

# **A CASE STUDY: THE SANTA ROSA CITY GARAGE UTILIZING ENVIRONMENTALLY PREFERABLE PURCHASING**

## **Background**

A demonstration project using the Environmentally Preferable Purchasing (EPP) Draft Policy in the City Garage was suggested by the City Manager and the Deputy City Manager. The Garage was chosen, because it presented the most opportunities and challenges for the implementation of the EPP Policy. On October 31, 2006 the EPP Policy was formally presented to the Garage staff. Each staff member was given a copy of the Policy to follow and the most pertinent information in the Policy was highlighted, explained, and additional resources were made available.

Following the introduction of the EPP Policy an inventory of the products used in the Garage was undertaken. The purpose of the inventory was to find alternative products and document the environmentally preferable purchases already being used in the Garage. The Fleet Superintendent, Jon Merian was instrumental in identifying product alternatives that were environmentally preferable, cost effective, and met performance standards.

The Garage now uses the highest recycled content oil available on the market that meets Original Equipment Manufacturer (OEM) standards. Recycled antifreeze, re-treaded tires when available and cost effective, chemical free solvents for parts cleaning, and alternative fuel vehicles are also used. The Garage has recently switched to extended-life antifreeze, synthetic automatic transmission fluid, and three trucks have been converted to biodiesel. The new policy has also sparked interest in the following products and practices: conversion of more vehicles to biodiesel, standardization of the vehicle fleet, synthetic engine oil, extended oil life with vehicle retrofit, and cleanable air filters. The City's Fleet Superintendent is actively researching new products and practices.

## **Vehicles**

The City's fleet of alternatively fueled and clean air vehicles is growing. As of October 2006, the City of Santa Rosa had 84 Clean Air Vehicles. Many of these vehicles were purchased as a result of grant funding from the Bay Area Air Quality Management District, Transportation for Clean Air, the State of California, PG&E, and General Motors. The October 2006 inventory is listed below.

<b><u>Quantity</u></b>	<b><u>Vehicle Type</u></b>
1	Compressed Natural Gas/ Gasoline Van
1	Hybrid Pick-up Truck
5	Compressed Natural Gas Vehicles
5	Compressed Natural Gas Bus/ Shuttle Bus
6	Compressed Natural Gas Light Trucks
6	Compressed Natural Gas Vans
6	Electric Off-Road Utility Vehicles
6	Electric Vehicles: Sedans, Compact Pick-up Trucks, Small Utility Service Vehicles
7	Compressed Natural Gas Medium & Heavy Trucks
8	Compressed Natural Gas/ Gasoline Light Trucks
8	Propane Trucks: Light, Medium, and Heavy Duty
25	Hybrid Vehicles

The City also has three biodiesel test vehicles running on B5 (5% biodiesel, 95% diesel). The Garage is moving towards B20 (20% biodiesel, 80% diesel) biodiesel, but must work with vehicle warranties and the California Air Recourses Board (CARB) standards. The B5 biodiesel test vehicles

include: one medium duty and two light duty work trucks. These trucks have performed at the same or an improved level as compared to those running on 100% diesel. As a result of using biodiesel drivers of the B5 test vehicles have indicated an increase in vehicle mileage. The Fleet Superintendent would like to expand the biodiesel fleet. There are approximately 200 diesel vehicles in the fleet that have the potential to be converted to biodiesel.

## **Products**

### **Currently Used Products & Practices**

The Garage has continually made strides to reduce waste, reduce toxicity, save money, and protect the health of employees. Below is an annotated list of effective products the Garage currently uses, has used in the past, and that meet the standards set by the EPP Draft Policy.

#### **Parts Washing**

In 2004, the City switched to an aqueous- (water-) based cleaner that does not contain volatile organic compounds (VOC's). The water-based cleaner is less hazardous to the user than their petroleum-based counterparts. They clean by using a surfactant (such as soap or detergent) to remove oil and greases from parts. This process reduces the risk of exposure to workers and is better for the environment.

Performance: The automated system saves time and money. The new technology no longer requires regular maintenance from outside contractors. The mechanics can maintain and operate the new parts washing machine, saving the City approximately \$10,000 a year.

#### **Recycled Antifreeze**

Recycled Antifreeze is used in all City vehicles. The City of Santa Rosa uses a recycling service for all waste antifreeze. This solves a waste disposal problem while providing a high quality reformulated product to use in vehicles.

Performance: Extensive testing indicates that when properly formulated, recycled coolants meet or exceed nationally recognized performance standards from the American Society for Testing Materials (ASTM) and the Society of Automotive Engineers (SAE).

#### **Recycled Motor Oil**

The City purchases the highest recycled content motor oil available on the market. The used motor oil is then recycled and re-refined into a base stock for lubricating oil. This process is very similar to the refining of crude oil.

Performance: Recycled motor oil is of as high a quality as virgin oil. Using re-refined oil takes 50 to 85 percent less energy than refining crude oil (American Petroleum Institute).

#### **Remanufactured Auto Parts**

Starters (rebuilt locally), alternators (rebuilt locally), fuel pumps, water pumps, and steering pumps are removed and returned to the vendor to be rebuilt, when possible.

Performance: Remanufactured auto parts perform as well as new parts. Using remanufactured parts ensures the correct part for the repair and the remanufacturing process often takes less time than ordering a new part.

### **Re-treads**

When vehicle tires have become worn, many can be refurbished with new tread. Re-treading bonds new tread to the tire body using a process very similar to the manufacture of a new tire. In 2006, the City re-treaded 344 tires locally. Re-tread tires are approximately 40% of the cost of a new tire and can be re-treaded 2-3 times. Re-treading a truck tire uses only seven gallons of oil, compared to the 22 gallons used to make a new one. Each year, re-tread tires save more than 400 million gallons of oil in North America and also helps divert thousands of scrap tires from disposal and tire dumps.

Performance: The improved technology in re-treads has led to insignificant failure rates when compared to new tires. In fact, failures in both re-tread and new tires are most often caused by overloading, under-inflation, or other abuse.

### **Vehicle Battery Test Reuse Program**

The vehicle batteries are returned to the vendor when they are removed from a vehicle due to poor performance. The batteries are then put through a recharge and test process; if the batteries are tested and found usable, they are returned free of charge and installed in a vehicle as needed. If the batteries are found to be unusable they are recycled.

Performance: This program allows the Garage to extend the use of the batteries in the fleet. The batteries can have fluid added, which reduces costs by decreasing labor and the exposure of employees to battery acid.

## **New Products & Practices**

The following are products and practices that have been used since the Policy was implemented in the Garage.

### **Extended-Life Antifreeze**

Extended-life antifreeze has only been used in the City's fire trucks, but will be integrated into more of the fleet over time. Extended-life antifreeze is designed to last 5 years/150,000miles or longer, which greatly reduces the need to purchase new and manage used antifreeze.

Performance: The service life of antifreeze is limited by the protection ability of the corrosion inhibitors. Extended-life coolants have been shown to retain over 95% of their corrosion inhibitors after 5 years/150,000 miles in automobiles. In addition, most extended-life coolants do not contain silicates and phosphates common in conventional antifreeze, which tends to be abrasive to water pump seals.

### **Synthetic Automatic Transmission Fluid (ATF)**

Synthetic automatic transmission fluid only needs to be changed every 6 months. The old petroleum based ATF had to be changed every six weeks. The initial cost for the synthetic ATF is four times more expensive than the petroleum based ATF, but a life cycle cost analysis of the product produces substantial savings. By switching to a synthetic ATF in 25 of the City Transit Buses the Garage has been able to save \$950 per bus per year. The total savings for the year for 25 transit buses is \$23,750. The total yearly savings includes the cost of labor, filters, and fluid.

Performance: Synthetic automatic transmission fluid reduces heat to and extends the life of the transmission.

## **Future Products & Practices**

The Garage is looking into the following products and practices in order to make their purchases more environmentally preferable as well as cost effective. The following is a list of new products and their projected benefits.

- **Air filters that can be cleaned and reused** will reduce waste and save money.
- **Synthetic Engine Oil** will save money in oil, labor, and parts.
- **Extended oil life with vehicle retrofit** will save money in oil, labor, and parts.
- **Standardizing the vehicle fleet** will save money and time because fewer types of parts and products will be needed, the inventory of parts will decrease, and less training will be required.
- **Expanding the biodiesel fleet** will allow for increased usage of an alternative fuel in new and existing diesel vehicles. The conversion to biodiesel requires few modifications and is relatively inexpensive. Biodiesel is a renewable fuel that can reduce greenhouse gas emissions and may be cost effective in the long run.