

TO: James L. App, City Manager
FROM: Doug Monn, Public Works Director
SUBJECT: Vehicle and Equipment Replacement FY 2015
DATE: July 15, 2014

NEEDS: For the City Council to complete the Fiscal Year 2014/2015 replacement of vehicles and equipment.

- FACTS:**
1. On June 3, 2014 Council considered replacement of equipment for Emergency Services, Police, Utilities and field tasks for FY 14/15.
 2. The public questioned whether the use of compressed natural gas is a viable alternate fuel source. Council awarded bids for Police and Emergency Services vehicles, but deferred replacement of remaining vehicles and equipment to allow time for an analysis for CNG viability.
 3. The use of Compressed Natural Gas as a fuel source for heavy utility equipment and high mileage vehicles (trash trucks, buses, delivery trucks) has been developing for over ten years. As a result the industrial equipment sector has factory designed/supplied engines constructed for CNG as a primary fuel source.
 4. Large jurisdictions such as the City of Los Angeles, Santa Clara County, Orange County and City of Ontario have incorporated CNG fueled commercial equipment, specifically garbage trucks and buses. To support the CNG conversion these cities/counties have also constructed their own fleet fueling stations to control price and ensure availability of the fuel source.
 5. In the light truck/car category neither General Motors nor Ford Motor Company currently provide factory installation of CNG equipment. As a result CNG conversions must be made by third parties. Such third-party (non-factory) conversions cost \$10,000 to \$15,000 and can void the factory OE (Original Equipment) warranty.
 6. The State Vehicle Bid List offers vehicles and equipment direct from the factory through registered dealers. Because there are no factory equipped vehicles, they are not listed for purchase on the bid list save garbage trucks or ten wheel dumps that use CNG.
 7. The cost to convert a new F-150 to CNG is \$11,853. The current bid list cost for a ½ ton F-150 pickup is \$20,800. A CNG conversion increases the unit cost 43% to \$32,658 and would occupy approximately 1/3 of the available bed space reducing cargo space from six feet to four feet.
 8. Every fuel source provides differing levels of energy output. The U.S. National Institute of Standards and Technology established "gasoline gallon equivalent unit" (GGE) and a (DGE) "diesel equivalent unit". This allows consumers to compare the energy content of competing fuels against a commonly known fuel—gasoline. To compare the energy equivalent of CNG to gasoline or diesel a

consumer must apply a multiplier to the listed price of 1.1398 or 1.3173 respectively to determine actual cost.

9. The projected retail cost of CNG in Paso Robles is \$2.85 per diesel equivalent gallon (as it is in San Luis Obispo). In June 2014 the average cost for a gallon of unleaded gas was \$3.95. For comparison staff reviewed fuel usage of four light duty trucks currently in its inventory (2- ½ ton and 2 – ¾ ton).

During a six month period the average gasoline fuel consumed was 61.42 gallons per month at a cost of \$242.61 per vehicle. Conversion to CNG at \$2.89 per gasoline equivalent could result in an adjusted fuel cost of \$177.50 per month compared to gasoline. Adjusting for a projected 20% reduction in fuel mileage (CNG industry publications note converted gasoline engines average a 20% loss in mileage) the annual savings per truck using CNG is estimated at \$626.06 per year. Oil change intervals on CNG vehicles can be extended saving and could save an additional \$200.00 per vehicle per year, however at a conversion cost of \$11,853 per unit it would require 14.34 years for the possible savings to render the upfront investment cost neutral. Vehicles are typically replaced at least every 10 years.

10. CNG vs Gas/Diesel:

Engine performance, life and durability:

CNG develop less power than gasoline when moving heavy loads or towing. Engine durability would be greater given that CNG does not fowl the crankcase oil as quickly as other fossil fuels. However, in case of the City body, suspension and drive trains wear and require replacement much faster than engines.

Mileage:

Trade papers such as Consumer Reports represent CNG vehicle can get upward of 20% less mileage than gasoline counter parts. Diesel provides greater mileage than gasoline. Diesel engines have greater torque (power) than either CNG or gasoline counterparts.

Emissions:

All vehicles CNG, gasoline or diesel must meet EPA requirements for emissions. CNG has lower emission by-products than gasoline or diesel.

Maintenance costs:

With the exception of greater miles between oil changes, maintenance should be relatively the same not considering the potential maintenance associated with the aftermarket CNG conversion system. If the CNG conversion voids the factory warranty there could be a greater maintenance cost for the first three years or 36,000 miles.

11. Additionally, the City resells its replaced vehicles to partially offset their replacement cost. A resale vendor tells us a used CNG converted vehicle would be a

specialty item resulting in a lower sale price reducing the partial cost offset to replacement.

ANALYSIS & CONCLUSION:

The use of Compressed Natural Gas as lower cost fuel source for heavy utility equipment and high miles traveled vehicles (trash trucks, buses, delivery trucks) has been developing for over ten years and can result in reduced fuel cost depending on number of fleet miles driven..

The Environmental Protection Agency strictly regulates vehicle emissions, and it must test the aftermarket system on a per-engine basis to make sure that key emission levels have not been increased and that the sensor system in the exhaust area is still working correctly. There are several companies that make conversion for the F-150 CNG conversion, but none are certified as a top-tier converter by Ford thus a conversion voids the factory OE warranty. In addition to the EPA there is an additional level of certification called CARB (California Air Resources Board) that is even more expensive and complicated than the EPA certification. In California CARB certification is required above the EPA certification limiting the number of certified conversions and driving up the cost of certified units.

What is more difficult to quantify, if the Council determines that the vehicles should be converted to CNG, is the loss of the factory warranty if subsequent repairs are needed. Another concern is the inability to obtain competitive bids for CNG, as there is only one CNG provider within the City.

More importantly, however, reliance upon CNG at this point, could affect the City's ability to obtain fuel during a disaster. The City's current fuel supplier has a capability for a backup generator that would still allow fuel to be pumped, and there are other gasoline stations in the City that could be accessed in an emergency. The proposed CNG facility would have no back-up generator and the City would have no alternative CNG providers to fall back on.

Regarding the City's Climate Action Plan Measure, section C-5 reads: "Continue to replace City vehicles and equipment with more efficient and/or alternatively fueled vehicles.

The Section suggests three actions to support this:

- 1) Develop a purchasing policy for such vehicles and equipment;
- 2) Work with the Central Coast Clean Cities Coalition to obtain funding for such purchase; and
- 3) Identify fleet vehicles near replacement and replace with lower emission vehicles.

Consistent with the Action Plan the City has:

1. Integrated Hybrid gas electric vehicles into the fleet as part of its vehicle replacement schedule.
2. Replaced the majority of our standby and portable generators with efficient Tier IV diesel power.
3. Replaced much of its heavy duty fleet with 'Clean burn/Clean idle' high efficiency diesel power equipment.
4. The existing waste water treatment plant consumes fossil fuel. The new facility will produce 60% of its power using methane (waste gas) powered generators.

Consistent with the Action Plan, future purchases will consider CNG and/or propane as alternate fuel sources and phase them into the fleet as the cost of the technology becomes more available and economical to acquire. However at this time the deferred replacement of equipment has resulted in a concentrated need for updating the fleet. Further delay in acquiring necessary equipment will impact service levels especially water and waste water utilities.

POLICY

REFERENCE: City of Paso Robles Vehicle/Equipment Replacement Policy; Climate Action Plan

FISCAL

IMPACT:

The City's Equipment Replacement Fund contains \$3,600,000. In authorizing purchase of equipment for Police and Emergency Services, Council allocated \$1,121,044. To complete the equipment purchase for FY 2014/2015 requires allocation of \$610,892 (\$589,914 plus \$11,978 contingency for possible model year cost due the delay in purchase).

Should Council determine to convert the five pickups requested to CNG, Council would need to allocate an additional \$66,000 to a total of \$676,892 (\$598,914 plus \$66,000 for conversion and \$11,978 contingency for possible model year cost), accept voided vehicle warranties, reduced power and possible increase in maintenance cost depending on the reliability of the conversion.

The Equipment Replacement Fund has adequate monies to cover the annual debt service. While the City has the ability to pay cash its equipment needs, 'lease/purchase option's (\$676,892) are a positive cash management alternative.

Administrative Services can arrange lease purchase option at an approximate interest rate of 2.5% for a period of 5 years or a 10-year lease, which coincides with the projected life of the fire truck, for approximately 3.0%. Both options include a \$1.00 buy-out at the end of the lease period.

Funding for these vehicles (without the cost of CNG conversions) would need to be appropriated from Fund 125, using account numbers:

<u>Account Number</u>	<u>Cost</u>
1257010-54540	\$34,948.80
1253151-54540	\$54,434.16
1253207F-54540	\$46,928.34
1253202-54540	\$4,746.60
1253257F-54540	\$17,895.60
1253207F-54540	\$10,530.53
1253302-54540	\$97,062.84
1253258F-54540	\$74,953.08
6003401-54540	\$67,493.52
6013550-54540	\$64,973.88
6013501-54540	\$73,977.21
6023601-54540	\$50,969.52
Total	\$598,914.09

- OPTIONS:**
- a. Adopt Resolution No. 14-xx approving the purchase of the new vehicles and equipment listed in Attachment "A" in the amount of \$610,892 (\$598,914 and \$11,978 contingency for possible model year cost).
 - b. Amend, modify, or reject the above option.

Attachments:

- 1) Resolution
- 2) Attachment "A" Vehicle/Equipment Replacement List
- 3) Attachment CNG Pros & Cons

RESOLUTION NO. 14-xxx

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PASO ROBLES AUTHORIZING THE ACQUISITION OF PUBLIC SAFETY VEHICLES AND EQUIPMENT BUDGETED FOR REPLACEMENT IN FISCAL YEAR 2014 USING A LEASE/PURCHASE AGREEMENT

WHEREAS, the City has adopted vehicle replacement policies based on the useful life of the vehicles/equipment; and

WHEREAS, prior to being considered for replacement, equipment is examined to determine if the useful life can be extended or has been exhausted; and

WHEREAS, the City's equipment replacement policies and dedication to modernization of the equipment has allowed increase productivity; and

WHEREAS, the FY14 replacement list, ATTACHMENT "A", is comprised of only the most critical Public Safety vehicles/equipment; and

WHEREAS, the FY2014-15 budget contains 19 Enterprise and General Fund vehicles and equipment totaling \$XXXXXXX; and

WHEREAS, vehicles and equipment are budgeted for replacement purchases in the FY20014-15 budget and funded in the Vehicle Replacement Fund; and

WHEREAS, prices were compiled using the State bid list and Governmental Agency Cooperative bidding to achieve the lowest cost possible; and

WHEREAS, the purchase of the proposed equipment would be through a lease/purchase agreement for blended 3 to 10 year term, with a \$1 purchase at the end of each lease period; and

WHEREAS, the Lease/Purchase Agreement will allow the City to preserve cash and reduce the impact to the Vehicle Replacement Fund.

THEREFORE, BE IT RESOLVED AS FOLLOWS:

SECTION 1. That the City Council of the City of Paso Robles does hereby authorize the City Manager to execute a Lease/Purchase Agreement for the vehicles and equipment listed on Attachment A in the of \$610,892 (\$598,914 and \$11,978 contingency for possible model year cost) and authorizes the City Manager to execute the contract.

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 15th day of July 2014 by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

Duane Picanco, Mayor

Caryn Jackson, Deputy City Clerk

General Fund

Vehicle/Equipment Replacement List

Attachment "A"

#	Year		Equip or Vehicle	Department / Fund	Years status	Miles/ hrs.	Status	"Policy" replace date	Unit Cost	Comments
107	1998	1257010-54540	Ford explorer	Community Dev Dept. & Waste Water	over	71,737	Surplus	2013	\$ 32,360.00	Replace surplus Unit 107 (1998) assigned to IT with Unit # 101 van assigned CDD. Replace #101 with pool vehicle shared between CDD and Waste Water (new Storm Water Manager)
115	2001	1253151-54540	Chevy blazer	Public Works - General Fund	over	62,980	Replace	N/A	\$ 25,201.00	See Appendix to this attachment
116	2001	1253151-54540	Chevy blazer	Public Works - General Fund	over	68,372	Replace	2011	\$ 25,201.00	See Appendix to this attachment
410	2007	1253207F-54540	John Deere mower model #977	Public Works - General Fund	over	1,271	Replace	N/A	\$ 17,620.17	Replace has blown diesel engine. Cost replace exceeds value of mower
413	2003	1253207F-54540	Chevy S10 truck	Public Works - General Fund	over	78,129	Replace	2012	\$ 25,832.00	See Appendix to this attachment
568	1989	1253202-54540	Utility trailer	Public Works - General Fund	over	N/A	Replace	2013	\$ 4,395.00	See Appendix to this attachment
TBA		1253257F-54540	Man-Lift	Public Works - General Fund	over	N/A	Replace	2013	\$ 16,570.00	Replace 11 year old man-lift, no longer safe, parts not available
TBA		1253207F-54540	Self Propelled Aerator - walk behind	Public Works - General Fund	over	N/A	Replace	2013	\$ 4,780.49	Original old not repairable, City has been renting at cost of \$400 per day when needed
TBA		1253207F-54540	Fertilizer Spreader - pull behind tractor	Public Works - General Fund	over	N/A	Replace	2013	\$ 4,970.00	Past replacement schedule, needs repair often
580	2001	1253302-54540	GMC 1ton dump truck	Public Works - General Fund	over	17,318	Replace	2013	\$ 89,873.00	See Appendix to this attachment
548	2003	1253258F-54540	Chevy S10 truck	Public Works - General Fund	over	80,851	Replace	2007	\$ 69,401.00	Fleet truck - See Appendix to this attachment
						Total PW General Fund			\$ 316,203.66	

Total General Fund Needs \$316,203.66

Enterprise Funds

#	Year		Equip or Vehicle	Department / Fund	Years status	Miles/ hrs.	Status	"Policy" replace date	Unit Cost	Comments
314	1990	6003401-54540	Valve Exerciser	Public Works - water	N/A	N/A	Replace	2014	\$ 20,800.00	Unit 24 years old. No longer serviceable
327	2003	6003401-54540	Chevy 1500 truck	Public Works - water	over	92,399	Replace	2013	\$ 20,847.00	Replace with 1/2 Ton Truck
414	2003	6003401-54540	Chevy S10 truck	Public Works - water	over	69,107	Replace	2011	\$ 20,847.00	See Appendix to this attachment
						Total Water Enterprise Fund			\$ 62,494.00	
515	2003	6013550-54540	Chevy S10 truck	Public Works - Wastewater	over	91,075	Replace	2013	\$ 20,847.00	See Appendix to this attachment
525	1989	6013501-54540	Case loader	Public Works - Wastewater	over	3,603	Replace	N/A	\$ 68,497.42	Replace with 60 PTO horse four wheel drive wheel w/front loader instead of new Case Loader (reduce cost \$173,365)
712	1984	6013550-54540	Chevy C70 dump truck	Public Works - Wastewater	over	51,596	Replace	N/A	\$ 20,800.00	Replace with two dump trailer pulled by tractor. Saves \$59,200 over buying dump truck.
TBA		6013550-54540	Gator type (Kubota)	Public Works - Wastewater	N/A	N/A	Add	N/A	\$ 18,514.00	See Appendix to this attachment
						Total Wastewater Enterprise Fund			\$ 128,658.42	
804	2000	6023601-54540	Case CX50 tractor	Airport	under	3,011	OK	2015	\$ 47,194.00	See Appendix to this attachment
						Total Airport Enterprise Fund			\$ 47,194.00	

Total Enterprise Funds
\$ 238,346.42

GENERAL FUND TOTAL \$ 316,203.66
SALES TAX \$ 25,296.29
TOTAL \$ 341,499.95

ENTERPRISE FUNDS TOTAL \$ 238,346.42
SALES TAX \$ 19,067.71
TOTAL \$ 257,414.13

GENERAL & ENTERPRISE FUNDS TOTAL \$ 598,914.09

..From AARO/Auto Gas

CNG PROS

- Vehicles converted to CNG are more cost-effective than those running on traditional gasoline engines. The cost of CNG can go as little as a third of the price of a gallon of gasoline, especially if you use a home refueling station. And even in commercial refueling stations, CNG still costs less than gasoline. Estimated savings on CNG is at 30% less than gasoline.

CNG is a cleaner fuel than gasoline. Compared to gasoline, using CNG reduces carbon monoxide emissions by as much as 90 to 97% and decreases nitrogen oxide emissions by 35 to 60%. Although CNG can still emit greenhouse gases, the emissions are 20-30% lower than those from gasoline engines. Also, CNG can potentially lower non-methane hydrocarbon emissions by as much as 50 to 70%. CNG vehicles also produce fewer carcinogenic pollutants.

CNG is safer than gasoline. CNG is a clean burning fuel. Since natural gas is lighter than air, leaks dissipate into the atmosphere rapidly. On the contrary, gasoline leaks are dangerous because the fuel pools in the ground creating a fire hazard. Meanwhile, CNG tanks are designed to release gas slowly. It will not explode even if subjected to a round of shots from a rifle.

CNG CONS

- Converting a car to CNG can be costly with prices ranging from one to several thousands of dollars. Although Congress encourages CNG conversion by offering tax cuts (the City does not qualify for any tax credits as it does not pay taxes) of up to 50%, the conversion still needs an EPA certification to qualify for the tax credit. Getting this certificate can cost companies tens of thousands of dollars and six to eight months' time. Fortunately, companies such as CNG United are determined to make CNG conversion more affordable and accessible for Americans.

Storage Tank: Any gas needs a container for storage or a storage tank. The design of CNG cars does not allow engineers to have a small storage tank, and a large one is not very conducive. Car safety is also a concern regarding gas storage.

Slow Performance: These vehicles are not famous for their high speeds. The horse power of similarly calibrated engines for gasoline and natural gas are not at all comparable. Less horse power basically results in a slower performance of such cars.

Less Performance: The mileage of the car in relation to the amount of gas used is quite low. One full tank of gasoline gives more output than one full tank of natural gas.

CNG stations may not be available in some areas. There is also a limited number of refueling stations throughout the US.

The buzz on alternatives to gasoline usually focuses on electrics, hybrids, or ethanol. But Honda is quietly pushing another alternative: a Civic that runs on compressed natural gas (CNG). The natural gas Civic has been offered in fleet sales since 1998 and customers in California and certain other states since 2005. Honda rolled its latest CNG sedan out nationwide for 2012, based on the current Civic.

Like other alternative fuels, CNG has its advantages and disadvantages. Compared with gasoline, it has much cleaner emissions while providing similar fuel economy, performance, and drivability. Its relative energy cost can be about half that of gasoline, and it's mostly a domestically produced energy source, thus contributing to reducing the reliance on foreign oil. (More than 85 percent of the CNG consumed in the U.S. is produced here.) On the other hand, the Civic Natural Gas is priced thousands of dollars higher than a similar gasoline-powered version, refueling stations are sparse, and CNG is not available at all—even for home-fueling in some areas.

Overview

Natural gas has been used as a motor vehicle fuel since the 1930s. But with the increased focus on electricity, ethanol and other alternative fuels, fewer and fewer CNG-powered passenger vehicles have been offered in recent years. Shoppers were left to choose only from Honda and a handful of aftermarket conversion companies, along with used fleet cars. Now General Motors, Ford, and Chrysler have come back into the game with heavy duty pickups converted to run on natural gas. All three are available from dealers. While they're primarily designed for fleets, consumers can also order them.

Honda used to sell a home refueling device called Phill, now sold by an Italian company called BRC FuelMaker. The device can refuel a vehicle overnight when connected to a gas line from a home served by natural gas. But at this time, Honda does not recommend home refueling “because of moisture and other contaminants inherent in some natural gas supplies.” This is a shame, as the ability to refuel overnight could help address the limitations with fuel pump availability.

Natural gas refueling, however, is still problematic. A few states, such as California and New York have an infrastructure in place to deliver natural gas, but other areas have very limited access to the fuel. Since CNG is generally transported by pipeline, rather than by truck or rail, the distribution infrastructure plays a key role in the fuel's availability.

To help understand the value of CNG, we broke down the notable benefits and the compromises involved. Like all alternatives, CNG will not be for everyone. But if it is available in your area, and you do a fair bit of commuting in a region with a ready supply, it might be worth a look.

Benefits

Cost

The cost of CNG can be as little as half that of a gallon of gas if you use a home refueling device. And at commercial stations, the cost is still significantly less than gasoline. Some research pegs the fuel savings at about 30 percent less than gasoline on average, although as of this writing the savings are nearly 40 percent.

The driving experience

Drivers will be hard-pressed to notice a significant difference in performance between a CNG-powered vehicle and one fueled by gasoline. Though acceleration is typically slower, the car starts and drives normally. As a bonus, in some states, drivers of CNG vehicles can use the HOV lane. A study of New York City taxis running on natural gas concluded that maintenance costs were also reduced.

Air quality

CNG burns much cleaner than gasoline. According to the Environmental Protection Agency, CNG can reduce carbon-monoxide emissions by 90 to 97 percent and nitrogen-oxide emissions by 35 to 60 percent when compared with gasoline. CNG can also potentially reduce non-methane hydrocarbon emissions by 50 to 75 percent, while producing fewer carcinogenic pollutants and little or no particulate matter.

Compromises

Purchase cost

CNG-powered vehicles have generally cost more to purchase new than comparable gasoline models. Suggested retail for the Civic Natural Gas is \$26,155 plus \$770 for destination charges. A comparably equipped, gasoline-powered Civic LX lists for \$18,242. A home refueling unit, plus installation, can cost upwards of \$5,000, making the premium to drive a CNG Civic can top \$10,000, before incentives.

Availability

CNG stations are not available in some areas. Check the U.S. Department of Energy Web site for availability in your region.

Honey, they shrunk the trunk

Even though a CNG tank is larger than a gasoline tank, you get fewer miles per tank. With the Civic Natural Gas, roughly half the trunk capacity is given over to the tank, with 6 cubic feet left for your luggage. The range between fill-ups also shrinks. Honda claims a 220 to 250 mile range from the Civic Natural Gas. But when we tested a 2008 model, we couldn't get more than about 130 before the low-fuel indicator came on.

Range anxiety. With a claimed usable range of 160-180 miles in the updated Civic Natural Gas, you're going to feel range anxiety as soon as the low fuel light comes on. Given the scarcity of public access CNG filling stations, that's a big concern.

Gassing up with CNG

Even if you have access to natural gas, refueling can be a hassle. There are a limited number of refueling stations in the United States, and many are operated by fleets and not open to the public.

In addition, the pressurized CNG pumps take some getting used to. They use a special fitting to seal to the vehicle, something most motorists might not recognize. A Honda representative suggested a 15-minute training session before using the pumps. Many pumps also work on a card-reader system specific to the fuel supplier. Users are billed monthly, which may be less convenient than handing over cash.

And the pumps take about twice as long to fill the car as a regular gas pump.

If you choose to fill up with a home system

An advantage of refueling stations over a home unit is that the gas is already pressurized, so the tank can be filled in a matter of minutes. Gas fed to the home is under very low pressure. The home refill device acts as both a pump and a compressor, which is why it takes overnight to fill the tank. But refueling at home can cost much less than a refueling station, so it can be worth the wait, especially if the refueling is done overnight. Of course, it would take time for the payback of the initial unit cost and installation. Also, installation is likely to require a building permit.

Other considerations

Safety

The Department of Energy says vehicles powered by natural gas are as safe as conventional gasoline or diesel vehicles, and their pressurized tanks have been designed to withstand severe impact, temperature, and environmental exposure. CNG is lighter than air, so if fuel were to escape in a crash, it would evaporate rather than create a puddle under the car. While the gas is escaping the storage tank, it is highly volatile. But once the gas has evaporated, the fire danger is diminished. In contrast, a gasoline spill remains a danger until the pooled liquid is removed. As for the potentially scary business of home refueling, BRC FuelMaker Corp. of Italy, says that the unit will not operate if it is not connected properly and that a built-in sensor shuts it down if the system senses a methane leak or any other malfunction. The manufacturer also says the device is considered a home appliance by municipalities, like a hot-water heater or gas dryer. Still, it would be wise to check with local authorities before making the investment.

No promises of cheap fuel Natural-gas prices have been volatile, and today's good deal might not look so good tomorrow. As anyone who has bought gasoline in the last few years knows, fuel prices can change quickly.