

Is Your Police Department Oil Resistant?

By

Michael Blair

Roseville Police Department

May 2008

COMMAND COLLEGE CLASS 42

The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

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Sergeant Draper walked into the sergeant's office at 6:30am Monday morning and greeted graveyard Sergeant Green, "Hey Mike! How'd it go last night?" Sergeant Green was seated at his desk. His eyes were red and droopy and his voice was sluggish. "Pretty slow last night, except for a couple of late deuce arrests. I'll finish approving these two reports and then I'm outta of here." Sergeant Draper gathered his briefing paper work and headed into the briefing room where six dayshift officers waited quietly. Sergeant Draper thought this was unusual for this group since they are normally very vocal this early in the morning.

As Draper entered the room, he noticed all the officer's eyes were glued to the briefing television. He glanced up to the set and was shocked at what he saw. "Oh my god, did we get attacked by terrorists again?" cried Draper. The television screen was filled with flames towering into the sky. There was black smoke bellowing from what looked like several large oil refinery storage tanks. "They're not sure." said Officer Sparks. "The reporter said there were several oil refinery fires across the country this morning." said Officer Atwell. "This is great!!" cried Officer Hooper. "Gas is already close to \$4.50 a gallon. We're all screwed now!" Officer Rickles chimed in, "With the war in Iraq and the conflict in the Middle East, we are all going to be walking to work or riding a bike!" Sergeant Draper quickly said, "You better all get out your bicycle shorts and walking shoes for work! You're gonna need them. There won't be gas to push your patrol cars around either!" Officer Johnson was sitting quietly and then said, "Look! The reporter said they expect gas prices to go up a dollar more a gallon." I can't afford to drive if gas get's that high!" "I wonder if the city will continue with the take home car program?" said Sergeant Draper. Lt. Townsend walked in as Draper was finishing, "You can forget about the

take home car program, you all are going to be patrolling the streets in hybrids!” Officer Hooper, who is quite a large man, said, “How am I going to fit with my equipment and any prisoners I might arrest in one of those little cars?” “Don’t worry Bill. You don’t make any arrests anyways!” Johnson quickly replied. Officer Rickles exploded, “Wait ‘til the crooks see that we’re driving hybrids!! Not only will they be laughing at us, we won’t ever catch them in a vehicle pursuit!”

Lt. Townsend raised his hand, “Alright, calm down. Obviously there are going to be some changes. The city will have a tough time covering the higher costs of gas, but they will have to take care of public safety. We have to be able to respond to calls for service and emergencies. We have to stay highly visible to keep crime down. I’m not sure exactly what changes are coming, but we will have to take a close look at the way we do business. For now, let’s finish briefing and hit the streets while you still have gas in your cars!”

A television news station breaks to the White House as the last patrol officer walks out of the briefing room. The President calmly walks to the podium. “My fellow Americans, the United States have suffered a serious set of events that will have a lasting effect on every American’s life. Several oil refinery fires have significantly impacted the major oil company’s ability to produce gasoline. We still have not determined whether this is another Al Qaeda attack on U.S. soil. However, this disruption along with the situation in the Middle East and the increase competition for oil with developing countries like China and India will demand that every American reduce the amount of fuel they use. Therefore, I am calling for an emergency mandatory 25% reduction in gasoline consumption by every American, private company and governmental agency until further notice.”

Could these chains of events ever happen? Some already have. Everyone can remember where they were when terrorists slammed two jet airliners into the World Trade Center buildings. In the wake of another attack, here or abroad, it is entirely possible that the flow of oil into the United States would be severely limited. The national economy would be crippled if the flow of oil was abruptly cut off. Gasoline would no longer be affordable, and it might not even be available in some locations. What about the delivery of services and goods? Costs would skyrocket; some businesses would flounder or simply go under. Gasoline would become such a valuable commodity, that criminals might be more willing to take serious risks to obtain it. Credit card fraud could increase significantly as individuals, both criminals and struggling law abiding citizens fill their needs for fuel. With oil reaching a new record of \$111 per barrel in the spring of 2008, other types of crime may also increase as people have difficult times making ends meet as the price of food and other essential services continue to climb due to higher energy prices.ⁱ

While striving to manage the adverse impacts of fuel shortages in their communities, law enforcement leaders will also face the challenges created by the issue inside their agencies. The article will explore that aspect of the problem. What potential strategies, both immediate and long term, are available to address fuel costs and supplies? How can we continue to provide appropriate safety service in a world where getting to the scene of trouble might be the first consideration in the minds of the police?

The Problem

Even if terrorist attacks or disasters don't occur, experts agree that the world's oil reserves are dwindling. The universal agreement is that the world as a whole will reach its peak

rate of production in the next few decades, but there is controversy as to exactly when it could occur. The US Department of Energy indicates that a twenty year “crash program” will be needed prior to the peak to prepare societies adequately. ⁱⁱ The world has increased its use of oil every recent year by over a million barrels per day. Oil depletion is easy to understand. Essentially, the world’s oil supply began to decrease when the first barrel was extracted from the ground. Since oil is not a renewable resource, only so much exists, and that is why an oil depletion protocol is necessary. ⁱⁱⁱ

According to Lester Brown of the Earth Policy Institute, the mixture of world oil production slowing down or starting to decline, while demand continues to rapidly rise, is forcing prices to rise. Since 2005, oil prices have increased from \$50 to over \$100 a barrel. Prices will continue to climb if production cannot keep pace with global demand. An energy watch group in Germany recently analyzed oil production data country-by-country and concluded world oil production has peaked.^{iv} They project a 7 percent a year decline from 84.80 million barrels per day in 2006, falling to 58 million barrels per day in 2020. The United States Department of Energy is projecting world oil output in 2020 at 104 million barrels per day. ^v The United States has a significant interest in reducing dependency on oil. The United States consumes more fuel than the next twenty countries combined and is extremely vulnerable since 88 percent of the American workforce travels to work by car. A campaign to reduce oil consumption is in the best interest of all countries. For example, in 2008 U.S. consumption of liquid fuels is expected to decline by 85,000 barrels per day because of the economic slowdown and high fuel prices. Total U.S. fuel consumption is expected to decrease by 210,000 barrels per day in 2008 because of the increased use of ethanol.^{vi} According to Brown, failure to do so could result in a global recession or worst case scenario might be a 1930’s type global

depression.^{vii} The problem of dwindling oil supplies can no longer be someone else's problem. Americans will have to eventually accept responsibility for their role in reducing the country's dependency on oil and must be willing to make life style changes to affect future change.

Forecasts of the future

An expert panel convened to study the issue of how rising oil prices and an emergency resulting in a forced twenty five percent reduction in gasoline consumption might impact the delivery of law enforcement services. The panel identified trends and events that might have an impact on the issue. From that work, they made a number of observations regarding the emerging landscape. The cost of fuel was listed as the most important trend, followed by citizen's expectation of law enforcement service delivery. The panel also believed the legislature could potentially give law enforcement special consideration to ensure fuel is available in the instance of widespread shortages. The panel believed the use of hybrid vehicles and the development of alternative fuels will be more important in the future because of the need for related technology to further develop. The panel also identified a list of ten events they believed could impact this topic.

They believed another catastrophic terrorist event was likely to take place within the next decade. Combine a terrorist event with a possible natural disaster similar to Hurricane Katrina, and America would suffer a significant impact on gasoline availability. The panel also forecast an economic recession as 100 percent possible in the next ten years or sooner. Interestingly, the panel made this forecasts in September 2007, when the economy was beginning to deteriorate, but had not come close to the economic lows we currently face. The trends and events identified by the panel, as well as what is currently taking place in our world, demonstrates the need for

law enforcement leaders to evaluate their vulnerability to rising fuel prices or worse yet, a reduction in availability. Police organizations will need to assess their ability to offer alternative methods of delivering service by using technology and more traditional means such as foot and bicycle patrols. Managers will need to provide training and create a culture throughout the agency that promotes the most efficient means of utilizing fuel resources and then put procedures in place to monitor and evaluate effectiveness.

Considering the opening scenario, what if the President of the United States ordered a mandatory emergency 25% reduction in the use of gasoline. What impact would this mandate have on law enforcement?

Case Study

The City of Roseville, California is a growing community of 108,000 residents. The Police Department is a service orientated agency with 129 sworn officers. The entire Police Department used approximately 193,000 gallons of gasoline in 2006, and the seventy five members of the Patrol Division used about 156,000 gallons of that total. In that year, gas prices were in the neighborhood of \$2.50 a gallon, resulting in an expenditure of about \$482,500 on fuel. In today's market, the city would spend \$675,500 if fuel prices averaged \$3.50 over the course of the year. A mandated 25% reduction in fuel consumption could save the Department \$168,750 a year in costs. Potential negative implications associated with this reduction, though, could be reduced visibility in the community, which may lead to increased crime in some neighborhoods. Services levels might drop as non priority calls would be handled by phone or through on-line reporting. Any overall agency savings might also be adverse to the overall environment, since Department policies might encourage residents to travel to police

headquarters and burn their own fuel if they want to speak to an officer in person. On a positive note, efforts to reduce consumption of fuel could translate to an increase in officers' inclined to get out of the car and use foot or bicycle patrol as a means of delivering service, which would be seen by residents as the police taking more of a personal interest in the community.

Beyond mere edicts to cut consumption by a set percentage, there are specific steps agencies can employ to strategically lower fuel use. One is the introduction of a training program to operate an emergency vehicle more efficiently. Another is to consider emerging technologies to offset reductions in miles driven by officers to fulfill their duties.

Time for a Tune Up

Police officers begin their law enforcement drivers training in the academy on the emergency vehicle operations course (EVOC). Officers learn how to safely pursue fleeing vehicles and avoid hazardous driving situations using deliberate and aggressive driving practices. Quick acceleration and hard braking is necessary when chasing bad guys or avoiding a roadway hazard, but none of these practices take in consideration the need to conserve fuel. Officers spend the majority of their time conducting random patrols or responding to non emergency calls for service, but sometimes these aggressive driving practices spill over into every day vehicle operations. A routine tune up of officer driving habits for non emergency operations could boost fuel economy by 37 percent and have no negative impact on delivering police services.

Just plain driving the speed limit can result in fuel savings of 7 to 23 percent, especially on long trips. Research shows that fuel economy decreases rapidly at speeds over 60 mph. Fuel economy is at its best when a vehicle is traveling between 25 and 60 mph. Economy

drops off rapidly above 60 mph. As a rule of thumb, a driver can assume for every 5 mph they drive over 60 mph is like paying an additional \$0.20 per gallon for gas.^{viii}

Another tip from experts to increase fuel mileage is to avoid excessive idling. Police officers traditionally spend a lot of time in their vehicles with the engine idling. Many spend time writing reports or monitoring vehicle and pedestrian traffic in this manner. In addition, many officers work in extreme temperatures that require the heater or air conditioner to run while the officer is in the car. The rule of thumb to follow to save fuel is to turn off the engine if the vehicle is going to idle for more than a minute. Although this may not always be practical, there are alternatives to writing reports in one's vehicle. This may include the use of satellite offices in shopping centers or fire stations to reduce the amount of idle time in the vehicle.^{ix}

One more tip to increase fuel mileage by as much as another 10 percent requires drivers to take a strategic approach to gradual and smooth acceleration and braking. This unconventional approach requires drivers to pay extra attention to traffic conditions and other motorists. A vehicle is most efficient when it is moving. More energy or gas is needed to slow a vehicle and then accelerate back up to speed. The premise behind this strategy involves gradually adjusting speeds and routes traveled to limit or reduce the number of times a vehicle has to stop and then start. The more you can maintain your forward momentum and reduce the number of times you stop, the better your fuel economy. This tip seems simple, yet it does require some focus on the driver's part. Police Officers usually are very familiar with their patrol beats and could take advantage of strategic driving during routine patrols to help improve fuel mileage.^x

For most police agencies, routine maintenance is handled by their city garages and the officers have little control over when their car receives service. Most city garages have a fuel management system in place that allows employees to fuel their vehicles using a card assigned to each vehicle. Managers can use the fuel management program to monitor consumption and determine the effectiveness of the training and other strategies relative to delivering service while reducing fuel consumption.

Incorporating the above tips into a law enforcement vehicle operation training programs could be challenging. According to the U.S. Environmental Protection Agency, however, a driver training and monitoring program in the trucking industry can improve fuel economy by five percent and save over \$1,200 in fuel.^{xi} Nana Training Systems offers a four hour block of training for law enforcement and other emergency vehicle operators entitled “Thinking Driver-Defensive Driving Course”, which teaches the proper driving attitude to increase fuel savings, reduce vehicle abuse and complaints against drivers.^{xii} The greatest advantage of tuning up officer driving habits is that law enforcement can reduce fuel consumption and still maintain quality service delivery to the public.

Future Service Delivery Platforms

There is no question police leaders will need to find new cost effective ways of delivering service to the public. The future holds some innovative ways to deliver services that will reduce the need for fossil fuels and still provide for a safe community.

First is the use of closed circuit television camera (CCTV) to respond to calls for service. An increased use of surveillance technology throughout cities may allow law enforcement to visually respond to some scenes before a police car ever arrives. Britain currently has 42 million

closed circuit television camera (CCTV) installed throughout the country, an average of one camera for every fourteen people. On average a person is seen 300 times a day on camera. CCTV is also used to monitor citizen's movements and shopping habits.^{xiii} Imagine, you are on patrol in a commercial district and you receive an alarm call at a local retailer. The dispatcher provides the details, "glass break at the front door" and sends two additional units for backup. With a CCTV program, the primary officer could ask the dispatcher to send the CCTV feed to their mobile computer while still blocks away. If the CCTV feed sees the glass is still intact, additional units could be cancelled without taking the trip to the scene. CCTV cameras could be an extra set of eyes for police agencies and make it possible for dispatchers to send the appropriate number of units to a call, which in turn could save fuel. The problem is many cities don't have enough CCTV cameras installed or the technology in place to manipulate or monitor these cameras so they are useful. In our fuel-impacted future, CCTV is an existing technology that could be modified to save oil, officer time, and also enhance public safety.

Another emerging technology being used in the military that is also being explored by law enforcement is the use of Unmanned Aerial Vehicles (UAV). Again, imagine you are on patrol working the midnight shift. A review of the crime analysis report shows there are a number of catalytic converter thefts taking place in two adjoining neighborhoods in your beat. Your sergeant has tried conventional patrols with unmarked vehicles in the area with no luck. Using one of your agency's UAV's you park just outside an area that you believe the crooks will hit next and unload the small battery powered UAV from the trunk. In a matter of minutes the UAV is airborne and you are quietly patrolling the neighborhood from the sky using a video downlink to your mobile computer. Aside from the significant improvement in your advantage

point over the troubled neighborhood is that you are only burning a fraction of the fuel you would burn to effectively patrol the neighborhoods.

The use of UAVs is regulated by the Federal Aviation Administration and other Federal statutes. Interestingly, the FAA has stated it will not issue a Certificate of Authorization (COA) for the use of UAVs over populated areas. The FAA will issue a COA for flight over unpopulated areas if the agency can demonstrate the operation is safe, that safe risk mitigations are in place and the operators have sufficient training which includes a pilot's license and medical certificate. There are currently no comprehensive studies that confirm the safety records or vendor-published data regarding the use of UAVs. Military evaluation has identified some problems which include radio interference, unexplained loss of control, and durability for repeat flight operations. It is not anticipated the FAA will change their position on the operation of UAVs before the year 2010. There are two key events, though, that may prompt them to formally reconsider the police use of UAV's and open the door for agencies across the nation. The FAA has agreed to conduct two test projects with two large police departments, Miami/Dade and the City of Houston. These test projects will provide valuable insight into the challenges that may exist when operating a UAV in an urban area.^{xiv}

Another large police agency diligently working on a UAV program is the City of Sacramento Police Department. They currently have a prototype built and have received permission to conduct test flights in uninhabited areas. The UAV is equipped with a four inch gyro stabilized camera system that provides video downlink to a laptop computer. The vision for the UAV is to augment the department's current Air Operations program and provide an additional resource to be used in tactical operations and critical incidents throughout the city.

Examples of other UAV's that may be suitable for police operations such as the Cyberbug™ can be found on the Cyber Defense Systems website (www.cyberdefensesystems.com)^{xv}

Finally, there is an automaker in Georgia that is in the virtual design phase with plans to build a vehicle specifically made for law enforcement. The company, Carbon Motors Corporation has been in existence for five years with two years of law enforcement market research put into the design of the vehicle. The executive design team consists of a former police officer and several members from the Ford Motor Company with over a hundred and forty years of automobile making experience. There is only one word to describe this car, and that is “cool”. The vehicle is designed to be custom built for individual police agencies, with standard equipment such as light bars and take down lights built into the exterior of the vehicle.

Carbon Motors has been working with Georgia Tech to design the interior of the vehicle. The thought behind the design is to make the interior comfortable and ergonomically correct to accommodate a lengthy patrol shift behind the wheel. An emergency lighting study is also being conducted to design a lighting system that reduces the “moth effect” that typically draws drunk drivers to emergency lighting equipment. The study is evaluating the rate of flashing lights with a variety of colors at various distances to determine the most effective and safest combination to use in the lighting system.

The power train of this vehicle is a 3.0 liter inline six cylinder diesel motor teamed with a six speed automatic transmission. The vehicle's maximum speed is 150 mph, reaching 0 to 60 in seven seconds. The car averages 28 to 30 miles per gallon and the vehicle has a range of 522 miles on a tank of fuel. Best of all, the vehicle is built to last up to 200,000 miles, which is well beyond what most agencies get out of their vehicle. There is a number of safety features

included on this vehicle including ballistic door panels, vehicle stability all speed traction control, PIT reinforced panels, enhanced side impact and rollover protection, and the vehicle is designed to withstand a 75 mph rear impact collision. The interior of the vehicle features an ergonomically designed cockpit, writing station with light, compartments for both lidar and radar units, audio/video rear compartment surveillance, and a washable rear seat with a drain in the floor. The vehicle can be ordered with a variety of options such as a 360 degree exterior audio/video system, automated license plate recognition system, FLIR, back up camera, heads up display on the windshield, MDC, and an intelligence key that maintains the individual officer settings each time they use the vehicle.

Production of this vehicle is anticipated to begin in 2010. Carbon Motors expects the cost of these vehicles to be similar to current law enforcement patrol vehicles. All vehicle orders will be taken directly from Carbon Motors and agencies will receive a vehicle that is equipped and immediately ready to put in service (Visit the Carbon Motors Corporation website to find out more about this innovative new vehicle. (www.carbonmotors.com)^{xvi}).

A purpose built law enforcement vehicle such as Carbon Motors concept vehicle could have a positive impact on police agencies ability to deliver service and save fuel. Current police vehicles average about 12 to 15 mpg, and are usually replaced at 80,000 to 100,000 miles. The Carbon Motors vehicle would offer substantially better fuel mileage and durability, which could help law enforcement leaders reach their goal of reducing fuel consumption and saving money.

Summary

Technology and society are changing, sometimes very rapidly. The political climate in many areas of the world is very volatile, especially in the Middle East where most of our oil is

produced. Fuel prices continue to rise at the slightest word of refinery problems, supply and demand issues, or political fallout. Gasoline prices have risen to over \$3.50 a gallon in Northern California; some areas have already experienced prices in excess of \$4.00 a gallon. This increase in fuel inevitably has an effect on city and law enforcement budgets.

History shows that law enforcement agencies provided police services to citizens long before automobiles were available. One could argue that more officers in the field walking foot beats would create a closer relationship with the public. As cities and suburban areas grow, though, the need for a more mobile police force becomes necessary in order to deliver police services.

Given the right conditions, such as further instability in the Middle East and increased competition for oil with China and India, fuel prices will continue to increase. The possibility of enacting restrictive environmental legislation will create challenges for further oil exploration. These conditions, coupled with fluctuating gasoline supplies, create an atmosphere where gasoline availability could be drastically reduced in a short period of time. Law enforcement agencies need to be prepared in case this happens. Law enforcement may need to rely on traditional policing methods combined with future technology to provide the level of service its citizens have become a custom to receiving.

End Notes

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