COUNTY OF SAN MATEO

INTERDEPARTMENTAL CORRESPONDENCE

DATE: September 13, 2011

TO: Jim Porter, Director of Public Works

FROM: Tom Huening, Controller

SUBJECT: **Follow-up Audit Report – Vehicle and Equipment Services of the Department of Public Works: Compact Vehicle Analysis**

Attached is the follow-up report on the audit of the Vehicle and Equipment Services of the Department of Public Works addressing the long-term cost implications of hybrid vehicles in the compact fleet.

We appreciate the proactive effort by your management and staff in addressing the concerns raised in our audit and the opportunity to work with them in improving processes that provide management increased assurance regarding the achievement of the County's and the program's financial and operational goals and objectives.

cc: Joe Lo Coco, Deputy Director, Roads Division
Tony Harwood, Manager, Vehicle and Equipment Services
David Boesch, County Manager/Clerk of the Board of Supervisors
Charlene Kresevich, Superior Court (Civil Grand Jury)

VEHICLE AND EQUIPMENT SERVICES
DEPARTMENT OF PUBLIC WORKS

COMPACT VEHICLE ANALYSIS
HYBRID *v* CONVENTIONAL

Follow-up - June 2011

Controller's Office
Audit Division

Vehicle and Equipment Services
Compact Vehicle Analysis – Hybrid *v* Conventional

The Audit Division performed an operational review of the Vehicle and Equipment Services of the Department of Public Works and issued a report in March 2004. A follow-up audit report on the status of the recommendations on hybrid vehicles was issued in January 2010. The major issue from the report was the long-term cost implications of replacing conventional vehicles in the fleet by hybrids that have a higher acquisition cost. This issue was also the topic of a Civil Grand Jury Report issued in April 2011.

The scope of this analysis focuses only on compact vehicles since hybrids for other vehicle classes are neither readily available nor economically feasible.

Compact Vehicles Fleet

Description	Type[1]	Current (FY 10-11) Meets New Policy	Current (FY 10-11) Count	FY03-04 Count
Honda Civic	H	Y	82	0
Toyota Prius	H	Y	65	5
Total Hybrids			147	5
Other	C	N	45	139
			192	144

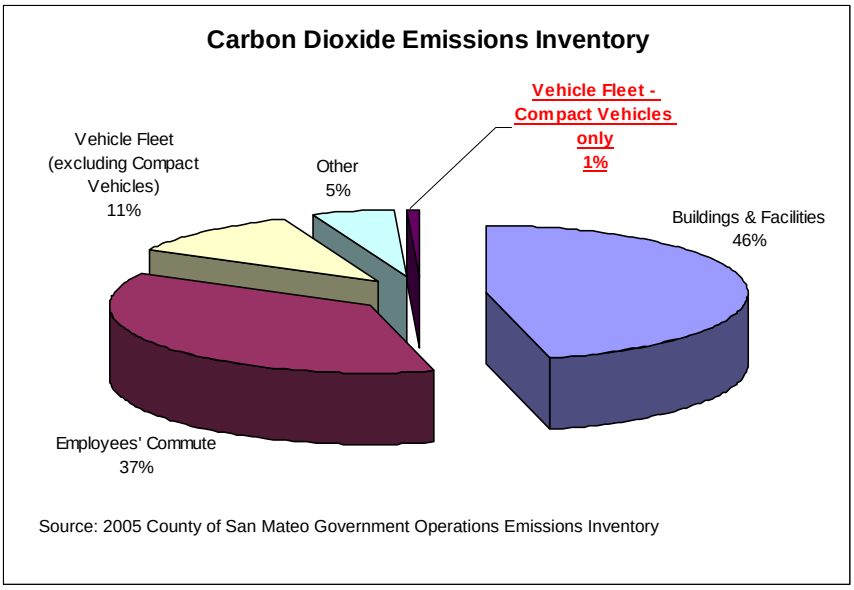
[1]Type: H - Hybrid; C – Conventional

County Policy

The County policy on the purchase of hybrids is driven by two Board resolutions. Board Resolution No. 069650, effective since September 9, 2008, requires the purchase of hybrid or other fuel-efficient models with a minimum of 30 combined street and highway miles per gallon (MPG) whenever possible. Fuel-efficient is defined as Ultra Low Emissions Vehicle (ULEV), Partial Zero Emissions Vehicle (PZEV) or Zero Emissions Vehicle (ZEV). This policy allows the purchase of conventional vehicles as long as they meet the emission and MPG requirements. Board Resolution No. 069053 (Cool Counties Declaration), adopted on October 16, 2007, requires the County to calculate carbon footprint, take inventory of current conservation activities and develop and implement a carbon emissions reduction plan. This declaration specified regional carbon dioxide emission reduction targets of flat emissions by 2010 and an 80% reduction by 2050 from 2005 baseline levels.

Hybrid Compact Vehicles and County Policy

While the majority of currently available conventional compact vehicles meets or exceeds the emission and minimum 30 combined MPG requirements and is less expensive to own than hybrids as discussed below, hybrids have significantly lesser carbon emissions and therefore contribute toward meeting the Cool Counties Declaration goal. However, the actual impact of compact hybrids on the overall emissions inventory is insignificant based on the Baseline San Mateo County Greenhouse Gas Emissions Inventory Report compiled in 2005. The report indicates that Government Operations generate a total of 41,517 metric tons of carbon dioxide. The largest contributors are County Buildings and Facilities (46%) and County Employees' Commute (37%). Although the County vehicle fleet is the next greatest contributor with 12%, the compact vehicles portion is only 1% of the overall total (as illustrated in the chart above).



Vehicle and Equipment Services
Compact Vehicle Analysis – Hybrid *v* Conventional

Within the compact vehicles class, our analysis of selected vehicles shows that a hybrid on average emits 57% less greenhouse gases and 75% less smog than a conventional vehicle. When the emissions inventory was compiled two-thirds of the compact vehicle fleet were conventional vehicles. Currently, only about a quarter of the compact vehicle fleet is conventional vehicles.

Cost of Policy Implementation

In our 2004 review, the analysis showed that a hybrid was less expensive to operate and maintain than a conventional vehicle. At the time of that review, the maintenance, fuel, and resale advantages of a hybrid offset its higher initial purchase cost giving it an overall ownership cost advantage of $1,764 over a similar conventional vehicle.

Seven-Year Ownership Cost Variance (Based on data current at the time of our reviews in the years noted)			
	2011[1]	2010[1]	2004[2]
Hybrid Cost Over/(Under)	$4,013	$5,283	($1,764)
Estimated Additional Cost of Hybrids over Conventional Cars Over the Next Seven-Year Lifecycle (Cost estimates based on current data and replacement of 200 compact cars in the fleet)			
Additional cost based on difference between average costs of hybrids in the fleet and selected conventional compacts	$803,000 ($115,000 annually)		
Additional cost based on difference between average costs of hybrids in the fleet and the least expensive conventional compact selected for analysis	$1.1 million ($162,000 annually)		

[1]2011 & 2010 is the variance of the average cost of hybrids in fleet and elected conventional vehicles.
[2]2004 is the variance for the Toyota Prius (only hybrid available at the time) and the Ford Focus (incumbent vehicle) only.

The January 2010 update to this analysis shows that the cost advantages of hybrids were no longer applicable. Although the amount fluctuates, the overall seven-year ownership cost of a hybrid is higher than a comparable conventional vehicle.

Our analysis was based on current data relating to hybrid models in the fleet and available hybrid models that meet policy requirements. The costs are based on data gathered in June 2011 and may change over time. Hybrids naturally have a higher MPG and emit less greenhouse gases and smog. They also have a higher reliability rating. However, the seven-year net ownership cost for a hybrid is, on average, approximately $4,013 more than a conventional vehicle. With approximately 200 compact vehicles in the fleet, the additional cost is substantial (see table above). The difference between the average cost of hybrid models in the fleet and the conventional vehicle with the lowest ownership cost, the 2011 Ford Fiesta S Sedan, is even higher at $5,700 per vehicle. Based on current data, the estimated additional cost of selecting a hybrid over a conventional vehicle over the next seven-year life cycle of fleet compacts is estimated at $0.8 million to $1.1 million, which computes to $115,000 to $162,000 per year.

Hybrids and Conventional Vehicles Comparison

For the purposes of our analysis we considered the following factors - MPG, compliance with current purchasing policy and environmental goal, ownership life cycle cost, reliability and emissions.

The table below summarizes the average data for hybrids and conventional vehicles selected from all available models that best meet the criteria mentioned above (selection process discussed in Appendix 1 and ownership cost composition detail in Appendix 2).

Summary - Comparing 2011 Compact Vehicles: Hybrids and Conventional

Vehicle Type[1]	MPG[2] & Emission	Meets Purchasing Policy (Y/N)	Contributes to Environmental Declaration (Y/N)	Seven-Year Ownership Net Cost[3]	Relia-bility[4]	Emissions[5]	
						Greenhouse Gases (lbs)	Smog (grams)
Hybrids	44 (PZEV)	Y	Y	$23,348	4.3	3306	450
Conventional	32 (ULEV)	Y	N	20,413	4.0	7714	1800
Variance	12			2,935[3]	0.3	-4408	-1350

[1]Hybrid vehicles include Honda Civic Hybrid & Insight and Toyota Prius. Conventional vehicles selected include Honda Fit, Toyota Yaris and Ford Fiesta.
[2] Combined Street/Highway Mileage.
[3] Seven-year ownership cost calculations in Appendix 3 and 4; variance is $4,013 if Honda Insight (currently not in fleet) is excluded from the Hybrids' average.
[4] JD Power predicted reliability score out of a maximum score of 5.
[5] Source: California Air Resource Board (www.driveclean.ca.gov).

Vehicle and Equipment Services
Compact Vehicle Analysis – Hybrid *v* Conventional

The analysis presented is based on data gathered in June 2011. Costs will change and fluctuate over time due to factors such as market demands, technological improvements, and introduction of new models.

Analysis – Hybrid Vehicles

In recent years the Vehicle and Equipment Services has restricted compact vehicles purchases to either the Toyota Prius Hybrid or the Honda Civic Hybrid. The last major purchase, made in March 2010, was for nine Honda Civic Hybrids.

A comparative analysis of the 2011 hybrid models that meet current policy requirements ranks the Honda Civic Hybrid the lowest and the hybrid Honda Insight as the highest or the best choice based on ownership cost. The 2011 Honda Insight meets current policy requirements and has identical MPG, reliability and emissions as the Honda Civic Hybrid but costs $3,900 less over a seven-year period. The cost difference between the Insight and the Toyota Prius Hybrid One is less; the Insight's ownership cost is $2,600 less than the Prius. The table below includes the related comparative data.

It should be noted that the current version of the Honda Insight included in our analysis was not available in 2010 when the nine Honda Civic Hybrids were purchased (the lower-cost Toyota Prius, however, was available). As indicated by our analysis, both the Prius Hybrid One and the Insight have lower ownership costs than the Civic Hybrid indicating the need to perform an appropriate comparative analysis on a regular basis to ensure the most effective use of capital, especially when a large purchase is anticipated.

Summary - Comparing 2011 Compact Vehicles: Hybrids

Vehicle		MPG[1] & Emis-sion	Meets Purchasing Policy (Y/N)	Contributes to Environ Declaration (Y/N)	Seven-Year Owner-ship Net Cost[2]	Relia-bility[3]	Emissions[4]	
							Greenhouse Gases (lbs)	Smog (grams)
Hybrids								
Honda Civic Hybrid		42 PZEV	Y	Y	$25,079	4.5	3306	450
Toyota Prius Hybrid One		49 PZEV	Y	Y	23,773	4	3306	450
Honda Insight		42 PZEV	Y	Y	21,192	4.5	3306	450

[1] Combined Street/Highway Mileage

[2] Seven-year ownership cost calculations in Appendix 3 and 4.

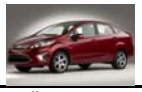
[3] JD Power predicted reliability score out of a maximum score of 5.

[4] Source: California Air Resource Board (www.driveclean.ca.gov).

Analysis Summary – Conventional Vehicles

Although conventional vehicles have lower MPG and higher emissions of greenhouse gases, the net ownership cost is typically lower than hybrids. Based on the table below, the Ford Fiesta S Sedan is the top choice among conventional vehicles with the lowest cost of ownership. The net ownership cost of the Fiesta is $6,300 lower than a Honda Civic Hybrid, $5,000 lower than a Toyota Prius Hybrid One and $2,400 lower than the Honda Insight. On average, the Fiesta's ownership cost is $4,600 lower than all the hybrids included in our analysis. Despite the Fiesta's slightly lower reliability rating, the cost of maintenance and repairs for the Fiesta is the lowest among all the other vehicles reviewed.

Vehicle and Equipment Services
Compact Vehicle Analysis – Hybrid *v* Conventional

Summary - Comparing 2011 Compact Vehicles: Conventional								
Vehicle		MPG[1] & Emis-sion	Meets Purchasing Policy (Y/N)	Contributes to Environ Declaration (Y/N)	Seven-Year Owner-ship Net Cost[2]	Relia-bility[3]	Emissions[4]	
							Greenhouse Gases	Smog
Conventional								
2011 Honda Fit Base		30 ULEV	Y	N	$21,242	4.5	7273	1875
2011 Toyota Yaris Base Sedan		33 ULEV	Y	N	21,237	4	7273	1875
2011 Ford Fiesta S Sedan		33 ULEV	Y	N	18,760	3.5	8596	1650

[1]Combined Street/Highway Mileage
[2] Seven-year ownership cost calculations in Appendix 3 and 4.
[3] JD Power predicted reliability score out of a maximum score of 5.
[4] Source: California Air Resource Board (www.driveclean.ca.gov).

It should be noted that fuel costs has minimal impact on net ownership costs. For every dollar increase in a gallon of gas, the ownership cost of hybrids versus conventional vehicles drops only about $70 per year. Fuel cost analysis detail is in Appendix 5.

Summary of findings

1. County compact vehicles have minimal impact (1%) on total Greenhouse Gas Emissions based on the Baseline San Mateo County Greenhouse Gas Emissions Inventory Report compiled in 2005.

2. Based on available data on current models, the ownership cost over the next seven-year life cycle of the average conventional compact vehicle is $4,013 less than a comparable hybrid vehicle in the fleet. With about 200 compact vehicles in the fleet, this amounts to approximately $803,000 in additional cost of hybrids over a full seven year replacement cycle, which averages to $115,000 annually. Comparing the average cost of hybrids currently in the fleet with the Ford Fiesta S Sedan, a current non-hybrid with the lowest ownership, shows $5,700 in higher cost of hybrids. Based on the entire compact fleet, the estimated additional cost over the next seven-year replacement cycle is $1.1 million or $162,000 annually.

3. Multiple factors affect the cost of ownership such as market demands, technological improvements, and introduction of new models and options, which change over time. The Department of Public Works' Vehicle and Equipment Services will need to consider these and other pertinent factors based on its knowledge and experience when making decisions regarding purchase of compact vehicles.

Recommendations

Recommendation 1:

Since the lifecycle ownership costs of vehicles are affected by various factors that change over time, we recommend that the Department of Public Works perform an appropriate comparative analysis on a regular basis, especially when a large purchase is anticipated to ensure that vehicles purchased not only meet policy but also ensure the most effective use of capital. Department personnel who manage the County fleet should use their knowledge and expertise to include in the analysis vehicle models suitable for the fleet and cost estimates that replicate actual experience.

Vehicle and Equipment Services
Compact Vehicle Analysis – Hybrid *v* Conventional

A comparative analysis of 2011 hybrid models shows the Honda Insight performs as well as the Honda Civic Hybrid (in terms of MPG, compliance, reliability, and emissions) but has a lower net ownership cost of $3,900 per vehicle.

Recommendation 2:

Policy decisions are the responsibility of the Board and management. The Controller's Office provides data and analysis to assist in decision making.

Our analysis indicates that hybrid compact vehicles contribute only marginally toward the emission reduction goal of the Board's Cool Counties Declaration but cost significantly more than conventional vehicles that emit more greenhouse gases than hybrids but otherwise meet current policy requirements. For example, the average ownership cost of a compact hybrid in the fleet is $4,013 more than a conventional vehicle.

Policy decisions often require consideration of competing priorities, in this case environmental and fiscal priorities. In view of the County's structural deficit the Board and management may need to reconsider current policy relating to purchase of compact fleet vehicles.

Appendix

Appendix 1 - Selection Process

We considered the entire 2011 hybrid and conventional compacts available in the market. Models that do not meet the current purchasing policy (minimum 30 MPG) were excluded. We computed the ownership life cycle cost for the remaining hybrid and conventional compacts, as well as included all the models mentioned in the Grand Jury Report.

Below is the comprehensive list of hybrid and conventional vehicles we reviewed.

Hybrid Vehicles -

- Honda Civic Hybrid
- Honda Insight
- Toyota Prius Hybrid One

Non-hybrid Vehicles -

- Chevrolet Cobalt
- Chevrolet Cruze LS Sedan
- Chevrolet Malibu LS Sedan
- Ford Fusion S Sedan
- Ford Focus S Sedan
- Ford Fiesta S Sedan
- Honda Civic LX
- Honda Accord LX Sedan
- Honda Fit Base
- Hyundai Accent Sedan GLS
- Kia Rio Sedan LX
- Toyota Scion xD Base
- Toyota Camry Base Sedan
- Toyota Corolla S
- Toyota Yaris Base Sedan

Since the Chevrolet Cobalt was discontinued in 2011, it was excluded from further review. Both the Hyundai Accent Sedan GLS and the Kia Rio Sedan LX were not considered due to poor Insurance Institute for Highway Safety (IIHS) ratings. Also excluded were the Chevrolet Cruze, Chevrolet Malibu, Ford Fusion, Honda Accord, and Toyota Camry, which have a higher cost of ownership than the Toyota Prius Hybrid.

The vehicles with the lowest cost for each make were selected for further review, including the hybrid models in the existing fleet. We included the 2011 models of six compacts - three hybrids and three non-hybrids in our sample, for comparative analysis:

Current hybrids in the fleet-

- Honda Civic Hybrid
- Toyota Prius Hybrid One

Hybrids selected for comparative analysis -

- Honda Insight

Conventional vehicles selected for comparative analysis -

- Ford Fiesta S Sedan
- Honda Fit Base
- Toyota Yaris Base Sedan

Appendix 2 - Life-cycle Cost of Ownership Analysis

Seven-year ownership costs were used in this analysis as this is the replacement criteria for County compact vehicles (or 100,000 miles). Costs were based on six components from estimates provided by Edmunds.com “True Cost to Own” feature. Since Edmunds provided five-year estimates based on 15,000 miles per year, adjustments were made, where appropriate.

- **Purchase**: Each vehicle analyzed is the standard model with a minimum of the following features: 4-doors, automatic transmission, power steering, anti-lock brakes, air-conditioner, airbag and audio system.
- **Taxes and Fees:** Taxes and fees were based on Redwood City, CA. For years six and seven, estimates were projections that followed historical growth patterns.
- **Fuel:** Fuel costs were adjusted to 8,120 miles a year per vehicle to better reflect the County’s actual compact fleet usage. The five-year historical retail price of $3.25/gallon of gas in the San Francisco region was used in our analysis. Source: GasBuddy.com
- **Maintenance:** The five-year total for maintenance and repairs were extended through seven years to reflect the actual total miles driven.
- **Repair:** (see above)
- **Salvage:** The salvage value is based on depreciation rates provided by Edmund. For years six and seven, depreciation were projections that followed growth patterns.

National discounts and rebates, as well as regional adjustments, were not factored into the analysis due to the variability and time sensitive nature of such discounts. Insurance was excluded from ownership cost as the County self-insures its vehicles and assigns the same fixed amount regardless of make, model, or vehicle type. To obtain the net present value, a discount rate of 3% was used in the analysis. The cost data was gathered in June 2011 and may fluctuate over time.

Appendix 3: Seven-year Ownership Cost - Hybrids

Make and Model	Combined MPG[1]	True Cost to Own (7 years)
2011 Honda Civic Hybrid	42	$25,079
2011 Toyota Prius Hybrid One	49	$23,773
2011 Honda Insight	42	$21,192

Gas Prices $ 3.25

Discount Rate 3%	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2011 Honda Civic Hybrid								
Purchase[2]	$ 27,043							
Taxes & Fees		$ -	$ 154	$ 139	$ 126	$ 115	$ 104	$ 95
Fuel[3]		$ 633	$ 633	$ 633	$ 633	$ 633	$ 633	$ 633
Maintenance[4]		$ -	$ 86	$ -	$ 466	$ 300	$ 1,148	$ 958
Repairs[4]		$ -	$ -	$ -	$ -	$ 111	$ 269	$ 393
Salvage								$ (11,916)
Annual Cash Flow	$ 27,043	$ 633	$ 873	$ 772	$ 1,225	$ 1,159	$ 2,154	$ (9,838)
Net Present Value	**$ 25,079**							
2011 Toyota Prius Hybrid One								
Purchase[2]	$ 25,341							
Taxes & Fees		$ -	$ 145	$ 133	$ 122	$ 112	$ 103	$ 94
Fuel[3]		$ 534	$ 534	$ 534	$ 534	$ 534	$ 534	$ 534
Maintenance[4]		$ -	$ 32	$ -	$ 392	$ 593	$ 902	$ 1,728
Repairs[4]		$ -	$ -	$ -	$ -	$ 111	$ 269	$ 393
Salvage								$ (11,330)
Annual Cash Flow	$ 25,341	$ 534	$ 711	$ 667	$ 1,048	$ 1,350	$ 1,808	$ (8,580)
Net Present Value	**$ 23,773**							

Appendix 3: Seven-year Ownership Cost - Hybrids

2011 Honda Insight

Purchase[2]	$	20,776												
Taxes & Fees			$	-	$	129	$	117	$	107	$	98	$	89	$	82
Fuel[3]			$	633	$	633	$	633	$	633	$	633	$	633	$	633
Maintenance[4]			$	-	$	159	$	-	$	466	$	299	$	1,147	$	1,228
Repairs[4]			$	-	$	-	$	-	$	-	$	120	$	288	$	423
Salvage														$	(9,278)
Annual Cash Flow	$	20,776	$	633	$	921	$	750	$	1,206	$	1,150	$	2,157	$	(6,913)
Net Present Value	**$**	**21,192**														

Purchase & Salvage

2011 Honda Civic Hybrid

Base price[5]	$	23,950
Options	$	-
Destination Fee	$	750
Tax & Fees	$	2,343
Total	$	27,043

Depreciation	YOY Factor
$ 4,911	
$ 2,244	46%
$ 1,976	88%
$ 1,751	89%
$ 1,571	90%
$ 1,410	90%
$ 1,265	90%
$ 15,127	
$ 11,916	Salvage

2011 Toyota Prius Hybrid One

Base price[5]	$	22,120
Options	$	200
Dstn Fee	$	760
Tax & Fees	$	2,261
Total	$	25,341

Depreciation	YOY Factor
$ 5,408	
$ 1,889	35%
$ 1,664	88%
$ 1,474	89%
$ 1,323	90%
$ 1,187	90%
$ 1,066	90%
$ 14,011	
$ 11,330	Salvage

2011 Honda Insight

Base price[5]	$	18,200
Options	$	-
Dstn Fee	$	750
Tax & Fees	$	1,826
Total	$	20,776

Depreciation	YOY Factor
$ 3,326	
$ 1,795	54%
$ 1,579	88%
$ 1,401	89%
$ 1,257	90%
$ 1,128	90%
$ 1,012	90%
$ 11,498	
$ 9,278	Salvage

Notes:

[1]EPA defines combined MPG as 45% city and 55% highway

[2]Purchase price from Edmunds.com based on base price, options (automatic transmission and/or floor mats), destination fee, tax, and fees.

[3]Fuel cost based on San Mateo County average of 8,121 miles per vehicle per year divided by the combined MPG, assuming fuel at $3.25/gallon, which is based on the 5-year historical San Francisco average provided by gasbuddy.com.

[4]Maintenance and repairs cost from Edmunds.com. Since the Edmunds.com estimates were based on 15K mi. per year, while the County vehicles were driven an average of just over 8K mi. per year, the five year total costs were extended through seven years.

[5]Base price of all vehicles based on automatic transmission. This is standard on all hybrids.

Appendix 4: Seven-year Ownership Cost - Conventional Vehicles

Make and Model	Combined MPG[1]	True Cost to Own (7 years)
2011 Honda Fit Base	30	$21,242
2011 Toyota Yaris Base Sedan	33	$21,237
2011 Ford Fiesta S Sedan	33	$18,760

Gas Prices $ 3.25

Discount Rate 3%	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2011 Honda Fit Base								
Purchase[2]	$ 18,280							
Taxes & Fees		$ -	$ 119	$ 109	$ 99	$ 90	$ 82	$ 75
Fuel[3]		$ 870	$ 870	$ 870	$ 870	$ 870	$ 870	$ 870
Maintenance[4]	$ -	$ -	$ 177	$ -	$ 473	$ 301	$ 1,152	$ 1,248
Repairs[4]	$ -	$ -	$ -	$ -	$ -	$ 111	$ 269	$ 393
Salvage								$ (7,908)
Annual Cash Flow	$ 18,280	$ 870	$ 1,166	$ 979	$ 1,442	$ 1,372	$ 2,373	$ (5,322)
Net Present Value	**$ 21,242**							
2011 Toyota Yaris Base Sedan								
Purchase[2]	$ 17,063							
Taxes & Fees		$ -	$ 117	$ 105	$ 95	$ 86	$ 78	$ 70
Fuel[3]		$ 802	$ 802	$ 802	$ 802	$ 802	$ 802	$ 802
Maintenance[4]		$ -	$ 32	$ -	$ 325	$ 500	$ 831	$ 1,630
Repairs[4]		$ -	$ -	$ -	$ -	$ 111	$ 269	$ 393
Salvage								$ (5,808)
Annual Cash Flow	$ 17,063	$ 802	$ 951	$ 907	$ 1,222	$ 1,499	$ 1,980	$ (2,913)
Net Present Value	**$ 21,237**							

Appendix 4: Seven-year Ownership Cost - Conventional Vehicles

2011 Ford Fiesta S Sedan

Purchase[2]	$	16,589												
Taxes & Fees			$	-	$	113	$	103	$	94	$	87	$	80	$	73
Fuel[3]			$	800	$	800	$	800	$	800	$	800	$	800	$	800
Maintenance[4]			$	-	$	145	$	-	$	315	$	492	$	485	$	997
Repairs[4]			$	-	$	-	$	-	$	-	$	103	$	247	$	361
Salvage														$	(7,310)
Annual Cash Flow	$	16,589	$	800	$	1,058	$	903	$	1,209	$	1,482	$	1,611	$	(5,080)
Net Present Value	**$**	**18,760**													

Purchase & Salvage

2011 Honda Fit Base

Base price[5]	$	15,900
Options	$	-
Destination Fee	$	750
Tax & Fees	$	1,630
Total	$	18,280

Depreciation	YOY Factor
$ 2,744	
$ 1,677	61%
$ 1,475	88%
$ 1,308	89%
$ 1,173	90%
$ 1,052	90%
$ 943	90%
$ 10,372	
$ 7,908	Salvage

2011 Toyota Yaris Base Sedan

Base price[5]	$	14,515
Options	$	150
Dstn Fee	$	760
Tax & Fees	$	1,638
Total	$	17,063

Depreciation	YOY Factor
$ 3,223	
$ 1,765	55%
$ 1,553	88%
$ 1,376	89%
$ 1,235	90%
$ 1,108	90%
$ 995	90%
$ 11,255	
$ 5,808	Salvage

2011 Ford Fiesta S Sedan

Base price[5]	$	13,320
Options	$	1,095
Dstn Fee	$	675
Tax & Fees	$	1,499
Total	$	16,589

Depreciation	YOY Factor
$ 2,432	
$ 1,504	62%
$ 1,324	88%
$ 1,174	89%
$ 1,053	90%
$ 944	90%
$ 847	90%
$ 9,279	
$ 7,310	Salvage

Notes:

[1]EPA defines combined MPG as 45% city and 55% highway

[2]Purchase price from Edmunds.com based on base price, options (automatic transmission and/or floor mats), destination fee, tax, and fees.

[3]Fuel cost based on San Mateo County average of 8,121 miles per vehicle per year divided by the combined MPG, assuming fuel at $3.25/gallon, which is based on the 5-year historical San Francisco average provided by gasbuddy.com.

[4]Maintenance and repairs cost from Edmunds.com. Since the Edmunds.com estimates were based on 15K mi. per year, while the County vehicles were driven an average of just over 8K mi. per year, the five year total costs were extended through seven years.

[5]Base price of all vehicles based on automatic transmission. For conventional vehicles, specific model with automatic transmission selected.

Appendix 5 - Fuel Costs

GasBuddy.com Historical Price Data

San Francisco, CA 5-year from 5/6/2006 to 5/6/2011
http://www.gasbuddy.com/gb_retail_price_chart.aspx?time=24

Date	Regular/Gallon
5/6/2006	$ 3.35
7/8/2006	$ 3.20
9/9/2006	$ 2.90
11/11/2006	$ 2.56
1/13/2007	$ 2.70
3/17/2007	$ 3.26
5/19/2007	$ 3.56
7/21/2007	$ 3.32
9/22/2007	$ 3.08
11/24/2007	$ 3.51
1/26/2008	$ 3.36
3/29/2008	$ 3.75
5/31/2008	$ 4.35
8/2/2008	$ 4.35
10/4/2008	$ 3.75
12/6/2008	$ 2.04
2/7/2009	$ 2.29
4/11/2009	$ 2.35
6/13/2009	$ 3.10
8/15/2009	$ 3.15
10/17/2009	$ 3.15
12/19/2009	$ 2.93
2/20/2010	$ 2.93
4/24/2010	$ 3.16
6/26/2010	$ 3.20
8/28/2010	$ 3.18
10/30/2010	$ 3.20
1/1/2011	$ 3.35
3/5/2011	$ 4.00
5/6/2011	$ 4.32
Average	$ 3.25

For every $1 change in gas price per gallon, the net ownership cost between a hybrid and conventional vehicle changes by about $70 per year. (i.e. $1 gas increase narrows the higher hybrid ownership cost vs. conventional vehicle by $70 annually and vice-versa)

This assumption is based on the County average of 8,120 miles driven per vehicle per year.