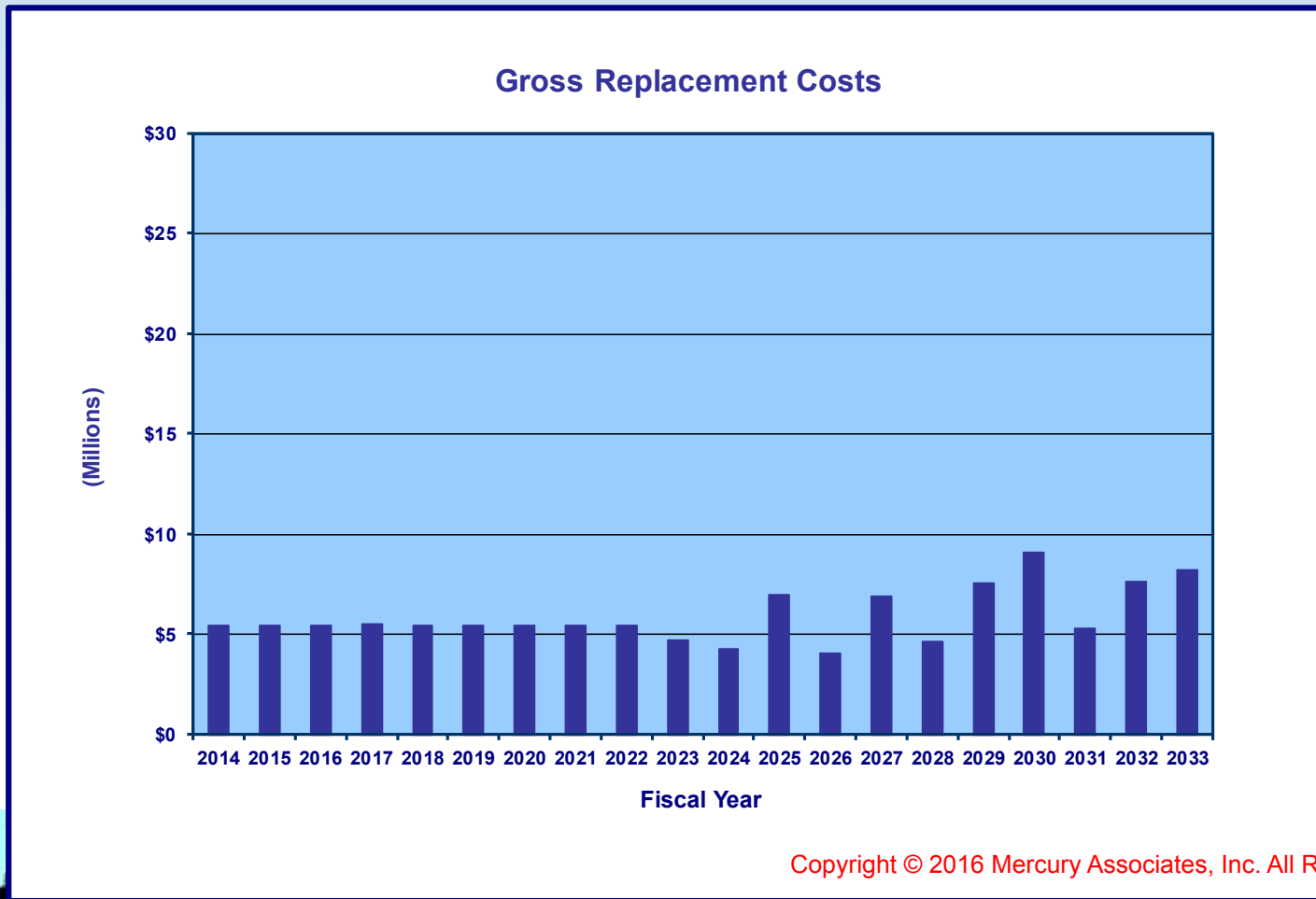


Fleet Replacement Statistics

| | |
|--|-----------------|
| Total number of units in the fleet | 906 |
| Number of asset types | 180 |
| Average asset age (years) | 9.2 |
| Average recommended replacement cycle (years) | 10.0 |
| Average current asset purchase price | \$ 53,607 |
| Gross fleet replacement cost (today's dollars) | \$ 44.9 M |
| Average annual fleet replacement cost (today's dollars) | \$ 4.5 M |
| Average annual replacement <i>expenditures</i> (2008-12) | \$ 2.7 M |
| Current replacement backlog | \$ 22.2 M |
| Number of assets that exceed recommended replacement age | 466 |
| Percentage of assets that exceed recommended age | 51.4% |

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Smoothed Replacement Plan

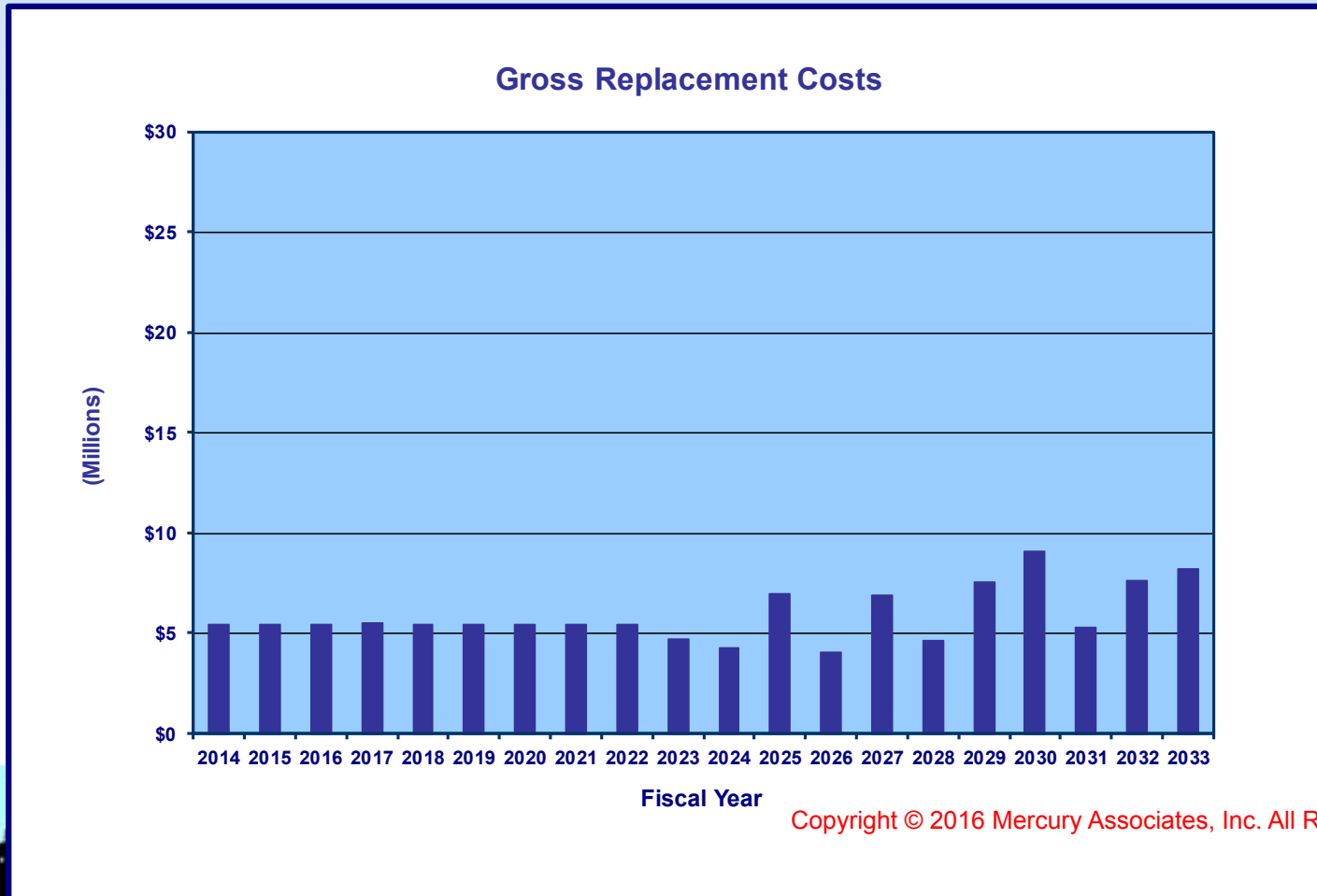


Strategies for Securing Enough Funds to Optimize Vehicle Replacement Cycles and Costs

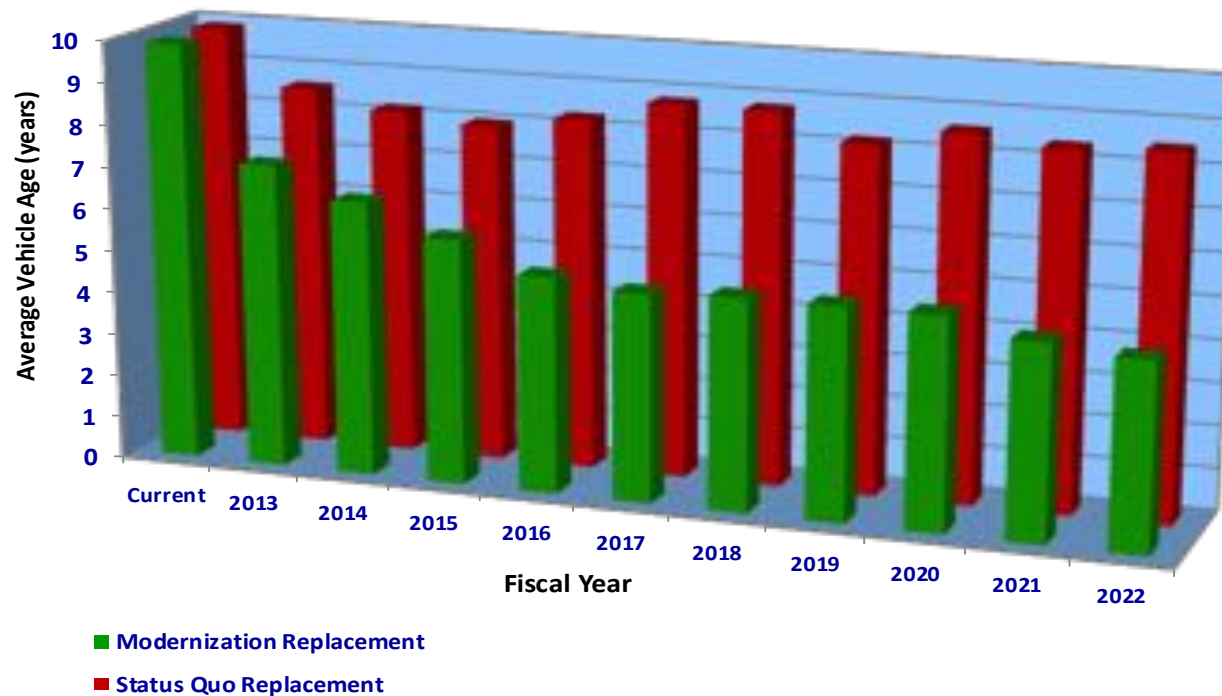
- Empirically identify optimal vehicle replacement cycles
- Develop a plan that quantifies long-term fleet replacement costs
- Quantify and compare fleet TCO under alternative replacement scenarios (capital spending levels)

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Fleet “Modernization” Plan

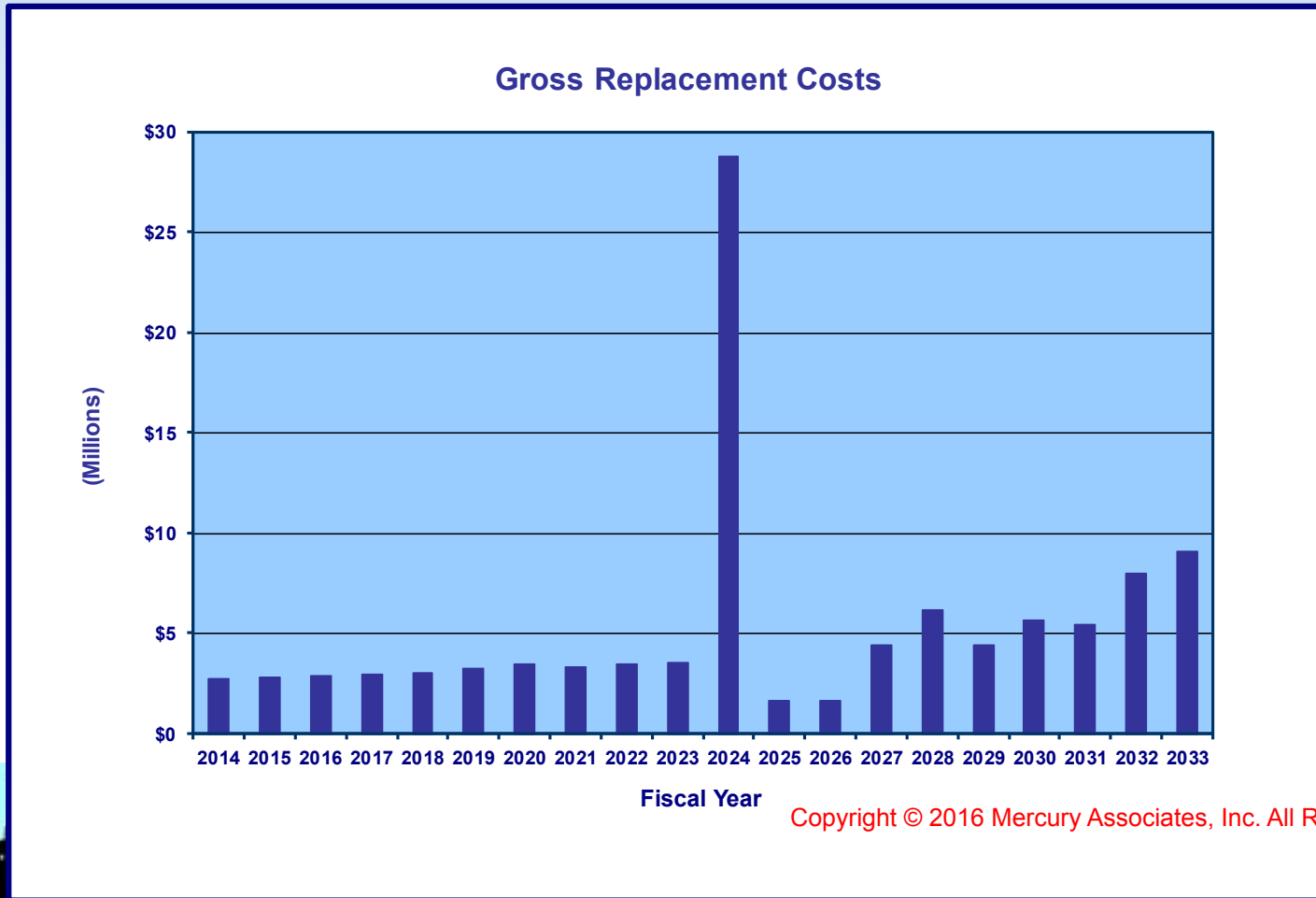


Impact of Modernization and Status Quo Plans of Average Asset Age



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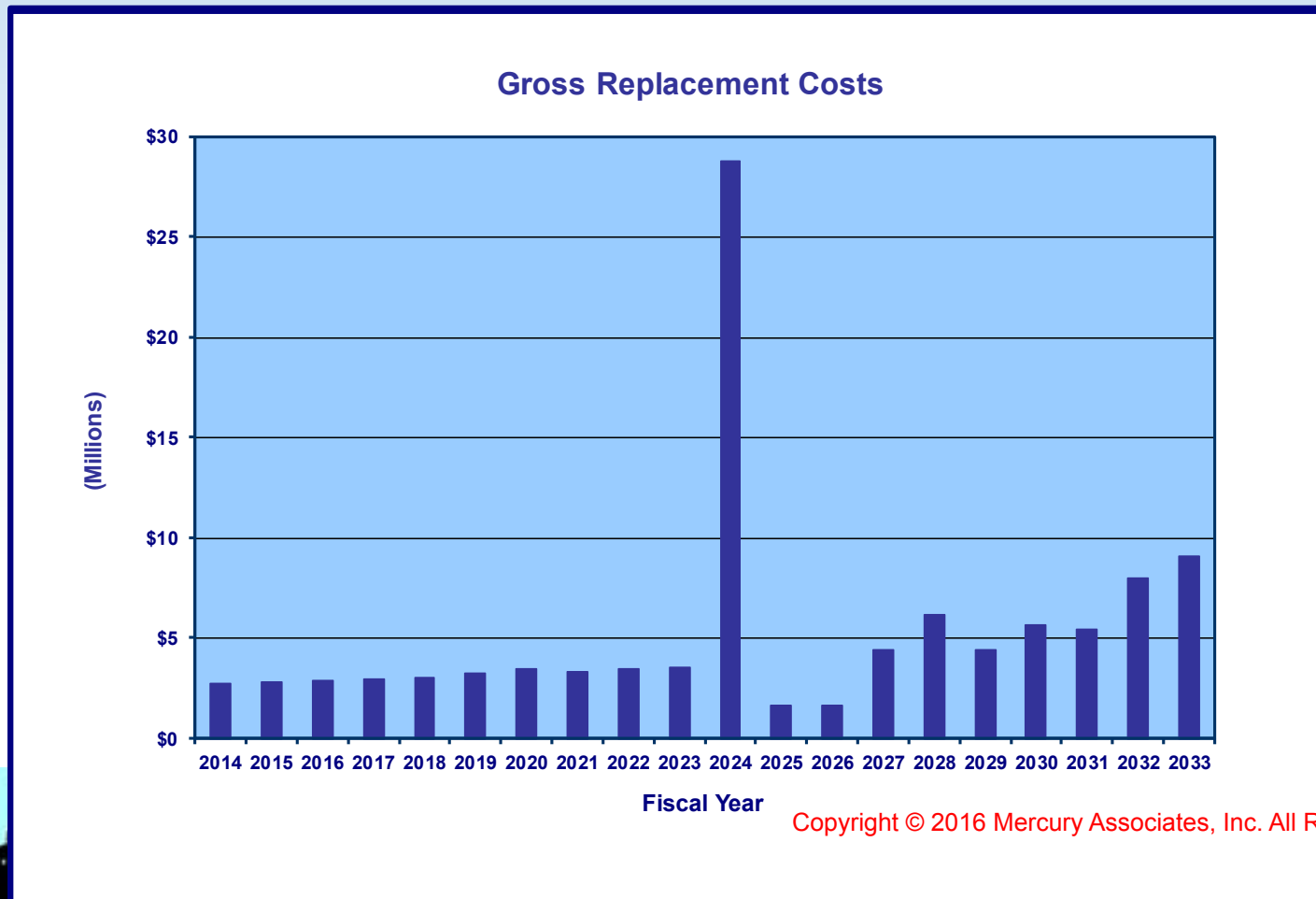
“Status Quo” Replacement Plan



Economic Impact of Status Quo and Modernization Replacement Plans

| Status Quo Replacement Plan Costs (millions) by Fiscal Year | | | | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|
| Cost/Value | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total/ Avg |
| Gross Replacement Expenditures | \$ 2.7 | \$ 2.8 | \$ 2.9 | \$ 3.0 | \$ 3.0 | \$ 3.2 | \$ 3.5 | \$ 3.3 | \$ 3.4 | \$ 3.5 | \$ 27.8 |
| Average Asset Age (years) | 8.6 | 8.2 | 8.0 | 8.3 | 8.8 | 8.8 | 8.2 | 8.6 | 8.4 | 8.5 | 8.4 |
| Market Depreciation | \$ 2.2 | \$ 2.2 | \$ 2.3 | \$ 2.4 | \$ 2.5 | \$ 2.7 | \$ 2.8 | \$ 2.9 | \$ 3.0 | \$ 3.0 | \$ 23.0 |
| Maintenance and Repair Costs | \$ 4.3 | \$ 4.3 | \$ 4.3 | \$ 4.5 | \$ 4.6 | \$ 4.6 | \$ 4.6 | \$ 4.6 | \$ 4.7 | \$ 4.8 | \$ 45.1 |
| Fuel Costs | \$ 1.6 | \$ 1.5 | \$ 1.5 | \$ 1.5 | \$ 1.6 | \$ 1.6 | \$ 1.5 | \$ 1.6 | \$ 1.5 | \$ 1.6 | \$ 13.9 |
| Total Direct Costs | \$ 8.1 | \$ 8.0 | \$ 8.1 | \$ 8.4 | \$ 8.7 | \$ 8.9 | \$ 8.9 | \$ 9.1 | \$ 9.2 | \$ 9.4 | \$ 86.9 |
| Ending Fair Market Value | \$ 8.5 | \$ 9.0 | \$ 9.4 | \$ 9.9 | \$10.3 | \$10.7 | \$11.3 | \$11.7 | \$12.0 | \$12.3 | |
| Modernization Plan Costs (millions) by Fiscal Year | | | | | | | | | | | |
| Gross Replacement Expenditures | \$ 5.5 | \$ 5.6 | \$ 5.6 | \$ 5.5 | \$ 5.5 | \$ 5.5 | \$ 5.5 | \$ 5.5 | \$ 5.5 | \$ 5.5 | \$ 49.7 |
| Average Asset Age (years) | 7.2 | 6.5 | 5.8 | 5.1 | 4.9 | 5.0 | 5.0 | 5.0 | 4.6 | 4.4 | 5.5 |
| Market Depreciation | \$ 3.1 | \$ 3.4 | \$ 3.7 | \$ 4.0 | \$ 4.2 | \$ 4.4 | \$ 4.5 | \$ 4.6 | \$ 4.7 | \$ 4.7 | \$ 36.6 |
| Maintenance and Repair Costs | \$ 4.0 | \$ 4.0 | \$ 3.9 | \$ 3.8 | \$ 3.7 | \$ 3.8 | \$ 3.6 | \$ 3.6 | \$ 3.5 | \$ 3.6 | \$ 37.5 |
| Fuel Costs | \$ 1.5 | \$ 1.4 | \$ 1.4 | \$ 1.3 | \$ 1.3 | \$ 1.3 | \$ 1.3 | \$ 1.3 | \$ 1.3 | \$ 1.3 | \$ 13.3 |
| Total Direct Costs | \$ 8.6 | \$ 8.8 | \$ 9.0 | \$ 9.1 | \$ 9.2 | \$ 9.5 | \$ 9.4 | \$ 9.5 | \$ 9.5 | \$ 9.6 | \$ 92.1 |
| Ending Fair Market Value | \$10.4 | \$12.4 | \$14.1 | \$15.4 | \$16.4 | \$17.2 | \$17.9 | \$18.4 | \$18.8 | \$19.0 | |
| Net Direct Costs of/(Savings frm) Modernization | \$0.5 | \$0.8 | \$0.8 | \$0.7 | \$0.5 | \$0.6 | \$0.5 | \$0.4 | \$0.2 | \$0.2 | \$ 5.2 |

Modernization Plan Eliminates Current Backlog; Status Quo Plan Does Not

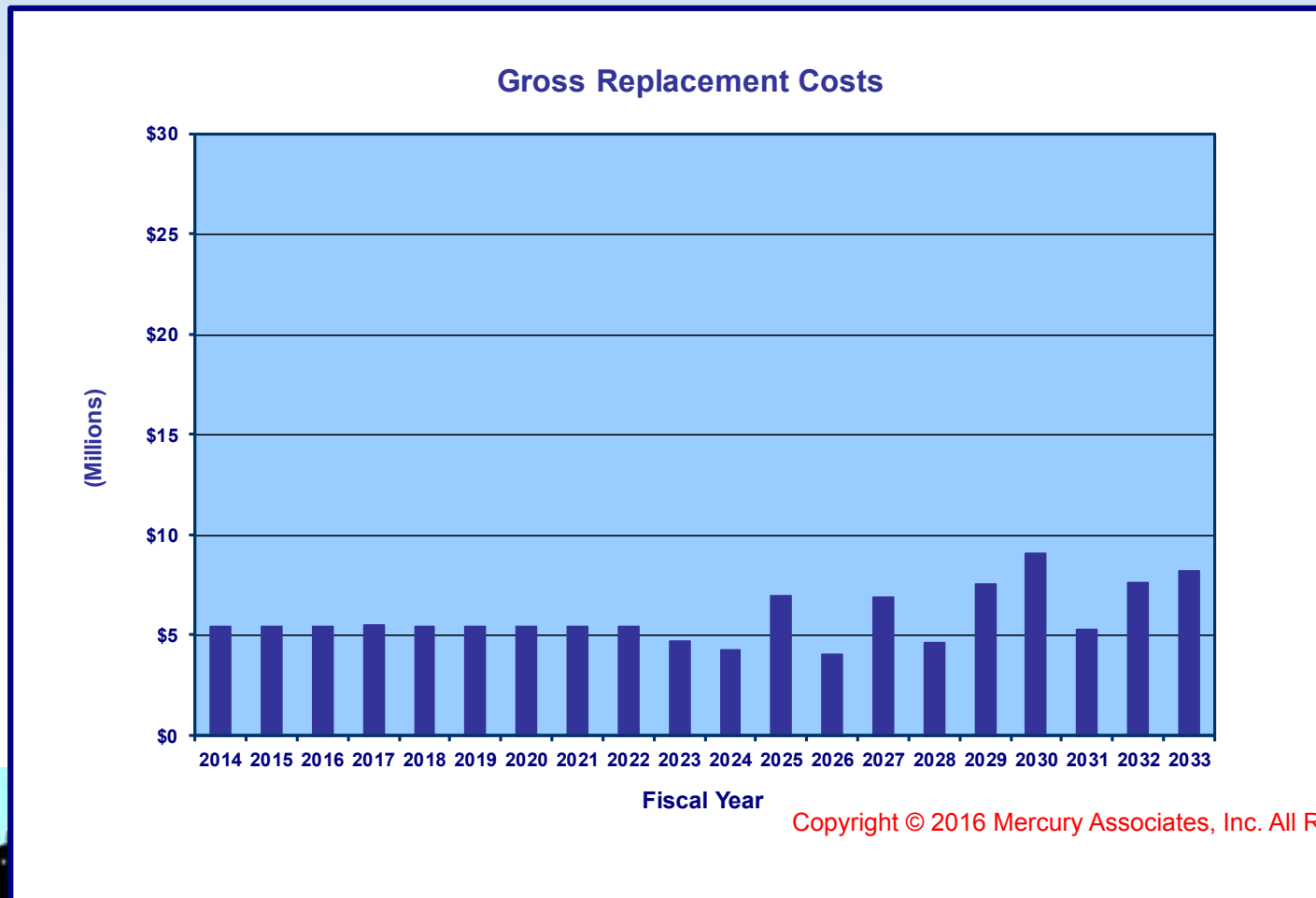


Strategies for Securing Enough Funds to Optimize Vehicle Replacement Cycles and Costs

- Empirically identify optimal vehicle replacement cycles
- Develop a plan that quantifies long-term fleet replacement costs
- Quantify and compare fleet TCO under alternative replacement scenarios (capital spending levels)
- Identify the best strategy for *financing* fleet capital costs

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Fleet Modernization Plan



Comparison of Cash Needed for Modernization Under Alternative by Capital Financing Methods

| Fiscal Year | | | | | | | | | | | |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Cash Requirements | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
| Approach 1 | \$5.4 | \$5.4 | \$5.4 | \$5.3 | \$5.3 | \$5.1 | \$5.2 | \$5.1 | \$5.1 | \$5.0 | \$52.4 |
| Approach 2 | \$5.6 | \$5.8 | \$5.8 | \$5.9 | \$4.1 | \$5.1 | \$5.4 | \$4.7 | \$5.0 | \$5.2 | \$52.7 |
| Approach 3 | \$0.6 | \$1.1 | \$1.7 | \$2.3 | \$2.8 | \$3.3 | \$4.1 | \$4.6 | \$5.4 | \$5.7 | \$31.5 |

| Fiscal Year | | | | | | | | | | | |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Cash Requirements | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | Total |
| Approach 1 | \$3.4 | \$5.9 | \$5.0 | \$6.0 | \$3.6 | \$8.7 | \$8.6 | \$7.0 | \$6.2 | \$7.2 | \$61.7 |
| Approach 2 | \$5.3 | \$5.7 | \$5.9 | \$6.2 | \$6.3 | \$6.5 | \$6.8 | \$6.9 | \$7.2 | \$7.3 | \$64.1 |
| Approach 3 | \$5.7 | \$5.6 | \$5.4 | \$5.5 | \$5.5 | \$5.6 | \$5.6 | \$6.5 | \$6.8 | \$7.0 | \$59.3 |

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

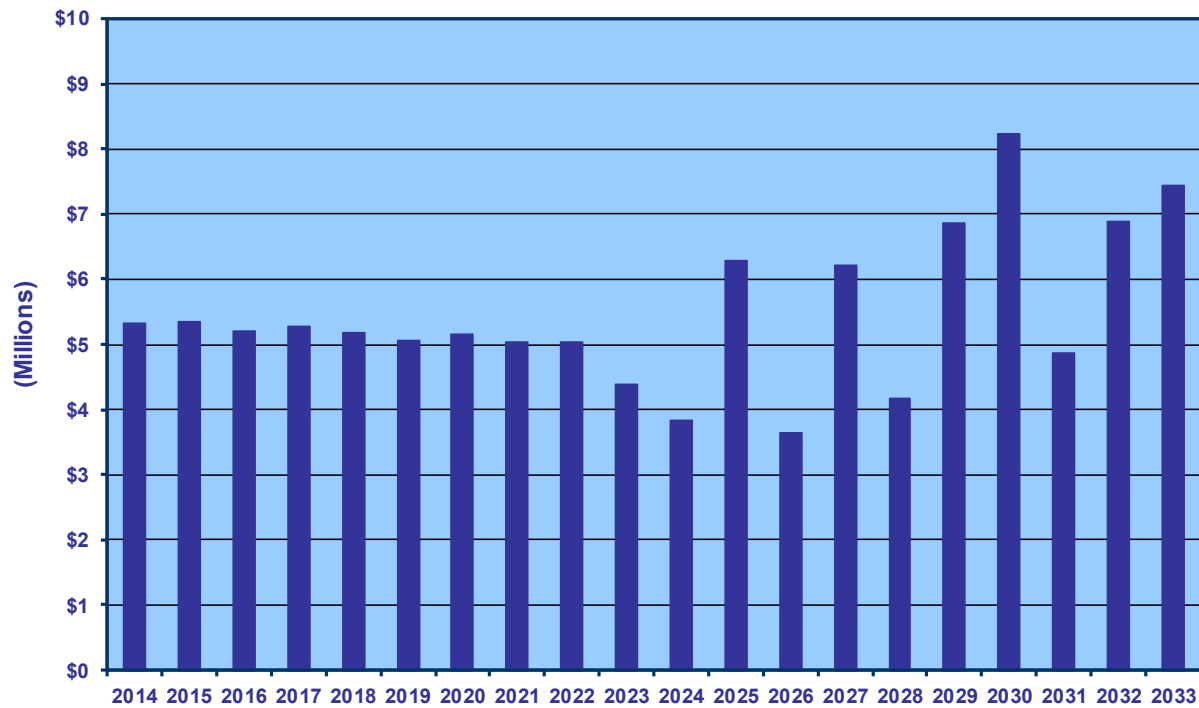
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Methods of Financing Vehicle and Equipment Acquisitions

- Outright cash purchase using ad hoc (i.e., year-to-year) allocations or appropriations of cash
- Outright purchase using cash reserves accumulated incrementally, 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

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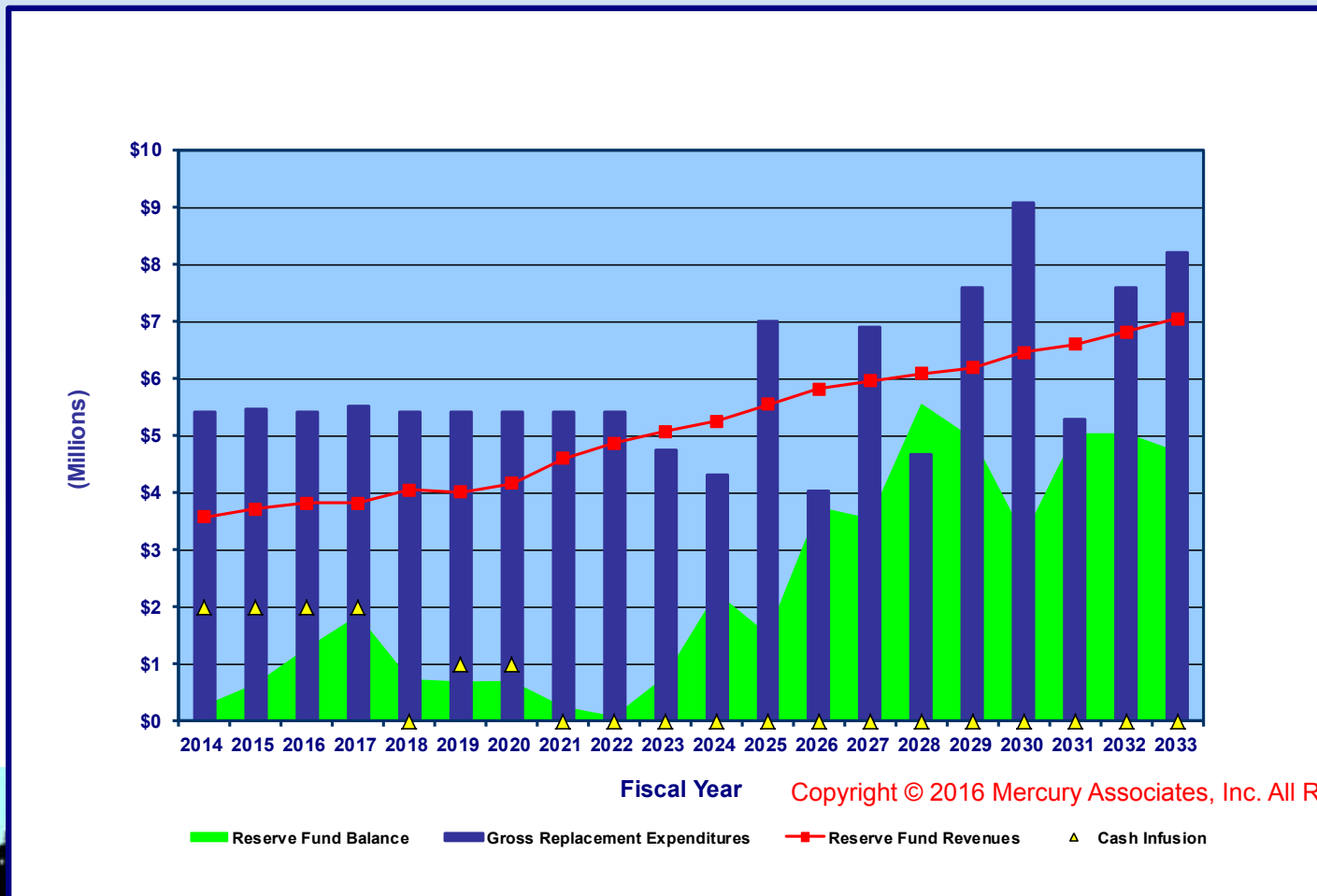
Cash Purchase Financing



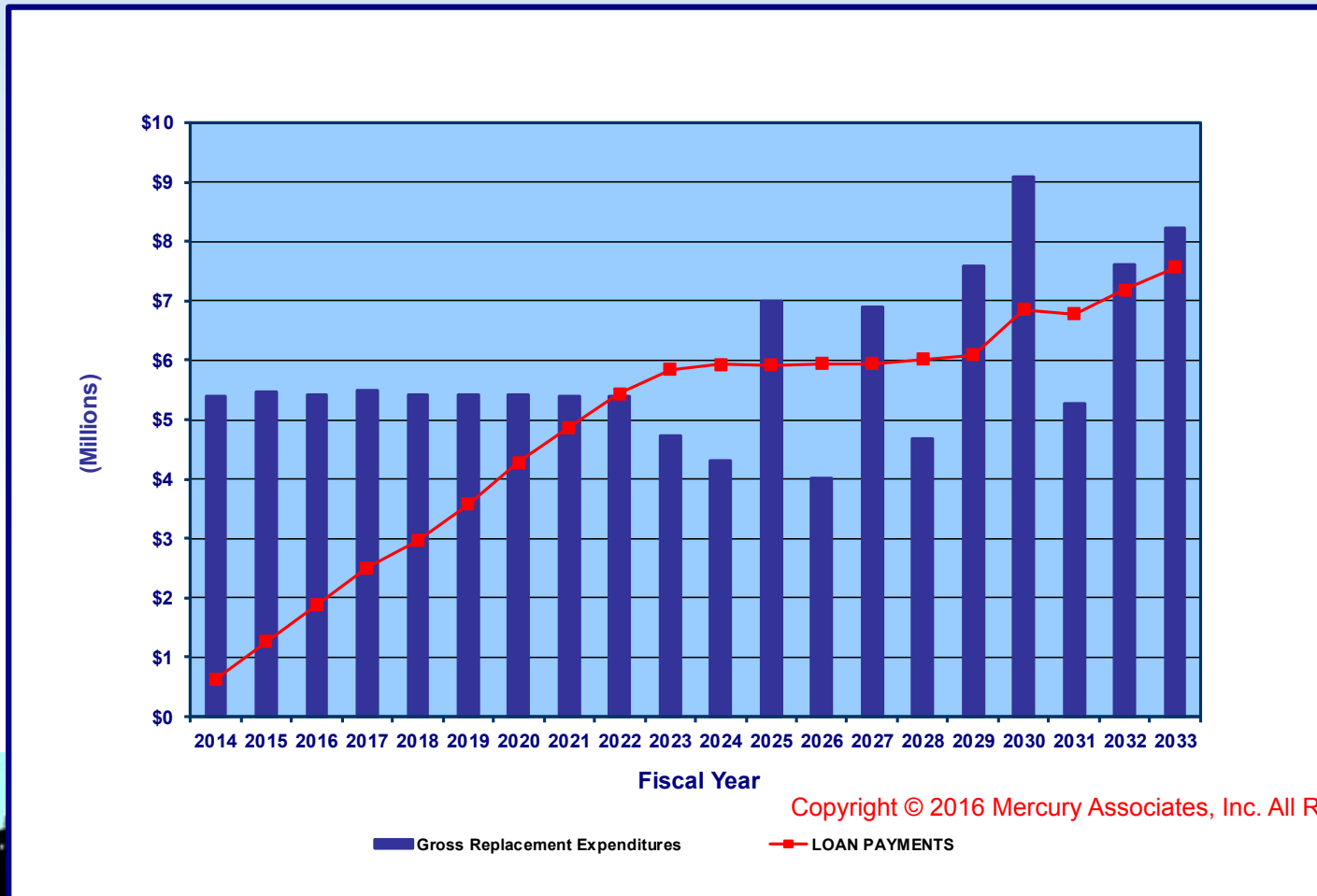
■ Replacement Expenditures Less Used Vehicle Sale Proceeds

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Reserve Fund Financing



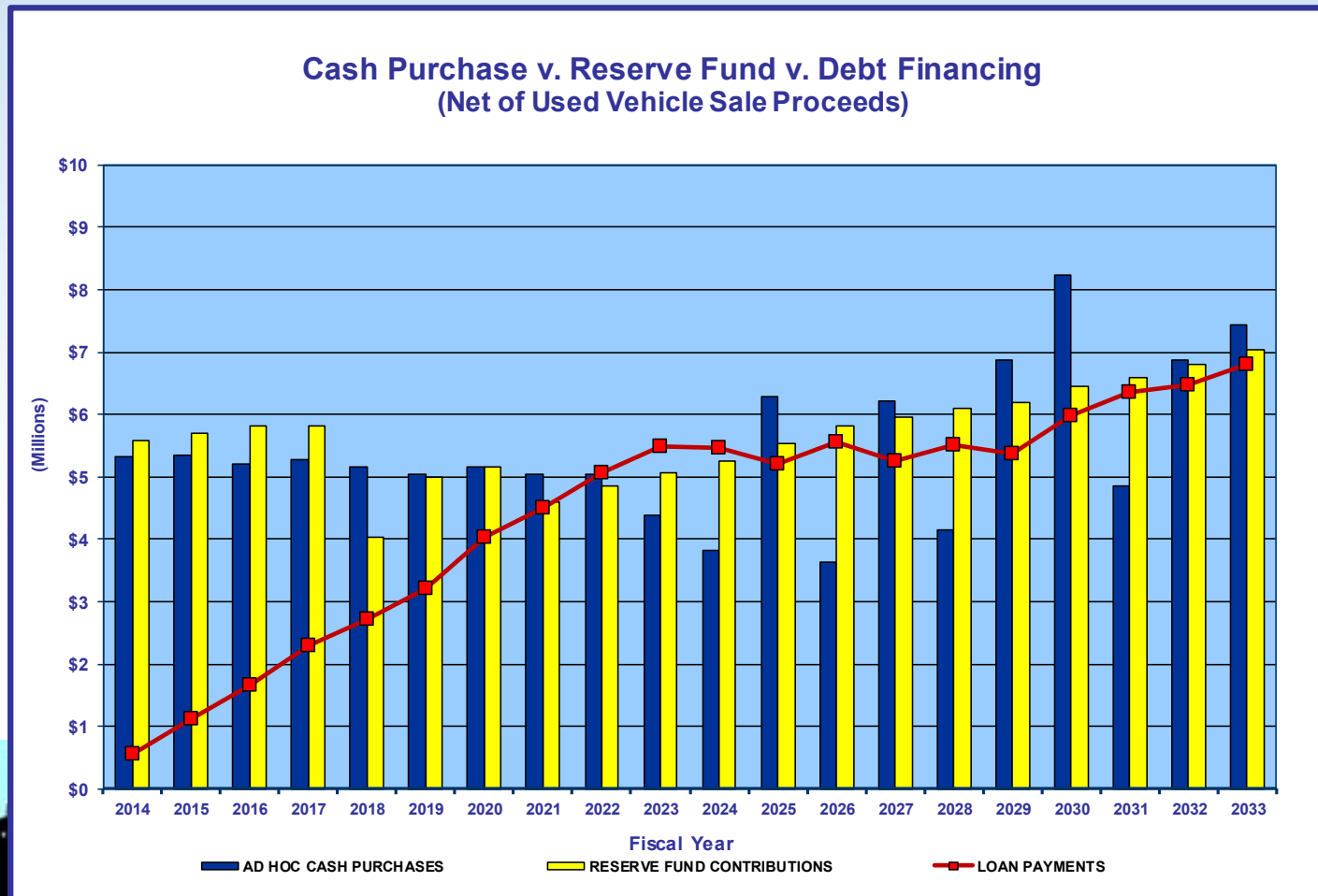
Loan Financing



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■ Gross Replacement Expenditures —■ LOAN PAYMENTS

Comparison of Cash Needed for Modernization Under Alternative Financing Methods



Net Cash Requirements for Fleet Modernization by Financing Approach

| Fiscal Year | | | | | | | | | | | |
|---|---------|--------|---------|--------|---------|--------|--------|--------|---------|---------|--------|
| Costs/Funding Requirements/Savings | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
| Gross Replacement Expenditures | \$5.5 | \$5.6 | \$5.6 | \$5.5 | \$5.5 | \$5.5 | \$5.5 | \$5.5 | \$5.5 | \$5.5 | \$55.2 |
| Replcmt Purchases Less Used Veh Sale Proceeds | \$5.4 | \$5.4 | \$5.4 | \$5.3 | \$5.3 | \$5.1 | \$5.2 | \$5.1 | \$5.1 | \$5.0 | \$52.4 |
| Reserve Fund Charges | \$5.6 | \$5.8 | \$5.8 | \$5.9 | \$4.1 | \$5.1 | \$5.4 | \$4.7 | \$5.0 | \$5.2 | \$52.7 |
| Loan Payments Less Used Veh Sale Proceeds | \$0.6 | \$1.1 | \$1.7 | \$2.3 | \$2.8 | \$3.3 | \$4.1 | \$4.6 | \$5.4 | \$5.7 | \$31.5 |
| Budget Savings, Debt versus Cash Financing | \$4.9 | \$4.3 | \$3.7 | \$3.0 | \$2.5 | \$1.9 | \$1.2 | \$0.5 | (\$0.3) | (\$0.7) | \$20.9 |
| Cumulative Cash Savings | \$4.9 | \$9.1 | \$12.8 | \$15.8 | \$18.3 | \$20.1 | \$21.3 | \$21.8 | \$21.6 | \$20.9 | |
| Fiscal Year | | | | | | | | | | | |
| Costs/Funding Requirements/Savings | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | Total |
| Gross Replacement Expenditures | \$3.9 | \$6.6 | \$5.6 | \$6.6 | \$4.1 | \$9.5 | \$9.5 | \$7.8 | \$6.8 | \$8.1 | \$68.4 |
| Replcmt Purchases Less Used Veh Sale Proceeds | \$3.4 | \$5.9 | \$5.0 | \$6.0 | \$3.6 | \$8.7 | \$8.6 | \$7.0 | \$6.2 | \$7.2 | \$61.7 |
| Reserve Fund Charges | \$5.3 | \$5.7 | \$5.9 | \$6.2 | \$6.3 | \$6.5 | \$6.8 | \$6.9 | \$7.2 | \$7.3 | \$64.1 |
| Loan Payments Less Used Veh Sale Proceeds | \$5.7 | \$5.6 | \$5.4 | \$5.5 | \$5.5 | \$5.6 | \$5.6 | \$6.5 | \$6.8 | \$7.0 | \$59.3 |
| Budget Savings, Debt versus Cash Financing | (\$2.2) | \$0.3 | (\$0.4) | \$0.4 | (\$1.8) | \$3.1 | \$3.0 | \$0.5 | (\$0.6) | \$0.2 | \$2.4 |
| Cumulative Cash Savings | \$20.9 | \$21.2 | \$20.9 | \$21.3 | \$19.4 | \$22.5 | \$25.5 | \$26.0 | \$25.3 | \$25.6 | |

Questions

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A black silhouette of a city skyline is set against a light blue background. The skyline includes a prominent suspension bridge on the left, a large dome in the center, and various other buildings and structures. The entire scene is reflected in a white horizontal band at the bottom.

How can telematics solutions support the management of fleet costs?

- Accurately measure vehicle utilization so as to allocate vehicles more cost effectively
- Identify opportunities to improve driving practices so as to reduce vehicle fuel consumption and M&R costs
- Support the distribution of costs to fleet users so as to increase cost visibility, accountability, and control

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Identifying and Managing Fleet *Supplier* Costs

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A black silhouette of a city skyline is positioned at the bottom of the slide. On the left, a suspension bridge with two towers is visible. To the right of the bridge, there are various buildings, including a prominent dome and a tall, thin tower. The entire silhouette is set against a light blue background that transitions into a white background at the top.

Purchasing and Supplier Sample Areas

- Vehicle funding
- Fuel
- Tires
- Spare parts
- Insurance
- Vehicle maintenance
- Breakdown recovery
- Accident management
- Telematics
- So on

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Choosing the Supplier

- Fleet managers must work with a number of internal stakeholders in order to choose the right supplier and emphasized with the purchasing department
- Setup tenders – clear criteria and objectives to achieve
- The cheapest supplier is almost certainly the one an organization does not want
- Finding an ethical supplier with good business practices and a sound reputation - “people buy from people”
- Fleets and their suppliers must have a cultural fit and be able to have open and honest discussions. Communication between the two parties is critical
- Fleet managers should also look to the future during their discussions with shortlisted suppliers: find out what is happening in the market place and what new products they might be introducing

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Managing the Supplier

- SLAs and KPIs need to be specific to the fleet-supplier relationship
- Make sure that understand any fees being charged by the supplier
- Keep the supplier in check

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Renewing or Changing the Supplier

- Best practice: re-evaluate every supplier regularly
- Start with how they are performing against the KPIs set and do a cost comparison
- Make sure you've got the right price and the right relationship
- Notice: it's important to take drivers' opinions into account. Listen to them and accept their comments if a supplier is not performing
- A decision to change will need to be justified to the board, so fleet managers need to be clear that the change was made for the right reason
- Recommendation: trying to rectify the situation with a supplier, rather than changing, and only change if issues cannot be rectified
- Sometimes the cost of changing can outweigh the saving

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How To Get the Best Out of Suppliers?

- Partnership approach – build a positive relationship
- Adopting the right approach
- Manage the suppliers effectively
- Contracts should include SLAs that both parties are happy with, supported by KPIs and processes to measure quality, driver satisfaction, competence, price and other issues
- Fleet managers can measure supplier performance by introducing a matrix system tailored to requirements from individual suppliers
- Fleets should look at measuring things that are to do with regulation
- Setup regular meetings with suppliers
- Tender reviews provide fleets with an ideal opportunity to review SLAs and introduce new requirements

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Purchasing and Supplier Management Considerations

- Control over procurement “playbook”
- Obtaining best value, not lowest cost
- Collaborating, not “commoditizing”
- Performance-based contracting
- Data collection and performance measurement
- Electronic data interchange
- Business continuity
- Ownership of data
- Cooperation
- Frequency of tenders

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Determining When Outsourcing Makes Sense Based on the Quality and Cost of Performing FM Activities in House

| | Low Quality | High Quality |
|-----------|-------------|--------------|
| Low Cost | Maybe | Unlikely |
| High Cost | Probably | Maybe |

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Why might outsourcing be the best means of achieving high quality and low cost?

- Inability to capture economies of scale that make quality and/or costs of in-house provision of services acceptable
 - Technical expertise
 - Facilities and equipment
 - Information technology
- Institutional impediments to optimizing – or even reforming – in-house business processes
- Desire to improve measurement focus and accountability for performance
- Desire to focus on core mission
- Desire to focus on core fleet management competencies

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Key Steps in the Outsourcing Process

- Define objectives
- Define service requirements
- Define supplier qualifications requirements
- Determine current costs and service levels
- Consider bundling versus unbundling of services
- Prepare tender/proposal/bid submission instructions
- Develop the tender evaluation process
- Evaluate tenders and make a selection
- Secure acceptance of findings and recommendations
- Implement the contract

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4. Performance Measurement and Benchmarking

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Why measure performance?

- To *evaluate* – to develop an understanding of conditions, activities, and performance attributes relative to competitors, trends, and goals that cannot be attained through first-hand observation or second-hand information
- To *diagnose* – to delve into underlying causes of, or contributors to, conditions and performance levels
- To *monitor* – to maintain awareness of conditions, activities, and performance levels in areas of critical importance and that are susceptible to change
- To *motivate* – to define concrete goals toward which to strive and to which rewards can be linked
- To *demonstrate* – to illustrate accomplishments in objective, independently verifiable terms

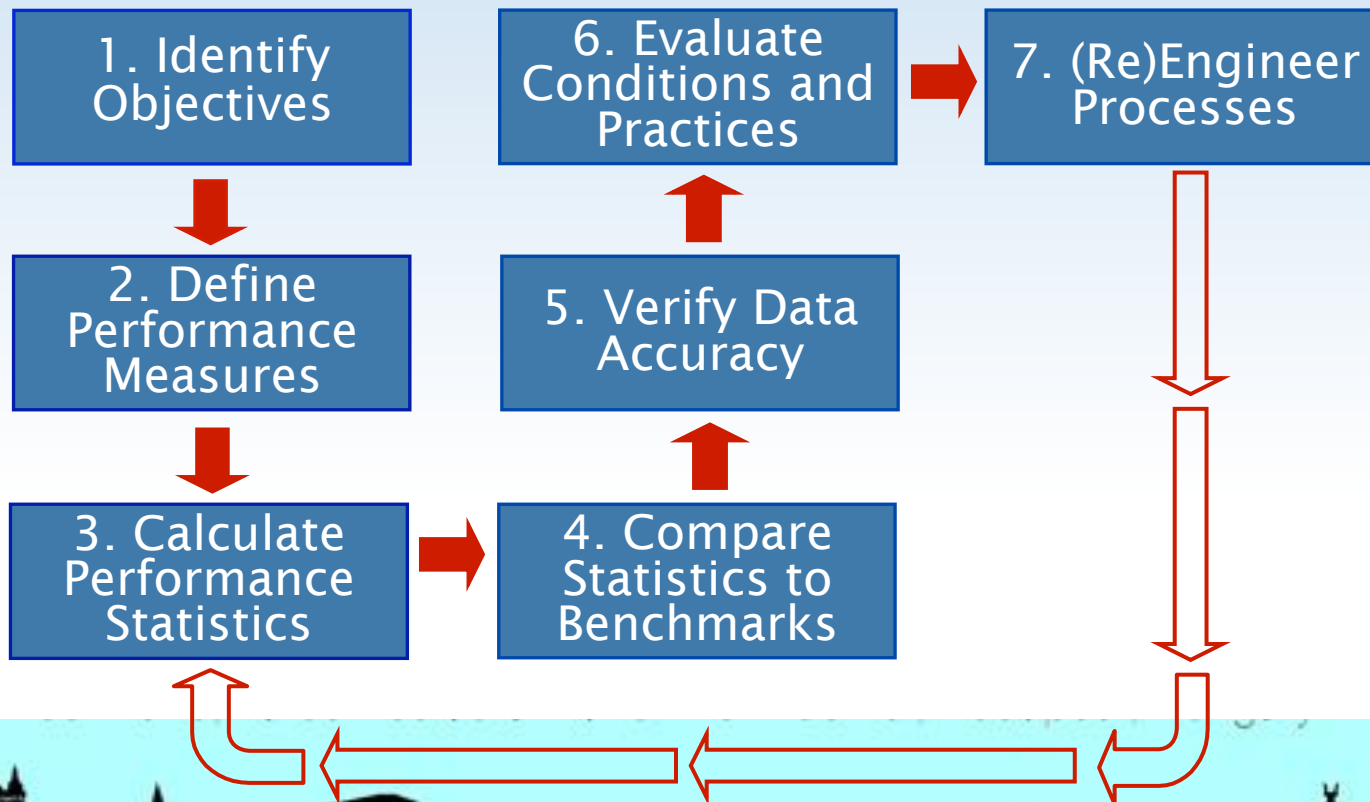
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Definitions

- *Performance measure* – the expression of a condition, activity, or level of performance in quantitative terms
 - Example – cost per in-house mechanic labor hour
- *Performance statistic* – the calculated value of a performance measure for a specific organizational unit, employee, vehicle, etc.
 - Example – \$128 per hour
- *Benchmark* – a numerical value that serves as a gauge of the reasonableness or acceptability of a performance statistic
 - Example – average or typical labor rate charged by local commercial repair shops (for comparable service delivery capabilities), say, \$105 per hour

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A Process for Using Performance Measurement to Evaluate Business Practices



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Key Points to Remember

- Performance should not be measured for its own sake but in order to evaluate how an organization is performing relative to a specific goal or objective
- The same performance measure can result in different performance statistics depending on the objective being examined
- The accuracy of performance statistics can be heavily affected by data codification, capture, and verification practices
- Benchmarks must be chosen with care to ensure “apples-to-apples” comparisons
- Performance measurement rarely produces definitive conclusions about how to improve business practices

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Monitoring Performance on a Continuous Basis

- Performance measures can be input or output based
 - Percentage of available time charged to work orders by mechanics (input)
 - Work orders completed within acceptable time allowance (output)
 - Average days to sale by remarketing company or surplus property agency (input)
 - Vehicle residual value as a percentage of suitable industry benchmark (output)

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Monitoring Performance on a Continuous Basis

- Performance monitoring generally should focus on dynamic, not static conditions
 - Vehicles waiting for work bays
 - Open work orders waiting for parts
 - Parts waiting for mechanic pickup
 - Vehicle repairs waiting for customer authorization
 - Percentage of drivers purchasing premium fuel
 - Percentage of motor pool vehicles rented
 - Percentage of new vehicles waiting to be commissioned
 - Percentage of used vehicles awaiting disposal

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Monitoring Performance on a Continuous Basis

- Performance measurement should be tailored to the concerns of different decision makers and other stakeholders
 - Upper management
 - Finance, procurement, risk management
 - Fleet manager
 - Shop supervisor
 - Mechanics
 - Parts manager
 - Customer organization representative
 - Drivers

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Different Performance Measures for Different Decision Makers

| | |
|--------------------------------|---|
| Executive Manager, Customer | <ul style="list-style-type: none">• Vehicle availability or downtime rate• In-service breakdown rate• Ratio of actual to budgeted expenses• Accident rate |
| Fleet Manager | <ul style="list-style-type: none">• PM schedule adherence rate• Work order turn-around time• Average maintenance and repair backlog• Mechanic productivity rate |
| Maintenance Supervisor | <ul style="list-style-type: none">• Direct/billable hours by mechanic• Efficiency rate by mechanic• Repair comeback rate by mechanic |
| Parts Manager | <ul style="list-style-type: none">• Parts order fill time• Parts order fill rate• Inventory turnover rate• Percentage of inventory with no movement in last 12 mos |

Performance Measurement and Monitoring Data Sources

- Internal (condition, performance, benchmark) data
 - Historical records
 - Surveys
 - Measurement
- External (benchmark) data
 - Peers
 - Vendors
 - Contractors
 - Manufacturers
 - Trade associations
 - Trade publications

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Performance Measurement Exercise

Define three measures of performance in terms of:

- Objective and performance attribute being examined
- Calculation of the performance measure
- Source of a benchmark for the measure
- Ease of development of a peer-based benchmark for the measure
- Level of management interest in the area of performance being measured

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Sample Performance Measures

- Vehicle cost
 - Purchase price as a percentage of published triple net price (PC Carbook)
 - Residual value as a percentage of average auction value (Manheim Market Reports)
 - Fully loaded cost per motor pool vehicle rental day as a percentage of local commercial rental rate (by vehicle type)
- Vehicle operation and utilization
 - Fleet accident rate: accidents per million miles/kilometers driven
 - Average vehicle repair cost per accident
 - Daily, weekly, monthly, annual usage in miles/KMs or hours as a percentage of class average usage (assigned vehicles)
 - Average annual rental days as a percentage of available rental days (motor pool vehicles)
- Vehicle maintenance / Shop management
 - Preventive maintenance schedule adherence rate
 - Maintenance and repair backlog: number of vehicles awaiting service as a percentage of average number of vehicles serviced per day

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Sample Performance Measures

- Vehicle maintenance (cont.)
 - Downtime rate: percentage of vehicles out of service for repair as a percentage of total vehicles in the fleet (by vehicle and mission type)
 - In-house cost per transaction as a percentage commercial transaction cost (by transaction type)
 - Maintenance and repair cost per vehicle equivalent unit per year
 - Avoidable cost per in-house mechanic labor hour as a percentage of local commercial shop labor rates
 - Mechanic productivity rate: hours charged to work orders as a percentage of pay hours (by mechanic, work crew, shift, shop)
 - Mechanic efficiency rate: average time to complete a specific service as a percentage of recognized service completion time (ditto)
 - Comeback rate: percentage of completed repairs returned to shop for rework (ditto)
- Parts management
 - Parts order fill rate: percentage of orders filled from stock
 - Parts order fill time
 - Inventory turnover rate

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Sample Performance Measures

- Parts management (cont.)
 - Inventory utilization rate: percentage of inventory lines used in last 12 months
- Vehicle replacement
 - Average life-to-date usage (miles or hours) by vehicle type
 - Average age
 - Average imputed replacement cycle as a percentage of recommended cycle
 - Average annual replacement expenditure amount as a percentage of average annual replacement cost
 - Replacement backlog as a percentage of total fleet replacement cost
- Staffing
 - Mechanic to supervisor ratio
 - Mechanic to parts technician ratio
 - Ratio of administrative and managerial personnel to direct service personnel
 - Ratio of vehicles to fleet management personnel

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Sample Performance Measures

- Miscellaneous
 - Average order to delivery time (weeks) for new vehicles
 - Average days to sale for used vehicles
 - Average road call response time (minutes) or percentage of road calls responded to within X minutes
 - Average subrogation recovery time (weeks)
 - Average subrogation recovery amount as a percentage of accident repair cost amount
 - Average call center call answer time and hold time
 - Monthly per-vehicle maintenance management fee

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Questions

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How can telematics solutions support effective performance measurement?

- Capture accurate, detailed data on vehicle usage (e.g., timing, frequency, and duration of trips)
- Capture data on vehicle operator behavior (e.g., speeding, idling, after-hours use, etc.)
- Capture data on vehicle performance (e.g., fuel consumption rates, engine fault codes, etc.)

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5. Fleet Management Training and Certification Needs in Central and Eastern Europe

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