CNG Fueling Options for Fleets
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What CNG fueling options are available for fleets?

- Time-fill
- Fast-fill
- Combination fast- and time-fill
- Buffer fast-fill
How to Select the Right CNG Fueling Option for Fleets

- Time-fill
  - Vehicles parked at central location generally overnight (school buses, refuse trucks)

- Fast-fill
  - Vehicles being fueled in a random fashion during the day (automobiles, light, medium and heavy-duty vehicles)
How to Select the Right CNG Fueling Option for Fleets (cont)

- Combination fast- and time-fill
  - Some vehicles parked at a central location overnight and some vehicles requiring random fueling during the day (school buses, refuse trucks, automobiles, light to heavy-duty vehicles)
- Buffer fast-fill
  - Vehicles requiring a large quantity of fuel and vehicles needing to be fueled one after another (primarily transit bus fuelling)
Time-Fill Fueling Equipment

- Gas Dryer - removes water
- Prime Mover - drives the compressor
- Compressor(s) - increases gas pressure
- Dispenser(s) - meters and dispenses fuel
- Temperature Compensation - ambient temperature affects
- Station Control System - controls operation of components
- Emergency Shutdown System (ESS) - isolates components for safety
Time-Fill Fueling System
Time-Fill Fueling Station
Time-Fill Fueling
Time-Fill CNG Applications

- Vehicles that
  - Are housed over night at a central location at least 6 to 8 hours
  - Can travel all day on a single CNG fuel fill-up
- Examples: transit buses, school buses, refuse trucks, automobiles through heavy-duty vehicles
Sizing Time-Fill CNG Fueling Equipment

- Number of vehicles
- Quantity of fuel to be dispensed in all vehicles
- Amount of time to fill all vehicles
  (Fuel compressed and delivered to vehicles)
Cascade Fast-Fill
Fueling Equipment

- Gas Dryer - removes water
- Prime Mover - drives the compressor
- Compressor(s) - increases gas pressure
- Priority/Sequential System - directs flow of compressed natural gas
- Storage System - stores compressed natural gas
Cascade Fast-Fill
Fueling Equipment (Cont)

- Dispenser(s) - meters and dispenses fuel
- Temperature Compensation – ambient and heat of compression temperature affects
- Station Control System - controls operation of station components
- Emergency Shutdown System (ESS) - isolates components for safety
Fast-Fill Fueling System

- Dryer System
- Compressor
- Priority Fill
- Ground Storage: Low, Med, High
- Sequencing
- Temperature Compensation
- Fill Hoses: #1, #2
- Storage Bypass

Suction Gas
Fleet Fast-Fill Fueling Station
Public Fueling Station
Cascade Fast-Fill CNG Application

- Randomly arriving vehicles of all types and sizes
- Station fueling pattern usually has two to three 30 minute peak fueling periods during a 24 hour period
- Card reader access to fueling
- May have an attendant perform the fueling function
Sizing Cascade Fill CNG Fueling Equipment

- Number of vehicles
- Quantity of fuel per vehicle
- Quantity of fuel in 30 minute peak period
- Number of 30 minute peak fueling events in 24 hours

(Fuel compressed and stored on site and delivered to vehicle(s) from storage)
Buffer Fast-Fill Fueling Equipment

- Gas Dryer - removes water
- Prime Mover - drives the compressor
- Compressor(s) - increases gas pressure
- Storage System – Stores compressed fuel
- Dispenser(s) - meters and dispenses fuel
- Temperature Compensation – ambient and heat of compression temperature affects
- Station Control System - controls operation of components
- Emergency Shutdown System (ESS) - isolates components for safety
Buffer Fast-Fill Fueling System

- Suction Gas
- Dryer System
- Compressor
- Buffer Storage
- Temperature Compensation
- Fill Hoses #1 #2
Large Transit Station
WAMTA Washington, D.C.
Large Transit Station
WAMTA Washington, D.C.
Large Transit Station
WAMTA Washington, DC

Single Hose
Transit Dispenser
Large Transit Station
WAMTA Washington, DC

OPW CT 5000
Nozzle
Buffer Fast-Fill CNG Application

- Known quantity of vehicles to be fueled in a specified time period
- Fueling of vehicles is one after another until all vehicles are fueled
- Usually have an attendant perform the fueling function
- Examples: transit buses, taxi cabs, automobiles through heavy-duty vehicles
Sizing Buffer Fast-Fill CNG Fueling Equipment

- Number of vehicles
- Quantity of fuel per vehicle
- Length of time to fill each vehicle
- Length of time to fill all vehicles

(Fuel compressed and transferred to vehicle or stored on site between vehicle fills)
What are the costs for these fueling options?

- Price depends on the option selected and the quantity of fuel used by the fleet.
- Prices can range from several thousand dollars to fuel a single vehicle to several million dollars for a transit fleet of 200 or more buses.
- Public access CNG fueling station could run $400,000 to $550,000.