



U.S. Virgin Islands Petroleum Price-Spike Preparation

Caley Johnson

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

Technical Report
NREL/TP-7A20-54385
June 2012

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This report summarizes the recommendations and work of the EDIN-USVI Transportation working group (TWG). The work, time, insight, and creativity of the TWG members made this report possible, but any errors herein are the author's responsibility. The TWG members represent a diverse set of backgrounds and organizations within the U.S. Virgin Islands and provided a well-rounded assessment of strategies to improve transportation throughout the territory. Jehangir Zakaria of St. Croix Renaissance and Radclyffe Percy of the Virgin Islands Energy Office were particularly important contributors.

Executive Summary

There is widespread fear that the recent closure of the Hovensa refinery will lead to a petroleum price spike throughout the U.S. Virgin Islands (USVI), and particularly on St. Croix. It is possible that the price will spike when the refinery's stockpile depletes in July 2012 or when a geopolitical incident upsets a tight global oil market within the next decade. There are a number of preparations the USVI government, corporations, and associations can make as part of a two-pronged strategy to minimize the negative impact that such a price spike would have on the USVI economy.

One part of the strategy targets transportation and delivery companies. It improves their chances of surviving a petroleum price spike by facilitating their implementation of a fuel surcharge or helping them reduce their petroleum use through better route planning or idle reduction. The second part of the strategy targets commuters. The commuter-aimed programs recommended in this report were identified by studying commuter behavior in the continental United States during the price spike of 2008.

Rideshare was the most common way commuters dealt with higher prices and could be promoted in the USVI with a rideshare website, employee rideshare programs, and strategically placed parking lots. Telework and compressed work schedules were other popular responses to high gas prices in 2008, and USVI employers (including the government) could set up such programs to reduce their employees' fuel expenditures through these means.

In the event of a petroleum price spike, commuters will want to improve their vehicle fuel economy. Car dealerships need to be prepared for a change in vehicles demanded, and consumers require education in selecting and finding the most appropriate vehicle. Commuters not in a position to purchase a new car need to be informed about how to optimize their fuel economy through changes in driving habits and vehicle maintenance.

The USVI should facilitate reductions in fuel expenditures by enabling commuters to take the bus. To do this, they must first secure diesel fuel for their buses by reallocating fuel that is currently designated for other government vehicles or by entering a fuel contract that requires delivery to St. Croix. The USVI transit system (VITRAN) must increase the number of buses in order to improve coverage and frequency, and it must enhance riders' ability to predict when buses will arrive. Finally, the Department of Public works should facilitate safe walking and biking by opening up space for bikers and walkers to stay clear of cars.

An education program is important to ensure that delivery companies, commuters, employers, and car dealerships know the opportunities they have to reduce their transportation expenditures and the roles they can play to help the USVI economy weather the price spike.

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Introduction

In February 2012, the Hovensa oil refinery on St. Croix, U.S. Virgin Islands (USVI) ceased operations, and its stock of gasoline and diesel fuel is predicted to be depleted by July 2012. Hovensa was the territory's largest supplier of refined petroleum fuels, and the nearly exclusive supplier to St. Croix. Gasoline and diesel prices have already increased by approximately \$1/gallon since the refinery's closure, and Crucians are extremely concerned about how high prices will rise come July (Zakaria 2012).

The following report details a plan for the USVI to minimize the economic impact of major petroleum price increases. With proper preparation, goods can continue to be delivered, workers can continue to commute, and the economy can continue to function even in the face of very high fuel prices. This plan will be useful if the Crucians' fears materialize in July, and it will also be applicable for future petroleum price spikes which are likely to come. The assumptions for this plan are that the USVI will have very little time and money to implement it and that the population will be highly motivated to follow it because of high fuel prices. The plan's success, therefore, is highly dependent on behavior change. This plan re-prioritizes a handful of the projects recommended in the USVI Transportation Petroleum Reduction Plan, (Johnson 2011) and it adds numerous projects that were not mentioned in the previous plan.

This plan was derived largely from a review of the actions taken and behavior changes made throughout the United States in response to the oil price spike of 2008. During this spike, high petroleum prices spawned many innovative solutions from individuals, communities, and corporations. These solutions enabled local economies to function on less petroleum. Many companies adopted fuel surcharges that enabled them to remain solvent by passing the price increases on to their customers. Other companies implemented changes to driving and delivery patterns that reduced the amount of fuel their fleets consumed. Likewise, commuters made changes—often facilitated by programs their employers put in place—that lowered their fuel use by either reducing the amount of driving they were doing or increasing their fuel economy. Many of these solutions were coordinated by or reported through the 88 local representatives of the U.S. Department of Energy's (DOE's) Clean Cities program. The National Renewable Energy Laboratory (NREL) provides technical and communications support for the Clean Cities program and serves as a de facto repository of these solutions. This plan is the first publication that has tapped this repository.

Given the wide variety of players that can collectively keep the USVI's economy functioning throughout a petroleum price spike, this plan has a broad audience. It is not a step-by-step manual for how the governor or senate can steer the territory through a petroleum price spike. Rather, it is a guide to various techniques and methods that can enable companies to stay profitable, commuters to manage tightening budgets, employers to help their employees make it to work, and entrepreneurs to capitalize on upcoming opportunities, as well as ways multiple government entities can help facilitate and coordinate these efforts through policy and projects. The projects are not prioritized as systematically as in the USVI Transportation Petroleum Reduction Plan. Instead, they are listed in general order of importance based on their potential to keep the economy afloat and popularity among commuters (as shown in Figure 1).

Ensuring Solvency of Transportation and Delivery Companies

The budgets of delivery companies, taxis, transit services, and waste collection services are dictated primarily by fuel costs. As a result, these businesses are the most vulnerable to price spikes. The USVI government can implement three strategies relatively quickly and cheaply to ensure that such companies survive a fuel price spike: enable fuel surcharges, reduce idling, and support more efficient delivery routes.

Enable and Enact Fuel Surcharges

Many transportation and delivery companies were saved by fuel surcharges in 2008. Fuel surcharges enabled them to pass on additional fuel costs to their customers, which in turn led customers to respond to the additional cost with incremental reductions in demand. This is in contrast to companies whose revenues were locked in, so when fuel prices spiked their only options were to operate at a loss or not operate at all. Once legislative action is taken to allow fuel surcharges in the USVI, the taxi commission needs to coordinate fare changes more frequently than on a quarterly basis. VITRAN and the Virgin Islands Waste Management Authority (VIWMA) also need to incorporate a surcharge into their fees. The Washington Utilities and Transportation Commission provides helpful documentation on how to calculate and enact a fuel surcharge on its website at utc.wa.gov.

Reduce Idling

Work trucks with drive cycles similar to those found in the USVI are estimated to use 250 to 540 gallons of diesel per year idling, and delivery vans are estimated to use 324 gallons (Gaines 2006). Avoiding this unnecessary fuel expenditure saves diesel for more important uses. The 1,685 vehicles in the USVI government fleet could save a substantial amount of fuel if drivers were mandated to reduce their idling. An education campaign by the Virgin Islands Energy Office (VIEO) or a nonprofit, which relays how much money can be saved through idle reduction, could have a significant impact. Furthermore, an idle-reduction policy similar to those set by 38 cities and states (Alternative Fuels Data Center 2012) could reduce the amount of fuel wasted by many transportation and delivery companies in the territory. Many of these locations started by restricting the idle time of school buses because the health benefits of reduced particulate pollution are especially important with school-aged children. A good example of such a regulation can be read in the California Code of Regulations Title 13, Section 240 at <http://archive.org/details/ca.ccr.13>.

Support More Efficient Delivery Routes

A growing number of delivery (and waste collection) services have implemented route optimization software to support more efficient operations. This software enables delivery and collection trucks to identify routes that reduce the driving distance to a given set of delivery or pickup locations. Furthermore, it allows trucks to reduce the number of times they stop or slow down and thus waste fuel when accelerating to get back up to speed. The improved routes also help reduce fuel losses incurred through idling. Software packages can be researched and compared at softwareadvice.com. Projects have shown that these tools often reduce fuel use by 8% to 10% and lead to a payback period of around six months (UPS 2008). VIWMA could be an early adopter of such software, and VIEO could educate other fleets on the associated benefits.

Reducing Commuter Fuel Use

The economy of the USVI can only weather an oil price spike if employees are able to work. To afford to do so, they must reduce the amount of fuel they use in commuting to work. This can have a secondary benefit of reducing fuel demand and lowering prices for all end users in the territory. During the price spike of 2008, a survey revealed the ways in which commuters reduced their fuel use (Robert Half International and Careerbuilder.com 2008). The results, shown in Figure 1, can serve as a guide for how the USVI government and other organizations can best equip commuters to reduce their fuel use. Therefore, Figure 1 sets the prioritization of these strategies and the order of this report.

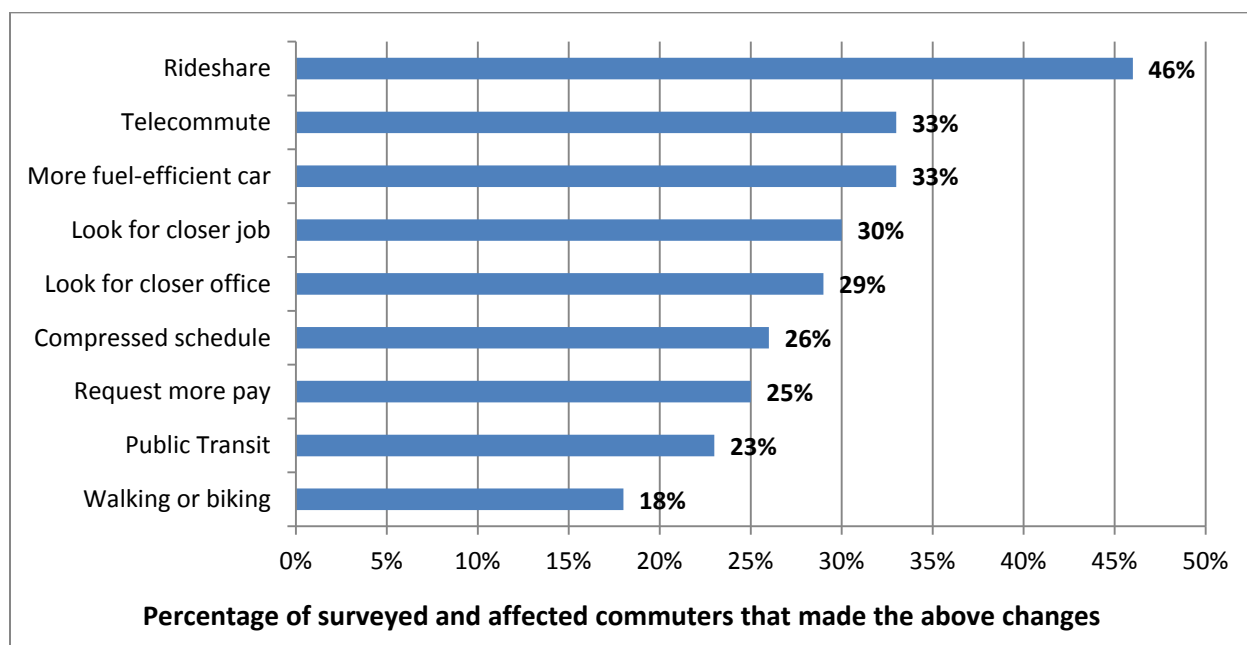


Figure 1. Commuters' responses to the 2008 oil price spike. Source: Robert Half International and Careerbuilder.com 2008

Rideshare

The most popular way commuters responded to the 2008 oil price spike in the United States was to rideshare or carpool. This is an extremely viable option in the USVI, where 79% of commuters drive to work alone (NuStats 2009). The four (or more) empty seats in each of these vehicles represent the most cost-effective transportation for other people going the same direction. But commuters in the USVI need help finding those empty seats in cars that are going to and from nearby locations at times that are convenient for them. Furthermore, they need reassurance that they will be as safe as possible when riding in these seats. A third party, such as a government agency, a community organization, an employer, or an entrepreneur can help in both of these endeavors through rideshare websites, strategic parking lots, and employee rideshare programs.

Rideshare Websites

Rideshare websites and smartphone applications enable travelers in a given region to coordinate their rides and provide safety through accountability. There are some universal rideshare

websites that can be used in the USVI,¹ but there are also advantages (such as improved usability) to tailoring a website to a specific locale. All rideshare websites ask for users' departure and destination locations, as well as their time of travel, in order to identify good rideshare groups. They also require users to create an account, which increases accountability. These sites are hosted and sponsored by local governments, nonprofits, and entrepreneurs that can benefit from directed advertising provided by such a site. Advanced features include rider/driver reviews, payment transfers, fuel-savings calculators, and free taxi rides as backup.

Strategic Parking Lots

Strategic parking lots are relatively quick, cheap, and effective ways of facilitating ridesharing and mass transit use. The best locations for parking lots are close to intersections of major roads as one approaches a popular destination (usually a city). This maximizes the number of people traveling between the city and the parking lot, which maximizes the flexibility of ride timing. The USVI Department of Public Works has already had contractors perform a parking lot assessment. Their findings are reported in Lea+Elliott 2009 and PB Americas 2009, and the recommended parking lot locations are listed in Table 1. It should be noted that the reports did not recommend a strategic parking lot on St. Croix (largely because the Lea+Elliott study was focused solely on St. Thomas), but the previous studies will serve to facilitate and expedite an assessment of St. Croix.

Table 1. Strategic Parking Lots Recommended in the 2009 PB Americas and Lea+Elliott Reports

Island	Location
St. John	Myrah Keating Clinic on Centerline Road (Rt. 10) at Giff Hill Road (Rt. 204)
St. Thomas	Intersection of Centerline Road (Rt. 10) and King Hill Road (Rt. 20)
St. Thomas	Red Hook Marine Facility (East end of Red Hook Road)
St. Thomas	Cost-U-Less parking lot on Weymouth Rhymer Hwy.

San Francisco and Northern Virginia could serve as good examples and mentors as the USVI implements strategic parking lots. In both locales, the number of people wanting to rideshare at well-located parking lots is great enough that the systems are very easy to coordinate. Signs are set up designating the riders' destinations, and drivers pick these riders up at their convenience. Rides to and from less popular parking lots are coordinated through websites.

Employee Rideshare Programs

Employee rideshare programs facilitate coworkers sharing rides to work. These programs have the advantage of all travelers having the same arrival point (the office), and safety is ensured since the participants are coworkers and therefore accountable. The emphasis of an employee rideshare program is on helping employees find coworkers that have a common destination after work (most often homes in shared neighborhoods) and have compatible schedules. This can be done through a free rideshare website or software package, or simply coordinated at a meeting. Many companies further encourage ridesharing by offering financial incentives, limiting employee parking, giving the most convenient parking spots to shared cars, or providing the

¹ See list of ridesharing websites and software packages at the National Center for Transit Research's website: nctr.usf.edu/programs/clearinghouse/ridematching-software/

carpoolers with a van. Employee programs are sometimes conglomerated to include neighboring companies to increase the pool of commuters.

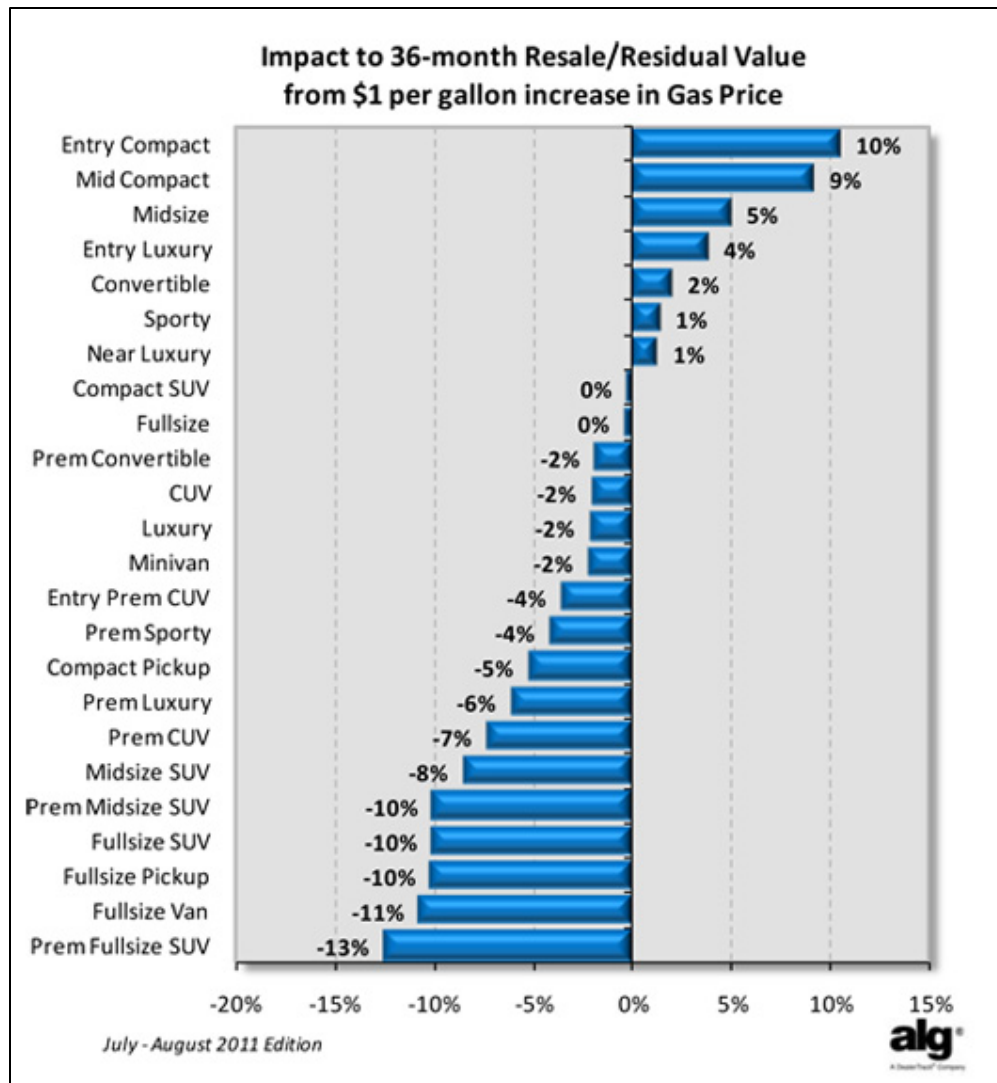
Telework

Telework reduces fuel use by enabling employees to work from home (telecommute) instead of commuting every day, and by allowing employees to participate in meetings over the phone or Internet (teleconferencing). Teleconferencing is particularly beneficial in the USVI, where it displaces expensive interisland flights. There are numerous teleconferencing services that are cheap, secure, effective, and easy to use. The most basic of these are free and enable meeting attendees to speak and hear each other while viewing the same documents over the Internet.

Telecommuting programs require a more sophisticated technology bundle and information technology staff to keep them running and secure. They also require a level of trust between the employer and employee that is easiest to achieve with pre-existing employees working at jobs that are based on deliverables rather than the amount of time worked. As a supplement to employer trust, it is also important to define the program well and to set policies that outline what is expected of the employees (including training) and when their telecommuting privilege might be revoked. A useful guide for setting policy and choosing the proper technology bundle for telecommuting is the MegaPath white paper *How to Implement a Successful Telecommuting Program* (Megapath 2006). Many of the USVI government agencies perform work that could be done remotely, and these agencies could lead by example, perhaps even serving as mentors for private companies and other employers in the USVI.

Purchase a More Efficient Vehicle

The third most common way commuters responded to the price spike of 2008 was to purchase a more efficient vehicle. Vehicle dealerships were overwhelmed with the demand for efficient new and used vehicles, had too many inefficient vehicles on hand, and therefore couldn't capitalize on the shift in demand (New York Times 2008). Since then, the residual value analysts at ALG have assessed the impact of fuel prices on vehicle resale value, as shown in Figure 2. The effects that the price spike had on vehicle value were profound, with an entry compact car increasing 10% while a premium full-size SUV decreased 13%. The best thing that could be done in the event of a localized price spike in the USVI is for dealers to make preparations to import efficient vehicles and export inefficient vehicles quickly. They should take this initiative after the potential profits (as highlighted in ALG 2011) are explained to them.



**Figure 2. Impact to 36-month resale/residual value from \$1-per-gallon increase in gas price.
Source: ALG 2011**

In addition to encouraging car dealerships to offer more efficient vehicles, a fuel-use awareness program would equip commuters to choose the most economical vehicle in the face of a fuel price spike. Such a program should start with the basics—helping commuters track how much they spend on fuel and calculate how much they could save if they traded in their car. It should highlight the website fuelconomy.gov, where visitors can compare new and used vehicles based on fuel economy. It should also review many of the helpful tips listed on Natural Resources Canada's Buying a Fuel-Efficient Vehicle website.² The program should teach USVI commuters ways of locating these cars from local dealers and discuss options for finding and importing certified cars directly from the mainland via the suite of available Internet search tools.³

² oee.nrcan.gc.ca/transportation/personal/buying/9515

³ edmonds.com, cars.com, autotrader.com, carsdirect.com, and others.

Improve Fuel Economy Through Maintenance and Driving Techniques

Drivers who are not in a position to trade in their vehicles should be encouraged to optimize the fuel economy of their current vehicles. The many helpful tips and savings estimates listed at fuelconomy.gov/feg/drive.shtml would make a good curriculum for an efficiency optimization education program. These tips include moderating acceleration, optimizing cruising speed, using the correct motor oil, maintaining proper tire pressure, and minimizing the use of air conditioning. Such an optimization program should also alert drivers to the numerous fraudulent products that are often pushed on desperate people during price spikes. These products include devices that allegedly turn water into fuel, fuel line devices, and mixture enhancers, as listed on the Environmental Protection Agency's Aftermarket Retrofit Device Evaluation Program website: epa.gov/otaq/consumer/reports.htm#co-in.

Opt for a Compressed Work Schedule

A quarter of all commuters who were affected by the price spike of 2008 sought a compressed work schedule that allowed them to work 10 hours per day/4 days per week or 9 hours per day/9 days every two weeks instead of the usual 8 hours per day/5 days per week. By reducing the number of days that workers must commute, these compressed work schedules reduce fuel use 20% for the 10-hour day and 10% for the 9-hour day. These alternative work schedules are common offerings in the federal government. The USVI government could offer compressed work schedules as an option and serve as a mentor to other USVI companies and organizations that are interested in making alternative work schedules available to their employees.

Increase Transit Ridership

In the continental United States, transit ridership has been shown to track gasoline prices after a short lag (see Figure 3). Most U.S. communities saw an influx of bus riders in 2008, yet many transit authorities were not able to expand their services because the additional fuel costs took any money that might have been used for new buses or drivers. Overcrowded buses led to inconvenient and uncomfortable experiences for many of the new mass transit users, making them less likely to become reliable long-term customers (Bradford 2008). This is why it is important to be able to quickly implement a fuel surcharge (like the King County Metro and Utah Transit Authorities did) or secure additional lines of funding (as outlined in the "Ensuring Solvency of Transportation and Delivery Companies" chapter of this report) during a price spike, to better enable supply to match demand.

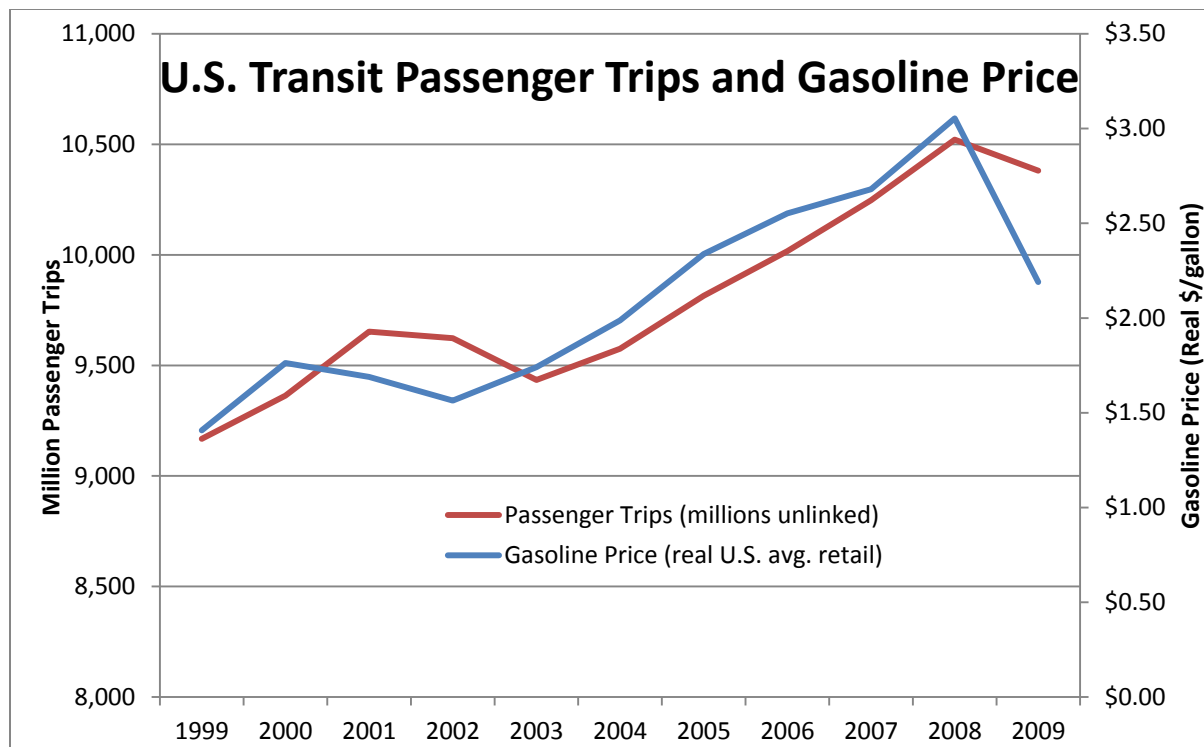


Figure 3. U.S. transit (bus and rail) passenger trips and gasoline price. Sources: American Public Transportation Association 2011 and Energy Information Administration 2011

The USVI has much room for increased transit ridership since its overall bus ridership rate is only 2.6% (USVI Household Travel Survey) and there is already a private transit option in place (Dollar Rides). School bus ridership in the USVI is also in need of improvement, as roads near most schools are congested with parents driving to schools twice a day to drop off and pick up kids. To prepare the USVI to increase transit ridership in the face of rising fuel prices, diesel fuel needs to be secured for the buses, the number of buses needs to increase, riding the bus needs to be made as convenient as possible, and the government must facilitate increased availability of Dollar Rides.

Securing Diesel Fuel for Buses

When Hovensa's stockpile runs out, there might not be enough diesel fuel for all uses on St. Croix. Transit and school buses must be given high priority for procuring the available diesel fuel. This could be done if the government reallocated fuel budgets from a fraction of its 1,680 other vehicles to buses. Another possibility is for VITRAN and the Department of Education to lock in a fuel contract now with its suppliers on St. Thomas. Such a contract would require the fuel supplier to barge diesel fuel to supply buses on St. Croix if needed.

Increasing the Number of Buses

St. Croix only has five fixed-route buses (McGregor 2011), and these do not provide coverage to many of the residential areas on the island. Nor can these buses provide enough frequency on routes—even the main route (Christiansted-Frederiksted) only has buses coming by every two hours. More buses are needed for the bus system to absorb the additional riders that are likely to

come with a gas price spike. If feasible, these buses should be similar to what the VITRAN and Department of Education mechanics are accustomed to working on—BlueBird transit buses and ThomasBuilt or Chevy Duramax school buses.

Most new buses require at least 10 months from order to delivery (Kemp 2012), which could cause VITRAN to miss its opportunity to coordinate service increases with the increased ridership of a price spike. Purchasing used buses would be much quicker, and the lower cost of used buses would enable VITRAN to stretch its budget further. The downside of used buses is that they wouldn't last as long, but the goal of the price spike plan is to enable the USVI to endure a relatively short spike. The robust secondhand bus market can be perused on a number of highly searchable and transparent websites⁴ that clearly display important features, including price, number of passengers, vehicle mileage, and transmission mileage, along with numerous photos.

Funding must be secured before buses can be purchased. The most logical source of funds to use for quick bus purchases would come from the liquid fuels tax. Diverting some of this money from road repair toward bus purchases could make sense under the assumption that the petroleum price spike would reduce traffic, road damage, and road repairs. Funds could also be raised from employers if they are informed of the federal tax advantages (as outlined in commuterchoice.com) of purchasing bus passes for their employees. Another good source of funds would be the Federal Transit Administration's formula and discretionary grant programs listed at fta.dot.gov/grants_263.html. Finally, a bond authorization could provide the funds for timely bus purchases.

To make the investment in buses worthwhile in the long run, new bus riders must be retained. Since humans are creatures of habit (New York Times 2012), it will be easier to retain them after prices drop than it would be to convert them without high prices. To maximize retention, bus ridership must remain economical even when the petroleum price drops. This is another reason a fuel surcharge should be used during the spike and then dropped or reduced afterward.

Increasing Bus Convenience

Finally, riding the bus must be made convenient. The increased coverage and frequency provided by more buses is the first step toward a more convenient bus system. Next steps should include posting schedules in locations that are easy to obtain and creating a VITRAN website to assist bus riders' informational needs. Furthermore, VITRAN should collaborate with Google to include its bus schedules in Google Maps' mass transit directions or implement a multi-modal travel trip planner such as Open Trip Planner. Enabling riders to track buses in real time via nextbus.com would provide a huge boost in convenience and predictability that would also help retain bus riders.

Increasing Dollar Rides

The USVI has a unique transit system called Dollar Rides, which are given by privately owned vehicles (called safari taxis on St. Thomas or just taxi vans on St. Croix) that pick up passengers at predetermined locations on the side of the road. A petroleum price spike is likely to increase ridership of the Dollar Rides, and the government needs to enable private companies to increase

⁴ busesforsale.com, nationsbus.com, busesonline.com

their operation. To this end, the government should consider suspending the moratorium on new safari taxis, the primary vehicles used for Dollar Rides on St. Thomas. If this is not possible, the government should highlight options for high-occupancy, fuel-efficient vehicles that meet safety standards and can be used for Dollar Rides. This will be important to ensure investor confidence in new vehicles in the wake of the safari taxi moratorium. To this end, the government should assess the potential of vehicles that serve functions similar to the Dollar Ride in petroleum-thrifty countries such as the Philippines (*jeepneys*), Thailand (*songthaews*), Indonesia (*angkots*), and Mexico (*colectivos*). Isuzu N-Series and Mitsubishi Fuso are two base vehicles that are commonly used in these markets and are offered in the United States. The USVI should inspect the body/equipment building guides of these vehicles and offer additional guidance as to what types of bodies they will allow to be used for Dollar Rides in USVI.

Increase Biking and Walking

Biking and walking require no petroleum and therefore offer commuters complete liberation from the volatility of fuel prices. There are a number of quick and inexpensive things that the USVI government (or independent organizations) can do to make biking and walking more viable options for commuters. Foremost, it must ensure the safety of bicyclists and pedestrians. It can do this by adding new crosswalks, bike lanes, and barriers to enable them to separate themselves from cars. Many helpful ideas on how to design biker-friendly infrastructure are summarized in the San Diego Bicycle Design Guidelines/Best Practices Manual (San Diego Association of Governments 2009). On St. Croix, vegetation needs to be trimmed from the shoulders of roads so that bikes can use them. Providing safety gear such as helmets, reflectors, and vests is another cost-effective way to increase biker safety. The USVI could also join the 16 states and numerous cities that have enacted laws requiring cars to give bikers at least three feet of space when passing. The specific laws can be read at http://3feetleft.com/cycling_laws.htm. Furthermore, safety for the bike (not just the biker) needs to be ensured by providing bike racks and lockers. A good example to follow is The Netherlands, where legislation that assumes motor vehicles are liable for collisions with bicyclists has helped lead a “spectacular” decline in danger to the bicyclist (Ministerie van Verkeer en Waterstaat and Fietsberaad 2009).

Biker safety and security can also be increased through educational campaigns about how to bike safely, where to bike safely, and how to repair bicycles so the cyclists don’t get stranded. Bike promotional events have resulted in increased ridership, with the most successful events providing bikes for a test ride so that people who don’t own bikes can refamiliarize themselves with the equipment and the joy of riding (Simons 2010). Successful events have also included route consultations by local residents (with bicycle maps that the bikers can take home) and overviews of the health-related benefits of exercising during one’s daily commute. One of the nationwide bicycle advocacy groups listed at bikeleague.org/links/advocacy.php could be helpful in making the USVI more biker-friendly.

Reaching Out with Education Programs

Many of these programs and projects depend greatly on outreach and education. VIEO would be a natural fit for an education program because they have a dedicated and experienced outreach staff. A three-pronged approach could optimize the use of their time. First, they should have a seminar for the fleets that they think could most benefit from idle reduction and delivery route

optimization software. During this seminar, they should highlight the potential cost savings of idle reduction and explain some of the route optimization software packages.

The second outreach effort should be a series of seminars to help commuters reduce their fuel costs. Such seminars would likely have a very good turnout, as commuters will be stressed by high fuel prices. These seminars should explain rideshare programs, discuss options for telework, teach the true relationship between fuel economy and the lifecycle cost of vehicle ownership (through tools such as the Vehicle Cost Calculator at afdc.energy.gov/afdc/calc/), and demonstrate how to best shop for a fuel-efficient car that meets individual needs. These outreach events should also educate commuters on bus and Dollar Ride options and how to best utilize these systems. In addition, they should introduce commuters to the best options for riding bicycles safely and conveniently by distributing bicycle maps and providing tips on bicycle safety and maintenance. This outreach approach could also expand into Individualized Transportation Marketing (ITM), where a transportation consultant would follow up with a call or household visit upon request. This ITM process has resulted in an 8% reduction in vehicle miles traveled for the targeted regions in Bellingham, Washington; Cleveland, Ohio; and Portland, Oregon (National Center for Transit Research 2008).

The third education effort would reach out to employers to describe how they can help their employees reduce fuel expenditures. These employer outreach sessions should include a description of carpool programs, introduce vendors that could set up carpool websites, and provide an overview of the MegaPath white paper *How to Implement a Successful Telecommuting Program* (Megapath 2006).

As part of this education effort, VIEO should also consider reaching out to car dealerships to better prepare them for the shift in vehicle demand (as shown in Figure 2) when petroleum prices rise.

Conclusion

Government agencies, businesses, and associations in the USVI have numerous tools, technologies, and techniques at their disposal to ensure that a petroleum price spike does not cripple their economy. Those recommended in this report are modeled on choices made by companies and commuters in the continental United States during the petroleum price spike of 2008. Because of this foundation in consumer preference and because they are relatively quick and inexpensive to implement, the recommended programs and measures are likely to be successful in the USVI. These measures and the primary actors involved in implementing them are summarized in Table 2. Despite the listing of primary actors, this report is intended to reach out to those with personal insight into their subsection of the economy and equip them to act. It will be a combination of efforts undertaken by the primary actors and various other innovators that keeps the USVI economy afloat through a petroleum price spike.

Table 2. Summary of Actions Recommended and Primary Actors

Action	Primary Actors
Enable fuel surcharge	Taxi Commission, VITRAN, VIWMA
Reduce idling	Senate, Dept. of Property & Procurement (DP&P), VIEO, nonprofit
Support more efficient delivery routes	VIWMA, VIEO
Aid rideshare	Commuters, employers, website hosts
Build strategic parking lots	Department of Public Works (DPW)
Telework	Employers, govt. agencies
Purchase a more efficient vehicle	Commuters, vehicle dealers
Improve fuel economy through maintenance and driving techniques	Commuters
Opt for a compressed work schedule	Employers, govt. agencies
Increase transit ridership	VITRAN, Department of Education, senate
Increase dollar rides	Senate, DP&P, VIEO, nonprofit
Increase biking and walking	Senate, DPW
Education programs	VIEO, nonprofits, entrepreneurs

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