

# Clean Natural Gas (CNG) Cost Fuel and Facility Analysis and Maintenance Facility Services

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# Why CNG? Why Now?

- Gas prices continue to remain elevated and projections remain for inflated gasoline and diesel fuel prices
- Operating funds remain scarce and fuel has been an increasing portion of our budget
- CNG is a proven fuel path in a transit application and well supported in the Sacramento region
- Agency had the technical capacity to deliver the project and phased implementation

# How does CNG compare to Gasoline for usage and cost?

- The range of a CNG vehicle is nearly identical to a gasoline vehicle.
- In the configurations utilized by Paratransit, Inc. there should not be a loss of passenger capacity due to CNG tanks (this is an issue on cutaways used on fixed route services).
- CNG, in general, saves \$**2.00** per gallon when compared to gasoline. Averaging 7,000 GGE/year that is a savings of \$**14,000** per bus per year.

# What comes first the fueling infrastructure or the buses?

- Trick Question: They work in tandem!
- The timing of infrastructure improvements and fleet development depends on the approach taken:
  - Construct a station in-house; or
  - Move forward in a partnership on a turn-key facility

# What we are and are not looking to do

- We are looking towards current (State of Good Repair and Section 5310) and “future” vehicle procurements
- We are NOT looking at existing fleet conversions
- We are looking to develop a sustained, lowered operating cost that will allow savings to be reinvested into the services provided to the public.

# Our Previous Experience with CNG Fleet and Operations

- Operated the Granite Park Shuttle which was CNG
- Maintain vehicles for CSU, Sacramento that are CNG fueled
- Understand range, operations and idling issues
- Experience in providing maintenance, tank inspections and necessary equipment

# What does Paratransit, Inc. need in a station?

- Twin Compressors
- Twin Dispensers with two nozzles each
- Ability for 1000 and 5000 Sherex fueling
- Dryer
- Storage
- Ability to maintain an 8 minute fill

# Different Approaches to Station Development

- Traditional Design-Bid-Build-Operate-Maintain
- Design-Bid-Turn-Key Build and Operate/Maintain
- Turn-Key

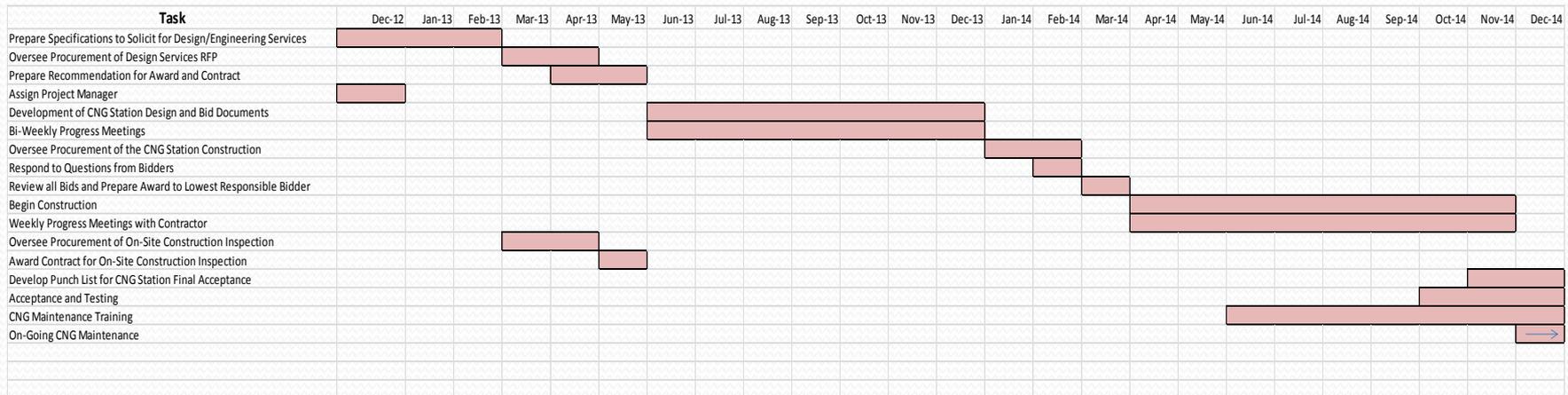
# Constructing a Station In-House

- Constructing a station in house would be a multi-step process and would likely take 2-3 years to develop and implement. Cost is projected at \$1.5- \$2.0 million
  - Identify potential sources of funds (loan, grant, etc.)
  - Issue a Request For Proposals for Design Services to develop the station layout and construction/equipment Bids and Specifications and assist with the bidding process
  - Create and issue an Invitation to Bid for Construction
    - One large bid or two: one for construction, one for equipment
  - Award a Contract to Construct and consider contracting out project management services

# Traditional Design-Build Construction

Task	In-House or Contracted	Estimated Cost
Prepare Specifications to Solicit for Design/Engineering Services	In-House	\$ 3,000.00
Oversee Procurement of Design Services RFP	In-House	\$ 3,000.00
Prepare Recommendation for Award and Contract	In-House	\$ 1,500.00
Assign Project Manager	In-House	\$ -
Development of CNG Station Design and Bid Documents	Contracted	\$ 250,000.00
Bi-Weekly Progress Meetings	In-House and Contracted	\$ 2,500.00
Oversee Procurement of the CNG Station Construction	In-House	\$ 3,000.00
Respond to Questions from Bidders	Contracted	\$ -
Review all Bids and Prepare Award to Lowest Responsible Bidder	In-House	\$ 3,000.00
Begin Construction	Contracted	\$ 1,850,000.00
Weekly Progress Meetings with Contractor	In-House and Contracted	\$ 6,000.00
Oversee Procurement of On-Site Construction Inspection	In-House	\$ 2,000.00
Award Contract for On-Site Construction Inspection	In-House	\$ 20,000.00
Develop Punch List for CNG Station Final Acceptance	Contracted	\$ -
Acceptance and Testing	Contracted	\$ -
CNG Maintenance Training	In-House	\$ 3,000.00
On-Going CNG Maintenance	In-House or Contracted	variable
		\$ 2,147,000.00

# Traditional Design-Build Construction (cont.)



# Using a Partnership to develop a Turn-Key Facility

- A turn-key Station is much easier to develop and would likely take a year to bring online. Costs to Paratransit, Inc would be built into the CNG fuel rate.
- No up-front cash contribution required.
- Development can happen in tandem, as the private provider has the experience to develop the project on a parallel path, speeding up the process.

# Two Approaches to Turn Key: Which one is right?

- All in One Agreement
- Two Agreements: Lease Agreement and Fuel Agreement

# What about using Regional facilities to fuel the Paratransit fleet?

Fueling is currently available at several of our regional partners. As part of the feasibility a Cost Analysis was completed to look at these sites. That analysis included a look at:

Distance to access station

Fuel consumed to access station

Time required to travel to station

Labor costs to access station

Fleet required to sustain service while fueling

# Potential Hard Costs by Agency:

<b>Cost at Clean Energy in Elk Grove</b>		
Fuel Rate Available to Paratransit:		\$2.99/GGE
Cost to access fueling:		\$18.49/ bus
Annualized Cost:		\$952,407.13
Loaded Cost of Fuel:		\$3.97/GGE
<b>Cost at PG&amp;E South Sacramento</b>		
Fuel Rate Available to Paratransit:		\$2.21/GGE
Cost to access fueling (incl. extra fueling time due to slow fill):		\$20.88/bus
Annualized Cost:		\$265,140.44
Loaded Cost of Fuel:		\$3.31/GGE
<b>Cost at YCTD facility in Woodland</b>		
Fuel Rate Available to Paratransit:		\$1.87/GGE
Cost to access fueling:		\$33.61/bus
Annualized Cost:		\$426,785.41
Loaded Cost of Fuel:		\$3.65/GGE

# Potential Hard Costs by Agency (cont.)

## Cost at Sacramento Regional Transit District McClellan Facility

Fuel Rate Available to Paratransit:	\$0.84/GGE
Cost to access fueling:	\$21.86/bus
Annualized Cost:	277,622.00
Loaded Cost of Fuel:	\$2.00/GGE

## Cost at Sacramento Regional Transit District Downtown Facility

Fuel Rate Available to Paratransit:	\$0.84/GGE
Cost to access fueling:	\$10.83/bus
Annualized Cost:	\$137,477.50
Loaded Cost of Fuel:	\$1.41/GGE

# Soft Costs to Access Fueling at RT: McClellan

Location	Variable	Quantity	Unit
	Travel Time per Bus	1	Hour
	Fueling Time per Bus	.25	Hours
	Total Time out of Yard	1.25	Hours
McClellan	Fleet to be Fueled	47	buses
	Total Time to Fuel	58.75	Hours
Our Yard	Fleet to be Fueled	47	Buses
	Total Time to Fuel	11.75	Hours
	<b>Difference</b>	<b>47</b>	<b>Hours</b>
	<b>Additional Service Assistants Required</b>	<b>6</b>	

# Off-Site Fueling Logistics

- Any off-site fueling will require the hiring of additional staff to meet our fueling needs
- Duration of off-site fueling is uncertain and dependent on receipt of grant funds
- Requires additional supervision possibly at alternate locations
- Travel time can be impacted significantly due to traffic and road construction

# Off-Site Fueling Logistics (cont.)

- Will result in additional mileage on vehicles and additional wear and tear
- Requires a minimum of 8 vehicles per hour to be dedicated just to fueling and may impact operations depending on demand
- Reduces the range of the vehicles as they are required to travel to fuel in addition, to providing trips
- May require the addition of fleet to ensure that operations are maintained (cost not included in projections)

# So how do we pay for it?

There are a variety of methods to pay for the construction of a CNG fueling station

Apply for Competitive Grant funds

Borrow the funds from a bank

Enter into a public private partnership

# State of Vehicle and Infrastructure Replacement Funding in the Region



- The SACOG Metropolitan Transportation Plan notes the region has no funding source dedicated to equipment rehabilitation and replacement and must compete against expansion and infrastructure improvements.
- The region's required need just for replacements is nearly \$600 million over the next 25 years.

# What is the difference in savings: Turnkey versus Traditional Build?

		<b>CNG Savings over Gas</b>	
<b>Rate</b>	<b>Oct Avg. Gas Rate (\$3.81)</b>		
(\$1.80 plus gas)	No Buy Down CNG Cost Savings	\$	374,400.00
(\$1.60 plus gas)	Buy Down CNG Cost Savings	\$	422,400.00
(\$1.20 plus gas)	At Projected Traditional Rate	\$	518,400.00
	<b>Oct Mean Gas Rate (\$4.14)</b>		
(\$1.80 plus gas)	No Buy Down CNG Cost Savings	\$	453,600.00
(\$1.60 plus gas)	Buy Down CNG Cost Savings	\$	501,600.00
(\$1.20 plus gas)	At Projected Traditional Rate	\$	597,600.00
<b>Annual Difference between Turnkey and Construction No Buy Down</b>		\$	<b>144,000.00</b>
<b>Annual Difference between Turnkey and Construction with Buy Down</b>		\$	<b>96,000.00</b>
	Gas is based at \$0.45/GGE		

# CNG Maintenance Shop Project and Contracted Maintenance Services



# Facility Impacts of Transitioning to CNG

With the conversion to CNG, there are facility improvements that would need to occur to be compliant for vehicle maintenance.

- *Roof-mounted Fans*
  - *CNG Methane Detection System*
  - *Explosion-proof Lighting System*
- *Potential adjustments to Shop Heating System*
  - *Tie into the existing Fire Detection System*
    - *Air Louvers to increase air flow*

# Benefits of an Upgraded Maintenance Facility

In addition to the benefit of being able to maintain a possible future CNG fleet, upgrading the shop also provides the following benefits:

- *Allows for Paratransit, Inc. to provide contract service maintenance to other public and private CNG fleets*
- *Assists our regional partners with accessing maintenance space during an emergency*
- *Improves the energy efficiency of the shop and lowers operating costs by utilizing the newest “technology” in lighting and heating*

# Potential Costs of CNG Shop Upgrades

Description	Estimated Costs
CNG Facility Improvement Plans and Overview	\$5,000.00
Fire Separated Walls/Improvements	\$75,000
Roofing	\$15,000
Mechanical	\$150,000
Electrical Improvements	\$120,000
Gas Detection System	\$150,000
<b>Total Anticipated Cost</b>	<b>\$515,000</b>

# Timeline for Facility Upgrades

In parallel with a fueling agreement is the need to conduct detailed facility design plans. As part of the fueling station agreement, Clean Energy has committed to developing the necessary design and plan work for the shop upgrades.

Once completed, the bid specifications will be publicly let. Bids will be solicited and a contract will be presented to the Board for consideration. It is estimated that the development of this plan should align directly with the proposed 12 month construction development of the CNG station itself.

# Paratransit Inc. Fleet Maintenance Services

- Paratransit, Inc. has a full service maintenance and repair shop and provides services to a variety of public agencies and private businesses
- Mechanics are CNG certified and are licensed to perform required tank inspections
- Our shop is highly rated and has received outstanding reviews by the California Highway Patrol
- Ability to provide detailed reports on maintenance required to meet grant funding requirements