



# ADMINISTRATIVE REPORT

**TO:** PUBLIC WORKS COMMISSION

**FROM:** BRAD UNDERWOOD, PUBLIC WORKS DIRECTOR

**PREPARED BY:** DEPARTMENT OF PUBLIC WORKS

**MEETING DATE:** August 12, 2015 – Regular Meeting Starts at 7:30 PM

**SUBJECT:** Update on Compressed Natural Gas Program

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## RECOMMENDATION

That the Public Works Commission, receive an update report on the Compressed Natural Gas Program.

## BACKGROUND

At the Public Works Commission meeting, staff will present an update on the Compressed Natural Gas Program at the Wastewater Treatment Plant. Included in the update are accomplishments, schedules and next steps for the program.

## OVERVIEW (data/information to be presented):

- Background
- Project Goals and Accomplishments
- Site Layout
- Modifications Required for the Project
- Proposed Equipment
- Construction Strategy
- Vehicle Procurement and Conversions
- Schedules and Next Steps

## NOTICE PROVIDED:

A Public Meeting notice was advertised in the newspaper on July 5, 2015.

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(650) 522-7361



# City of San Mateo Biogas to CNG

Presentation to Public Works Commission  
August 2015



# Proposed Corporation Yard Project Location (Superseded by the WWTP Master Plan)





# Massing Study of Corp Yard

(superseded by the WWTP Master Plan)

City of San Marcos  
Corporate Yard Phase 2a



San Marcos Construction Team  
**Preferred Option**



# San Mateo WWTP

- Wastewater solids from WWTP with ADWF of 11.6 mgd
- Two egg shaped digesters
- 1.2 million gallon capacity each
- 100 cfm of digester gas available





# Project Goals/Accomplishments

- Develop project to use beneficially use the energy from the 100 cfm of digester gas
- Assess cost-effectiveness of CNG production for vehicle fueling
- Grant awarded by the California Energy Commission December 2014. Match funds \$2.45M.
- Key partners identified: Kennedy/Jenks – design engineers and Unison Solutions – equipment manufacturer

# Modifications Needed

- Digester gas treatment
  - Moisture
  - Siloxane
  - Carbon dioxide
- Gas storage
- Gas system controls
- Vehicle fuel storage and dispensing
- Converted vehicles to CNG

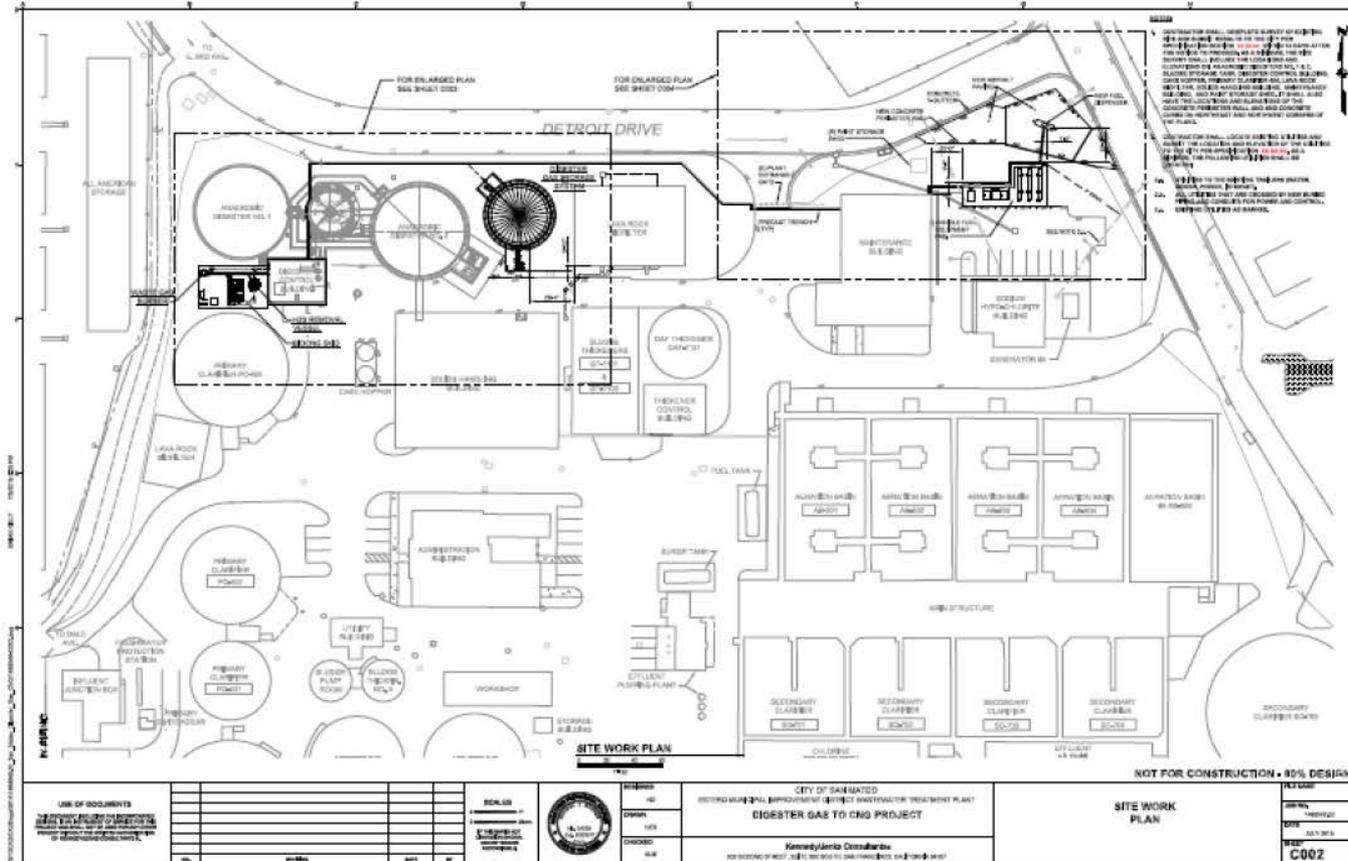


## Findings from the Study

- Can produce 500 GGE
- Existing utility vehicles could use about 280 GGE



# Site Layout Established and Finalized



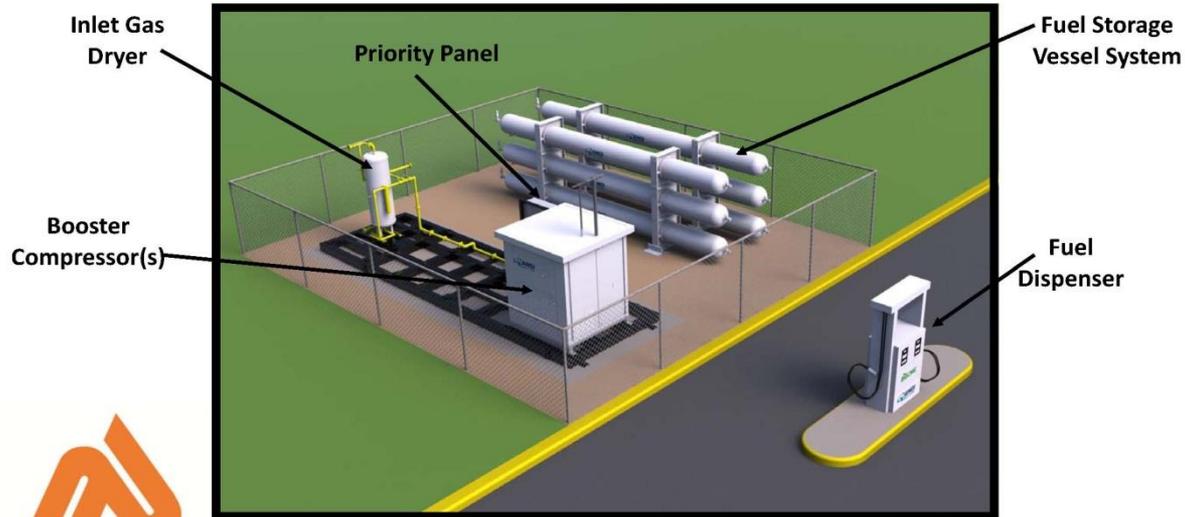
# Existing CNG Storage Examples



# Vehicle Fueling Layout



## BioCNG™ "Fast Fill"- Fueling Components



Phone: 563-585-0967  
E-Mail: [sales@unisonsolutions.com](mailto:sales@unisonsolutions.com)  
Website: [www.unisonsolutions.com](http://www.unisonsolutions.com)



# Existing Gas Treatment Examples





## **CONSTRUCTION STRATEGY - PRE-QUALIFY THE CONTRACTORS**

<b>Contractor</b>	<b>Location</b>
<b>Anderson Pacific</b>	<b>Santa Clara</b>
<b>DW Nicholson Corp</b>	<b>Hayward</b>
<b>Monterey Mechanical</b>	<b>Oakland</b>
<b>Pacific Infrastructure</b>	<b>Pleasanton</b>
<b>TNT Industrial</b>	<b>Sacramento</b>
<b>Western Water</b>	<b>Santa Rosa</b>



# Key Variables for Successful Project

- Reliable gas treatment
- Vehicle conversion to CNG
- Need to use 500 GGE per day



# GMC CNG Vehicle

## Express/Savana CNG Cargo Van

A Complete, Integrated CNG Solution



Whether it's meeting company-wide initiatives or government standards, fleet managers face many challenges. GM offers the Express/Savana Compressed Natural Gas (CNG) option for fleet and commercial customers. The option is available for ordering on Express/Savana 2500 and 3500 Cargo Vans.

### EASY ORDERING

- Ordering is easy — just choose a three- or four-tank system and your sales consultant checks the order box. FHZ is the regular production option for compressed natural gas.
- The vehicle is built with a gaseous fuel-ready engine. The fuel delivery/storage systems are added using a dual-stage, single-invoice process. The ordering system allows you to then take advantage of the many upfitters available for cargo management solutions or other customization.
- GM is the only manufacturer with a fully integrated solution for vans.

### ENGINEERED BY GM

- Express/Savana use a proven, 6.0L Vortec V-8 engine with factory-installed hardened exhaust valves and intake/exhaust valve seats. These components are engineered to GM durability standards for gaseous fuel use.
- Two systems are offered:
  - (UFM) Three-tank system provides a range of up to approximately 200 miles. Allows for use of complete cargo area.
  - (UFP) Four-tank system provides a range of up to approximately 300 miles. This system adds a single tank in the driver's side of the cargo area, just inboard of the wheel well.
- Meet rigorous GM standards for safety, reliability, and durability.

### BACKED BY GM

- All major components will have GM service part numbers for broad availability, providing you peace of mind that parts will be available to keep your fleet on the road.
- Express/Savana have a comprehensive 5-Year/100,000-Mile Transferable Powertrain Limited Warranty.<sup>1</sup>
- Backed by the largest dealer network in the U.S.
- Express/Savana are the only full-size vans with available factory OnStar<sup>2</sup> including a Live Advisor for help when you need it.

To learn more, visit [gmfleet.com](http://gmfleet.com).



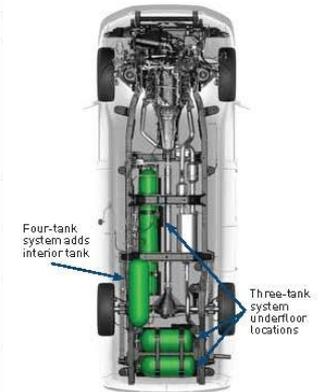
## CNG Cargo Van Specifications

Regular Wheelbase (135-inch) or Extended Wheelbase (155-inch) Cargo Vans only
2500: 8,400 GVW
3500: 9,400 GVW
(LC8) 6.0L Gaseous Fuel-Ready Engine
282 hp @ 4800 rpm SAE Net
320 lb-ft @ 4400 rpm SAE Net
6-Speed Automatic
EPA: BIN 5
CARB: LEV2 - SULEV
Certified in all 50 states
23%
Regular Wheelbase:
Three-Tank - 2500: 2,673 lb, 3500: 3,628 lb
Four-Tank - 2500: 2,373 lb, 3500: 3,328 lb
Extended Wheelbase:
Three-Tank - 2500: 2,458 lb, 3500: 3,433 lb
Four-Tank - 2500: 2,158 lb, 3500: 3,131 lb
Three-Tank - 15.8 GGE
Four-Tank - 23.1 GGE
Three-Tank - 200 miles
Four-Tank - 300 miles
Three-Tank System: Dual tanks aft of the rear axle (underbody, replaces the spare tire), single midship (underbody, replaces the gas tank)
Four-Tank System: Same as Three-Tank System, plus a single interior tank in the driver's side of the cargo area
5-Year/100,000-Mile Transferable Powertrain Limited Warranty <sup>2</sup>
3-Year/36,000-Mile Limited Bumper-to-Bumper Warranty <sup>2</sup>
Subject to individual state regulations
<b>Emissions Warranty</b>
<b>Options Required</b>
(FHZ) Monofuel Compressed Natural Gas (CNG) Fuel Package
(LC8) 6.0L Gaseous Fuel-Ready Engine
(UFP) Four-Tank System or (UFM) Three-Tank System
(Z82) Trailing Equipment
(ZX9) Spare Tire and Jack Delete
(W10) Cold Climate Package



Compressed Natural Gas

### Tank Locations



<sup>1</sup> Gas Gallon Equivalent (GGE). The vehicles may be filled at either a 3,600-psi or 3,000-psi station. Note: Filling at a 3,000-psi station will result in a reduced amount of dispensed fuel and resulting loss of range. Based on individual driving habits, your range may be less.

<sup>2</sup> W/chevy.com first. See dealer for details. ©2013 General Motors. All rights reserved.

<sup>\*</sup>Wherever comes first. See dealer for details.  
<sup>\*\*</sup>[gmfleet.com](http://gmfleet.com) for coverage map, details, and system limitations.



# Schedule and Next Steps

- May: Reviewed 50% Construction Documents
- May: Pre-Qualified General Contractors
- June: Identified vehicles
  - Passenger cars
  - Vans
  - Light-Duty Trucks
  - Other Equipment
- July: Received 90% Construction Documents. Currently under review.
- September: Out to bid



# Schedule and Next Steps, continued

- October: Bid and award
- October: Construction notice to proceed
- October 2015 – April 2016: Construction
- April 2016: Start-up & training
- April – October 2016: Testing & Refinements
- 5-year maintenance contract

