



# Memorandum

**TO:** MAKING GOVERNMENT WORK  
BETTER COMMITTEE

**FROM:** Frank Kirkbride

**SUBJECT:** SEE BELOW

**DATE:** April 15, 2005

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Approved

Date

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**SUBJECT: STATUS REPORT ON COMPRESSED NATURAL GAS FACILITY AT  
MINETA SAN JOSE INTERNATIONAL AIRPORT**

## **RECOMMENDATION**

Accept the staff report on the use of the Compressed Natural Gas fueling station at the Mineta San José International Airport.

## **BACKGROUND**

In April of 2003 the Airport completed construction and began fueling operations at the Compressed Natural Gas (CNG) fueling facility located within Mineta San José International Airport (SJC). The station was opened to the public in August 2003 and has been providing fuel to a variety of users since start up of operations. This report provides information on station performance for FY 2003-04 and provides an overview of the following major areas:

- CNG Station Overview
- Users of the Station
- CNG Conversion Efforts
- Fuel Consumption
- Operating and Maintenance Costs
- Related Station/Clean Air Program Accomplishments
- Opportunities for Improvements to Station Utilization and Performance
- Revenue/Utilization Assessment

## **ANALYSIS**

### **CNG Station Overview**

The CNG station is one element in the Airport's Clean Air Program (CAP). The CAP has evolved and continues to evolve to support the Airport's efforts to comply with the spirit of the

California Air Resource Board's (CARB) air quality certification of the Environmental Impact Report (EIR) to the Airport's Master Plan.

The Airport's CNG station was designed to provide fuel to the Airport's shuttle bus operations and to provide fuel for ground transportation vehicles and private owned vehicles (POVs). The CNG buses are used to shuttle passengers and employees to long term parking facilities and currently meet CARB air quality certification requirements. The buses are leased by the Airport and are operated under contract by ShuttlePort California LLC.

The size and capacity of the station was established by considering the amount of fuel used to accommodate busing operations in FY 2000-01 and the projected demand to be created by growth in the Airport's CNG fleet. In addition, the Airport took into account the value of providing a CNG fuel source to the general public as an effort to promote the use of alternative fuel vehicles. This resulted in the station having an annual capacity of approximately 2,500,000 gallons of gas equivalent (GGE) or the ability to dispense approximately 6,850 GGE per month. Gallons of gas equivalent is a measure of the thermal energy value of a CNG unit in relation to natural gas and is the unit rate used to measure CNG usage.

The total cost to build the station was \$3,200,000 of which \$750,000 was provided by a grant secured from the Santa Clara Valley Transportation Authority (VTA) and the California Energy Commission (CEC). The operation and maintenance of the station is performed under a contract with Pinnacle CNG, Inc., of Midland, Texas.

### Users of the Station

The station was designed to provide fuel for several types of vehicles that operate at the Airport, as well as to the general public. As most of the Airport's vehicles are conventional fuel vehicles, (i.e., gasoline and diesel powered), it was recognized that the Airport fleet would need to be replaced or retrofitted to operate on CNG fuel. Toward that end, the Airport specifically developed an Alternative Fuels Program (AFP) as a component of the Airport's Clean Air Program. Vehicles that are candidates for the AFP and thus potential users of the CNG station include:

#### *Landside Vehicles*

Approximately 2511 vehicles are permitted to operate on landside pursuant to conditions of the Airport's Ground Transportation Permit Program (GTPP). These vehicles provide services to both Terminals A and C, as well as to the short and long-term parking lots and the rental car agency lots. These vehicles consist primarily of taxis, door-to-door vans, shuttle buses, parcel delivery vehicles, charter buses and limousines. The majority of these vehicles are conventionally fueled.

#### *Airside Vehicles*

Vehicles that operate on airside are commonly classified as ground support equipment (GSE). These GSE are owned and operated by Airline tenants and/or their subcontractors under Airport lease agreements. They provide services to the commercial and general aviation communities

operating at the Airport. Typical GSE include mobile fueling, aircraft tow tractors, baggage tugs, lavatory waste haulers, food catering trucks and cargo loaders. Most of these GSE are not allowed to operate outside the boundaries of the Airport or on any California roads and highways. While some GSE units are electric, the majority of the vehicles are powered by gas and diesel.

#### *Airport Vehicles*

The Airport uses various City supplied vehicles for Airport functions, primarily for administrative and field support operations. The Airport is provided with 98 City vehicles, of which 10 are CNG. Currently the Airport is complying with a vehicle purchase and replacement moratorium intended to relieve the current budget shortfall, and minimal vehicle procurements or replacements have occurred.

#### *Airport Shuttle Buses*

Shuttle transport is provided between the long term parking facilities and the terminals as well as between the employee parking lot and the terminals. As previously noted twenty buses (20), all of which use CNG for fuel, are used for these operations.

The Airport also utilizes 20 diesel buses to transport passengers from the terminals to the rental car lots. CNG fueled buses will replace these buses in 2007 pursuant to a CARB air quality certification requirement to meet the emission standards in effect in 2007. As these buses are dedicated to transporting passengers from the terminals to the rental car lots and based on tentative plans to relocate the rental car lots to the newly acquired FMC property on the west side of the Airport, the use of CNG rental car shuttle buses would represent a substantial increase in CNG station utilization.

#### *Other User Vehicles*

The Santa Clara Valley Transportation Authority (VTA) operates the Airport Flyer buses that transport passengers to and from the Metro light rail station to the terminals. These buses are powered by diesel. Similar to the Airport, the VTA is committed to the use of alternative fuel vehicles and has been considering options relative to the use of a variety of alternative fuel vehicles. By exemplifying the successful use of CNG buses within the Airport, it is our intent to partner with VTA and encourage their utilization of the CNG buses at the Airport leading to an increase in the utilization of the CNG station.

#### Conversion to CNG Power

In June 2001, SJC established a Clean Vehicle Policy. This policy established a 25% conversion goal to alternative fuels by the end of 2004 for all fleet vehicles operating on both landside and airside. Alternative fuels are defined to include CNG. With the exception of the Airport's efforts towards the use of CNG buses, there has been limited progress in conversion to CNG vehicles. This has been primarily due to the front-end costs associated with the conversion and/or the purchase of CNG fuel vehicles. In addition, the competitive nature of the transport environment at SJC and the lack of operational incentives or advantages have made it difficult to promote investments in alternative fuel vehicles among landside operators.

Though the Airport has identified sources of grant funding to facilitate vehicle conversions, grant restrictions limit the application of grant funds to the procurement of “new” alternative fuel vehicles. This restriction further moderated the level of stakeholder interest and involvement in pursuing CNG conversion and CNG vehicle purchases. To date there are approximately 31 CNG taxi vehicles from a taxi pool comprised of 530 units.

Airside operators have also been slow to embrace a systematic conversion program. This position has been primarily influenced by the Airlines’ concerns with undertaking new and costly initiatives at a time when they are facing increasing financial hardships. Similar to the concerns with operators on landside, many of the GSE tenants are adverse to the front-end costs to convert their vehicles to alternative fuels.

### Summary of Fuel Consumption and Revenue

This analysis covers utilization of the CNG station in FY 2003-04. This represents a complete and total one-year representation of station utilization. For FY 2003-04, the station dispensed 340,411 gallons of gas equivalents (GGE). This represents 13.6% of the station’s capacity. The following summarizes and analyzes fuel consumption by vehicles types.

#### *CNG Shuttle Buses*

The existing 20 CNG long-term parking shuttle buses consumed 301,154 GGE that represents approximately 88.5% of the station’s total amount of fuel dispensed during FY 2003-04. The amount of fuel consumed by the buses for FY 2003-04 is approximately 68% of the baseline design projection. The baseline consumption projection for the shuttle bus operations serving the long-term parking areas was predicated on the level of busing operations performed in 2001. The difference in consumption is attributed to reductions in the number of buses in operation and the decrease in the number of hours of operation due to the impacts of 9/11 and a drop in passenger levels that was amplified by the inception of the economic downturn in the region.

#### *City Vehicles*

The 10 non-bus type CNG vehicles operating at the Airport consumed 3,541 GGE, or approximately 1% of the total amount dispensed during FY 2003-04. Due to the volatile market for oil and natural gas based fuels, the use of CNG fuel has not automatically resulted in fuel savings. Currently the cost of CNG fuel and conventional diesel fuel are basically equal. The 3,862 GGE used by Airport vehicles represents 46% of the estimated consumption projected at the time of the station design. The difference is largely due to the original intent to pursue an aggressive replacement effort of these vehicles to CNG operations. However, due to budget restraints, replacement has not occurred, and CNG consumption by this vehicle class has remained stable.

#### *Paying Customers*

Paying customers are those that have established accounts with the Airport to use credit cards to purchase CNG fuel. Paying customers consumed 35,716 GGE or approximately 10.5% of the total amount dispensed for FY 2003-04. Paying customers generated revenue of \$61,447 for FY 2003-04. This volume of CNG fuel consumed by paying customers represents 13% of the

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baseline design assumptions, and clearly indicates that the station has the capacity for increased use by paying customers if a viable and interested market can be identified and motivated. It also reveals that the interest for public use of the CNG station does exist, as reflected by the fact that 10% of all fuel dispensed at the station in FY 2003-04 was sold to paying customers.

Operating and Maintenance Costs

The following is data and preliminary analysis on the operation and maintenance costs of the station for FY 2003-04 as a function of the type of expenditure.

*Station O&M Management*

The total O&M fees paid to Pinnacle during FY 2003-04 were \$188,255. This fee equates to \$0.55 per GGE. The Airport's GNG station's unit cost for O&M is higher than the industry standard. The reason for the higher unit rate is the fact that the current agreement is based on a fixed annual O&M cost that was based on the projected volume of CNG fuel to be dispensed at the station. Specifically, the baseline design projected that 725,000 GGE would be dispensed in FY 2003-04. This was based on the Airport achieving a higher fleet conversion rate to CNG and the airport shuttle bus operations using an equivalent amount of fuel as the diesel buses in FY 2000-01. However, as previously stated only a total of 340,411 GGE were dispensed in FY 2003-04. It is evident that the management agreement needs to be restructured to account for and be based on the volume of gas dispensed and should also include incentives that promote utilization.

*Utilities*

The Airport directly pays for the cost of electricity and natural gas to the station in an effort to promote the lowest possible costs. These utilities are provided by PG&E. The cost of the utilities for FY 2003-04 was \$406,010. Based upon 340,411 GGEs dispensed in FY 2003-04, the unit cost related to utilities \$1.19 per GGE.

*Total O&M Costs*

The total annual O&M costs for FY 2003-04, which includes station management costs, electricity costs and natural gas fuel costs, were \$594,266. Based on total fuel dispensed, and the annual cost for station management services and utilities the average operating cost for CNG fuel at the station was \$1.74 per GGE. The cost of CNG fuel supplied at PG&E stations in FY 2003-04 ranged from \$1.45 per GGE to \$1.81 per GGE with an annual average of \$1.63 per GGE. This data indicates that increasing the customer base and reducing O&M costs by restructuring the management contract, are critical elements if the station is to be competitive and become a more viable option for general public use.

*Revenue/Cost Diversion/Operating Cost*

For FY 2003-04, the station generated direct sales revenue of \$61,447. In addition, the availability of CNG fuel at the station decreased the Airport's dependence on diesel fuel representing a reduction in diesel fuel expenditures of \$451,731. Based on the annual O&M station costs and accounting for the reduced diesel fuel costs, the station had a net operating cost of \$81,088. Though this reaffirms the need to pursue cost reduction efforts, it does not account

for the environmental value associated with eliminating the use of over 300,000 gallons of diesel fuel.

### Summary of Station/Clean Air Program Accomplishments

The daily operation of the CNG station is one of several inter-related activities performed by the Airport as part of its Clean Air Program. The following are additional actions and accomplishments related to the CNG station for 2003-04:

- In 2003, the Airport replaced 17 diesel buses with 20 new CNG buses that meet the 2004 super ultra low emission vehicle (SULEV) standards. This resulted in a direct reduction of 11.33 tons of emissions for FY 2003-04.
- In 2003, the Airport presented the design and benefits of its new CNG station to the Clean Cities Coalition of Silicon Valley (CCCSV), a consortium of public and private agencies, businesses, and citizens dedicated to the advancement of alternative fuels to improve air quality in the Silicon Valley region. The Airport's presentation is now on CCCSV's web site.
- In 2003, an article on the unique design and operating features as well as the benefits of the Airport's CNG station was featured in *Natural Gas Fuels*, a nationally recognized technical publication.
- The Airport has partnered with the Clean Cities Coalition of Silicon Valley to promote the CNG station. By engaging the Coalition, the Airport has developed relationships with a variety of entities, both public and private, that are engaged in promoting the use of alternative fuel vehicles. The Airport CNG station is listed in the Coalition's web page list of available CNG stations, information that is available to the general public.
- On April 29, 2004, the Airport received a Clean Air Award from the American Lung Association of the Bay Area for "the Adoption of Technologies to Promote Clean Air Quality."
- The Airport was successful in bringing in Bauer Limousine Services, in FY 2003-04, who provided two (2) CNG buses that were used exclusively to transport customers from downtown hotels to the Airport. Unfortunately due to the lack of business the company ceased the operation.
- On October 7, 2004, the station and select Airport staff were featured in the "Green Commute" program broadcast on the Civic Center Television's award winning "San José in Focus."
- An RFP is being prepared to fabricate new CNG buses to replace the remaining diesel buses by 2007. The RFP is scheduled to be advertised in July 2005.
- The Airport has reached the milestone of having 25% of its own fleet being alternative fuel vehicles pursuant to the 2001 Clean Vehicle Policy.

### Recommended Improvements to Station Utilization and Performance

The Airport believes that the following areas should be the focus in efforts to improve the utilization of the CNG station.

- Increase vehicle conversion efforts to landside and airside fleets.
- Increasing utilization opportunities.
- Reassess and restructure the station O&M contract.

#### *Increase Vehicle Conversion Efforts*

Studies will be conducted to determine which vehicle fleet components on airside and landside are the best candidates for CNG conversions. Numerous meetings are being planned with stakeholders to determine their needs and identify actions that make conversion more palatable and less cost impacting. The Airport may need to consider numerous incentives that promote conversion including but not limited to grant funding, differential trip rates with lower trip fees for CNG vehicles, first-in-line privileges for CNG vehicles picking up and dropping off passengers at the Airport, help with low interest loans, tiered fuel rates that provide cost discounts for bulk fueling, lobbying for government tax incentives, and expansion of the use of CNG vehicles whenever Airport operational changes or initiatives are implemented.

The introduction of the new CNG rental car buses to replace the remaining diesel buses and the utilization of these buses to run the expanded route to the FMC site is an example of how increased utilization can enhance CNG station utilization. The replacement of the rental car buses with CNG vehicles coupled with the relocation of rental car operations to the newly acquired FMC parcel, will lead to a CNG fuel consumption rate on the same order of magnitude as the CNG buses serving long-term parking. Assuming CNG fueling levels remain the same as FY 2003-04 for existing activities, the rental bus shuttle operation to FMC will increase station utilization from 13.6% of the station's maximum capacity to 25.3% by 2007. This represents a considerable contribution in reducing use of high pollutant fuels at the Airport and clearly illustrates the Airport's commitment to its Clean Air Program.

#### *Increasing Utilization Opportunities*

Interest and use of the Airport CNG station is impacted by efforts to develop a viable market and efforts to increase awareness of both the benefits of CNG fuel and the availability of the station. Since the inception of station operations, the Airport has partnered with the Clean Cities Coalition of Silicon Valley to ensure that the Airport station is an integral part of outreach efforts led by the Coalition. As previously noted the station is listed on the Coalition's station location web listing as well as being an element in the distribution and dissemination of CNG information to the public.

Going forward the Airport is challenged by several factors. One impacting factor is that interest in CNG vehicles by the general public, particularly for private transportation use, has been tempered by the introduction of other alternative fuel vehicles that have been more positively perceived and accepted by the general public. At the same time, due to budget restraints, staff resources and competing expenditures are being closely monitored with regard to return in investment and overall benefit. For these reasons, the Airport is of the opinion that outreach

efforts should be focused on expanding the “captured” market that currently exists at the airport and more effectively partnering with other agencies and organizations to maximize outreach and promotion at the lowest possible cost.

Finally a dedicated outreach resource needs to be considered to better seek and assess a viable CNG customer base. As illustrated by the consumption values noted in this report the CNG station has excess capacity and can be a viable source of CNG fuel for the area. The challenge is to identify potential users and efficiently operate the station to allow for a competitive price structure. Because the current budget challenges create a need to prioritize this resource need among several competing needs, a cost benefit analysis will be a factor in assigning priority to this need.

#### *Revise the O&M Contract*

As part of creating a competitive market position, the Airport will examine the station’s O&M contract agreement and negotiate a compensation structure that is linked to the amount of fuel dispensed. The current agreement allows the City to reconsider the extension of the contract annually, with each contract period extension commencing in December of each year. Station management services will be expanded to include the promotion and continuous examination and assignment of competitive fuel prices along with establishing specific outreach and marketing tasks that further enhance station utilization.

### **OUTCOME**

The primary goal of establishing the Compressed Natural Gas station was to improve air quality by reducing the level of diesel and gasoline fuel vehicle emissions within the Airport campus. In addition, it was presumed that if adequately designed relative to capacity and if sufficiently marketed, the station could create an opportunity to promote the use of CNG vehicles by external entities and agencies outside of the airport environment. There have been and continue to be several impacting issues that affect the Airport’s progress in achieving this goal. The primary being the following:

- Airport passenger activity has been reduced since the inception of the station, and the operational levels that align with projected fuel consumption have been less than projected.
- Due to the difficult and competitive business environment that the transport entities must operate in, interest and support for conversion efforts has been adversely impacted.
- Current development of alternative fuel vehicles, particularly CNG vehicles, has been impacted by new technologies that are perceived to offer greater advantages than CNG vehicles.
- Recent and on-going budget challenges have impacted the level of outreach and marketing that has been dedicated to the station. However, based on information resulting from the examination of station operations, it is evident that maximizing station utilization and reducing station costs will help create a positive cost recovery position for station operations. The Airport will continue to search for opportunities to partner with

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other agencies and organizations to maximize outreach and promotion at the lowest possible costs.

- The development of incentives or preferential operational policies that could be afforded transport entities to convert to CNG use have been difficult to promote due to the competitive nature of the Airport's transport business environment.

Despite the challenges, the construction and activation of the CNG station has allowed the Airport to accomplish the following:

- Provide a convenient and accessible CNG station that supports all Airport shuttle bus operations.
- Better manage the cost of the shuttle bus operation contracts due to retaining direct control of fuel costs.
- Facilitate the conversion of 100% of the Airport diesel fuel bus fleet, representing a major reduction in diesel fuel consumption, resulting in projected emission reductions of over 22 tons.
- Provide a viable CNG source that is accessible by the general public as demonstrated by the fact that 10% of all CNG dispensed in FY 2003-04 was to private vehicles.
- Demonstrate to direct Airport partners and to the community the Airport's commitment to the Clean Air Program.
- Provide a base that can be expanded relative to CNG station marketing and management, positioning the Airport to better utilize this critical asset.

**PUBLIC OUTREACH**

Not applicable.

**COORDINATION**

This report has been coordinated with City Attorney's Office and the Department of Environmental Services.

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