California Action Plan for Reducing or Displacing the Consumption of Petroleum Products by the State Fleet and First Annual Progress Report

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Executive Summary

Assembly Bill (AB) 236 (Chapter 593, Statutes of 2007) (Lieu) added Public Resources Code (PRC) Section 25722.8 (a) establishing the goal of reducing or displacing the consumption of petroleum products by the State fleet when compared to the 2003 consumption levels based on the following schedule:

1. By January 1, 2012, a 10-percent reduction or displacement.
2. By January 1, 2020, a 20-percent reduction or displacement.

Key to the success of this public policy is the development and implementation of a plan that can improve the overall State fleet's use of alternative fuels, synthetic lubricants, and fuel efficient vehicles by reducing or displacing the consumption of petroleum products (See Appendix A, Statutory Authority).

This *California Action Plan for Reducing or Displacing the Consumption of Petroleum Products by the State Fleet* (Plan) is respectfully submitted to the Legislature and the Governor as a crucial step in meeting the Legislature's goals to reduce petroleum consumption by the State fleet. Additionally, to maintain transparency this Plan and all follow up progress reports will be made available to the public on the DGS web site.

To develop this Plan, the State and Consumer Services Agency created a task force known as the State Fleet Petroleum Reduction Advisory Committee (Committee) to advise the Administration on cost effective methods to meet the target petroleum reduction goals. Fleet experts from across ten State agencies developed a project charter and held public meetings over a six-month period to gather and share information, research best practices from across the country, and hear public comments (See Appendix B, References). The Committee established its own web page at: http://www.ofa.dgs.ca.gov/AB236/default.htm to maintain transparency and keep the public informed of the Committee's progress.

The Committee sought cost effective solutions to reduce or displace the consumption of petroleum and looked for best practices throughout the nation's fleet community. This Plan provides the guidance and rationale for State agencies to better manage their respective fleets and reduce their petroleum consumption. Mindful of the State budget shortfall, the Committee set out to identify as many low cost actions that State agencies can take in the near term to reduce petroleum consumption. For example, actions such as reducing the overall vehicle miles traveled (VMT) are being addressed by fleets throughout the nation and one that the State fleet can benefit from through low cost policy revisions. Eco Driver training provides drivers with smart fuel saving techniques that can be easily learned and utilized immediately. This Plan recommends that these lowest cost solutions be deployed as best practices within the State fleet. There are, however, several more-costly solutions worthy of consideration. And,

with the influx of special State and federal funding opportunities to reduce petroleum consumption now available, the Committee has identified higher cost solutions that are needed to accelerate the modernization of the State fleet, build needed alternative fuel infrastructure, and introduce technological solutions to manage fuel consumption.

The DGS will take the lead role in implementation and oversight for this Plan by: establishing the baseline of the State fleet's 2003 petroleum consumption; educating State agencies; developing Statewide contracts; measuring progress and reporting to all interested parties; and recommending adjustments if anticipated petroleum reductions are not being achieved. Further, DGS will revise existing State fleet policies where necessary and/or formulate new State fleet policies specifically aimed at petroleum reduction, including: restructuring the DGS lease rate to reduce costs for using agencies and empowering them to self-manage their State fuel card to better control and reduce their fuel consumption.

As this plan was undergoing its final review in preparation for delivery to the Legislature on July 1, 2009, it became evident that several of the actions laid out in the Plan would take time to implement or have a financial cost. And as the State was facing yet another budget crisis, several significant actions outlined within the Plan would be at risk of not being implemented at all. Therefore, it was determined that rather than submitting the initial plan to the Legislature, a change of course was necessary to identify a few actions within the Plan that could have the highest impact on both reducing petroleum consumption and addressing the emergent budget crisis. The key actions sought needed overlapping goals—to reduce petroleum consumption and reduce the fiscal impact associated with the State fleet.

On July 17, 2009, the Governor took steps to reduce waste in the State's vehicle fleet through the issuance of Executive Order S-14-09. This order set an objective to reduce15 percent of the State vehicle fleet and to reduce the number of vehicles taken home by State employees by reducing Home Storage Permits by 20 percent. The Governor's order sends a strong message and will immediately begin paying dividends toward the reduction of petroleum consumption and lessening the fiscal impact of the State fleet simultaneously.

This plan has now been combined with the first annual progress report (due April 1, 2010) to lay out several actions that will provide incremental solutions to achieving petroleum reduction within the State fleet as they are implemented, and the key actions that have already begun with the implementation of the Executive Order.

Cabinet Secretaries and department heads will play a pivotal roll by providing top down support and interest in the State's petroleum reduction efforts and keeping abreast of the progress being made by their respective departments. State

drivers are perhaps most essential in this effort as their buy-in is critical to changing driving habits or avoiding driving whenever possible, as well as using alternative fuels to the maximum extent possible.

The Committee's recommended key action items to reduce petroleum consumption are summarized in Table 1 below:

Summary of Key Recommended Actions

Table 1

Action	Responsibility	Cost Range[1]
Establish the baseline of the State fleet's 2003 petroleum consumption	DGS	Low
Collect, analyze, and report on petroleum consumption of the State fleet annually	DGS	Low
Seek standardized product coding from retail fuel vendors and naming conventions with Voyager's data base	DGS	Low
Actively manage bulk fuel contracts	DGS	Low
Educate State agencies on the petroleum reduction goals and objectives, and responsibilities	DGS	Low
Establish an economical driver's training program for all State drivers	DGS	Low
Establish new vehicle anti-idling policy	DGS	Low
Rewrite State fleet utilization policy	DGS	Low
Rewrite State fleet preventative maintenance policy to extend oil change intervals and incorporate fuel saving tasks	DGS	Low
Establish statewide preventative maintenance contracts with commercial vendors to provide synthetic and re-refined motor oils to the State vehicle fleet	DGS	Low
Establish contracts for plug-in hybrid and all electric vehicles as soon as available	DGS	Low
Establish a statewide contract for low rolling resistant tires	DGS	Low
Specify oil condition, fuel economy, and tire pressure monitors in State vehicle contracts	DGS	Low

[1] Low cost can be achieved with existing resources. Needed staffing resources have been redirected from existing positions within Office of Fleet and Asset Management (OFAM) to address fuel related workload. Moderate cost may require some expenditures and/or staffing. High cost requires a significant investment in capital and/or staffing.

Action	Responsibility	Cost Range[1]
Track and report comprehensive fuel data	All State agencies	Low
Have all State drivers attend Eco Driver training	All State agencies	Low
Reduce the size of the State fleet	All State Agencies	Low
Reduce State fleet VMT	All State agencies	Low
Retrofit existing hybrid vehicles with plug-in technology	All State agencies	Moderate
Replace retired vehicles with hybrid vehicles rather than alternative fuel vehicles	All State agencies	Moderate
Install by-pass oil filters on heavy-duty mobile equipment	State agencies with heavy-duty mobile equipment	Moderate
Upgrade existing State operated fuel pumps with data management systems	State agencies with fuel pumps	Moderate
Procure plug-in hybrid and all electric vehicles as soon as they become available in California	All State agencies	Moderate
Install electric charging stations at State facilities to support plug-in hybrid and all electric vehicles	All State agencies	Moderate
Install data gathering devices on State fleet vehicles	All State agencies	High
Install State alternative fuel tanks/pumps at State facilities	State agencies with high fueling capacity	High
Modernize State fleet—accelerate replacement of older inefficient vehicles	All State agencies	High

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Introduction

In May 2003, the DGS, California Air Resources Board (ARB) and California Energy Commission (CEC), published the *California State Vehicle Fleet Fuel Efficiency Report* recommending several strategies to reduce petroleum use in the State vehicle fleet.[2] Many of these strategies were subsequently incorporated in legislation. Senate Bill 552, Chapter 737, Statutes of 2003 (Burton) added Section 25722.5 to the PRC to minimize the economic and environmental costs due to the use of petroleum-based fuels in the State fleet.[3]

Two subsequent bills: AB 2264 (Chapter 767, Statutes of 2006) (Pavley) and, AB 236 (Chapter 593, Statutes of 2007) (Lieu), continued to enhance this landmark effort by adding key strategies of their own to reduce petroleum consumption in the State fleet. AB 236, for example, identified the essential need to set measurable target reduction goals and to formulate a strategic plan for reaching those goals.

Established by AB 236, PRC Section 25722.8 (a), provides that the Secretary of State and Consumer Services Agency, in consultation with DGS and other appropriate State agencies that maintain or purchase vehicles for the State fleet, including the California State University (CSU) system, shall develop and implement, and submit to the Legislature and the Governor, a plan to improve the overall State fleet's use of alternative fuels, synthetic lubricants, and fuel-efficient vehicles by reducing or displacing the consumption of petroleum products by the State fleet when compared to the 2003 consumption level based on the following schedule:

(1) By January 1, 2012, a 10-percent reduction or displacement.
(2) By January 1, 2020, a 20-percent reduction or displacement.

This Plan, therefore, plays a key role in the effort to reduce petroleum consumption in the State fleet from 2003 levels.

To develop the Plan, the State and Consumer Services Agency assembled a team of 16 advisory Committee members representing ten uniquely qualified State agencies: The CEC, ARB, CSU, Department of Fish and Game, Department of Parks and Recreation, Department of Motor Vehicles, Department of Toxic Substances Control, Department of Corrections and Rehabilitation, Department of Transportation, and DGS. Additional advice was received from the California Integrated Waste Management Board (CIWMB) and through public comments submitted to the Committee. From November 2008 through April 2009, the Committee conducted a series of meetings to develop ideas and formulate the petroleum reduction plan for the State fleet. The breadth and depth

[2] http://www.energy.ca.gov/reports/2003-05-01_600-03-003-VOL1.PDF

[3] PRC Section 25722.5: http://www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=00357719558+0+0+0&WAISaction=retrieve

of the varied perspectives allowed the Committee to identify an assortment of best practices that will kick off the State's efforts to meet the targeted petroleum reduction goals.

There is no single solution, no silver bullet, to reducing petroleum consumption but rather a variety of measures, large and small, that when applied collectively are capable of producing the intended results and that are sustainable over the long term.

Benchmarking and Data Issues

Benchmarking 2003 State fleet petroleum consumption levels is proving to be highly complex and challenging as statewide fleet fuel data had never been collected or reported on prior to the DGS' first attempt to do so in 2008.[4] The Committee was faced with the task of recreating 2003 petroleum consumption levels from any remaining sources of available data. The first of which was the State fuel card provider U.S. Bank, Voyager. Voyager's robust archives were tapped to isolate retail fuel charges for 2003. However, because the State fuel card contract is not only available to State agencies but to local governments as well, Voyager's database contained 660 accounts many of which were not State agencies or were not readily identifiable. This exercise highlighted the need for naming convention requirements in future contracts to become part of the recommendations.

Inaccurate Vendor Codes

An even more significant challenge arose by way of inaccurate fuel product coding from the approximately 9,000 retail merchants supplying fuel to State agencies. Antiquated credit/debit card systems at the retail merchant level is jeopardizing our ability to capture accurate data about the various types of fuels being used by the State fleet. The importance of resolving this issue cannot be overstated. If the State is going to have any hope of measuring its progress in reducing petroleum consumption, it must know the types and quantities of fuel State vehicles are using. This problem is so widespread that the federal General Services Administration (GSA) is working to address the issue on a national level. The DGS and the GSA are collaborating to address this problem.

Bulk Fuel

The third link to benchmarking 2003 consumption levels is the use of bulk fuel. Several State agencies procure bulk fuel for their vehicles but records from 2003 were not always available and other records were available only in paper file format. The DGS is currently working on establishing the 2003 baseline numbers, working to re-create or document bulk fuel purchases, and doing further trend analysis between 2003 and 2009. Once these numbers are established, a clearer picture will emerge as to the impact the Plan will have fulfilling the goals of reducing its dependence on petroleum by 10 percent by 2012 and by 20 percent by 2020. Although not anticipated, if more aggressive

[4] http://www.dgs.ca.gov/FuelPurchases0708.htm

measures are deemed appropriate they will be raised as needed. In the mean time, State agencies can start immediately to reduce their dependence on petroleum by implementing the methods and procedures described in this Plan.

Solutions to Reduce Petroleum Consumption

To reduce the State fleet's petroleum consumption, several methods and practices will be utilized. Some of these methods can be executed with little to no cost. Some solutions are more costly to start up and maintain but are worthy of consideration if State and/or federal funding is available. The Committee has identified many low cost solutions that can be carried out immediately. These actions can be implemented to some degree by all State agencies with fleet assets and travel needs to reduce petroleum consumption.

Establishing the 2003 Petroleum Consumption Baseline

To establish an accurate baseline of 2003 petroleum consumption, DGS has embarked on a systematic review of fuel purchases using data from multiple sources. To begin with, DGS has queried the Voyager database and is putting together a historical record of fuel purchases from 2003 to present. Secondly, DGS is surveying all State agencies on their bulk fuel purchases and any other fuel cards used for the same period of time. Third, DGS is asking the State Controller's Office to search its payment records for bulk fuel purchases made by State agencies from 2003 to present. Lastly, DGS is contacting the Board of Equalization for compressed natural gas (CNG) fuel usage data from historical tax reports collected from State agencies. Together, these historical records, albeit fragmented as they may be, will provide sufficient fuel purchasing trends over a long enough period of time to quantify the State fleet's 2003 petroleum consumption. There is no known source for motor oil usage to baseline 2003 consumption levels. Assumptions will be necessary to estimate motor oil usage throughout this process.

Collect Fuel Data and Report Petroleum Consumption

To effectively make decisions on how to reduce petroleum consumption in the State fleet, DGS required a technology solution that would enable its staff to efficiently and effectively record, manage, and access critical information about California's State fleet inventory.

As a result, the DGS has deployed a State Fleet Asset Management System known as (FAMS). Starting in 2009, this data warehouse is now the required method for all State agencies to report their vehicle fleet asset and utilization data, which include fuel consumption by fuel type. Statewide fleet reporting can only be as complete and accurate as the data that DGS receives from other

agencies. Using accurate data from the FAMS will be the linchpin of measuring petroleum reduction. As of the end of 2009, every State agency can now go online and enter their fleet data into FAMS allowing DGS to analyze and report on their respective progress in meeting the petroleum reduction goals, as well as other fleet related mandates.

Given immediate access to current and accurate fleet data, DGS will perform analyses and produce reports that may be used to justify right-sizing the State fleet and improve fleet fuel efficiency by replacing older, less fuel efficient vehicles with newer more fuel efficient and more environmentally friendly vehicles resulting in significant fuel savings.

Beginning with the 2007 State Passenger Vehicle Report[5], DGS has begun posting an overview and analysis of the fleet data submitted by State agencies. This annual report will serve as the foundation for tracking the State fleet's petroleum reduction going forward as more robust fleet data becomes accessible in FAMS. Because an incomplete picture of fuel consumption currently exists, as improved data collection efforts continue, there could appear to be an increase in fuel consumption in the future.

Even with the FAMS solution, however, several challenges remain in measuring State fuel consumption. Voyager fuel card data imported into FAMS remains inconsistent due to incorrect product coding by the commercial sector. This is especially true for alternative fuels. Fuel product code accuracy is a significant problem at the point-of-sale with merchants and credit card companies among the approximately 9,000 retail fueling stations in California. The federal GSA is experiencing the same problem nationally and is unable to specifically account for alternative fuel purchases nationwide by the federal fleet. The DGS is developing new specifications for the next State fuel card provider contract that will require the vendor to reconcile improper fuel product codes with the merchants prior to sending the State its fuel usage reports.

The other challenge for FAMS is receiving bulk fuel data through electronic feeds from State agencies. Most State operated fuel pumps do not have electronic card readers and rely on manual systems to purchase, dispense, and account for bulk fuel use. These older systems need updating to incorporate card reading fuel management solutions that can automatically feed the FAMS data warehouse. The DGS is working with those State agencies on updating their equipment in the coming years.

The value of DGS measuring and providing transparency of each State agency's fleet metrics cannot be overstated. The old phrase "what gets measured gets done" has significance and will likely encourage State agencies to take actions to reduce petroleum consumption.

[5] http://www.ofa.dgs.ca.gov/SB552.htm

Education and Outreach

The Committee identified a major gap in State drivers' knowledge and understanding of alternative fuel vehicles, alternative fuels, and State initiatives to reduce petroleum consumption and greenhouse gases. The DGS is taking steps to get alternative fuel station location information more consistently into the hands of State drivers so they can take advantage of using the fuel where available. The DGS web site now hosts an interactive link that employees can access from work or via BlackBerry devices in the field to locate the nearest alternative fuel station to their location, or plan their trips beforehand to take full advantage of available alternative fuel stations.[6]

The DGS is working to develop methods to push fleet and travel related information directly to as many State travelers as possible through the use of the DGS web site, email blasts, the DGS You Tube, as well as other electronic medium. The ability to transmit information through non-traditional means and educate State travelers directly on fleet related issues as well as promote the advantages of traveling smarter is essential in today's economic climate. Rapid communication is critical to effecting changes in drivers' behavior and reducing petroleum consumption of the State fleet.

Establish Eco Driver Training for State Drivers

Eco Driving refers to specific driving behaviors that can improve fuel economy, save money, reduce greenhouse gas emissions, and promote safe driving. California was the first State to join this nationwide effort to improve fuel economy through driver behavior and Governor Schwarzenegger has endorsed these best practices at Eco Driving USA.[7]

Recently, the Ford Motor Company and the Phoenix-based Pro Formance Group teamed up to pilot Eco Driving for fleet customers. Over a four-day period, Ford and the Pro Formance drivers conducted validation tests using volunteers from Phoenix who were given individual coaching on specific driving behaviors. The Sports Car Club of America verified the results, which showed an average 24 percent improvement in fuel economy as a result of hands-on Eco Driving.

The nation uses close to 150 billion gallons of gasoline annually. If every American practiced Eco Driving and got the EPA-estimated 15 percent benefit in fuel economy, more than 22 billion gallons of gas would be saved.[8] Eco Driving tips are easy to understand and easy for the average driver to implement. They include the following practices and procedures:

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[6] http://www.cleancarmaps.com/home
[7] http://www.ecodrivingusa.com/
[8] U.S. Energy Information Administration

- Avoid aggressive driving and quick starts
- Maintain a constant speed
- Use cruise control
- Reduce air conditioner use
- Eliminate extra wind resistance and weight
- Use the highest gear possible
- Practice trip chaining

The DGS, which already provides driver safety instruction that State employees are required to complete every four years, will develop an Eco Driver training and education program for State drivers to ensure they become well versed with the easy to use techniques that have the potential to dramatically reduce petroleum consumption at virtually no cost to the taxpayer. To be effective, this will require management change and employee buy-in unless global positioning system (GPS) devices are installed on State vehicles.

Establish State Vehicle Anti-Idling Policy

Heavy-duty trucks use 18 billion gallons of diesel fuel annually, or 12 percent of U.S. fuel consumption, and contribute a corresponding share of greenhouse gas emissions. Moreover, the U.S. Department of Energy projects freight emissions will triple by 2025, accounting for almost one-third of transportation carbon dioxide (CO^2) output.

According to the Environmental Protection Agency (EPA), truck idling affects our environment and our energy supply in several ways. Trucks consume up to one gallon of diesel fuel for each hour at idle, using as much as 2,400 gallons of fuel every year per truck. This totals 1.2 billion gallons of diesel fuel consumed every year from idling, costing $1.8 billion (at $1.50 gallon/diesel). On average, each idling truck produces about 21 tons of $C0^2$ and 0.3 tons of nitrogen oxides (NOx) annually totaling over 11 million tons and 150,000 tons, respectively. Diesel exhausts also contain particulates, sulfur dioxide, carbon monoxide, hydrocarbons, and various air toxics. Idling emissions can contribute to premature mortality, bronchitis (chronic and acute), hospital admissions, respiratory symptoms (upper and lower), asthma attacks, work loss days, and minor restricted activity days. In addition to fuel costs and emissions, engine idling results in increased maintenance costs associated with substantial wear to the engine. Studies indicate that idling can cost over $300 per vehicle annually in maintenance costs alone.[9]

[9] Environmental Protection Agency http://www.epa.gov/reg3artd/diesel/truck_idling_fs.pdf

While the State's heavy-duty diesel fleet is used for a multitude of tasks beyond long-haul trucking, the fleet can reduce petroleum consumption through reduced idling and adherence to a recent ARB anti-idling regulation.[10]

Above and beyond the heavy-duty diesel anti-idling rules, the Committee recommends a statewide fleet policy using similar criteria for the light and medium-duty fleet to gain similar petroleum reduction benefits. Passenger vehicles are not immune from over idling practices—running a stationary vehicle's engine to operate the heater in winter or air conditioning in summer, and waiting in drive-through restaurants all waste fuel. Drivers should be made aware of the best fuel savings practices as well as the disadvantages that idling can have, such as:

- For every two minutes a car is idling, it uses about the same amount of fuel it takes to go about one mile.
- Research indicates that the average person idles their car five to ten minutes a day.
- Idling gets ZERO miles to the gallon.
- If you are going to be parked more than 30 seconds, turn off the engine. Ten seconds of idling can use more fuel than turning off the engine and restarting it.[11]

The benefits of practicing reduced idling procedures that are mandated in the larger vehicle fleet can also be incorporated within the non-diesel light and medium-duty fleet through education (Eco Driving) and a statewide anti-idling policy formulated by DGS. This action also has the potential for petroleum reduction with minor and absorbable new costs.

Reduce Vehicle Miles Traveled (VMT)

Reducing the VMT of the State fleet provides a corresponding reduction in petroleum consumption. Through the Governor's Executive Order S-14-09, this action has been implemented and is well underway to eliminate 15 percent of the State vehicle fleet and 20 percent of the take home vehicle permits. By reducing all but the most mission critical vehicles, non-critical VMT will be eliminated. Additionally, reducing all but the most mission critical take home vehicle permits will further reduce the VMT for the State fleet and reduce petroleum consumption accordingly.

[10] http://www.arb.ca.gov/msprog/truck-idling/factsheet.pdf
[11] www.energy.ca.gov

The vehicles identified for reduction are considered excess and offer a tangible reduction in petroleum consumption through the elimination of non-mission critical VMT. And, as the oldest most fuel inefficient vehicles are being removed from the State fleet, the newer most fuel efficient vehicles will remain in use thereby increasing the fleet's overall MPG average. This action also benefits the reduction of greenhouse gas emissions and particulate emissions that the older fleet contributes. Further petroleum reductions will be seen as a result of fewer oil change services—typically requiring the renewal of five quarts of motor oil twice a year. The fleet reduction has targeted more than 3,200 light-duty non-emergency response vehicles for elimination and directed each agency to identify the oldest most fuel inefficient vehicles for disposal. It is estimated that approximately 10 percent of the vehicles being reduced do not contribute to petroleum consumption. However, of the remaining light-duty vehicles being removed from daily operation, the State can reduce as much as 1.9 million gallons of gasoline and 7,420 gallons of motor oil annually (See Table 2).

The use of Home Storage Permits that allow State vehicles to be stored at or near employee's homes is being revamped. Home Storage Permits help ensure that State vehicles are only taken home by State employees under approved policies. Unnecessary home storage of State vehicles contributes to unnecessary petroleum consumption. Tightening the process and including better oversight will prevent the unnecessary use of State vehicles and reduce petroleum consumption. The DGS has implemented a new process requiring each agency head to certify that the home storage permits they have issued are mission critical and in compliance with State law. By eliminating more than 1,600 Home Storage Permits the State can reduce as much as 393,527 gallons of gasoline and 2,016 gallons of motor oil annually (See Table 4).

Table 2 below quantifies the impact to petroleum consumption if both the vehicles and miles driven on those vehicles are eliminated.

Table 2 Potential Petroleum Reduction From 15 Percent Fleet Reduction

Three Typical Vehicle Types Targeted for Fleet Reduction[12]	MPG Rating[13]	Average MPG[14]	Annual VMT[15]	Annual Petroleum Consumption[16]	Potential Petroleum Reduction from Fleet Reduction[17] [18] (Annually)
1999 Chevrolet Cavalier 1998 Ford Taurus 1999 Dodge Ram 1500 Pick up	22 MPG 19 MPG 14 MPG	18.3 MPG	12,000	656 Gallons	1.9 million gallons gasoline 7,420 gallons motor oil

Table 3 Potential Petroleum Reduction Putting Mileage on Newer Vehicles

Model	MPG Rating	Annual VMT	Annual Fuel Consumption	Annual Cost @$3.00 per Gallon
1999 Chevrolet Cavalier	22	12,000	545.45	$1,636
2007 Ford Focus	26	12,000	461.54	$1,385
Number Change	4	0	(83.92)	($251.75)
Percentage Change	18.20%	0	(15.40%)	(15.40%)

Table 3 above notes that the vehicle reduction executed pursuant to the Governor's Executive Order S-14-09 provides an opportunity to achieve a 15 percent reduction in petroleum use per mile driven. The reduction will be achieved through right-sizing the fleet and putting business miles on newer, more efficient vehicles.

[12] Older vehicles currently in the State fleet and identified for reduction
[13] EPA combined city/highway ratings
[14] 22 + 19 + 14 = 55/3 = 18.3
[15] State Minimum Utilization Policy is 6,000 miles or used at least 80 percent of available work days in a six month period (12,000 miles annually)
http://www.documents.dgs.ca.gov/osp/sam/mmemos/MM06_06.pdf
[16] 12,000 miles/18.3 MPG (combined average MPG) = 656 gallons annually
[17] Based on 2,968 vehicles. Fleet reduction target is 3,298 light-duty non-emergency vehicles less 10 percent that are presumed disabled and not currently being driven 12,000 miles annually.
[18] 2,968 vehicles traveling 12,000 miles annually. Two oil changes annually x 5 quarts of motor oil = 29,680 qt/4 = 7,420 gallons of motor oil

Table 4 Potential Petroleum Reduction From 20 Percent Home Storage Permit Reduction

Three Typical Vehicle Types Remaining in State Fleet[19]	MPG Rating[20]	Average MPG[21]	Annual Take Home VMT[22]	Annual Petroleum Consumption[23]	Potential Petroleum Reduction from Home Storage Permit Reduction[24] (Annually)
2007 Ford Focus 2008 Chevrolet Impala 2007 Chevrolet Silverado	26 MPG 22 MPG 17 MPG	21.6 MPG	5,280	244 Gallons	442,372 gallons gasoline 4,532 gallons motor oil[25]

By adopting other actions, including improved operating policies and procedures, the State could reduce vehicle trips of its employees, thereby reducing petroleum consumption and ensuring the most efficient transportation choices for State business. Flexible work options such as telecommuting, teleconferencing, and videoconferencing will reduce petroleum consumption. Telecommuting and other types of electronic communications have the potential to reduce State fleet VMT to the extent that a trip involves State vehicles.[26]

Telecommuting and video conferencing can play a role in reducing the need for personal transportation on State business. Improving travel services that the State uses through vendors like Southwest Airlines (SWA), Enterprise Rent-a-Car, and American Express could make travel more efficient. Airlines could calculate emissions for routes between cities frequently traveled to on State business. This data could be used by the State to enable more strategic travel planning. City destinations could be selected that require less auto travel to meeting locations. Enterprise Rent-a-Car, Alamo, and National Car Rental, currently under contract with the State, operate nationally 73,000 flex-fuel cars and trucks that can use E85, along with 4,000 hybrid cars.

The DGS is collaborating with the States' rental car, airline, and lodging partners on collectively reducing petroleum consumption.

In the area of transportation:

1. Enterprise vehicles are fuel efficient and obtain at least 28 mpg.
2. Enterprise recently opened up a "green" branch at their 12th and E Sacramento location. There are various other "green" branches located

[19] Newer vehicles currently in State fleet and not targeted for fleet reduction
[20] EPA combined city/highway ratings
[21] 26 + 22 + 17 = 65/3 = 21.6
[22] Estimated mileage associated with taking State vehicle home: 20 round trip miles per day x 22 working days per month x 12 months = 5,280 miles per vehicle
[23] 5,280 miles/21.6 (combined average MPG) = 244 gallons annually
[24] Based on 1,813 non-mission critical Home Storage Permits eliminated as of April, 2010
[25] Based on 2 oil changes annually (5 quarts of motor oil x 1,813 vehicles x 2 ÷ 4 (quarts per gallon))
[26] *California State Vehicle Fleet Fuel Efficiency Report: Volume 1*, 2003

throughout California: Bay Area, San Francisco, Oakland, Los Angeles, San Diego, Fresno, and many more. At these "green" branches, 70 percent of their fleet is fuel-efficient vehicles and all vehicles obtain 28 mpg or more.

3. Promote the use of hybrid, biodiesel, E85, and other alternative fuel vehicles.
4. SWA has retrofitted their fleet with winglets and engine wash. Based on SWA current fleet of 737-700 aircraft we are estimating an annual savings of 134 million pounds of carbon dioxide annually. Every pound of jet fuel saved reduces carbon dioxide emission by 3.1 pounds.
5. Promote use of public transportation or bicycling as another form of transportation.

The DGS is including webcasting and teleconferencing as alternatives to travel and is encouraging departments to plan "green" meetings or use the services of the DGS Meetings and Conference unit. These alternatives to driving can provide significant petroleum reductions.

Moreover, the State has long held to a mileage threshold as a measurement to justify its fleet assets. This threshold, which was raised in 2006 at the request of the State Auditor and the Senate Select Committee on Government Cost Control, requires State agencies to operate passenger vehicles at least 12,000 miles annually.[27] In a 2004 Bureau of State Audit's (BSA) report,[28] the BSA determined that certain employees were being allowed to misuse State vehicles for personal commuting for the specific purpose of meeting the State's mileage criteria. The Governor's Executive Order S-14-09 will encourage pooling of vehicles and increase utilization of remaining vehicles – reducing misuse for this purpose.

The Committee recommends that DGS revisit the State vehicle utilization policy to strike a better balance between the need to justify fleet assets and the need to reduce petroleum consumption. The DGS will work with the State Mobile Equipment Council[29] to develop recommendations for a new statewide utilization policy that takes into account conservation best practices along with determining the need for fleet assets.

Extend Oil Change Intervals

A recent two-year study conducted by the Department of Toxic Substances Control for the CIWMB *Evaluation of High Efficiency Oil Filters in the State Fleet* examined motor oil longevity in a variety of vehicles ranging from passenger cars

[27] http://www.documents.dgs.ca.gov/osp/sam/mmemos/MM06_06.pdf
[28] http://www.bsa.ca.gov/pdfs/reports/I2004-2.pdf
[29] The State Mobile Equipment Council, established under Government Code Section 14723, advises DGS on fleet policy and is the focal point for the dissemination of State fleet information among State agencies.

to large diesel engine busses.[30] The 120 vehicles studied accumulated a combined total of nearly 3 million miles. The test resulted in three major findings.

Finding #1: For any type of vehicle, oil change intervals can be simply and safely extended beyond their current level to the maximum mileage recommended by the vehicle/engine manufacturer. A fleet managers' survey showed an average oil change interval of 4,460 miles for passenger vehicles before the study. This is well below the manufacturers' recommended 7,500 miles for these vehicles. The oil analysis results showed that oil change intervals can be extended beyond warranty limits to 10,000 miles.

Finding #2: Fleet managers can further extend oil change intervals by using higher quality oil and by using oil analysis. The study found that higher quality oils can extend the life of engine oil especially those with higher amounts of additives. Routine oil analysis indicates that many current synthetic oils effectively protect engines from wear with oil change intervals at 15,000 miles.

Finding #3: In larger engines, high efficiency oil filters are effective, economical, and will further extend oil change intervals. High efficiency oil filters remove small damaging particles, such as dirt and soot, which accumulate rapidly in large diesel engine oils. Not only does the motor oil last longer because it is cleaner, engine wear is also reduced.

CIWMB Used Oil Campaign: "The 3,000 Mile Myth"

About the Campaign:

- The mantra that drivers should change their motor oil every 3,000 miles is not always the case – it's a myth.
- Many automakers recommend oil changes at 5,000, 7,500, or even 10,000 miles depending on your vehicle's model, make, and driving conditions.
- Research shows that nearly 75 percent of California drivers change their motor oil more often than recommended by their automakers.

Environmental Impacts:

- Used motor oil poses a great risk to the environment. Many environmental problems are caused by improper disposal of used motor oil because it is insoluble and contains heavy metal and toxic chemicals.
- Only 59 percent of that oil is recycled.

[30] http://www.ciwmb.ca.gov/publications/UsedOil/2008020.pdf

- Used oil that is not recycled often finds its way into California's waterways.
- One gallon of used oil pollutes one million gallons of water.

Industry impacts:

- Advances in motor vehicles and oil make it possible to go much longer between oil changes without harming a car's engine.
- Ford Motor Company recommends that motorists change the oil every 7,500 miles for 2007 or newer vehicles.

Extended oil change intervals, coupled with the use of synthetic and/or re-refined oil, have the ability to greatly reduce the State fleet's use of petroleum. Through the use of oil analysis, vehicles can be safely operated while maintaining an extended drain interval. This results in both an economical and environmental benefit for the State. Less petroleum will need to be purchased and less used oil will enter the waste stream.

The DGS, in conjunction with the State Mobile Equipment Council, will recommend changes to the State preventative maintenance policy and incorporate extended oil change intervals—thus decreasing the petroleum consumption in the State fleet. This is a cost savings solution.

By-Pass Oil Filters

In the CIWMB report *Evaluation of High Efficiency Oil Filters in the State Fleet,* by-pass or high-efficiency oil filters proved a valuable tool in extending the oil change intervals in larger heavy-duty vehicles.[31]

Used oil is the largest volume of hazardous waste generated in California. If the oil change intervals could be extended by using extended life oil filters, additional cost savings and a decrease in waste oil generation could be achieved.[32]

A by-pass oil filter is an added system designed to be used with a full flow oil filter to remove fine contaminant particles, such as dirt and metal particles as small as one micron or less. A fleet maintenance facility can generate thousands of gallons of used oil each year from routine engine maintenance. By-pass oil filtration systems extend oil life in vehicles reducing purchase and disposal costs of oil while still maintaining optimal operating conditions.[33]

As with synthetic oils, by-pass oil filters are more expensive than traditional oil filters. However, as with synthetic oils, the initial cost is far outweighed by the

[31] http://www.ciwmb.ca.gov/publications/UsedOil/2008020.pdf
[32] *California Environmental Protection Agency*, News Release, 2006
[33] *California Department of Toxic Substance Control*, 2003

long term savings. Ultimately, less oil will need to be purchased and less used oil will go into the waste stream, thereby helping the State meet the petroleum reduction goals.

The DGS will work with those State agencies that could benefit from the use of efficient by-pass oil filters to achieve best pricing through leveraged purchasing.

Petroleum Reduction from Using Synthetic Oils

In July 1996, Consumer Reports published the results of a two-year motor oil test using a fleet of 75 New York taxi cabs that found no noticeable advantage of synthetic oil over regular oil.[34] In their article, they noted that "Big-city cabs don't see many cold start-ups or long periods of high speed driving in extreme heat. But our test results relate to the most common type of severe service — stop-and-go city driving."

The *Consumer Reports* study stated that synthetic oil is "worth considering for extreme driving conditions: high ambient temperatures and high engine load, or very cold temperatures." This research was criticized by some because most engine damage appears to be caused by cold starts, and their research method may not have included enough cold starts to be representative of personal vehicle use.

Other studies, however, have shown significant cost savings with synthetic oil use.[35] A 1981 study measured increases in fuel economy of between 2 and 5 percent when using part- and full-synthetic Poly-Alpha-Olefin type oils. The original drain interval of 5,000 miles compared to 15,000 miles for extended drain intervals offsets the increased crude oil equivalent energy cost to manufacture the synthetic oils. The net economic savings will be increased further from three additional factors: labor savings for skipped oil changes, reduced engine wear, and higher vehicle availability in the field.

Extended drain intervals can be achieved more reliably with synthetics because the physical properties make them resistant to degradation. Patter, et al, showed that several important physical properties are superior when compared to traditional mineral oils.[36] Synthetics were shown to have as little as 8.8 percent volatiles (chemicals prone to evaporation), compared to as much as 25.7 percent for comparable mineral oils, thereby greatly reducing the potential for evaporative

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[34] "The Surprising Truth about Motor Oils". *Consumer Reports*: 10–13. July 1996

[35] Campen, M. (1981). A chemical introduction to “synthetic automobile engine oils” - Their sources, classes, advantageous properties, and fuel saving, cost/performance benefits, in Synthetic Engines Oils, Progress in Technology series 22, Society of Automotive Engineers, Warrendale, PA, pp. 1-10.

[36] Patter, R. L., M. Campen, and H. V. Lowther. (Eds. (1981). Synthetic automotive lubricants - performance and protection, SAE paper 871273, in Proceedings of the 4th International Pacific Conference, Melbourne, Australia.

losses. Improvements were also noted in viscosity under high temperature and high shear conditions. These physical properties led to reduced oil breakdown and decreased oil losses.

Although synthetic oils cost more than regular oil, the long term savings associated with their use and extended oil drain intervals will ultimately save the State money and help to reduce the State's dependence on petroleum.

Petroleum Reduction from Using Re-Refined Oil

Re-refined motor oil is used motor oil that undergoes an extensive re-refining process to remove contaminants – such as dirt, water, fuel, and used additives – through vacuum distillation. The oil is then hydro-treated to remove any remaining chemicals to produce a "good-as-new" base oil, capable of meeting the physical and compositional properties, in addition to the contaminants and toxicological properties, defined under the American Society for Testing and Materials. This base oil is then sold to blenders who add additive packages to produce lubricants such as motor oil, transmission fluid, and grease. The main difference between re-refined and virgin motor oil products is that re-refined oil reduces the impact on the environment.

Re-Refined Lubricants are Safe to Use

Lubricants made from re-refined base stocks must undergo the same testing and meet the same standards as any other lubricants to receive the certification of the American Petroleum Institute (API). Vehicle and engine manufacturers such as Ford, General Motors, Chrysler, and Detroit Diesel have issued warranty statements that allow the use of re-refined oil as long as it meets API standards. Many government and private fleets have used re-refined lubricants in their vehicles for years and report no difference in performance from other lubricants.

Re-Refined Oil Offers Advantages

Buying re-refined oil reduces our dependence on foreign oil, reduces the depletion of natural resources, eliminates waste material, and helps create jobs.

Common Facts about Re-Refined Oil

- Preserves a non-renewable resource – oil.
- Demonstrate a commitment to a cleaner environment through recycling and proper waste management.
- Helps protect the environment against pollution.

- State agencies have maintained their fleets at State maintenance shops using re-refined oil for more than a decade. In total, State agencies annually purchase approximately 189,890 gallons of re-refined oil.[37]
- If all used motor oil generated by the public was collected and re-refined, it would provide enough oil for more than 8 million cars each year.

Common Myths about Re-Refined Oil

- **Myth #1: Re-refined oil is not of equal or sufficient quality compared to virgin oil.** Reality**:** Re-refined oil is the same quality as virgin oil. Oil does not break down; it simply gets dirty, additives become depleted and chemicals break down. The re-refining process cleans up the used oil and adds additives.

- **Myth #2: Re-refined oil will void the warranty on new cars.** Reality**:** New-car and new-engine manufacturers require that API-certified oil be used to keep a warranty intact. Since re-refined oils earn API certification, the warranty will not be voided.

- **Myth #3: Re-refined oil may be more expensive than virgin oil.** Reality: Since re-refined oil is part of an emerging industry, some products may have higher prices than products from the more established virgin-oil industry. This is not always the case though, as local market considerations may affect prices.

- **Myth #4: There are gaps in the geographic availability of re-refined oil.** Reality: As the market grows for re-refined oil, so will the availability. As in any growing market, assured demand will encourage vendors to make increased supply available.

Health and Safety Code Section 25250, Public Contract Code Section10406, 12203, and 12209 (e), promote State agencies to purchase recycled products including re-refined motor oil.[38] The practice of using re-refined oil helps to

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[37] www.ciwmb.ca.gov

[38] California Public Contract Code Section 10405-10409
http://www.leginfo.ca.gov/cgi-bin/displaycode?section=pcc&group=10001-11000&file=10405-10409
California Public Contract Code Section 12209 (e)
http://www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=99217312516+0+0+0&WAISaction=retrieve
California Health and Safety Code Section 25250-25250.28
http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=25001-26000&file=25250-25250.28

displace the consumption of petroleum products and should be continued by State agencies servicing their own vehicles and expanded to commercial vendors servicing the State fleet.

The Department of Transportation (CalTrans) has done extensive testing on lubricating products and has found that in some heavy-duty truck applications the use of synthetic oils offer improved performance and more options. State agencies doing in-house preventative maintenance services, including CalTrans and DGS, have successfully used re-refined oil in their passenger vehicle fleets for over a decade.

The Committee recommends that the practice of utilizing re-refined oil continue as a best practice and that synthetic oils also be included as a companion tool to displace petroleum in the State fleet where most applicable. The DGS, in conjunction with the State Mobile Equipment Council, will recommend a policy to include the best practices for using both re-refined and synthetic lubricants to allow for flexibility in meeting individual department's fleet needs. And, to use the State's purchasing power to have commercial service providers use these products in the State fleet as well, expanding the use of both products and displacing the use of petroleum.

Establish Commercial Preventative Maintenance Contracts

Proper vehicle preventative maintenance practices offer an easy and effective way to reduce the amount of fuel consumed and can help to reduce the greenhouse gases generated by the burning of petroleum. The following is a list of basic maintenance practices which can be utilized by State drivers.

- **Maintain vehicle efficiency** - Regular maintenance as prescribed by the vehicle owner's manual will help your vehicle achieve its best fuel economy.

- **Use the proper tire and maintain the proper tire pressure** - When replacing your tires, replace them with the same size and rating as the tires that were on your vehicle when it was new. Also, be sure to maintain the tire pressure recommended by the manufacturer.

- **Check the weather and then check your tires** - Tire pressure changes an average of 1 pound per square inch for every 10 degrees. A sudden cold snap or heat wave may mean it is time to check tire pressure. Properly inflated tires run cooler, last longer, and improve fuel economy.[39]

[39] www.ecodriving.com

- **Tighten your gas cap** - Today's automobiles have been engineered to significantly reduce evaporation emissions compared to vehicles from the past. However, gasoline evaporates relatively easily and a loose gas cap can be a quick escape route for gasoline. In order to eliminate evaporation, be sure to tighten your gas cap after filling up.

- **Refuel in the evening and never top off** - Putting fuel into a vehicle releases volatile organic compounds (VOCs) into the air. Throughout the day, these VOCs mix with oxides of nitrogen (NOx), 'cook' in the summer sun, and form ground-level ozone. Refueling in the evening decreases the opportunity for VOCs to create ozone.[40]

The State fleet is maintained through a network of commercial vendors pre-approved by DGS, as well as by State agencies at their own State operated maintenance shops. By leveraging the State's purchasing power with the commercial sector, public-private partnerships can further the use of synthetic and re-refined oil. Further, by redefining the current State fleet preventative maintenance schedules, extended oil changes can replace outdated policies and practices.

The DGS will update the State preventative maintenance policy to better reflect vehicle manufacturers' recommended schedules and, pursue leveraged pricing agreements with commercial providers to follow State approved schedules and extend oil change and other fluid change intervals—reducing petroleum consumption. This no-cost solution also has the potential for additional cost savings through better pricing for preventative maintenance services.

Establish a Statewide Contract for Low-Rolling Resistance Tires

Reducing the rolling resistance of tires translates into a reduction in total fuel consumption because less fuel energy will need to be sent to the engine in the first place. The effect on total fuel consumption will depend on a number of factors, including the efficiency of the engine and driveline as well as the amount of energy used by accessories.

For most passenger vehicles, a 10 percent reduction in rolling resistance will lead to a 1 to 2 percent increase in fuel economy and a proportional reduction in fuel consumption.[41]

[40] www.sparetheair.com
[41] "Tires & Passenger Vehicle Fuel Economy", *Committee for the National Tire Efficiency Study and Transportation Research Board,* 2006

In 2003, the CEC published the *California State Fuel-Efficient Tire Report* that stated the potential fuel savings from fuel-efficient tires is substantial.[42]

As stated above, the simple action of ensuring that low-rolling-resistance tires are available and being procured for the State fleet can be an effective method for achieving the petroleum reduction goals. The DGS will investigate the potential for creating a statewide contract that includes low-rolling resistant tires for the State fleet.

Vehicle Contract Specifications for On-board Monitors

Other fuel saving tools identified by the Committee include: fuel economy, oil condition, and tire pressure on-board monitors in passenger vehicles. Many of these devices currently come on the vehicles already available on State contract. By specifying these items, DGS can help ensure this advanced technology becomes available across a greater cross section of the State fleet.

Because tire pressure plays such a significant role in the fuel economy of a vehicle and due to the fact that drivers do not typically check their tire pressure routinely, having a standard low tire pressure monitor can assist in petroleum savings. Drivers can help maximize fuel economy by having low tires attended to much sooner when alerted to do so by a tire monitor rather than not knowing there is a problem.

Fuel economy monitors on vehicle dashboards are also becoming more commonplace in State vehicles. By specifying this option, State drivers could be trained to monitor their driving habits to maximize the fuel economy of the vehicles they drive.

Lastly, vehicle oil condition monitors are being employed in vehicles as a means to alert drivers when their engine's oil requires changing. Because motor oils are now more sophisticated and engine technology more refined, oils do not need to be replaced as frequently as they once did. Having an oil monitor helps extend oil change intervals thereby displacing petroleum.

Further, combined with an education campaign and through preventative maintenance policy revisions, State drivers can take more control over their use of petroleum by monitoring their fuel economy in real time, having low tire pressure attended to as soon as is indicated, and by extending the oil change when alerted to do so by the engine's computer. Since many of the vehicles offered on the State's contract already have these on-board monitoring systems, the Committee sees their routine inclusion on vehicle specifications as prudent and a no cost solution to reducing petroleum.

[42] http://www.energy.ca.gov/reports/2003-01-31_600-03-001CRVOL2.PDF

Purchase Hybrid, Plug-in Hybrid and All Electric Vehicles

Since the inception of the federal Energy Policy Act of 1992 (EPAct), California's State fleet has been required to purchase a percentage of its new fleet acquisitions as alternative fuel vehicles. Seventy-five percent of the light-duty (non-emergency type) vehicles purchased annually must be capable of operating on alternative fuels.[43] Hybrids do not meet EPAct's alternative fuel vehicle rule, therefore, California can only acquire hybrid vehicles as a portion of its acquisitions annually if they meet the business needs of State agencies.

There is an opportunity, however, that California can take advantage of by way of using EPAct credits. Because California has banked credits for EPAct compliance over many years, we can cash in those credits and purchase high-fuel economy hybrids in place of purchasing alternative fuel vehicles. This strategy is allowable under EPAct's rules. Hybrids typically get high fuel economy that will reduce petroleum consumption immediately.

The cost of hybrid vehicles is higher than conventional or alternative fuel vehicles; however, the fuel economy savings—especially during times of higher fuel costs—can help to offset some of the additional expense. By purchasing hybrid vehicles, the State fleet can allow the alternative fueling infrastructure to continue to expand to better accommodate the State alternative fuel vehicles over time. The DGS will work with State agencies to purchase hybrid vehicles and use banked EPAct credits to offset the federally required purchase of alternative fuel vehicles until such time as the credits are exhausted, thereby allowing time for the commercial alternative fueling infrastructure to grow.

Over the next two years, California should see a host of commercial offerings of plug-in hybrids and all-electric vehicles. These vehicles will likely meet EPAct requirements and offer the State more options to both reduce petroleum and meet its business needs. The DGS is committed to securing contract opportunities for these emerging technologies as soon as they become commercially available. In the mean time, the DGS is working with the CEC, ARB and Sacramento Municipal Utility District on piloting advanced prototype plug-in hybrid electric and all electric vehicles to determine their effectiveness and infrastructure needs to better ensure widespread adoption.

Plug-in Hybrid Conversions

Retrofitting hybrid vehicles as plug-in hybrid electric vehicles (PHEVs) can help bridge the gap between current hybrid technology and the emergent higher-mileage plug-in technology due to arrive shortly. In the CEC's 2008-2009

[43] http://www1.eere.energy.gov/vehiclesandfuels/epact/

Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program, $3.5 million dollars has been proposed for plug-in hybrid retrofits for public fleets.[44] The DGS has taken advantage of this funding to have 50 hybrids converted to PHEVs as well as retrofitted with GPS/telematic devices to monitor the fuel savings and vehicle's location. This demonstration project, supported by AB 118—2007 funding, will enable State vehicles to achieve a much higher mile per gallon average and have vital vehicle data transmitted to DGS, CEC and ARB for review. The Department of Energy's Idaho National Laboratory is also a partner in this pilot and has been studying the DGS' PHEV pilot fleet as well. Lessens learned from this pilot are expected to provide policy makers with information to better understand the capabilities of PHEVs and how they may or may not be suitable to meet State business needs.

Alternative Fuel Infrastructure

Alternative fuels are any fuels other than standard gasoline and diesel. Fuel types include CNG, biodiesel, electric, ethanol, liquefied petroleum gas (propane), methanol and fuel cells. Some alternative fuels, like E85 or B20, which are traditional fuels blended with ethanol or biodiesel, do not require major changes to the engines using the fuel. Other fuels, like CNG and electricity, require special vehicles designed to use them. For the purposes of displacing or reducing petroleum, the State should increase its use of the following alternative fuels:

- **Electricity** – Electric vehicles (EVs), utilize batteries as an energy storage device and are expected to make a resurgence into the market place by 2010 or 2011. Once commercially available, the State will begin making all electric vehicles a part of the fleet where their drivability requirements match with State agencies' business needs. The DGS is already making plans to take advantage of electrical charging infrastructure from past electric vehicle programs such as EV Sacramento that included over 100 charging stations located in public and private parking facilities throughout the Sacramento area. Plans are being made to upgrade the existing infrastructure to accommodate the next generation chargers and expand charging stations. State and federal funding sources will be sought to offset the cost of the electric infrastructure.

- **Biodiesel** – a replacement diesel fuel blended with petroleum based diesel. The percentage of biodiesel is specified following the letter "B". So, B5 contains 5 percent biodiesel and 95 percent petroleum diesel, B20 contains 20 percent biodiesel and 80 percent petroleum diesel.

[44] http://www.energy.ca.gov/2009publications/CEC-600-2009-008/CEC-600-2009-008-CMF.PDF

In California there are biodiesel fueling sites mainly dispensing B5. CalTrans is in the process of using B20 biodiesel in their fleet and will utilize their own tanks/pumps.

Other State agencies that utilize diesel equipment can take advantage of the research and testing that CalTrans has already completed should they want to convert their diesel tanks to biodiesel.

- **Ethanol** – Like biodiesel, ethanol blends use the letter "E" followed by a number to specify the amount of ethanol blended with regular gasoline. Blends up to E85 are available. Regular unleaded gasoline already is mixed with 5-10 percent ethanol.

  There are few commercial ethanol stations operating in California making widespread availability for the State E85 fleet challenging. This lack of availability has caused the DGS, CalTrans, and CHP to install their own E85 fuel dispensers to ensure their respective fleets have some access to this alternative fuel. This effort is costly and cannot provide enough saturation in a State the size of California to accommodate all the State's E85 fleet. More commercial E85 fueling infrastructure is needed to fill this gap. Commercial infrastructure is the preferred solution as it accommodates not only State vehicles but the estimated 400,000 E85 vehicles being driven by the general public as well. As more commercial E85 stations come online they will directly impact the displacement of petroleum going forward in the State fleet. As one way of ensuring these future proposed stations help meet the State's fleet needs, the DGS is working with the CEC and Voyager to create overlay mapping of those commercial stations currently being used by the State's flex fuel fleet where no E85 is available. This information can be useful in locating future E85 sites that are in close proximity to the State fleet's existing fueling patterns. According to the CEC 2010-2011 draft AB 118 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program, there are too few ethanol fueling facilities in California, therefore the CEC plans to invest $8.5 million to increase that total to 183 stations in FY 2010-2011.[45] Further, E85 investment by the CEC is expected in the coming years of the AB 118 program to assist the commercial sector meet the latent demand for E85.

- **Renewable Gasoline** – The DGS has met with San Diego's Sapphire Energy to possibly demonstrate green crude produced gasoline. Sapphire has built a revolutionary platform using sunlight,

[45] http://www.energy.ca.gov/2010publications/CEC-600-2010-001/CEC-600-2010-001-SD-REV.PDF

CO^2, photosynthetic microorganisms, and non-arable land to produce renewable, 91 octane gasoline that conforms to ASTM standards. This algae based gasoline could prove to be a highly valuable tool in the State's arsenal to reduce petroleum consumption.

Policy Reform

The impacts of some State fleet policies negatively impact reducing petroleum consumption in the fleet. A multiple of often overlapping State and federal policies intended to lower particulate emissions, reduce petroleum consumption or green house gas emissions, or hold expenditures in check, have evolved over decades independent of one another. This has resulted in some State fleet policies having unintended consequences.

The DGS will conduct a comprehensive review of State and Federal fleet related statutes, Executive Orders, DGS Management Memos, the State Fleet Handbook, and the State Administrative Manual to identify gaps or conflicts. The DGS will then revisit any administrative policies and/or make recommendations for clean up legislation, if necessary. This review can provide a more holistic approach to managing the fleet and reducing petroleum consumption.

CONCLUSION

While petroleum will remain an important component of transportation fuels into the future, using it more efficiently, increasing the availability of alternatives, and reducing the overall need to drive, will reduce the State's dependence on unpredictable and unstable foreign sources of energy, expand its economic opportunities, and improve Californians' quality of life. The individual pursuit of each of these components can seem daunting.

By taking a portfolio approach and utilizing the low cost solutions currently available, the Committee believes that reducing 2003 petroleum consumption levels is achievable. The cornerstone to achieving success is the ability to measure fuel consumption accurately. The implementation of FAMS will play a key role and, therefore, the tracking and reporting of accurate fleet and fuel data into FAMS by State agencies must be embraced by department heads to achieve success. Even with such a commitment measuring success in terms of capturing the amount of alternative fuels put through the State fleet will remain challenging. This is due to the commercial sector's inaccuracy in reporting alternative fuel purchases to consumers.

The budget crisis has focused State agencies on cutting expenses and right-sizing their fleets. This effort will lead to immediate reductions in petroleum use. The DGS is actively working with State agencies to identify transportation

efficiencies and finding cost effective alternatives to meeting the State's travel needs—solutions that will translate into sustainable petroleum reductions as they become common business practices going forward,

Appendix A
Statutory Authority

Public Resources Code §25722.8 (a) On or before July 1, 2009, the Secretary of State and Consumer Services, in consultation with the Department of General Services and other appropriate State agencies that maintain or purchase vehicles for the State fleet, including the campuses of the California State University, shall develop and implement, and submit to the Legislature and the Governor, a plan to improve the overall State fleet's use of alternative fuels, synthetic lubricants, and fuel-efficient vehicles by reducing or displacing the consumption of petroleum products by the State fleet when compared to the 2003 consumption level based on the following schedule:

(1) By January 1, 2012, a 10-percent reduction or displacement.
(2) By January 1, 2020, a 20-percent reduction or displacement.

(b) Beginning April 1, 2010, and annually thereafter, the Department of General Services shall provide to the Department of Finance and the appropriate legislative committees of the Legislature a progress report on meeting the goals specified in subdivision (a). The Department of General Services shall also make the progress report available on its Internet website.

Appendix B
Reference Material and Public Comments

California State Fuel-Efficiency Tire Report: Volume 1
California Energy Commission
http://www.energy.ca.gov/reports/2003-01-31_600-03-001F-VOL1.PDF

California State Fuel-Efficiency Tire Report: Volume 2
California Energy Commission
http://www.energy.ca.gov/reports/2003-01-31_600-03-001CRVOL2.PDF

California State Vehicle Fleet Fuel Efficiency Report: Volume 1, *California Energy Commission*
http://www.energy.ca.gov/reports/2003-05-01_600-03-003-VOL1.PDF

California State Vehicle Fleet Fuel Efficiency Report: Volume 2, *California Energy Commission*
http://www.energy.ca.gov/reports/2003-05-12_600-03-004-VOL2.PDF

Reducing California's Petroleum Dependence, *California Energy Commission*
http://www.energy.ca.gov/reports/2003-08-14_600-03-005.PDF

State Alternative Fuels Plan, *California Air Resources Board, California Energy Commission* http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF

California Action Plan for Transportation Energy Security
http://calstep.weststart.net/CalSTEP_Action_Plan_Summary.pdf

Bio-energy Action Plan for California
http://www.energy.ca.gov/2006publications/CEC-600-2006-010/CEC-600-2006-010.PDF

Climate Action Team Proposed Early Actions to Mitigate Climate Change in California, *California Environmental Protection Agency*
http://www.climatechange.ca.gov/climate_action_team/reports/2007-04-20_CAT_REPORT.PDF

Options to Reduce Petroleum Fuel Use, Second Edition, *California Energy Commission* http://www.energy.ca.gov/2005publications/CEC-600-2005-024/CEC-600-2005-024-ED2.PDF

Alternative Fuel Use among California Fleets: Current Use, Barriers, and Opportunities, *California Energy Commission*

http://www.energy.ca.gov/2007publications/CEC-600-2007-006/CEC-600-2007-006.PDF

Evaluation of High Efficiency Oil Filters in the State Fleet, *by the Department of Toxic Substances Control for the California Integrated Waste Management Board*
http://www.documents.dgs.ca.gov/ofa/FAMS/evaloilfilters.pdf

State of California Fleet Handbook, *Department of General Services Office of Fleet and Asset Management*
http://www.documents.dgs.ca.gov/ofa/handbook.pdf

California Public Contract Code Section 10405-10409
http://www.leginfo.ca.gov/cgi-bin/displaycode?section=pcc&group=10001-11000&file=10405-10409

California Public Contract Code Section12209 (e)
http://www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=99217312516+0+0+0&WAISaction=retrieve

California Health and Safety Code Section 25250-25250.28
http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=25001-26000&file=25250-25250.28

Petroleum Reduction Advisory Committee Website, “Public Comments”
http://www.ofa.dgs.ca.gov/AB236/publiccom.htm

Federal Energy Policy Act (EPAct)
http://www1.eere.energy.gov/vehiclesandfuels/epact/

Governor’s Executive Order S-14-09
http://gov.ca.gov/executive-order/12868/