

NGV Infrastructure & Vehicle Availability

Presentation to
TRB

January 17, 2013

NGV Fuel Types

- Liquefied Natural Gas (LNG):
 - Primarily Class 8 over-the-road trucks requiring long range, locomotives, large marine applications
- Compressed Natural Gas (CNG):
 - All other on-road vehicles

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 - Primarily Class 8 over-the-road trucks, locomotives, large marine applications
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 - All other on-road vehicles
- LCNG:
 - CNG supplied on-site from LNG stations

CNG Fueling Options

- Home refueling
- Time fill
- Fast fill

From \$5,000 -
\$2 million+

CNG Home Refueling



CNG Time Fill Station



CNG Time-Fill Station



CNG Fast Fill Public Station



LNG Fueling Option

- Fast fill

LNG Fueling Station



LNG Fueling Station



CNG Infrastructure Strategy

- Fueling Stations:
 - Gasoline: 150,000
 - Diesel: 75,000
 - CNG: 1,100
- CNG stations expanding about 20-25 per month

(continued)

CNG Infrastructure Strategy

- Can't be all things to all people – yet
- Focus on HD, MD and LD high fuel-use fleets in return-to-home applications

(continued)

CNG Infrastructure Strategy

- Can't be all things to all people – yet
- Focus on HD, MD and LD high fuel-use fleets in return-to-home applications – *until*:
 - Community develops adequate number of public fueling stations to serve non-RTH fleets and consumers
- Then connect community “hubs” with highway “spokes”

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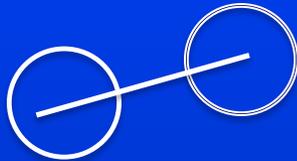
CNG Infrastructure Strategy

Step 1:

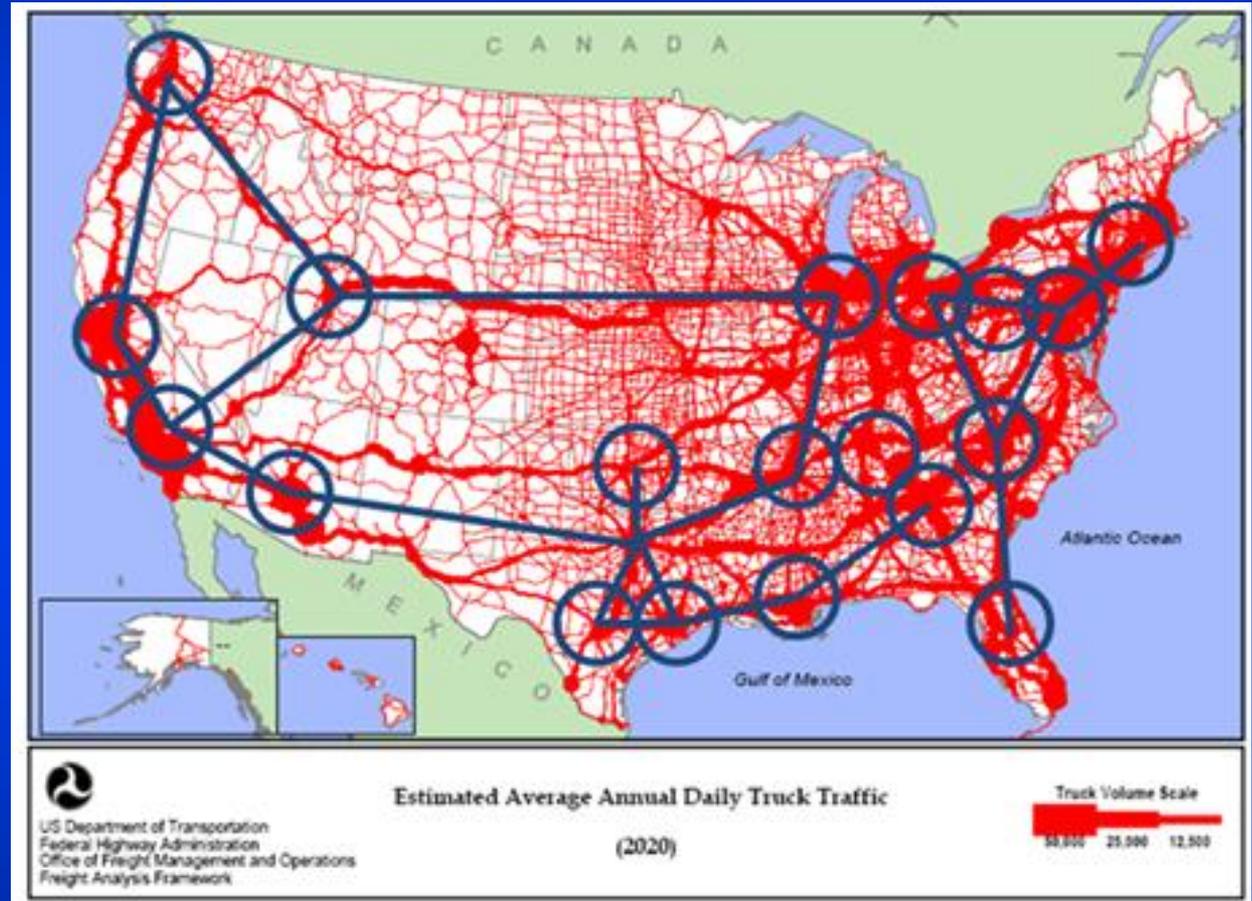


Serve local/regional fleets within hub. Build confidence for consumer adoption.

Step 2:



Serve spokes that connect the hubs



LNG Infrastructure Strategy

- To serve the long-haul truckers, can't be bottom-up, organic growth
- Must be top-down “big-bang” approach

America's Natural Gas Highway



Selection of NGVs from OEMs, SVMs

OEMs

- American Honda
- General Motors
- Chrysler
- VPG/MV-1
- Thomas Built Bus
- Blue Bird Bus
- Optima/NABI
- El Dorado
- New Flyer
- Orion
- Foton America
- Gillig
- Elgin
- Allianz/Johnston
- Schwarze
- Tymco

OEMs

- Freightliner Truck
- International/Navistar
- Kenworth
- Volvo
- Peterbilt
- Mack
- ALF Condor
- Crane Carrier
- Autocar Truck
- Capacity
- Vehicle Production Group

OEM/Repower Engines

- Cummins Westport
- Westport Innovations
- Doosan America

SVMs: Gasoline

- Altech-Eco
- BAF Technologies
- Landi Renzo/Baytech Corp
- IMPCO Technologies
- NGV Motori
- NatGasCar
- Auto Gas America
- GoNatural CNG
- Westport LD
- Green Kraft

SVMs: Diesel

- American Power Group
- Clean Air Power
- EcoDual
- NGV Motori

NGVAMERICA

Natural Gas Vehicles for America

Local-Regional Haul/Line Haul



Vocational/Specialty/Work Truck



Step Vans/Shuttles



Vans



NGVAMERICA

Natural Gas Vehicles for America

Pickups



Sedans



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Natural Gas Vehicles for America