



Fuel Forward

Propelling Transportation with Natural Gas

Calgary, AB – March 21, 2012

Presentation Agenda

- About CNGVA
- A successful model for natural gas
- *Deployment Roadmap* findings
- Barriers to be addressed
- Actions now underway
- Our Canadian trailblazers



About CNGVA

- National not-for-profit trade association that leads the sustainable growth of natural gas as a primary transportation fuel for the benefit of Canada's economy and environment.

Members:

Natural Gas Value Chain - ATCO Gas, Enbridge Gas Distribution, Encana, FortisBC, GazMetro, Shell Canada, Spectra Energy, Union Gas

Vehicle, Equipment & Fuel Suppliers - Agility Fuel Systems, ATW Automotive, CanGas Solutions, Change Energy, Clean Energy, Cummins Westport, ECO Fuel, Ferus, GNA, Hi-Tec, IMW Industries, Jenmar Concepts, Kraus Global, Marathon Technical, Peterbilt, Ryder Systems, Viridis, Westport Innovations, Xebec

Research Organizations - Powertech Labs, Saskatchewan Research Council



A Successful Model

- To develop the market for natural gas vehicles, need a successful business model:

1. **Repeatable**
2. Based on a solid **business case**
3. **Integrates** into the fleet's operation
4. Addresses **all implementation needs**
5. Involves **timely approvals**
6. Links to **service and support networks**

Many different players involved on the vehicle, fuel, and station supply chain

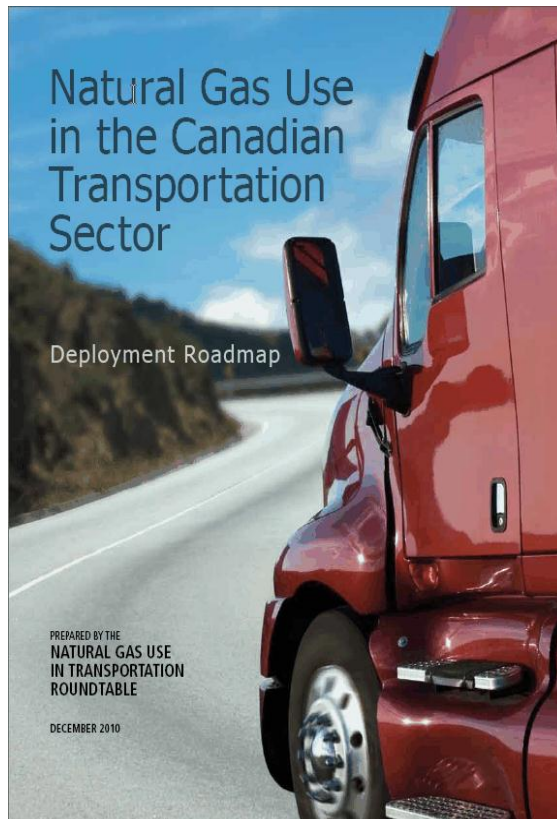


Deployment Roadmap

2010 – Roundtable organized by NRCan

2011 – *Roadmap* report released in January

2012 – Implementation underway



Who's involved?

- AB, BC, ON
- Fleet end users
- NRCan & Transport
- Vehicle OEMs
- Fuel providers
- Station providers



Overall *Roadmap* Findings

- Start with return-to-base and regional corridor medium & heavy fleets
- Focus on high mileage fleets with strong business case
- Address barriers to adoption:
 1. De-risk investment & early adoption
 2. Address information gaps
 3. Increase capacity to sustain markets
 4. Ensure ongoing competitiveness

Available Factory-Built Vehicles



Bus (school)	Bus (transit/commuter)	Bus (intercity)	Dump	Flow / Utility	Refuse	Waste (solid or liquid)	Great Sweeper	Factor (long haul)	Factor (short haul)	Medium / General	Ward (garage)

Future Original Equipment Manufacturer (OEM) or Model

Phoenix NG 7.6L
7.6 litre engine
175 – 245 horsepower
466 – 828 lb-ft torque
Manufactured by
Eaton Sealed Air Inc.[®]
*McNeilus CF series

Westport ISL G
8.0 litre engine
258 – 338 horsepower
668 – 1,000 lb-ft torque
Manufactured by
Cummins Westport

Westport ISL G SX
15 litre engine
488 – 475 horsepower
1,450 – 1,750 lb-ft torque
Manufactured by
Westport

Westport (TED)
11.0 litre engine
400 horsepower
1,350 lb-ft torque
Manufactured by
Cummins Westport

GK12-S
11.1 litre engine
300 – 340 horsepower
604 lb-ft torque
Manufactured by
Doosan

Box Builder Notes
(Canadian shows in red)

Refuse
Hell Environmental (front loader, rear loader, side loader & wing clear)
McNeilus (front, rear & side)
Labore (universal group (included)
Labore (side)
Leach (rear)
Witek (front)
Ampac Inc (front & side)
Sprengern Manufacturing (front & side)
F.C. Clarke, Inc. (front & roll off)
S-C Pack (front, rear, side)
Pandac (front, rear, side)
New Way (front, rear, side)
Pac-Mor Ltd (front, rear, side)
Wayne Engineering (front, rear, side)
GSP Marine Int'l (side)
Universal Group (front, rear, side)
Ampac
Galloweth
Kear Manufacturing Corporation
Numerous other small local body builders

Oscorbe Int'l
Numerous other small local body builders

Dump
Or Bodies
Typically, one or two local suppliers in each marketplace

Roadmap Implementation Actions



Ensure ongoing
competitiveness

De-risk investment
& early adoption

Address
Information gaps

Increase capacity
to sustain markets

Trailblazer #1 – Vedder Transport



- 50 LNG Peterbilt tractors
- 1 private refuelling station on their site with plans to open to other fleets via cardlock
- Incentive funding offset truck incremental
- Energy: 3.9 million diesel litre equivalent/year

Trailblazer #2 – Robert Trucking



- 180 Peterbilt LNG tractors
- 3 private in-yard refuelling stations – Montreal, Toronto, and Quebec City
- Accelerated capital cost allowance measure helped offset truck incremental
- Energy: 14 million diesel litre equivalent/year

Trailblazer #3 - Waste Management



- 20 CNG refuse trucks in Coquitlam, BC
- 20 more trucks to be added in 2012
- Private time fill station

- Incentive funding offset incremental cost
- Waste Management has announced a second project in Ottawa - 25 trucks

Trailblazer #4 – City of Surrey, BC



First Canadian city to require use of NG trucks for residential waste collection services

Starts Oct 2012

- BFI Canada awarded business
- Start on fossil NG and transition to RNG produced from municipal green bin waste
- First-of-its kind project in North America

Trailblazer #5 – Province of Quebec



- 3 LNG ferries to operate on St. Lawrence River
- 2 @ 440 passengers; 110 vehicles
- 1 @ 800 passengers; 180 vehicles
- Refueling will be direct from tanker trucks
- Energy: 23 million diesel litre equivalent/year

A Successful Model – What's Next?

- How to build on early successes?
- Get the word out and ensure:
 1. **Repeatable**
 2. Based on a solid **business case**
 3. **Integrates** into the fleet's operation
 4. Addresses **all implementation needs**
 5. Involves **timely approvals**
 6. Links to **service and support networks**





Thank You & Questions

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