



A LOOK AT LIFECYCLE COSTS FOR LAW ENFORCEMENT VEHICLES

Prepared February 2010 by Vincentric, LLC.

The current economic environment and the resulting flat or reduced government budgets means that all major expenditures of taxpayer dollars receive increased scrutiny. Because one of the major costs for states, counties, municipalities and other government entities is law enforcement vehicles, Vincentric used its lifecycle cost system to calculate the cost to own and operate four major 2010 police vehicles currently on the market. The results of this lifecycle cost analysis allow governments to better compare the cost to own and operate these law enforcement vehicles and to make a better informed decision on which vehicle provides the best combination of features vs. the overall lifecycle cost.

The four police vehicles studied in this market analysis were the Chevrolet Impala, Chevrolet Tahoe, Dodge Charger, and Ford Crown Victoria. The key vehicle specifications that impact lifecycle costs are shown in Chart #1 below.

Specifications of 2010 Vehicles Included in Vincentric's Lifecycle Cost Analysis of Law Enforcement Vehicles				
Yr/Make/ Model	2010 Chevrolet Impala	2010 Chevrolet Tahoe	2010 Ford Crown Victoria	2010 Dodge Charger
Vehicle Description	Police 4D Sedan	Police 4D Utility 2WD	Police 4D Sedan	Police 4D Sedan
Transmission	4-speed Automatic 4T65E Electronically controlled w/Overdrive (MX0)	6-speed Automatic Hydra-matic 6L80 Electronically controlled w/Overdrive (MYC)	4-speed Automatic Electronically controlled Lockoutw/Overdrive (44U)	5-speed Automatic W5A580 (DGJ)
Engine	3.9L V6 Flex Fuel	5.3L V8 SFI 16-valve Flex Vortec OHV (LC9)	4.6L V8 EFI OHC 16-valve Flex (99V)	3.5L V6 MPI SOHC 24-valve (EGG)
MSRP	\$25,710	\$32,255	\$27,260	\$29,420
Invoice	\$24,552	\$30,062	\$25,639	\$28,167
Destination	\$825	\$950	\$875	\$750
Published Fleet Incentive	\$2,000	\$2,000	\$2,500	\$2,000
Vincentric Fleet Price (Invoice + Destination - Incentive)	\$23,377	\$29,012	\$24,014	\$26,917

Chart #1



Lifecycle Cost Analysis is the measurement of all costs incurred as a result of owning and operating a vehicle. By using a lifecycle cost analysis to evaluate the value of a law enforcement vehicle, buyers take into account more than just the purchase price. Items such as depreciation (how much value a vehicle loses over time), fuel costs, insurance, maintenance, repairs, financing, and even opportunity cost...which is the loss of potential interest income as a result of owning and operating a vehicle....all play a role when evaluating a vehicle's value.

***Lifecycle Cost Components Measured
In Law Enforcement Lifecycle Cost Analysis***

- ***Depreciation***
- ***Fuel***
- ***Insurance***
- ***Financing***
- ***Maintenance***
- ***Repairs***
- ***Opportunity Cost***

Note: Vincentric does not include Fees and Taxes when measuring government lifecycle costs

Vincentric is well positioned to analyze the impact of promotions on Lifecycle Cost. Each month the organization measures Lifecycle Cost for over 12,000 vehicle configurations for vehicles from 2005-2010 model years, with many of the results published on major web sites, including Yahoo! Autos, Cars.com, AOL Autos, NADA Guides, The AutoChannel, Fleet-Central.com, and many others. In addition, the company releases Vincentric's Best Value in America awards and Vincentric's Best Fleet Value in America awards each year for vehicles in each automotive segment.



Law Enforcement Vehicle Lifecycle Cost Analysis

Because different organizations have different vehicle ownership strategies, Vincentric's fleet lifecycle cost analysis measures costs at a variety of timeframes (2, 3, 4, and 5 years) as well as a variety of annual mileages (10, 15, 20, 25, and 30 thousand miles). This results in a total of 20 different scenarios (e.g. 3 yr, 30,000 miles per year) that were measured by Vincentric. In doing so, the results showed that the 2010 Chevrolet Tahoe Police 2WD had the lowest lifecycle cost in the majority of the scenarios.

This was somewhat surprising, given that the Tahoe had the highest acquisition cost of any vehicle in the study. However, as shown in Chart #2 below (which displays 25,000 miles per year and 3 years of ownership), the Tahoe's strong residual values created the lowest depreciation cost in this, and many other scenarios.

Lifecycle Cost Analysis of Law Enforcement Vehicles Based Upon 25,000 miles per year, 3 years of ownership				
Yr/Make/ Model	2010 Chevrolet Impala	2010 Chevrolet Tahoe	2010 Ford Crown Victoria	2010 Dodge Charger
Vehicle Description	Police 4D Sedan	Police 4D Utility 2WD	Police 4D Sedan	Police 4D Sedan
Vincentric Fleet Price (Invoice + Destination - Incentive)	\$23,377	Highest Acquisition Cost \$29,012	\$24,014	\$26,917
Depreciation	\$18,577	\$11,637	\$18,714	\$20,267
Fees & Taxes	\$0	\$0	\$0	\$0
Finance	\$3,387	\$4,203	\$3,480	\$3,898
Fuel	\$10,079	\$11,945	\$10,924	\$9,842
Insurance	\$3,471	\$4,796	\$3,576	\$4,757
Maintenance	\$2,069	\$2,402	\$3,094	\$3,016
Opportunity Cost	\$1,134	\$1,408	\$1,236	\$1,291
Repairs	\$821	\$1,306	\$688	\$1,017
Grand Total	\$39,538	\$37,697	\$41,712	\$44,088
Cost Per Mile	\$0.527	Lowest Lifecycle Cost \$0.503	\$0.556	\$0.588

Chart #2



A Look at the Details

To better understand the details in Chart #2, an explanation of each cost component follows.

1. **Vincentric Fleet Price (Acquisition Price)** – To create a fair process for estimating a fleet acquisition price, Vincentric uses a standard methodology of taking the invoice price (plus destination charge) and discounting that number by subtracting the published fleet price. This results in an acquisition price that is obtainable by all authorized fleet buyers. Although high volume buyers will certainly be able to negotiate a lower price, regardless of the vehicle, this lifecycle cost analysis uses only published discounts to create the most objective analysis possible.
2. **Depreciation Expense** - Vincentric determines depreciation by using the Vincentric Fleet Price and subtracting the expected residual (future) value of the vehicle at 2, 3, 4, and 5 years. Vincentric’s source for residual values is Black Book, a division of Hearst Publishing. Mileage adjustments for each of these years were made to determine lifecycle costs assuming annual mileage of 10,15, 20, 25, and 30 thousand miles.
3. **Fees and Taxes** – Although fees and taxes are typically used in lifecycle cost analysis, this study did not do so because governmental entities do not typically incur this expense.
4. **Fuel Costs** – Fuel Costs use EPA estimates and assume 55% city and 45% highway driving. Fuel prices were based on US averages and used a weighted average of prices from recent months.
5. **Finance Costs** – Financing costs were based on a down payment of 15% using average current industry rates. The same financing rate was used for all four vehicles.
6. **Opportunity Cost** – Opportunity Cost is the amount of interest that could have been earned by investing the out of pocket expense of a vehicle in a Certificate of Deposit. Although Opportunity Cost is not a line-item in a departmental budget, it has an impact on available cash for the government entity, and as a result is appropriate for an in-depth lifecycle cost analysis.
7. **Maintenance Costs** – Maintenance costs include both costs to adhere to the manufacturer’s recommended maintenance schedule as well as costs for normal wear items such as tires and batteries.

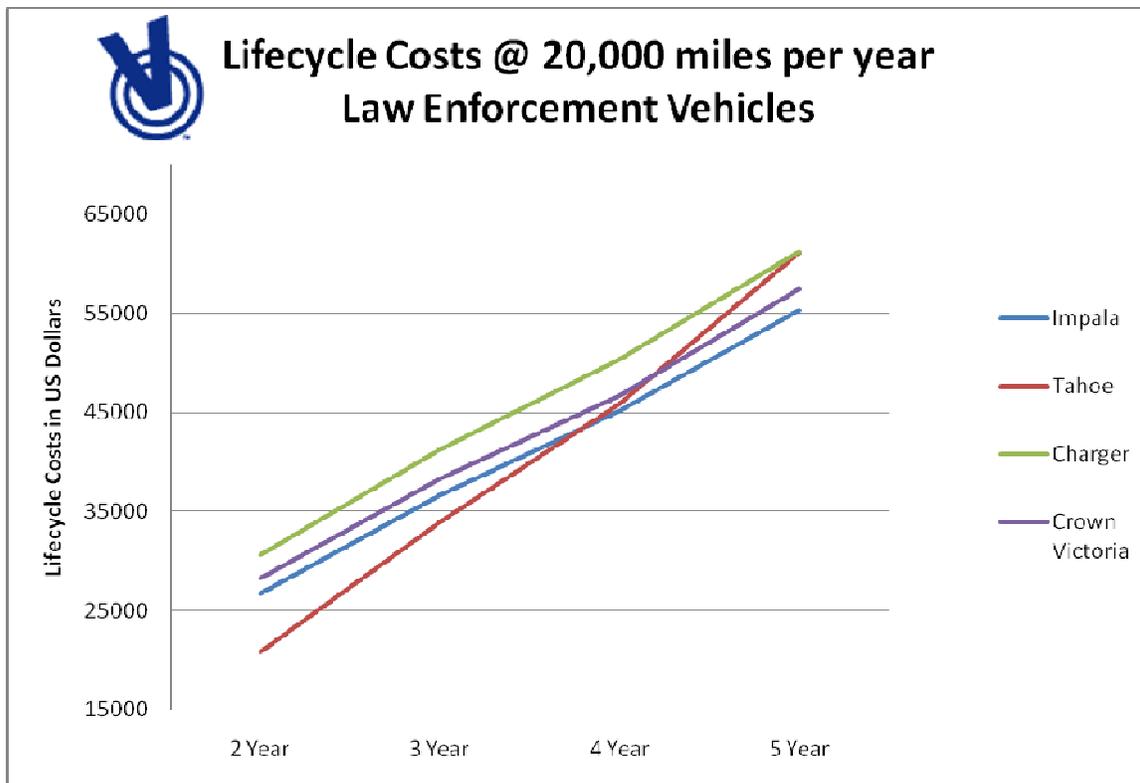


8. **Repair Costs** –Repair costs are estimated using the average price businesses will pay to keep their vehicle in operating condition (not including the cost for expected maintenance). To calculate this, we start by using the cost of a \$0 deductible extended service contract that will pay for repairs during the vehicle's lifecycle. Figures used are averages from major providers of automotive extended warranty contracts, and are adjusted to eliminate the profit margin from the calculation. This cost is applied after taking into account manufacturer warranties.

9. **Insurance Costs** – Insurance costs vary by type of vehicle and coverage amounts. Although the insurance costs included in this analysis are not specific for law enforcement coverage, they are included to help create a basis for comparison to determine which vehicles are lower to insure and by what percentage. Even if an organization is self-insured, insurance costs are relevant in a lifecycle cost analysis to show which vehicles may require greater or reduced insurance reserves for the government entity.

Lifecycle Cost and Timing

Although the Tahoe performed well and had the lowest lifecycle cost more often than any other law enforcement vehicle, it didn't have the lowest lifecycle cost in every scenario measured. For instance, in Chart #3 below which reflects annual mileage of 20,000, the Tahoe shows the lowest lifecycle cost in years 2 and 3, but then in the later years its costs rise relative to the other vehicles, with the Chevrolet Impala and Ford Crown Victoria having lower lifecycle costs as the timeframe increases. This chart shows the cumulative lifecycle costs and indicates that the expected length of ownership is a key factor when using Lifecycle Cost Analysis to assist in the vehicle purchase decision process.





Cost Isn't the Only Purchase Criterion

It is important to realize that although lifecycle costs are critical component of a purchase decision, vehicle functionality must be taken into account as well. Although all four vehicles in this analysis are built to be functional for law enforcement use, their performance, handling, capacity, and other features and functions are not identical. However, by using and understanding lifecycle cost analysis, vehicle purchasers can better understand the lifecycle cost savings or surcharge that will be incurred to have the features and functions of a particular vehicle.



APPENDIX

*A look at lifecycle costs for Law Enforcement Vehicles
Prepared February, 2010 by Vincentric, LLC.*

Two different presentations of the same data are shown below to identify which law enforcement vehicle had the lowest lifecycle cost in each of the twenty different lifecycle cost scenarios measured by Vincentric.

The results in the left column are sorted by timeframe, while the chart on the right is sorted by annual mileage. The Chevrolet Tahoe had the lowest lifecycle cost in eleven of the twenty scenarios, while the Chevrolet Impala was lowest in the remaining nine scenarios. The Tahoe's strengths were in the shorter timeframe, lower mileage scenarios, while the Impala was stronger in the longer timeframes and higher mileage scenarios.

Lowest Law Enforcement Lifecycle Costs		
Prepared Feb 2010		
Annual Mileage	Timeframe	Lowest Lifecycle Cost
10,000	2 year	Tahoe Police
15,000	2 year	Tahoe Police
20,000	2 year	Tahoe Police
25,000	2 year	Tahoe Police
30,000	2 year	Tahoe Police
10,000	3 year	Tahoe Police
15,000	3 year	Tahoe Police
20,000	3 year	Tahoe Police
25,000	3 year	Tahoe Police
30,000	3 year	Impala Police
10,000	4 year	Tahoe Police
15,000	4 year	Tahoe Police
20,000	4 year	Impala Police
25,000	4 year	Impala Police
30,000	4 year	Impala Police
10,000	5 year	Impala Police
15,000	5 year	Impala Police
20,000	5 year	Impala Police
25,000	5 year	Impala Police
30,000	5 year	Impala Police

Lowest Law Enforcement Lifecycle Costs		
Prepared Feb 2010		
Annual Mileage	Timeframe	Lowest Lifecycle Cost
10,000	2 year	Tahoe Police
10,000	3 year	Tahoe Police
10,000	4 year	Tahoe Police
10,000	5 year	Impala Police
15,000	2 year	Tahoe Police
15,000	3 year	Tahoe Police
15,000	4 year	Tahoe Police
15,000	5 year	Impala Police
20,000	2 year	Tahoe Police
20,000	3 year	Tahoe Police
20,000	4 year	Impala Police
20,000	5 year	Impala Police
25,000	2 year	Tahoe Police
25,000	3 year	Tahoe Police
25,000	4 year	Impala Police
25,000	5 year	Impala Police
30,000	2 year	Tahoe Police
30,000	3 year	Impala Police
30,000	4 year	Impala Police
30,000	5 year	Impala Police

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